ENVIRONMENTAL EDUCATION AND CITIZENSHIP: A CASE STUDY OF ELEMENTARY TEACHERS AND PRINCIPALS PERSPECTIVES IN ISRAEL

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Abstract

The social-environmental crises worldwide and in Israel led to the recognition of environmental education (EE) forty years ago as an important way to improve these global problems. Despite this recognition and subsequent investment in EE, it has failed to change social-environmental degradation. Through an examination of Israeli teachers and principals’ perspectives, this qualitative, instrumental case study seeks to better understand the potential of EE, when it is paired with critical citizenship (CC), to foster more just and equitable society. Data were collected using semi-structured interviews, observations of EE events totaling 40 hours, and reviews of about 140 documents. The study focused on two elementary schools in Israel from middle-low SES communities, located in northern Israel and in central Israel. The schools had implemented EE more than ten years, were awarded the “Continue Green School Certificate”, and were considered to be highly involved in EE. Participants included twelve teachers (six from each school) and two principals. This study used Values, Beliefs, Norms (VBN), environmentalism theory, and the Critical Citizenship (CC) approach to help answer the following questions: How do Israeli elementary school teachers understand EE’s role in fostering citizenship for a more just and equitable society? And, what structures and strategies do teachers employ to create opportunities for active involvement as part of their approach to EE?

Findings from this study make an important contribution to the literature by offering a new perspective about the relations between EE and CC according to teachers and principals. The findings also suggest that a school’s ontological perspective on knowledge, namely the constructivist approach, enhances pro-environmental behavior, while the positivistic approach matched the EE scientific approach that emphasized behavioral change less. Pro-environmental
behavior in the private sphere (mainly recycling) was more common than pro-environmental behaviors in the public sphere in both schools. A school’s approach to EE was important for the type of pro-environmental behaviors it encouraged. A whole-school approach to EE deepened the active involvement of participants and enhanced their sense of citizenship more than an inquiry-based learning approach. The findings reveal that both schools lacked critical citizenship focused on the critical social justice aspect of EE. This might reflect the complexity of social gaps in the Israeli context, namely the Jewish-Arab conflict and the pervasive adherence to the educational status quo, which is not open to using EE to foster social justice. Recommendations include strategies and approaches to make EE more effective, such as emphasizing diverse approaches to EE focusing on the whole-school approach, providing teachers with the knowledge and skills to promote pro-environmental behavior in the public sphere, and establish the understanding among faculty, community, and policymakers that EE cannot be implemented while neglecting social issues since the environmental crisis is inherently connected to social crises and social gaps. To that end, this study recommends an integration of the social component of EE, focusing on how individuals and communities use and share natural and social resources in a just way, and developing action skills and dispositions for critical citizenship as well as social and environmental justice.

**Key words:** Environmental education, civic education, critical citizenship, VBN – values, beliefs, norms, theory, constructivist-positivist approach to knowledge construction, pro-environmental behavior, social and environmental justice
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Chapter 1: Introduction

Statement of the Problem

Societies across the globe suffer from environmental crises that demand urgent action (A. Tal, 2002). These crises include climate change; water, air, and land pollution; loss of biodiversity; and social-environmental injustices such as unequal access to environmental resources and exposure to pollution (Orr, 1991; Saylan & Blumstein, 2011). A society's response to environmental crises reflects its values and its belief in the need to make cultural changes to improve the lives of its citizens and its natural environment (Orr, 1994). Policymakers have formally recognized the importance of reversing environmental degradation through the implementation of environmental education (EE) programs (UNESCO/UNEP, 1975, 1977). Consequently, EE was developed to create a deep level of knowledge about the environment, foster an awareness of and positive attitudes towards the environment, and enhance pro-environmental behaviors (Sauvé, 1996). Although the United Nations Educational, Scientific and Cultural Organization (UNESCO) recognized EE as a way to decrease environmental degradation four decades ago (UNESCO/UNEP, 1975, 1977; United-Nations, 1992), and despite similar declarations in countries around the world, actually implementing EE has been difficult. It remains a marginal educational issue even in many developed countries such as the US and Israel (Dunetz & Peled, 2004; Gruenewald & Manteaw, 2007).

When schools do manage to implement EE, it is usually bound to the area of science, focusing mainly on environmental knowledge and attitudes (Hart & Nolan, 1999; Rickinson, 2001). Due to social crises affected by environmental factors, however, EE should also include social components, which in turn would also demonstrate to learners that active citizenship can be a democratic tool to solve these crises (Orr, 2002). The social component of EE includes
exploring the relationships between humans and the environment, focusing on how individuals and communities use and share natural and social resources in a just way, and developing action skills and dispositions for citizenship and environmental justice (Tilbury, 1995).

For the purposes of this study, I focused on the following main characteristics of EE that framed the relationship between humans and the environment: holism, interdisciplinary, values, beliefs, norms, and critical thinking (Sauvé, 1996). These characteristics were especially important for this study because understanding the relationship between humans and the environment should be holistic and cannot be too narrow or specific (Orr, 2002). Furthermore, learning about the connections between the natural environment and human society inherently must be interdisciplinary and not focus on a single discipline. Social-environmental justice, for example, is not emphasized enough in science, and should be part of EE (Rickinson, 2001). Emphasizing values, beliefs, and norms were also important for understanding one of the most important components in EE: encouraging learners and educators’ active learning, critical thinking, and community engagement around social-environmental justice (S. Gough, 2006).

The environmental crisis is unique among educational subject matter because it requires immediate attention (Sund & Wickman, 2011). Therefore, one of the important components of EE is its potential to foster pro-environmental behaviors that can lead to solving pressing environmental problems (Rickinson, 2001) as well as social problems (Furman & Gruenewald, 2004). Environmental behavior can be classified into two categories: the ‘private sphere’ and the ‘public sphere’. The private sphere generally refers to individual behaviors directly influence the environment, such as recycling, energy and water conservation, and composting. The public sphere refers to behaviors of a social nature that indirectly influences the environment (Chawla & Cushing, 2007), such as donating money, citizenship (defined below), gathering
environmental information, membership in environmental organizations, and community projects (Kollmuss & Agyeman, 2002). Indirect environmental behaviors—or public actions—are less common and require more research in the related scholarly literature (Chawla & Cushing, 2007). For the purpose of this study, pro-environmental behaviors included social aspects, particularly citizenship (Orr, 2002; Sauvé, 1996).

For this study, the concept of citizenship went beyond the minimal approach to civic education that tends to focus on civic knowledge and fostering the ‘good,’ law abiding citizen but fails to explore social problems that create inequalities. In this study, however, citizenship was referred to the maximal approach to civic education that promotes behaviors related to democratic participation (Johnson & Morris, 2010). According to Dejaeghere (2008), the idea of citizenship is changing throughout the world and being a citizen involves understanding how different people within a society embody privileges and enact power. Therefore, citizenship includes concepts of privilege and power to understand the exclusionary nature of citizenship (J. G. Dejaeghere, 2008).

In recent years, some groups have tried to widen the scope of EE to include social-environment aspects. These efforts often emphasize the need for solving environmental problems through political change (Chawla & Cushing, 2007; Marsden, 1997; Stern, 2000). Thus, we need to educate for civic engagement within the public sphere and not only for pro-environmental behavior at the individual level or within the private sphere (Pizmony-Levy, 2011). In light of this understanding, citizenship becomes a particularly important pro-environmental behavior. The concept of citizenship as part of EE, however, is usually overlooked by researchers and has only recently garnered scholarly attention (Berkowitz, Ford, & Brewer, 2005; Chawla & Cushing, 2007). No study has yet investigated citizenship as part of
EE in Israel. Therefore, it was important to understand citizenship in the context of environmental behavior both worldwide and in Israel.

The suggested research is important for scholars because there has been little investigation into the relationships among sustainability, society, and what students are taught (Scott, 2009). The ability of teachers to implement theories, ideas, and knowledge about the environment and society into the curriculum makes them important agents of change in the education system (Cotton, 2006a). Therefore, it is valuable to understand their perspectives on EE and citizenship (Hungerford, Volk, & Ramsey, 2000; Kandir, Yurt, & Kalburan, 2012), which may help create better EE programs that include teaching for effective citizenship. Scholars should explore this topic more deeply and thoughtfully and make clearer connections between EE and its wider civic and social implications (Ratcliffe & Grace, 2003). This is especially true in Israel, where research on these topics is particularly limited.

In conclusion, EE has an important role in decreasing social-environmental problems, particularly since its primary goal is to foster pro-environmental behaviors, including, ideally, citizenship (Orr, 2002). The practice of implementing EE, however, is very difficult, especially when it comes to encouraging pro-environmental behaviors, because environmental and civic education are rarely integrated (Berkowitz et al., 2005). Furthermore, it is usually complicated to create educational opportunities for learning and practicing pro-environmental behaviors in the public sphere. Therefore, the purpose of this research was to better understand and describe how EE, when paired with civic education in Israeli elementary schools, can foster both student and teachers’ efficacy and social action toward a more just and equitable society.
Significance of the Problem

Environmental degradation has led to a worldwide crisis and an urgent need for EE programs and research (Orr, 1991). EE’s main goal to enhance pro-environmental behaviors—including environmental and social aspects—is important to many stakeholders such as policymakers, administrators, and educators. This suggests a need for research into how to make EE more effective, especially in places such as Israel where there is substantial environmental degradation and wide social gaps. Understanding relationships between environmental degradation and social problems, as well as the urgent need for social action to address those problems, should compel teachers, administrators, and policymakers to embrace EE programming that incorporates citizenship at every level (Orr, 1994).

Despite the urgent need for implementing EE, teachers in Israel are not generally trained to teach it (Goldman, 2004), and school systems face many challenges in its implementation due to teachers’ lack of knowledge about the benefits of EE (Dreyfus & Veinberger, 2011). Therefore, it is important to understand teachers’ perspectives on EE and civic education in order to better implement such programs, especially in Israel (Goldman, Yavetz, & Pe'er, 2006; T. Tal, 2010; T. Tal & Argaman, 2005; Yavetz, Goldman, & Pe'er, 2009). Increasing pro-environmental attitudes and behaviors among teachers could improve their effectiveness in teaching EE and lead to increased student efficacy and action as citizens (Chi-chung & Chi-kin, 2003; Ernst, 2007; Lieberman & Hoody, 1999). Since research shows the value of educating for pro-environmental action and not just knowledge (Rickinson, 2001), it is important to investigate teachers’ perceptions of the relationship between EE and citizenship and their abilities to foster social change (Paige & Cogan, 2002).
Although EE and civic education research is well established, there is a lack of research combining the two bodies of literature (Hungerford, 2010), specifically in Israel. Therefore, this research contributed to the broader view of EE and civic education for scholars and practitioners. To better understand how EE—when paired with civic education—fosters social action, I explored how educators see the relationship between EE and social change in the context of civic engagement.

**Positionality Statement**

Social justice vis-a-vis EE is at the core of my life, my values, and my passions. I would like to make a difference not only through my practice but also through meaningful and influential research. My identity and culture reflect historical, local, national, and global influences and inform the value and importance I attach to the environment, to social justice, and to social-environmental change. I believe that EE provides a context in which students learn about the environment and develop agency for building a more just society. In this positionality statement I identified and described my personal and professional backgrounds and explored how they inform my perspectives and biases related to my research, which focused on the following question: How do Israeli elementary school teachers’ perceptions, values, beliefs, norms, and behaviors related to the social and natural environment affect their understanding of EE’s role in fostering citizenship for a more just and equitable society?

My biases are rooted in my social-capital (Bourdieu, 1986), demographic characteristics, and educational background. I grew up in a poor, urban community in Israel. Like many other graduate students in education programs, my parents did not finish high school (Butin, 2010). I am the first and will probably be the only one in my family to study in a doctoral program, let alone one conducted in English. My educational eagerness was sparked by my grandmother, who
encouraged education. She did not finish elementary school, but she motivated me to study and have a better future than she and my parents had. My grandmother’s support, my proximity to Tel-Aviv (the largest city in Israel), and my hard work helped me to overcome a number of systemic obstacles. Having grown up in a low income family may help me to understand poor communities. However, having overcome the challenges of my demographic background by getting support from my grandmother, living near Tel-Aviv, and my ability and motivation to work hard may prevent me from understanding others who have not changed their social reality. Being aware of this bias helped me to be cognizant of the ways I may inadvertently judge others that struggle and be more open to how others may deal with their social capital or lack thereof, such as emphasizing positivist knowledge construction. Despite the fact that my academic knowledge helps me to understand that the constructivist and critical approaches are more effective for changing the social status-quo, I was raised by the positivist approach, and apparently it helped me to change my social capital. This inner struggle between my personal experience and my academic knowledge helped me to better understand the school in my study that emphasized the positivist approach, and it potentially will help me to find ways in the future to influence the schools.

Also relevant to my success is the central geographic location (Briscoe, 2005) in which I lived in Israel. Although I come from a low-income background, I grew up near Tel-Aviv, which is located at the center of Israel and includes many cultural and educational opportunities such as the special high school where I studied and received my education in classical music. My grandmother’s encouragement and the educational opportunities to which I had access in Tel-Aviv led me to study more than was required in high school and in college. I learned the highest levels of math, physics, philosophy, and music in high school and subsequently earned two
bachelors and two masters degrees. My geographic positioning is different from students and teachers living in low-income, rural communities in Israel, as was the case at Beach School.

Despite my geographic background, I have worked throughout Israel and have had the opportunity to work with many different populations, including those from high and low socioeconomic groups, as well as students from different ethnicities in rural areas and in the center of Israel. Furthermore, working with teachers has helped me to better understand their perspectives. This understanding, gained over years of experience, study, and practice, combined with self-reminders of my biases, helped me mitigate the impact of my demographic difference and my educational and cultural privileges on my interpretations during this study (Jupp & Slattery, 2010). Experiencing different communities and understanding their needs made me more aware of and sensitive to the “other” (Briscoe, 2005).

My interest in nature and the environment was established when I was accepted into a special position for the Israeli army at the Society for Protection of Nature in Israel (SPNI). During that time, I saw how ecologically reckless policies can damage natural treasures and unprivileged communities (De-Shalit, 2001; A. Tal, 2002). Soon I came to understand the importance of education in raising public awareness of social-environmental problems. I realized that social-environmental problems are one factor associated with social justice and could be identified and changed from within the affected communities through EE. Consequently, I consider myself to be an educator who advocates strongly for social equality, economic justice, and ecological sustainability, which in turn is influenced by my low socioeconomic upbringing, my understanding of the strong relationship between social and environmental justice and education, and my awareness of social inequality and subsequent desire to change it.
My belief that Israel should have strong EE that emphasizes social equality motivated me to develop a special program titled, “Children Make a Difference.” This program provided children with the opportunity to study nature, society, and the environment near their homes, while also encouraging students, teachers, and communities to take action toward improving their environment and society. This program was implemented successfully in 200 schools and involved more than 20,000 students. The program has not only benefitted participating schools, but it has also been used to help develop Israel’s national EE program. One of my greatest achievements as an educator came in Israel in 2010 when the Ministry of Education adopted my program to be implemented in many Israel’s elementary schools.

My involvement in developing and implementing EE programs in Israel created some biases in my perspective. There are other EE programs in Israel with which I was not involved, and I needed to be careful not to judge other programs negatively. To avoid this bias, I focused on figuring out how teachers described and understood the relationship between EE and citizenship in changing their own realities in poor communities. Furthermore, one of the advantages that helped me to overcome this bias was being out of Israel and living in the US for the past five years. Geographical and temporal distance helped me to better recognize and minimize this bias in my research mainly because I was not working with any of the schools or organizations during that five year period, and therefore I have been less involved emotionally and physically. Moreover, during my five years in the US, many of the teachers and programs in Israel changed.

The advantage of being out of Israel and in the US for five years also presented difficulties that influenced my approach to my research. I lived and studied in American culture and was influenced by the academic approach, which led me to a scholarly understanding of the
critical approach. However, when I returned to Israel and needed to study again my new understanding conflicted with the realities of the Israeli educational system. In this reality, social justice and the critical approach were not part of the language and culture, neither in practice nor in academia. This was very hard to navigate, since I looked for a social-environmental phenomenon – critical citizenship – about which no one in the academy or in schools knew. Therefore, I needed to keep translating not only the language from Hebrew to English and vice versa, but also the academic language to the practice language. I realized that being out of Israel for such a long period of time changed my perspective on one hand, but it did not let me fully realize the reality at the beginning of designing my study. It took me a long time to get a better understanding of what I thought I would find; my underlying assumptions were based partly on my immersion American culture and partly on the academic approach I had gained during my studies. What I really found and understood after returning to Israel, and investigating the schools in my study, was profoundly different from.

Before going to the US, I helped implement the “Children Make a Difference,” program in schools in some of the most remote parts of Israel. I realized that EE may be especially important for rural, disadvantaged populations because of the civic engagement component of the program. Moreover, EE may be important for disadvantaged communities because it may give them opportunities to change their environment and work toward a more equitable society. I encouraged students, teachers, and communities to take action and push for decision-makers to improve the environmental and living conditions of their cities. On several occasions, it seemed that students and teachers were excited and empowered by being active and trying to influence decision-makers because, as they described it, they had never been encouraged to do so before. This experience led to my interest in understanding EE’s potential to contribute to the fight for
social equity in Israel. However, this underlying assumption, which was based on the academic literature and declared that EE should and may lead to social change, encouraged me to look for critical citizenship which, in turn, only partially appeared in my study. The research journey disappointed to me in the beginning because I did not find what I thought I would. Later on, I realized that I had forgotten the complexity of the Israeli context, even though I knew it in my head when I lived in the US.

Surprisingly, it was only after starting my research that I realized that while the complexities of Israeli society, including the gaps between rich and poor, the Arab-Jewish conflict, and other aspects of social justice, were inherently related to my study and influenced the schools I was investigating, these factors did not have the effects I originally thought they would in the beginning. These complexities actually prevented the school from integrating social justice into their EE. I also realized that my approach to the Arab community was very important for understanding my biases in this study. In general, I worked with many Arab students and implemented in my college-level teaching the idea that the Israeli Arab community as a social group is constantly oppressed in Israel. However, whenever there were attacks by Arabs on Israelis, which is a regular situation in Israel, I found myself also feeling the pervasive fears of Arabs. At the same time, I realized that the Arabs (especially religious women) are afraid too, maybe even more than Jews. It is a very difficult situation to know that I am raising my children in this fearful situation, when we could have stayed in the US. I acknowledged that my own positionality toward the Arab community was a part of my biases and I tried to reduce it by acknowledging both sides: the Arabs feel fear of and isolation from Israel and to the hostile environment, and the Jews that fear of Arab attacks especially in predominantly Arab neighborhoods. I constantly reminded myself that I did not choose to live in a mixed Arab and
Jewish city, but I live in a predominantly Jewish village, since I did not want to deal on a daily basis with the fear of Arab attacks.

I believe this study incorporated strategies that mitigate my biases (Machi & McEvoy, 2012). After examining and acknowledging my biases, it is important to point out that despite the complex concept of positionality—which includes race, class, gender, and other social identities (Briscoe, 2005; Carlton-Parsons, 2008)—my background—which includes demographic positioning, knowledge, culture, and perceptions—are important factors to consider when conducting high-quality research. This is especially true in qualitative research (Maxwell, 2012), which I employed in this study. Furthermore, by developing and implementing EE programs throughout Israel, I gained extensive experience and understanding of schools, teachers, the education system, and Israeli society as a whole. As part of my involvement with EE, I have chosen to align myself with those who seek to end the oppression and suffering caused by inequality. I aimed to be a critical researcher who took an ideological position and sought to create greater equity for all social groups, particularly in Israel, by empowering those from lower social, political, and economic backgrounds with the ability to enact change. In conclusion, reflecting on my positionality had shown me that research and teaching are complementary parts of an academic career, and despite any biases it may introduce, my background was crucial to my research (Butin, 2010; Machi & McEvoy, 2012) on how EE practice can foster teacher efficacy in improving the human condition.

**Theoretical Framework**

One of the main goals of EE is also one of its big challenges: educating for pro-environmental behaviors, including citizenship (Berkowitz et al., 2005). Deepening students’
understanding of their responsibilities and rights as citizens is also one of the main goals in civic education. Teachers, however, may construct barriers in the implementation of EE (Bartosh, Ferguson, Tudor, & Taylor, 2009). For example, teachers may be overwhelmed by the conceptual and practical difficulties of educating for pro-environmental behaviors (Dreyfus & Veinberger, 2011). Despite these barriers, teachers’ ability to implement theories, ideas, and knowledge about socio-environmental issues makes them important agents of change in the education system (Cotton, 2006b). Therefore, it is valuable to understand teachers’ perspectives concerning EE and citizenship, as well as their values, beliefs, and norms regarding the environment and pro-environmental behavior (Hungerford et al., 2000). In this case study, the relationships between EE and civic education were the focus of the problem of practice. Consequently, the purpose of this research was to better understand and describe how EE, when paired with civic education, can foster teachers’ efficacy and social action toward a more just and equitable society in Israeli elementary schools, by focusing on teachers’ values, norms and beliefs concerning the environment, pro-environmental behavior, and citizenship.

There is a large and diverse body of literature about EE practice, research and theory. This study used a conceptual framework emphasized the social aspects of EE (Sauvé, 2005) and is discussed first in this section. The first lens that was used to frame the problem of practice, a Values-Beliefs-Norms (VBN) theory focused on EE and citizenship, is presented next. Finally, critical citizenship is examined as a second lens to study the problem of practice of this research.

Environmental Education

Globally, societies suffer from environmental crises require urgent action (Orr, 1991). Policymakers have formally recognized the importance of reversing environmental degradation through the implementation of EE programs (UNESCO/UNEP, 1977). In practice and in
research, however, these declarations are not fully applied (McKeown-Ice, 2000). Despite this gap, during the past 30 years EE programs, related research, and theories have grown, and there is a large body of scholarship about EE worldwide (Hart & Nolan, 1999; Marsden, 1997). In the past twenty years, EE research has become much more complex and diverse, both methodologically and philosophically (Hart, 1996). Developments in EE programs, research, and conceptual frameworks have led to a wider definition of EE, including social aspects (Pizmony-Levy, 2011).

The main principles of EE, as it is used in this study, include holism, interdisciplinary, values, beliefs, norms, and critical thinking. In EE programs, learners are encouraged to be involved in their environment, become active learners, and to change their environment (S. Gough, 2006). Furthermore, the goals and principles of EE, in the framework of this study, also include the need to consider social aspects and to adopt global and local perspectives (Sauvé, 1996). However, the concept of citizenship—the social component of EE— as part of EE is usually overlooked by researchers and has only recently received scholarly attention (Berkowitz et al., 2005; Chawla & Cushing, 2007), and no study has yet investigated citizenship as part of EE in Israel. Therefore, it is important to understand environmental behavior in the context of citizenship worldwide and in Israel, especially when dealing with teacher perceptions. To understand this important goal of EE, the problem of practice in this study was based on two lines of research: one relates to EE, and the other to civic education. Therefore, two lenses were used: 1) values, beliefs, norms (VBN) environmentalism theory and 2) critical citizenship.

**Values, Beliefs, Norms, Theory**

There are several general theories and frameworks that were developed and used in EE research (Malone, 1999; Palmer, 1998; Tilbury, 1995; Walker, 2006) as well as diverse
conceptual and theoretical frameworks that explain pro-environmental behaviors (Steg & Vlek, 2009). The problem of practice in this study is focused on pro-environmental behavior, especially citizenship. Therefore, the first lens of this study relates directly to values, beliefs, norms (VBN) theory (Stern, 2000). VBN theory of environmentalism is based on social-psychological theory, which creates a framework for pro-environmental behaviors and citizenship and is influenced by several theories, such as links value theory, norm-activation theory, and the new environmental paradigm (NEP) perspective (Stern, 2000).

In this study, VBN theory guided the data collection and the analysis of the intended pro-environmental behavior based on teachers’ perspectives on citizenship. VBN theory consists of five factors in a casual chain: values, beliefs such as ecological worldviews, adverse consequences for valued objects, perceived ability to reduce threats, and pro-environmental personal norms. Factors such as personal values, beliefs about the biophysical environment, and personal norms for pro-environmental action lead to behavioral changes. According to VBN theory, this cluster of factors is a strong predictor of behavior. Furthermore, according to VBN theory, not only are personal moral norms the basis for individuals to take pro-environmental action, but they may also affect very specific pro-environmental behaviors. Using VBN theory can help explain a person’s willingness to change behavior and take on environmental citizenship. Therefore, VBN is appropriate to the problem of practice that focused on pro-environmental behaviors and citizenship.

Critical Citizenship

Critical citizenship (CC) is the second lens used in this study. Rooted in political science and civic education theories and approaches, CC can be used to investigate the citizenship component of EE with a socio-political approach (J. G. Dejaeghere, 2008). CC is an approach to
education for citizenship that includes concepts of privilege and power through “creating a sense of belonging, participating in meaningful experiences, critiquing access to knowledge and resources, and dialoguing about and enacting one’s rights” (Dejaeghere, 2008. p.373). In other words, this approach emphasizes and allows for the importance of educating for citizenship in different ways that will suit diverse communities. Therefore, the main goal of CC is to create change by motivating people to address societal injustices. As Johnson and Morris (2010) pointed out, “teachers are involved as proactive agents of change by connecting civic education with engagement in the public sphere” (p. 48). CC is not only about personal responsibility to society, but it is also conceptualized as the relationship between the individual’s behavior within society and within structures of social injustice (Johnson & Morris, 2010). In other words, within the framework of CC, participants are encouraged to be proactive in their civic engagement.

According to a CC perspective, countries should develop civic education programs and diverse civic engagement opportunities that foster and support pro-environmental behavior, environmental citizenship, community-based engagement, social justice, human rights, and multiculturalism (J. G. Dejaeghere, 2008). A similar approach has been developed by many EE programs. When paired with CC, EE can emphasize that its role in a democratic society is to develop environmental citizenship among participants. Therefore, CC is appropriate to the problem of practice in cases where the role of EE in developing environmental citizenship among participants is being explored. In particular, CC guided my exploration of teachers’ perspectives about their own engagement as well as their methods for educating students for social responsibility.

Furthermore, I used CC for curriculum analysis, establishing specific parameters such as knowledge, skills, values, and dispositions. Each parameter analyzed according to politics,
social, self, and engagement components. The engagement component, for example, should include teaching skills that highlight critical thinking and active participation. Another example is in the dispositions parameter, which includes developing the commitment and motivation to change society. Therefore, again, the CC approach proved useful as part of the analysis phase of this research.

**Application of Theory - Conclusion**

The problem of practice in this study was based on two lines of research: one related to EE, and the other to civic education. Therefore, two lenses were used: VBN theory and CC conceptual framework. VBN is an environmental theory based on social-psychological theory, which provides insights into the origins of certain pro-environmental behaviors and sense of citizenship (Stern, 2000), and helped in collecting data and analyzing teachers’ intended pro-environmental behavior and their related perspectives about citizenship. CC, from a civic education perspective, was the second lens I used in this study. Teachers’ perspectives about their own engagement and the way they educate their students to be proactive, especially in low SES schools, explored by using this approach.

**Research Questions**

The topic of this research was the integration of EE and citizenship. The goal of the research was to gain a better understanding of principals and teachers’ perspectives about the role of EE when paired with CC to create social change, as framed by the following questions:

- How do Israeli elementary school teachers and principals understand EE’s role in fostering citizenship for a more just and equitable society?
- What structures and strategies do teachers employ to create opportunities for active involvement as part of their approach to EE?
Using VBN theory, in this study, I investigated teachers’ perspectives, values, beliefs, and norms related to society and the environment through a qualitative, open-ended research questions. It is important that teachers serve as role models not only in their teaching but also in their personal behavior. Therefore, teachers’ perceptions, values, beliefs, norms, and behaviors related to the social and natural environment are important to understanding EE’s role in fostering citizenship in Israeli elementary schools. Pre-service teachers in Israel, for example, have positive attitudes towards the environment but no commitment to pro-environmental behavior (Yavetz et al., 2009). Furthermore, teachers from low SES schools are less aware of environmental degradations in Israel (T. Tal & Argaman, 2005). Therefore, it is important to get better understanding of teachers’ values, beliefs, norms, attitudes, and behaviors in middle-low SES schools.

According to the concept of CC, it is important to understand how teachers empower their students and create opportunities for active involvement as part of their approach to teaching EE. CC may be used to investigate how teachers demonstrate, identify, and provide opportunities for exercising pro-environmental citizenship within the public sphere, such as meeting with policymakers on state and local levels, writing petitions to create social-environmental change in their own environment, or by empowering their students in the classroom to be critical citizens. Moreover, the lens of CC not only can be used to analyze the curricula that guide teachers’ implementation of EE programs but also helped to identify important and relevant citizenship skills such as active participation; values such as responsible action; and a commitment to changing society. In this study my assumptions were that teachers in middle-low SES communities will perceive CC as empowering for their students because their students sometimes lack opportunities to influence decision-makers or make substantial change
and therefore do not believe that they have the power or efficacy to address social and environmental problems that affect them. Additionally, I assumed that schools which implemented EE for more than ten years in an extensive EE approach, would understand the importance of CC as an integral component of EE, and would therefore implement it as part of its daily life behavior, curriculum, lessons, and other educational activities.
Chapter 2: Literature Review

Social, Environmental Education and Citizenship

Globally, societies suffer from environmental crises, which increased and became a major problem during the twentieth century in Israel and worldwide (A. Tal, 2002). Climate change, water, air, and land pollution, loss of biodiversity, and a lack of social-environmental justice such as unjust environmental resource or pollution distribution, unjust accessibility to decision makers regards the socio-environmental situation, are only some of the problems the world continues to face that make urgent the need for action (Orr, 1991; Saylan & Blumstein, 2011). This action reflects societies’ values and the need for cultural changes to save people and the environment (Orr, 1994).

Understanding relationships between environmental degradation and social problems and the urgent need for action to address social-environmental problems should lead teachers, administrators, and policy-makers to realize that EE should be part of education at every level. Education at all levels should place greater emphasis on values such as citizenship and living with limited environmental resources (Orr, 1994). National and international policy-makers have formally recognized the importance of reversing environmental degradation by developing and enhancing EE programs (Ministry-of-Education, 2012b; UNESCO/UNEP, 1975, 1977).

However, in practice, reality has not lived up to these declarations (Dunetz & Peled, 2004; McKeown-Ice, 2000).

During the past 30 years, EE programs and related research have grown worldwide (Hart & Nolan, 1999; Rickinson, 2001). Scholars have focused primarily on science knowledge and facts about the environment while also examining, but to a lesser extent on pro-environmental behaviors, especially behaviors related to the private sphere, such as recycling and hardly any
attention was given to behaviors related to the public sphere, such as civic engagement and
citizenship (Chawla & Cushing, 2007; Rickinson, 2001). Because increasing pro-environmental
behavior is a primary goal of EE, it is important to understand this topic. The environmental
crisis is unique among educational subjects because it requires immediate attention. It is
therefore urgent to encourage teachers to educate students with an emphasis on promoting pro-
environmental behavior (Osler, 2011; Sund & Wickman, 2011).

The complexity of pro-environmental behaviors makes investigating this topic similarly
complex. Two main complexities relate to the conceptual framework of research on pro-
environmental behaviors. First, past scholars have suggested that environmental knowledge
could be used to predict pro-environmental behavior (Rickinson, 2001). Subsequent research,
however, has shown that this is not always the case (Alkaher & Tal, 2011; Berkowitz et al.,
2005; Negev, Sagy, Garb, Salzberg, & Tal, 2008). Therefore, it is essential to effectively educate
for pro-environmental action and not just for knowledge about the environment. Consequently, it
is important to investigate how teachers describe and understand the relationship between EE
and students’ experience with their efficacy in changing their own realities in poor communities
(Paige & Cogan, 2002). Second, scholars have tended to examine EE independently of civic
education, especially civic engagement and citizenship. Research in this area needs to be
conducted in deeper and more thoughtful ways in order to make clearer connections between EE
and its wider civic and social implications (Ratcliffe & Grace, 2003). This is especially true in
Israel, where research on these topics is limited.

To address this disconnect between EE and civic education in Israel and worldwide, the
links between teacher perceptions of EE programs and their attitudes and behavior toward the
environment regarding civic engagement was examined. The key premise is that increasing pro-
environmental attitudes and behaviors among teachers will increase the probability that they will teach and implement EE effectively. This may lead to increased student civic engagement as a result of EE (Lieberman & Hoody, 1999; Paige & Cogan, 2002). There is a large body of scholarship about teacher perceptions of the environment and EE worldwide (Chi-chung & Chi-kin, 2003; Desjean-Perrotta, Moseley, & Cantu, 2008; Ernst, 2007, 2009; Ernst & Monroe, 2006; C. C. Gardner, 2009; Hart & Nolan, 1999). A smaller number of studies focus on this issue in Israel (Alkaher & Tal, 2011; Goldman et al., 2006; Pe'er, Goldman, & Yavetz, 2007; T. Tal, 2010; T. Tal & Argaman, 2005; Yavetz et al., 2009; Yavetz, Goldman, & Pe’er, 2013). However, teachers’ perceptions, values, beliefs, norms, and behaviors related to the social and natural environment and the strategies they employ to create opportunities for active involvement have so far been overlooked.

This review was built on two bodies of literature. The first is an examination of teachers’ perspectives of EE with regard to pro-environmental behaviors and citizenship. Emphasized in this line is that increasing teachers’ pro-environmental behaviors leads to an increased adoption of EE programs (Berkowitz et al., 2005; Chawla & Cushing, 2007). The second body of literature is an examination of the connections among civic engagement, citizenship, and civic education with respect to demographic and socioeconomic factors and social change (Ichilov, 2007). Suggested in this body of literature is that increased civic knowledge leads to increased citizenship and civic engagement, which are part of civic education. Emphasized in this literature is the importance of schools’ socioeconomic characteristics in understanding civic education outcomes (Campbell, 2008). Combining these bodies of literature in practice is vital to understanding teachers’ roles in educating for pro-environmental behavior and citizenship and to create social change.
I presented in the beginning of this literature review an examination of EE practice and research conducted worldwide and the context of academic achievement globally. I discussed next the main goal of EE, pro-environmental behavior, related to teacher perceptions, with an examination of the relationships between social variables and pro-environmental behavior. I examined in the second part of the review, teacher attitudes toward EE programs focusing on the civic educational goals of citizenship and the impact of socio-economic background on knowledge. In the next section, I presented a review of the literature on teacher perceptions about EE in Israel. In the final section I outlined gaps in the literature, and revealed the connections between EE, civic education, and social change through the lens of ‘critical citizenship’ and environmental citizenship. In the conclusion I offered suggestions for further investigation.

**Environmental Education – Global Context in Research & Practice**

Although EE is recognized globally by the Organization for Economic Co-operation and Development (OECD) and other international declarations (UNESCO/UNEP, 1977; United-Nations, 1992), and despite increased public awareness of environmental degradation, EE and its social implications remains outside mainstream education in many countries (Scott, 2009; R. B. Stevenson, 2007). To get a better understanding of the global context of EE, I examined the development of EE research approaches, global EE, and several global policy influences on EE.

**Environmental Education: Research Approaches**

In the past 30 years, with increasing environmental degradations and public concern, EE as a concept, program, and research topic has become increasingly important (Rickinson, 2001). The past ten years in particular have seen EE research become much more complex and diverse, both methodologically and philosophically (Pizmony-Levy, 2011). EE has received attention from researchers using quantitative and qualitative methods and paradigms (Hart, 1996).
Quantitative research in this area focused on connecting knowledge, attitudes and pro-environmental behavior (Hart & Nolan, 1999). Initially, EE programs and research focused on science education relied mainly on quantitative methods to investigate environmental knowledge. These studies relied heavily on a positivist theoretical framework. This ‘scientific’ approach is still the most common research design in the field of EE research (Rickinson, 2001). However, in recent years there has been a growing number of qualitative investigation including case studies, curriculum research, action research, and mixed methods approaches. These studies focused on interactions among people, culture, and the environment (Scott, 2009). The increasing scholarly concern with the environment is visible not only in EE research, but also in many aspects of academia, including conferences, journals, and other research publications (Hart & Nolan, 1999). Developments in EE programs, research, and conceptual frameworks have led to a wider definition of EE.

Consequently, two main conceptual approaches have developed worldwide: EE and education for sustainability (EfS). The main principals of EE and EfS are the same, including holism, interdisciplinary, values, beliefs, norms, and critical thinking. With EE, however, learners are encouraged to be involved in their environment, to be active learners, and to contribute to the environment (S. Gough, 2006). On the other hand, EfS is focused on how individuals and communities use and share natural and social resources in a just way, and it develops action skills and dispositions for citizenship and environmental justice (Tilbury, 1995). The main difference between these two approaches is the social component included in EfS but not emphasized in EE. Not all researchers accept this definition and difference between EE and EfS (Sauvé, 1996). Sauvé (1996), claims that EfS has the same goals and principals as EE, including the need to consider social aspects and adopting global and local perspectives.
Furthermore, some scholars oppose the idea of education for sustainability, claiming that education cannot be for something because the goal of education is to emphasize critical thinking (Jickling, 2006; Sauvé, Brunelle, & Berryman, 2005). This particular criticism of EfS is one that I hold as well. Given that the term EfS is used by many researchers in Israel (Goldman, Ben-Zvi-Assaraf, & Shaharabani, 2012; T. Tal & Argaman, 2005), it was also be used here. Therefore, the terms EE and EfS was used interchangeably in this study with the understanding that the term EE and its focus on social aspects are explicitly explained.

In recent years, some groups have tried to widen the scope of EE to include the social-environment aspects. These studies often attempt to use political change to solve environmental problems (Chawla & Cushing, 2007; Marsden, 1997). Chawla and Cushing (2007), for example, pointed out that individuals in the US are responsible for only about one third of the total national natural resource consumption. Yet EE programs usually focus on pro-environmental behavior among individuals in the private sphere. Although this is an important aspect, it is much more important to enact change at the state and global levels. In other words, citizens need to act in the political field in order to solve social and environmental problems. Thus, educators need to advocate civic engagement, not just pro-environmental behavior in the private sphere. Including the social environment in EE programs and research provides a broader scope and reflects the interdisciplinary qualities of EE. This approach has led to multiple theoretical approaches to EE that draw upon education in the natural and social sciences, as well as in the humanities (Pizmony-Levy, 2011). The conceptual framework of this review was made possible by this broadening of EE and by linking it to enacting social change through civic education and citizenship.
Environmental Education in Practice and Policy

Despite growing interest in and declarations of the importance of EE, in practice EE in general, and the social-environmental aspects in particular, remains marginalized. In the US, for example, researchers indicate that EE is not implemented in pre-service teachers’ schools (McKeown-Ice, 2000). In contrast, while there has been less emphasis on subject matter in Finnish educational reform (Sahlberg, 2011), EE and environmental values, including social aspects such as equality, democracy, multiculturalism, and citizenship, are part of their national curriculum (Uitto, Juuti, Lavonen, Byman, & Meisalo, 2011). Demonstrated by the Finnish example is the ability of an education system to effectively implement EE values and goals. In Finland, these values are not only stated, but also actively pursued and practiced.

Another important aspect of global EE that could influence educators and policy-makers is illustrated in findings that EE increases student performance on international and national tests (Bartosh et al., 2009; Bybee, 2008; Ernst, 2007, 2009; Ernst & Monroe, 2006). Although teachers claim that these tests made them focus on preparing students for the test and prevented them from focusing on higher levels of education, researchers point to examples where students from low SES backgrounds achieve higher scores when learning in different ways, with an emphasis on inquiry-based learning (R. B. Stevenson, 2007). Therefore, EE programs that focused on social-environmental approach may lead to increased success for the Israeli education system, and it is important to investigate this possibility.

EE has many advantages in 21st century education (Palmer, 1998). As an interdisciplinary and learner-centered constructivist approach (Ratcliffe & Grace, 2003), it offers experiential, problem-based learning and hands-on outdoor training, develops critical thinking (Dreyfus & Veinberger, 2011; Kyburz-Graber, 1999), affects school climate (Gislason, 2009),
and improves academic achievement (Bartosh et al., 2009; Ernst, 2007; Lieberman & Hoody, 1998, 1999). Experiential learning, as one of EE’s advantages, is rooted in the constructivist approach and is an important theory and a practical way for implementing EE, especially when combining it with outdoor learning (Robertson, Lawrence, & Heath, 2015).

Experiential learning is rooted in Dewey (1938) approach as was presented in his book *Experience and Education*, which emphasized the importance of actual experience for meaningful education. Experiential learning theory is based on the idea of learning by doing and is a process of knowledge production through direct experience that is holistic and integrative and combines experience, perception, cognition, and behavior (Kickul, Griffiths, & Bacq, 2010; Kolb, 2014; K. T. Stevenson & Peterson, 2015).

Experiential learning theory and practice has been used and described in the literature as a technique in transferring knowledge and can have impact on students knowledge and attitudes. It is also an effective methodology for transferring knowledge between diverse cultures and molding attitudes toward the environment (McKeown & Nolet, 2012; Silcox, 1993). Experiential learning includes a knowledge transfer process when it comes to understanding and beliefs about social responsibility. For example, after participating in an international Russian-American student exchange, using experiential learning in the field of EE, students’ concern about social issues increased and their perception of their own role as agents of change increased too. In this example, the students expressed a higher understanding of the need for group action (Silcox, 1993). Experiential learning is being used in diverse scholarly and practical areas such as management, education, work-place, and it is well suited for EE due to its holistic characteristics. When EE includes outdoor learning, experiential learning in the outdoors may include an action, reflection on the strategy behind the action, review of the action itself and its effectiveness, and
repeating the action while applying lessons from the reflection (Robertson et al., 2015). Experiential learning can include both environmental and social aspects (Brown, 2009). The advantages of the social aspects of EE are usually understood in the context of global education theory (Suarez-Orozco & Qin-Hilliard, 2004). However, these advantages are not always well-known among educators (Dreyfus & Veinberger, 2011), and they are generally not integrated well by researchers (Palmer, 1998; Rickinson, 2001).

State and international tests have significant impacts on administrators’ and teachers’ curriculum choices (Bartosh et al., 2009; Ernst, 2007; Suarez-Orozco & Qin-Hilliard, 2004). In Washington State, for example, EE is required in all grades. However, teachers and administrators have found it difficult to implement EE programs. Recent research has aimed to identify relationships between EE and academic achievement (Bartosh et al., 2009). Research conducted by Ernst (2007) points out that one of the main barriers to implementing EE is national and international testing. Schools’ emphasis on state testing often prevents teachers from implementing EE programs. Other research, however, points out that EE improves academic achievement for many students (Bartosh et al., 2009; Lieberman & Hoody, 1998, 1999). For example, Lieberman and Hoody’s (1998) study of 40 US schools with EE programs reports that students who participate in EE program “tend to have higher scores on standardized tests in math, reading, writing, science, and social sciences” (Lieberman & Hoody, 1998, p. 3). Understanding EE’s effect on academic achievement may help administrators and teachers adopt EE programs and implement these more effectively (Bartosh et al., 2009). Although national and international tests do not evaluate pro-environmental behavior, changing behavior is the main goal of EE and therefore one of the most important aspects of this literature review and study.
Social Change: Pro-Environmental Behavior and Citizenship

Changing students’ pro-environmental actions is considered to be one of the main goals of EE (Hart & Nolan, 1999; Kollmuss & Agyeman, 2002; Rickinson, 2001). Although changing behavior is the main goals of EE, there is a dearth of research dealing exclusively with behaviors (Scott, 2009). Therefore, understanding the context of environmental behavior is important for evaluation and investigation, especially when dealing with teacher perceptions about pro-environmental behavior and citizenship. I present pro-environmental behaviors including citizenship in this part of the review and discuss teachers’ environmental attitudes and behaviors. Finally, I examine the relationships between social aspects and pro-environmental behaviors.

Environmental behavior can be classified into two categories. First are behaviors that have direct influences on the environment. Chawla and Cushing (2007) describe these as ‘private sphere’ (p.438) such as recycling, energy and water conservation, and composting. Second are behaviors of a social nature that have indirect influences on the environment, or the ‘public sphere’ (Chawla and Cushing, 2007, p.438), such as donating money, political and civic engagement, gathering environmental information, membership in environmental organizations, and community projects (Kollmuss & Agyeman, 2002). Indirect environmental behaviors, or public actions, are less common. Chawla and Cushing (2007), state that much more needs to be done in this area of EE and in the related scholarly literature. This is the most effective way of educating for more pro-environmental behavior, and an important part of it is citizenship (Rickinson, 2001). Pro-environmental behavior lags in the private sphere, so educators need to emphasize the significance of both public and private sphere behaviors. Research in this area could develop these concepts as well as identify the kinds of EE programs that encourage civic engagement and creating the link to civic education and enacting social change.
Civic education is important for sustaining a democratic society, and this is a responsibility of schools (Battistich & Solomon, 1997). Citizenship, as the main goal of civic education, is not received passively by students. They need to be active. According to Ratcliffe and Grace (2003), scholars and practitioners do not have enough practical understanding of civic education. For example, there is a lack of understanding of outcomes related to civic education and EE. As mentioned above, the main goal of EE is to educate for pro-environmental behavior, and citizenship is a particularly important pro-environmental behavior. However, the concept of citizenship as part of EE is usually overlooked by researchers and has only recently received scholarly attention (Berkowitz et al., 2005; Chawla & Cushing, 2007; Houser, 2009; Meerah, Halim, & Nadeson, 2010; Schusler, Krasny, Peters, & Decker, 2009; Wilks, 2010).

EE usually stays in the area of science, focusing on environmental knowledge and attitudes (Hart & Nolan, 1999; Rickinson, 2001). One reason that EE has not developed as an interdisciplinary subject is that policy-makers have incorporated EE into the sciences because it is easier to maintain the existing approach than to change the whole system (Palmer, 1998). Teachers do not generally receive enough training in EE, and when they do it is usually narrowly focused on science as opposed to taking a wider view (Hart & Nolan, 1999). Moreover, EE curricula are also science-oriented (Ernst, 2007), and science teachers often find it difficult to implement social and civic aspects in their teaching (Skamp, 2010). It is important to understand teacher perceptions of relationships between EE and citizenship because teachers are a key to implementing EE and civic education programs and consequently to be a social-environmental change agents.

Citizenship is a particularly important pro-environmental behavior (Berkowitz et al., 2005). Therefore, understanding the context of environmental behavior focused on citizenship
worldwide and in Israel is important for investigation, especially when dealing with teacher perceptions. The topic of citizenship has several theories, such as citizenship theory and global citizenship theory (J. G. Dejaeghere, 2008; Meerah et al., 2010). Among the first to investigate citizenship and pro-environmental behavior, Paige and Cogan (2002) created and investigated conceptual frameworks specifically related to citizenship and pro-environmental behavior.

**Values, Beliefs, Norms, Theory**

There are several reviews and analyses of the theories and conceptual frameworks that were used in EE research (Malone, 1999; Palmer, 1998; Tilbury, 1995; Walker, 2006). The theories are rooted in many disciplines including social, psychological, and educational approaches. The problem of practice in this study focused on pro-environmental behavior, especially citizenship; therefore, the theory that was used directly relates to this aspect. A recent review of pro-environmental behavior theories was conducted by Steg and Vlek (2009). Steg and Vlek (2009) examine diverse conceptual and theoretical frameworks that explain pro-environmental behaviors. One of the theories they discuss is the VBN theory developed by Stern (2000). The VBN theory of environmentalism is influenced by several theories, such as links value theory, norm-activation theory, and the new environmental paradigm (NEP) perspective (Stern, 2000).

VBN theory suggests five factors (i.e. values; beliefs-ecological worldviews, adverse consequences for valued objects, perceived ability to reduce threats; pro-environmental personal norms) in a causal chain. Factors such as personal values, beliefs about the biophysical environment, and personal norms for pro-environmental action may lead to behavioral changes. According to VBN theory, personal norms may affect particular pro-environmental behaviors. For example, people who care about other people will be concerned about environmental
conditions that threaten other people’s health, which means that the “consequences that matter in activating personal norms are consequences to whatever the individual values” (Stern, 2000, p. 412).

According to VBN theory, people who value the environment, have ecological worldviews and have perceived their abilities to reduce environmental threats and have the sense of obligation to take pro-environmental action will use pro-environmental behaviors. People who participate in pro-environmental behaviors such as being activists in the public sphere (e.g. influence decision-makers) will be activists in social change and will personally engage in pro-environmental behaviors (e.g. save energy, save water, recycle). These people also will change the behaviors of their organizations (Stern, 2000).

According to research comparing VBN theory to other theories, the VBN cluster of factors is a stronger predictor of behavior. The results provide strong support for VBN theory’s contentions that personal moral norms are the main basis for individuals to take pro-environmental action (Stern, 2000). Furthermore, VBN theory is successful in explaining intentions such as willingness to change behavior and environmental citizenship. Therefore, VBN was appropriate to the problem of practice that focused on citizenship. Furthermore, CC framework was used as a lens to study pro-environmental behaviors and citizenship, which I discussed later.

Another theory included in VBN theory is new environmental paradigm (NEP). NEP is an ecological theory and tool that includes a scale used to measure pro-environmental orientation. The focus of NEP, developed by Dunlap (2000), is on beliefs about humanity’s ability to change the balance of nature (Dunlap, 2008; Dunlap, Van Liere, Mertig, & Jones, 2000). This concept and scale is widely used for shaping EE research, including studies in Israel
This theory was not the main framework of the study presented in this thesis because it focuses on ecological worldviews and deemphasizes social-environmental concerns, which were the focus of this study. Furthermore, this theory is focused on beliefs. Although such beliefs may also influence behavior, there are more factors that influence pro-environmental behaviors and there usually is not a strong NEP-behavior relationship (Dunlap, 2008; Dunlap et al., 2000).

VBN theory may be used as a framework to study teachers’ perspectives and pro-environmental behavior. VBN is appropriate when focusing on pro-environmental behavior, especially citizenship, but these appear to have less explanatory power in situations characterized by high behavioral costs or strong constraints on behavior, such as reducing car use, household recycling, waste composting, and water use. In such settings, the Theory of Planned Behavior (TPB) appears to be more powerful in explaining environmental behavior, probably because the TPB considers a wider range of factors including non-environmental motivations (Steg & Vlek, 2009).

**Environmental Education: Teachers’ Perceptions Attitudes and Behaviors**

Teachers are important leaders of EE in schools (Rickinson, 2001). An important role of the formal education system is to educate students to be engaged citizens. Education for pro-environmental behavior is also one of the formal goals of education and may be considered as such. Teachers have a key role in this process (Goldman et al., 2006). The area of citizenship and pro-environmental behavior has been investigated in the past ten years. Paige and Cogan (2002) were among the first to investigate citizenship and pro-environmental behavior. In a cross-national study, two scales of citizenship and the environment were used to investigate teachers’ perspectives about the importance of each scale component. Findings of this research suggest...
that the most important citizenship characteristics were problem-solving skills, willingness to change lifestyles, and consumptions habits. Deforestation and waste management were also among the top five environmental concerns (Paige & Cogan, 2002). This knowledge could help policy-makers and educators develop and create better curricula that integrate both aspects of EE and citizenship.

Chi-chung and John Chi-kin (2003) also examined teachers’ perceptions of EE. They investigated Hong Kong high school teachers’ attitudes and practices in EE through the teaching of science. A trend in their findings was that teachers gave more weight to environmental knowledge and less to attitudes. There was very little attention paid to behaviors. Revealed in these findings, however, was that teachers would like to teach EE with fewer constraints. Despite the barriers, when teachers feel a personal urge to act for the environment, they will try to teach EE based on real environmental problems in their area (Chi-chung & Chi-kin, 2003).

The tension between knowledge formation and knowledge ownership is represented in teacher perspectives toward the environment and EE. Teachers prefer to teach EE with more emphasis on knowledge than on attitudes and pro-environmental behavior. It is more difficult for teachers to teach real-life problems and give students the power of owning their knowledge (Ernst, 2007). By teaching EE and giving students the opportunity to be social change agents who are engaged both in the learning process and in citizenship, learning processes and outcomes may be more effective (Dreyfus & Veinberger, 2011).

**Social Aspects, Socioeconomic Characteristics and Pro-Environmental Behavior**

Several researchers have identified relationships among environmental behaviors, including citizenship and socio-economic characteristics. Revealed in this literature review research is that environmental behaviors are influenced by socioeconomic background.
Specifically, students from higher socio-economic backgrounds tend to report more environmental knowledge and attitudes, and they exhibit more pro-environmental behavior (Rickinson, 2001). These findings have also been identified in a global context. Countries with low socio-economic backgrounds have citizens with less environmental knowledge than citizens in more developed countries (Bucher & Pizmony-Levy, 2012).

Moreover, specific differences appear among activities related to saving or earning money among individuals from low socio-economic backgrounds. These students act in pro-environmental ways, such as bottle recycling and reducing electric consumption due to the economic benefit and not due to their environmental awareness or attitudes (Bucher & Pizmony-Levy, 2012; Rickinson, 2001). Some suggestions for explaining the differences refer to parental education. Parental education has a significant correlation with socio-economic status, where high levels of education correlate with high SES. This correlation suggests that parents influence the environmental and political knowledge, attitudes, and behavior of their children. In that case, students from low socio-economic backgrounds are more likely to have parents with low levels of education and less likely to act in pro-environmental ways. Other explanations are that low SES families are less likely to have the financial resources or time to provide children with academic support. In other words, parents with more education can provide more school-related and other environmental knowledge compared to parents in low SES households (Hampel, Holdsworth, & Boldero, 1996).

As found in other parts of the world, Negev et al. (2008) identify differences in environmental knowledge between students from high and low socioeconomic backgrounds in Israel. Knowledge was greater in high SES communities. However, the authors did not find significant differences regarding attitudes and behaviors in different SES communities (Negev et
al., 2008). There is no definitive explanation given by Negev and colleagues. But the knowledge part, as suggested above, could be related to parental education. The mixed results relating to attitudes and behavior may be affected by the quantity and quality of the questions asked in the survey. For example, only ten questions (out of 56) related specifically to environmental behavior. Furthermore, some of these questions were irrelevant or poor predictors of environmental behavior, such as the question about whether participants went hunting or fishing. This is not relevant for students in Israel, where these are not common activities, so they cannot predict environmental behavior. Other survey questions were connected to saving energy and water, and recycling. These actions can be related to gain some understanding of SES differences. In this part I discussed the relationship between EE and social aspects, focused on the socio-economic backgrounds. These social aspects also relate to the next section that discusses another important social aspect, civic education.

**Civic Education - Civic Knowledge & Civic Engagement**

The second lens in this review relates to civic education. This body of literature focuses on civic knowledge and engagement. Research on this topic has been conducted both globally and in Israel. Civic education is a crucial part of democratic society. Civic education researchers often focus on socioeconomic backgrounds, motivational factors, and the effects of schools, such as political climates in schools and classrooms (Campbell, 2008; Ichilov, 2007). Civic education has the goals of focusing on civic knowledge and civic engagement. However, in the last twenty years, civic education, and specifically civic engagement, has changed from educating citizens to take part in state formation by voting, to more complex expectations regarding citizens and citizenship (Johnson & Morris, 2010). Civic engagement and changes in perceptions are particularly important for this literature review because this is the civic education’s connection to
In the following section I began a review of the concept of civic knowledge. I emphasized newer conceptions of civic engagement, which is also known as critical citizenship. Lastly, I presented the relationship between environmental citizenship and civic engagement.

**Civic Knowledge**

Civic knowledge is crucial to civic education because it is the first step to understanding citizens’ roles in society, which is especially important in democratic nations. Although civic knowledge also happens outside of schools, classrooms have great importance in disseminating civic knowledge (Campbell, 2008; Ichilov, 2007). Campbell (2008) points out that an open “classroom climate” (p.442) for political discussions facilitated by teachers and classmates improves both civic knowledge and civic engagement. Moreover, civic knowledge is a primary goal to encourage civic engagement and citizenship (Campbell, 2008; Llewellyn, Cook, & Molina, 2010). Another aspect of civic knowledge is linked to economic characteristics. In the US there are positive correlations between school-level economic characteristics and civic knowledge. This phenomenon has been documented nationally and internationally, as illustrated by the lower civic knowledge of students in impoverished nations (Torney-Purta, 2002). Many studies have discussed relationships between civic knowledge and economic characteristics (Bucher & Pizmony-Levy, 2012; Ichilov, 2007).

In Israel, there are linkages between civic knowledge and social aspects, as presented by Ichilov (2007) in her article titled *Israeli 11th graders’ performance on the International Association for the Evaluation of Educational Achievement (IEA)* (p.417). This international survey focused on factors related to political efficacy and civic engagement. Several of those factors link EE to changes in environmental behavior. Ichilov (2007) emphasized in her study that civic knowledge is strongly influenced by students’ backgrounds, motivations, schools, and
classrooms. Also in Israel, differences in civic knowledge between Arab students (low level of knowledge) and Jewish students (high level of knowledge) point to the importance of socioeconomic status as well as other social differences, and emphasize the importance of the classroom atmosphere (Ichilov, 2007).

The Israeli Ministry of Education is trying to provide an objective and neutral civic education, which means presenting and teaching civic education without biases (Lemish, 2003; Llewellyn et al., 2010). There are several problems with this approach. For example, it sometimes makes the curricula not engaging enough for Arabs students. This is because it attempts to be neutral, but in reality it has many Jewish influences (Barak & Ofarim, 2009; Ichilov, Salomon, & Inbar, 2005). Moreover, it does not sufficiently reflect real life or address issues of student civic engagement. For example, students cannot organize political demonstrations as part of school activities (Personal communication, Alexandri, E. 3.15.2013). Lastly, there is no such thing as “neutral” education (Freire, 2000; Llewellyn et al., 2010). As Campbell (2008) points out, it is important to create an open classroom climate by allowing teachers to express openly their own political values because it affects and encourages both civic knowledge and citizenship, which are the goals of civic education.

One of the reasons for choosing the neutral approach in Israel is its multicultural society, including religious and non-religious groups, Israeli and Arabs groups, political right and left and the rich and the poor (Ichilov et al., 2005), a diversity that makes it complicated to educate for citizenship. In Israel, EE is also distinguished from civic education and considered to be an independent field that applies to all society. Because of this, it can be a bridge for civic education, citizenship and EE. Furthermore, because EE relies on both scientific and civic knowledge, EE may provide a way of linking the political and formal education systems in Israel.
and in other nations that differentiate between science and civic education (Pizmony-Levy, 2011). Civic knowledge is the first step in achieving civic engagement (Ichilov et al., 2005).

**Civic Engagement and Citizenship**

Civic engagement and citizenship are the most important goals of civic education. Aside from teaching reading and mathematics, schools have the important role of preparing students to participate in democratic society and be a social change agent (Campbell, 2008). This important aspect of citizenship was investigated by Torney-Porta (2002) in 28 countries by the International Association for the Evaluation of Educational Achievement (IEA). In this comparative study, the author found that youth are not engaged enough in political activities and that there has been a decline over time in youth political engagement. These findings motivated many countries to investigate the phenomena and develop ways to improve youth citizenship and political engagement (J. G. Dejaeghere & Tudball, 2007; Hourdequin, Landres, Hanson, & Craig, 2012; Ichilov, 2007; Ichilov et al., 2005; Llewellyn et al., 2010). As discussed above, Israel was part of these efforts.

Other important issues to point out related to civic engagement are social aspects, especially socioeconomic backgrounds. The relationships between civic engagement and SES have been the subject of several studies (Banks, 2008; J. G. Dejaeghere, 2008; J. G. Dejaeghere & Tudball, 2007; Ichilov et al., 2005). For example, researchers have found differences between the civic engagements of students from high and low socioeconomic backgrounds. Campbell (2008) suggests that “classroom climate has the greatest impact on young people of low socioeconomic status” (p.449). In other words, schools and teachers that create open classroom climates may help compensate for students’ low SES. This finding is particularly important to the problem of practice because teachers’ perspectives of the relationships between EE and
citizenship in middle-low SES schools were investigated in this study. According to those findings there may be greater gains as a result of EE among low SES students.

**Critical Citizenship and Environmental Citizenship**

There are two main approaches to civic education: minimal and maximal. Minimal civic education is usually exclusive in notion and tends to focus on civic knowledge, with less attention to citizenship. It usually promotes the ‘good’ citizen who obeys the law and works hard but does not focus on social problems that create inequalities. Maximal civic education promotes “values, attitudes, and behaviors related to participation in democracy and citizenship” (Johnson & Morris, 2010, p. 48). There is a need to expand civic education to include wider contexts and problems from diverse levels (i.e. local, national and global). Citizenship is changing in the world in response to globalization; therefore, civic education must respond to this change as well. Dejaeghere (2008) points out that “being a citizen involves embodying privileges and enacting power… [Therefore] citizenship theory and civic education should include concepts of privilege and power to understand the exclusionary nature of citizenship” (Dejaeghere, 2008. p.373).

In light of these research findings, some scholars encourage the development of new civic education programs (J. G. Dejaeghere & Tudball, 2007; Llewellyn et al., 2010). Others point to the importance of examining the phenomenon using different approaches and theoretical frameworks (Hourdequin et al., 2012; Llewellyn et al., 2010). In Australia, for example, the finding that students score “below the international mean on three of four scales (Conventional Citizenship, Social Movement Citizenship and Expected Participation in Political Activity)” (Dejaeghere & Tudball, 2007, p.41), encouraged the Australian Ministry of education to develop new civic education programs. Another example is the Nordic countries, where research has led
to a new interpretative approach that defines active citizenship as more than simply voting (Hooghe & Dejaeghere, 2007). Hooghe and Dejaeghere (2007) suggest that the declining civic engagement among young people is not a result of a declining interest in politics. Rather, they suggest that younger generations are interested in subjects other than joining a political party. As a result, these people prefer to engage with their communities in postmodern ways, such as performing community service. Suggested by this citizenship called ‘monitorial citizenship’ (p.250) is a different kind of engagement by young people who participate at the local level as part as a larger criticism of traditional politics, such as political parties (Hooghe & Dejaeghere, 2007). In other words, there is a ‘critical citizenship’ (CC) movement that changed the traditional concept of civic engagement (Johnson & Morris, 2010). This CC movement and conceptual framework can be seen as part of pro-environmental behaviors focusing on citizenship. According to the CC lens, teachers may develop their students’ critical thinking skills and active participation, encourage acting collectively to challenge the status quo, develop the commitment and motivation to change society, and develop responsibility for decisions and actions (Johnson & Morris, 2010).

**Society, Education, and Environment in Israel**

The Israeli case, which is complicated socially and environmentally, is the focus of this literature review and study. Those complexities influenced the civic and EE practice and research in Israel. It is important to emphasize that Israel is a geographically small and densely populated country with 7.8 million people (CBS, 2011). Residents suffer from many social and environmental problems, which have had substantial negative effects on the country’s air, land, and water pollution (A. Tal, Leon-Zchout, Frankel-Oshri, Greenspan, & Akov, 2011). However, Israel is still not paying enough attention to environmental degradation and social-environmental
problems (A. Tal, 2002). In Israel, it is usually Arabs and other poor, minority communities who suffer most from environmental problems (Omer & Or, 2005). One way to address this situation is through education. Currently, Israel has a poor education system and low scores on international tests (Ben-David, 2010, 2011a, 2011b). There have been many attempts at reform, but there are not enough people who are willing to change the entire education system, which is needed.

The political situation of Israel is very complicated and differs from other developed countries. Israel is surrounded by enemies and there is a need to invest a large amount of money in security. To fully understand Israel’s environmental and social complexity, key historical conflicts must be addressed. In brief, Israeli society is marked by many conflicts between Jews and Arabs, seculars and the religious, and rich and poor (Cohen, 2011; Orenstein, 2004; Yashiv et al., 2011). The Jewish-Arab conflict is very complicated both at the regional level (i.e., tensions between Jews and Palestinians or other Arab countries) and within Israel (i.e., Israeli Jews and Israeli Arabs). The conflict between Israeli Jews and Israeli Arabs is based on cultural differences, perspective differences, socio-economic gaps, and social injustice. Israeli-Arab citizens are part of the social landscape of Israel and of one of the schools participated in the study in particular. Arabs are key stakeholders in the social justice problems facing Israel (Omer & Or, 2005).

Furthermore, although education spending in Israel is second only to defense spending (CBS, 2011), there are many education challenges similar to those in the US For example, just as in the US, the goals of increasing the number of students finishing high school, decreasing inequity between communities, and integrating immigrant students (Darling-Hammond, 2010) are all part of the Israeli education system.
The education system in Israel contains many paradoxes. For example, one of the goals of the Israeli education system is to create a melting pot that allows immigrant students to have equal social opportunities. Israel’s government invests more hours and more money in the poor and needy than in the wealthy. However, wealthy schools have much better teachers compared to poor schools because good teachers usually prefer to teach in the wealthy schools. Furthermore, parents with higher SES can afford to spend more money on educating their children (Dagan, 2009).

Another example of a paradox is that Israel invests more in education than most developed countries. However, students receive fewer benefits from this investment than students in other developed countries. The cost of the system is very high, but teachers’ salaries are among the lowest in the world (Bar-Yishai & Pe'er-Li, 2008). Although the goals of the Israeli education system include higher student achievement and reducing the achievement gap, it has not achieved either goal. Only 52% of Israeli students complete high school (CBS, 2011). Students sit in classes that average 32 students (Blass, 2008). However, many schools have 40 students per class with only one teacher for K-12. People in the education system have declared that it supports equality, but in reality the education system reinforces gaps between rich and poor. Despite Israel’s problems, it must invest more wisely in its education system to create a better system to be prepared for the 21st century (Ben-David, 2011a).

Due to its size, density, lifestyle of consumption, and industry, Israel faces substantial environmental degradation. It is badly polluted and more than a thousand people die each year as a result of air pollution. The water is also polluted and there is large gap between the ability of poor and wealthy people to avoid the effects of environmental harm, yet it lacks the necessary investment and focus on social-environmental problems (A. Tal, 2002; Weinthal & Parag, 2003).
It is not surprising that EE is such a low priority in a place where the environment is relatively minor concern. Despite Israel’s prioritizing national security over the environment (Dunetz, 2002), there are several EE programs and attempts to influence the education system through EE.

**Environmental Education in Israel**

As a result of environmental degradation and local and global influences, EE programs have increasingly been implemented, especially during the past ten years in elementary schools and high schools. Programs are run by non-governmental organizations (NGOs), the Ministry of Environment, and individual schools (Pizmony-Levy, 2011). In the 1990s, EE programs in Israel were first implemented as a way to address environmental degradation, and not as an approach to educating for democracy or strengthening democratic society (Dreyfus, Wals, & Van Weelie, 1999). Only recently have several EE programs linked EE to civic engagement. These programs were developed mainly by NGOs (Dunetz, 2002; Goldman et al., 2012).

In contrast to EE worldwide, EE research in Israel is very limited and has started to emerge only in the last few years. Few studies regarding EE and pro-environmental behavior have been conducted in Israel (Alkaher & Tal, 2011, 2013; Goldman et al., 2012; Negev et al., 2008; Pizmony-Levy, 2011; T. Tal, 2010; Yavetz et al., 2009), and only a few have investigated young students’ environmental literacy (Goldman et al., 2012; Negev, Garb, Biller, Sagy, & Tal, 2010; Negev et al., 2008). Recently, research has investigated the ecological footprint of high school students in the Israeli city of Haifa. Pro-environmental behavior has been encouraged by this research, which has implications for using ecological footprints as an effective EE tool (Gottlieb, Vigoda-Gadot, Haim, & Kissinger, 2012). These studies are just the beginning of much-needed EE research on pro-environmental behavior and citizenship in Israel.
Students’ Environmental Behaviors in Israel

To date, Israeli students’ environmental behaviors and attitudes have been investigated by only a few studies (Alkaher & Tal, 2011, 2013; Negev et al., 2010; Negev et al., 2008). In each study, there was no high level of environmental behavior. Revealed in the findings of Negev et al. (2008) are significantly greater pro-environmental behaviors among 6th compared to 12th graders. However, the level of pro-environmental behavior was low. Suggested in the findings of Alkehar et al. (2011) is that EE programs have little influence on pro-environmental behaviors. Also found in Alkehar et al.’s (2011, 2013) study is a comparison of Arabs and Jews pro-environmental behaviors that suggests cultural differences. In these studies, EE had more pro-environmental influence on Arabs than on Jews. This may be because it was self-reported behavior, and it may reflect different expectations between Arabs and Jews, with Arabs’ initial expectations and perceptions of the environment being lower than those of Jews. The pro-environmental behaviors in these studies were self-reported behavior, such as water and electricity conservation (Negev et al., 2008). Similar to those in Rickinson’s (2001) review, suggested in these findings is that much more needs to be done to understand pro-environmental behavior. Future studies need to examine additional observed behaviors, perhaps by using other methodologies (Gottlieb et al., 2012). Moreover, the social aspects of environmental behavior need to be investigated, specifically by taking SES into consideration.

Environmental Education: Teacher Perceptions Attitudes and Behaviors in Israel

In many countries including Israel, EE is not a separate subject matter and therefore does not require special training for teachers (Chi-chung & Chi-kin, 2003; Dreyfus & Veinberger, 2011; Pe'er et al., 2007; T. Tal & Argaman, 2005). In Israel, there is a lack of EE training for pre-service and in-service teachers. Several studies have been conducted on teacher perspectives
and EE in Israel (Dreyfus & Veinberger, 2011; Goldman et al., 2006; Pe’er et al., 2007; Tal, 2010; Tal & Argaman, 2005; Yavetz et al., 2009). Goldman (2006), Pe’er (2007), Yavetz (2009) and Tal (2010) conducted research on pre-service teachers, and only Tal and Argaman (2005) and Dreyfus and Veinberger (2011) have investigated in-service teachers. Goldman et al. (2006) suggest that new pre-service teachers in Israel are characterized by a low level of pro-environmental behavior. Although pre-service teachers have an awareness of the need to have responsible environmental behaviors, it is not translated to action (Goldman et al., 2006). In their longitudinal study, Yavetz et al. (2009) investigated pre-service teachers’ students at the beginning and end of the EE program. Their findings demonstrated a low level of knowledge both in the beginning and the end of the program. There are students who claim that they did not get enough knowledge about the environment during their period of study. However, there was an increase in pro-environmental behavior (Yavetz et al., 2009).

A study conducted by Dreyfus and Veinberger (2011) focused on how experienced teachers deal with challenges in studying EE in a M.Ed. program. The authors found that experienced teachers have difficulties changing their practices and attitudes. EE was especially difficult because it is a complicated interdisciplinary subject that includes many topics that are different from traditional science education. Experienced teachers find it difficult to change their teaching strategies in ways that are more appropriate for EE. Furthermore, the environmental knowledge of many experienced teachers is limited, a finding also reported by Yavetz et al. (2007). These findings reveal another barrier to effective EE.

**Conclusion**

This literature review is the foundation for the research presented on the relations between EE and citizenship according to Israeli elementary school teachers from disparate socio-
economic backgrounds and communities in terms of their pro-environmental behaviors, attitudes, and social justice. In this research the connections between EE and civic education, which fostering social change was explored. Specifically, EE is conceptualized as holistic and interdisciplinary. Civic engagement is considered as the main driver of change in the environment and society. The main goal of civic education is to create better citizens. Citizenship skills are important for education. In this literature review I suggested that citizenship skills, and actual social change, may be achieved by effectively implementing EE programs. In both EE and civic education research, one could find similar questions dealing with environmental participation in community groups and in environmental NGOs as indicators of civic and environmental engagement.

The second element discussed in this review is the relation between socioeconomic backgrounds and knowledge, both in EE and civic education. The low socioeconomic and its pro-environmental behavior and civic engagement explored in the study. In the current literature, there are gaps in the research on EE behavior and on citizenship and SES. According to this review, the role of school and classroom climates in increasing citizenship is more important to students from low socioeconomic backgrounds than to students from high socioeconomic backgrounds. Therefore, low socioeconomic schools were investigated in EE programs and pro-environmental behaviors to see if the same holds true in Israel.

A third conclusion of this review of the literature is that there is a lack of EE research in Israel, especially regarding EE programs and teachers’ perspectives of pro-environmental and citizenship behavior. Scholars have only recently combined the conceptual frameworks of EE and civic education, yet these approaches are closely related in some aspects. Combining these approaches enabled a closer look at the characteristics of pro-environmental behavior as part of
citizenship, political efficacy, and social change. Moreover, there are clear connections between environmental and civic knowledge and socioeconomic background. The Israeli context was the focus of this research. This work is important for the field of EE and for civic education research. It allowed scholars to look in a different way at citizenship and its implication for low socioeconomic students in Israel. The lack of research regarding pro-environmental behavior and citizenship among teachers worldwide and in Israel contributed to this EE research. Moreover, examined in this research will be ways to integrate EE with citizenship and to help practitioners and decision-makers adopt and implement EE programs that emphasize behavioral change rather than simply advance knowledge.

Finally, it is difficult to fully implement EE in countries such as Israel that emphasize high-stake tests and narrow subject matter and that have significant social gaps and security problems. However, there are enough people in Israel who desire change that there is a chance to implement EE and change environmental and social inequality. Moreover, according to the literature, EE could be an effective way to produce deep understandings for each student. EE helps improve problem solving skills because EE is based on environmental degradation and the socio-environmental problems found around the world. Giving students the power to solve real-world problems, to be engaged, and to influence stakeholders may be effective educationally and create a better society and environment. This may be achieved by stakeholders, administrators, and teachers.
Chapter 3: Research Design

Methodology - Qualitative Research Rationale

This qualitative case study designed to gain a better understanding how EE, when paired with civic education in Israeli elementary schools, can foster teachers’ efficacy and social action toward a more just and equitable society. I used two lenses in this study: Value-Beliefs-Norms (VBN) environmentalism theory (Stern, 2000), and critical citizenship (CC) conceptual approach (Johnson & Morris, 2010). According to Stern (2000), VBN theory is based on four pro-environmental behaviors: a) activism, such as influencing decision-makers to change social policies to help society and the environment, b) non-activist in public-sphere behaviors, such as adopting a site and taking care of an open space, c) private-sphere behaviors, such as recycling, consuming fewer environmentally harmful products, d) and behaviors in organizations, such as taking environmental issues into consideration in design. These behaviors are influenced by norms, beliefs, and values which include pro-environmental personal norms; or the sense of obligation to take pro-environmental actions influence behaviors; beliefs such as ecological worldviews and perceived ability to reduce threat influence behaviors; and personal values towards the environment and society influence pro-environmental behaviors (Stern, 2000, p. 412). Based on VBN theory, this study focused on teachers’ perceptions about pro-environmental behaviors in the public and private spheres and in organizations (their own schools) according to their values, beliefs, and norms.

Critical citizenship is based on a political science approach with an emphasis on enabling students and teachers to participate and be engaged in citizenship actions, including knowledge and values. Critical citizenship developed to enable the analysis of curricula and to compare civic education programs (Johnson & Morris, 2010). Therefore, in this research design, critical
citizenship was used for curriculum analysis and to identify citizenship behaviors of participants and students in schools. These two lenses were combined, enabling an exploration of teachers’ perceptions about pro-environmental behaviors, mainly citizenship according to their values, beliefs, and norms.

Informed by these two lenses, the goals of this research were to understand the meaning of social phenomena that relate to pro-environmental behavior and citizenship and to understand individuals and their subjective perspectives, particularly those of teachers and principals in elementary schools. Ponterotto (2005) points out that qualitative research is “designed to describe and interpret the experiences of research participants in a context-specific setting” (p. 128). In other words, the focus of qualitative research is the description and interpretation of the experiences of research participants. In this research I explored a description and interpretation of teachers’ and principals’ experiences relating to EE in the specific context of elementary schools in Israel.

According to Yin (2009), it is important to design case studies that align the components of the study (e.g. research questions, theoretical framework, analysis, and findings) to support the findings with evidence that answer the research questions. Therefore, in this study the theoretical framework was the foundation of the main goal and questions. Understanding teachers’ perspectives in a subjective way enabled a better understanding of their social reality. Two research questions were explored in this qualitative case study:

1. How do Israeli elementary school teachers and principals understand EE’s role in fostering citizenship for a more just and equitable society?

2. What structures and strategies do teachers employ to create opportunities for active involvement as part of their approach to EE?
The research questions can be addressed by VBN theory and CC approach, which are the two lenses of this study. The first question enabled the exploration of teachers’ values, beliefs, and norms as related to pro-environmental behaviors and citizenship according to the VBN theory. The second question explored according to CC, focusing on civic engagement.

**Rationale for the Qualitative Case Study Design**

The research design of this study was qualitative. Qualitative research, according to Merriam (2009), is based on “uncovering the meaning of a phenomenon for those involved” (p. 5). In qualitative research, researchers are trying to understand people’s interpretations of their own experiences, the way these individuals construct their worlds, and the meaning they attribute to their experiences. Participants in qualitative research apply subjective meanings to their experiences. These subjective meanings are formed through their interaction with others and through cultural norms that relate to their individual lives (Merriam, 2009).

Qualitative research is appropriate for this study because my purpose was to gain a better understanding of teachers’ and principals’ perspectives regarding environmental and civic education in Israeli schools. Teachers have a crucial role in creating their environment. Therefore, I investigated in this study individual experience as opposed to universal laws (Merriam, 2009). I designed a qualitative research to explore the meaning of a phenomenon. For this study, EE and citizenship and understanding how teachers and principals develop subjective meanings from their experiences was part of the goal.

To achieve the study goals, I used a case study that is a qualitative, naturalistic, and holistic research approach and includes an “intensive, thick description and interpretation of the phenomenon” (Merriam, 2009. p. 207). Case study also enables the investigation of “complex social units containing multiple variables” (Merriam, 2009. p. 210). According to Yin (1989),
case study is a research strategy that examines “a phenomenon in its real-life context… and in which multiple sources of evidence, are used” (Yin, 1989, p. 23). Case study research is a qualitative approach that includes a real-life exploring, bounded systems over time, and in-depth data collection involving multiple sources of information. The “case” presented in this study represents a complex social phenomenon (EE and citizenship) with multiple factors (e.g. diverse participants such as teachers and principals, diverse projects, social and environmental aspects, etc.). A contemporary phenomenon in its real life context (Yin, 1989) is part of the context of this study (i.e. Israeli elementary schools that have implemented EE). The case is within a bounded system, with EE and citizenship being the bounded phenomenon case according to teachers’ and principals’ experiences: bounded by time (five or more years of experience implementing EE) and by place (Israeli elementary schools).

Despite the large body of literature on case study research design, there is a criticism of case study research (Yin, 2009). Some of this criticism is rooted in different perspectives and approaches to research across disciplines. For example, quantitative researchers criticize case study research for not being generalizable enough, for being biased, and for lacking credibility. This critique is based on quantitative approaches that make generalizations. However, a qualitative approach is not meant to be generalized on a large scale. In this study I used a qualitative approach. Therefore, there were no generalizations to the larger population. However, the findings are transferable to other schools implementing EE programs with an emphasis on pro-environmental behaviors and citizenship in Israel and worldwide.

Another perspective that may be considered is the way Yin (2009) categorizes case study as explanatory, exploratory, or descriptive, while Stake (1995) discusses case study as intrinsic, instrumental, or collective. However, these different perspectives can also be seen and approach
as complimentary. I used descriptive case study in this study to describe an intervention (i.e. EE programs) and phenomenon (i.e. citizenship) and the real-life context (i.e. in Israeli elementary schools) in which it occurs (Yin, 2009). Instrumental case study, as Stake (1995) points out, can be used when a general understanding is required, which will lead to a larger understanding of the case itself. In this study, I used instrumental case study because this research aimed to get a general understanding about how EE foster social change through its pro-environmental behavior component, as opposed to just the schools or the teachers who participated in the study. Therefore, both Yin’s (2009) and Stake’s (1995) perspectives are appropriate and were used in this study. An instrumental case study (Stake, 1995) was used because this research aimed to describe specific issues that were part of a bigger phenomenon and to combine them with a descriptive case study (Yin, 2009) because the focus of this research is a description of teachers’ and principals’ perspectives about environmental education and citizenship.

**Participants and Sampling Strategy**

In this study, I used a purposeful sampling strategy and criterion sampling strategy. I used two levels of sampling: 1) site-level, schools, and 2) individual-level, teachers. At the site level, I used a criterion sampling strategy that focused on specific characteristics. On the individual level, I used a purposeful sampling strategy that enabled me to explore different perspectives to get a better understanding of the phenomena (Creswell, 2012).

**Site Selection: Criterion Sampling**

I used criterion sampling strategy and considered several criteria when choosing schools to participate. First, the school had to allow me to interview teachers and principals, collect data from curriculum and documents, as well as observe EE events and lessons. Second, the school had to be involved in EE for more than five years and certified as Continue Green School
Certificate (CGSC). Third, the school had to include communities from middle to low SES. Additionally, the two diverse schools were selected to reflect different locations in Israel-central and rural.

In order to identify schools committed to EE, schools that were awarded a CGSC (a volunteer-based award given by the Ministry of Environment and Ministry of Education in Israel) were identified. The information about CGSC collected from the Ministry of Environment (specifically, the persons in charge of implementing EE). Schools awarded a CGSC are considered to have highly effective EE because they include the following criteria: a) EE is implemented for all grades in their schools, b) EE is integrated at least an hour each week in the school year calendar, c) EE community projects are integrated on a regular basis, d) Schools have a green council (i.e., a group of children, teachers, and other community participants who create change in the whole school’s pro-environmental behaviors), e) Principals and teachers emphasize pro-environmental behaviors, f) EE curriculum is implemented for more than five years. Two schools that met the criteria were identified: The first school was located in northern Israel and the second school was located in central Israel.

Individual Selection: Purposeful Sampling

At the individual level, I used a purposeful sampling of participants in the schools. The principals recommended a purposeful sampling of six teachers from each school based on the following factors: teachers who had been involved in EE programs for more than five years; teachers who had taught fourth to sixth grade; and teachers with a special role in the school (e.g., vice principal, art, and science teachers). A total of fourteen participants from both schools were interviewed: two principals, two vice principals, and ten teachers including the homeroom teacher in fourth, fifth, and sixth grades as well as science teachers in both schools and the art
teacher in one school. The average years of teaching experience of the participants was 21.5 years. Despite my participation guidelines of five years of experience and an engagement in school EE programs, I included one Beach School teacher who had only two years of experience. This teacher was the leader of the Green Council (GC), a student leadership group as well as the science teacher in the school. Therefore, it seemed appropriate to interview her (see Appendix A for participants list).

I wrote a letter explaining the study and asking for cooperation and permission to conduct the study (see Appendix B for a letter to principals). After the principals accepted the invitations to participate, I communicated with them by phone, followed by email correspondence. (see Appendix C). I also conducted a conversation with teachers during faculty meetings to explain about the study and its goals (see Appendix D for faculty meeting protocol). Principals and teachers voluntarily participated in the study and no incentives were offered to participants. In order to protect against psychological risk, participants voluntarily participated and were informed of their right to withdraw from the research at any time if they become uncomfortable (see Appendix E for a letter to the participating teachers). The letter was sent to participants via e-mail. An informed consent form was developed for the study (see Appendix F for a consent form). The informed consent form explains the details of the research, its importance, how data will be collected, managed, and stored, steps taken to ensure confidentiality, protection of privacy, and participants’ right to withdraw from the research at any time. Participants signed the consent form, as well as verbally agreed to participate in the study. Permission from the schools obtained in order to gain access to the research sites (an example of permission letter see Appendix G).

In order to minimize risk and maximize benefits for the individual, I emphasized the
importance of the research’s results to participants. There was minimal risk to participants due to the subject being investigated (environmental education) and the actions to protect participants that were taken. However, participants may feel uncomfortable sharing their thoughts, especially if they do not personally believe in EE. Therefore, participants were informed about their right to withdraw before starting the interview and informed about the confidentiality of the data and how it might be presented in theses, journal articles, books, presentations, and other research. The interviews were audio taped and transcribed by the researcher only after the above was explained to participants and their permission was given.

**Data Collection, Storage, and Management**

Data collection strategy in case studies should include the use of multiple types of data collection such as “documentation, archival records, interviews, direct observations, participant-observation, and physical artifacts” (Yin, 1989, p. 85). As typical for a case study, I drew extensively on multiple sources of information, including interviews, observations, and documents. The multiple sources of information that were collected included:

**Curricula and documents analysis:** Analysis of curriculum documents from both schools was used as a preliminary dataset to identify the main EE themes and focuses, and the major pro-environmental behaviors including citizenship that are expected to be implemented. This dataset was used to conduct a preliminary analysis of each school’s EE program and its emphasis of pro-environmental behaviors. I reviewed and analyzed the documents to supplement information obtained from interviews and observations. Selection criteria included documents that related to EE and general documents that related to the schools’ visions and regulations, which in turn represented the school agenda. The types of documents included general and EE curriculum documents, EE lesson plans, PowerPoint presentations, projects, and special events.
plans, EE-related documents published on the internet, visions and regulations documents, relevant professional development program documents, and documents that were submitted to the Ministry of Environment through the GSC process. I collected documents from participants and the schools’ websites. Overall, I reviewed and analyzed about 139 documents (see Appendix H for the number and types of analyzed documents).

**Interviews:** There are several types of interviews relate to different aspects such as number of participants (i.e. individual interview, paired interview, group interview or focus group), methodology (i.e. quantitative, qualitative), and the structure of the interview (i.e. structured interview, semi-structured interview, and unstructured interview). The number of people participating is one aspect used to classify the interview. There are individual, pair, and group interviews (Lodico, Spaulding, & Voegtle, 2010). In this study I used individual interview because the aim of the study was to explore individual values, beliefs, norms, and pro-environmental behaviors, regarding EE and citizenship. These individuals may have different values, beliefs, and norms which may not be emphasized in paired or group interviews. Therefore, it was more appropriate to use in this study individual interview.

Quantitative research method interviews will usually be designed and conducted as structured interview which includes specific protocol of questions and answers, the researcher stance is objective and his perspective is as an outsider. Structured interview enables mathematics and statistical analysis with numeric representation as appropriate for quantitative interview (Ritchie, Burns, & Palmer, 2005). This study was based on qualitative research method therefore structured interview was not appropriate and was not used.

The purpose of the interview in qualitative research is getting better understanding of participant’s experience (Wengraf, 2001), and the meaning making they make of that experience
Semi-structured and unstructured interviews are usually associate with qualitative research methods (Seidman, 2012). Unstructured interview includes only general topics and is conducted in an informal conversation, allow for the greatest flexibility (Lodico et al., 2010). Due to its characteristics, unstructured interview was not appropriate for this study because it is too open.

Semi-structured interview are carefully planned and provides a repertoire of possibilities, based on interview protocol that includes two types of questions: open-ended and more theoretical questions (Lodico et al., 2010). The questions are designed to be sufficiently open in a way that the researcher can be open to new ideas but at the same time aware of the theories and the research purpose (Wengraf, 2001). In this study I conducted semi-structured interview due to its characteristics of being “sufficiently structured to address specific topics related to the phenomenon of study, while leaving space for participants to offer new meanings to the study focus” (Galletta, 2013. p. 24).

Therefore, I conducted semi-structured 45-90 minute interviews with fourteen teachers and principals. Yin (1998) points out that the interview is one of the most important data sources in case study and qualitative research. Therefore, interviews are the primary dataset of my study due to its importance in identifying participants’ perceptions regarding EE and citizenship. Curriculum does not always reflect the perceptions of the teachers. Teachers may interpret the curriculum differently. Therefore, it is important to identify participants’ perspectives according to their experience and not only according to the written curricula. Furthermore, pro-environmental behaviors and citizenship are not always explicitly mentioned in curriculum. In Israel, curriculum often reflects pedagogical approaches and usually does not include active citizenship examples. In order to stay focused on the purpose of the study and to maintain
accuracy, interview protocols were designed for principals and for teachers, but in order to make room to participants to take unexpected direction, open-ended questions were developed as part of the interview protocol (see Appendices I and J for interview protocols for teachers and principals).

**Observations:** Direct observation is useful in providing additional information (Yin, 1989). Observations were one of the methods used to collect data to better understand the EE programs in the schools and to observe the relationship between EE and civic education as it appeared in the school in general and teachers’ activities in particular. Observations conducted as additional information in EE lessons and special EE project events according to the schools’ programs. Observations were useful in evaluating the use of EE as it relates to citizenship in and out of the classrooms. Observations contained field notes to capture observational data. Field notes included technical information such as date, time, and place, description of activity (lesson, special event), examples of opportunities for pro-environmental behaviors for the students (embedded in the lesson, or part of a special activity), examples of observed pro-environmental behaviors of teachers and principals, and other observed details that relate to EE, pro-environmental behaviors, and CC (see Appendix K for a field note protocol). I conducted field observations in both schools, based on each school’s principal’s list of dates, and included EE activities, lessons, and special events. I engaged in approximately forty hours of observations across both schools. Both schools wanted me to come and learn about the school, and therefore gave me information and access to all activities between May and June 2015.

Data was managed using encrypted and secured data storage and by providing pseudonyms for participants and their schools. These steps helped protect privacy and improve the confidentiality of the research. The researcher and principle investigator were the only ones
who have direct access to the data. A list of participants with their pseudonyms was stored in a separate location from the data. All data was stored in paper form in a locked metal cabinet and on password-protected computers. Audio tapes are not labeled with participants’ names and are kept until transcribed and then safely destroyed. Other data will be safely destroyed after a reasonable time. Privacy and confidentiality kept while presenting data in the researcher’s thesis, potential journal articles, books, and presentations. Only pseudonyms appear in the presented data, and no identifiable descriptions such as school names or locations is mentioned. No people mentioned in the interviews are referred to by name or by any other identifiable characteristics.

**Data Analysis**

Case study data analysis is similar to a spiral that includes the following steps: organizing the data, reading and writing memos (writing notes while reading the data and transcripts), forming initial codes, describing the case and its context, classifying and interpreting data into codes and themes (aggregating codes to categories and themes), and representing and visualizing the data (Saldaña, 2009). In this study, I conducted data analysis according to Miles and Huberman (1984) in three main steps: data reduction, data display, and conclusion-drawing and verification. *Data reduction* is the process of selecting and focusing the data (Miles & Huberman, 1984), including, in this study, first and second cycle coding (Saldaña, 2009). *Data display* is presented in matrices, narrative explanations, and charts, as presented in chapter 4 of this study. *Conclusion-drawing and verification* are presented in chapter 5.

Yin (2009) discusses five strategies for analysis, including cross-case synthesis. This study analyzed and then compared the schools using cross-case synthesis. The analysis process was first conducted through a deductive approach by identifying themes in each case and then looking for common themes. I compared across cases according to the pattern of each case. In
cross-case analysis and synthesis, as suggested by Yin (2009), a word table was created to display the data from individual cases and to look for similarities and differences among the cases.

The last step of data analysis was interpreting the meaning of the case. According to Stake (1995), there are two ways to understand new meanings regarding cases: 1) direct interpretation of the individual or 2) aggregation of instances “until something can be said about them as a class” (Stake, 1995. p. 74). In this study the second strategic method was used to aggregate the data using the analysis process first and second cycle coding (Saldaña, 2009).

First cycle coding was conducted after collecting the data via interviews, and observations. In the first cycle coding, values coding, which is “application of codes onto qualitative data that reflect a participant’s values, attitudes, and beliefs, representing his or her perspectives” (Saldaña, 2009. p. 90), was used for analysis. This study is based on VBN theory (Stern, 2000) and is focused on values, beliefs, and norms regarding EE and citizenship. Therefore, this approach of coding may be appropriate to this research. Furthermore, according to Saldaña (2009), values coding is particularly appropriate to case studies and research that “explore[s] cultural values and intrapersonal and interpersonal participant experiences and actions” (p. 90). In this study participant values and actions were investigated, and it is therefore appropriate to use values coding. Moreover, values coding is applicable to diverse data collection methods such as interview transcripts and field notes (Saldaña, 2009), which are part of this study.

In the first cycle coding, values, beliefs, norms, and pro-environmental behaviors—including citizenship and other codes related to social aspects, pedagogy, and school characteristics—emerged from the data. The second cycle coding, using the Axial Coding, reveal
three main categories: (a) VBN & Behavior, (b) social issues, (c) pedagogy & school characteristics. The second cycle coding was conducted in two phases after the first cycle coding of each phase of data collection. A comparison of sources and schools was conducted after analyzing each source in cross-case analysis. In the second cycle coding, Axial coding, which focuses on identifying categories, relationships, and processes (Saldaña, 2009), was used for analysis. In this research, I wanted to identify the relationship between EE and citizenship according to participants’ perspectives. Furthermore, I aimed to get a better understanding of the process used by participants to combine between EE and citizenship. Therefore, Axial coding is appropriate to be used in this research.

Atlasti software was used for the coding and analysis process due to its capacity to conduct Hebrew analysis. The Atlasti software enabled an analysis of all types of resources of this study: curriculum, lesson plans, teaching materials, transcripts of interviews, and field notes of observations. Using first and second cycle coding based on the software enabled the creation of organized, systematic, and valid analysis that can compare all sources.

Yin (2009) discusses three dominant modes of analysis: pattern-matching, explanation-building, and time-series analysis (p. 108). Pattern-matching is appropriate to case study with propositions and variables and therefore is less appropriate to the research questions, which are not built on propositions. Time-series analysis is based on cases in which time changes are significant. In this case, the phenomenon of the relationship between EE and citizenship in schools that have been successfully implementing EE for more than five years is being explored; therefore, a time-series is less appropriate to this study. The best fit to the problem of practice and research questions is explanation-building, whose goal is to analyze data by explaining the case (Yin, 2009).
The research questions in this study were based on the theoretical framework, values, beliefs, norms, and pro-environmental behaviors theory, as well as critical citizenship because the research questions aim to explore teachers’ and principals’ values, beliefs, and norms towards the environment publically and privately, as well as in their own organization through their teaching of pro-environmental behavior to their students. Data analysis was based on the research questions, which was also based on the two lenses of this study.

Main Categories

After finishing the first cycle coding (in both schools), I had 500 codes. In the second cycle coding I looked for themes (Appendix L represents the codes’ titles, descriptions, and categories as analyzed from the data). I aggregated the codes into three main categories using the Axial Coding: (a) school characteristic, pedagogical, and management aspects (b) community aspects; and (c) VBN & Behaviors components. These three categories had sub-categories, which, as shown below, are the basis of the analysis presented in chapter 4.

(a) School Characteristics, Pedagogy, and Management. This includes two sub categories:

- EE in school life includes the uniqueness of the school, school culture, management process, curriculum, leadership of students (i.e., the GC), teachers leadership and professional development, people and organizations that help the school; and

- EE characteristics includes the pedagogical approach, experiential and outdoor learning, EE as holistic and integrative, democracy principles, critical and creative thinking, EE projects and programs, knowledge, bio-diversity, sense of place, involvement, action and engagement.
(b) **Community Aspects.** This includes two sub categories:

- **School and community** include parents’ engagement, influence community, Arabs-Jews relationships; and

- **Social, environmental, and SES** and the relations to EE, social and environmental justice, and citizenship.

(c) **VBN and Behaviors.** According to VBN Theory, the sub categories include values, beliefs, norms, pro-environmental behaviors, and CC. Although, CC may be part of pro-environmental behaviors, in this research I specifically interested in CC therefore I separated this into subcategory.

- **Values, beliefs, norms** are decoded as (a) general values and beliefs existing in an educational institution, in this case two elementary schools, and (b) values or beliefs that directly connected to EE and sustainability.

- **Pro-environmental behaviors & CC** are presented as part of the private sphere such as reuse, recycle, reduce; saving water and energy; and as part of the public sphere such as CC, relationship with decision makers.

**Trustworthiness**

This research is designed as qualitative research. Therefore, instead of looking for reliability or external validity, as is the case with quantitative research, trustworthiness and validity are the focus of qualitative research (Bryman, 2012). According to Creswell (2012), validation in qualitative research is “an attempt to assess the ‘accuracy’ of the findings, as best described by the researcher and the participants” (p. 249). Therefore, looking for validation and trustworthiness could be achieved by extensive time spent in the field, detailed description, the closeness of the researcher to participants, and other actions (e.g. self-reflection, triangulation of
data, the opinion of others, etc.) that the researcher should take to create validation and trustworthiness.

There are several validation strategies that the researcher could choose to focus on, such as triangulation, reliability perspectives of data collection, and trustworthiness, especially with regard to case study research, like this study. Due to my practice experience, I created detailed descriptions and was close to participants. Furthermore, I explored my bias, and used of self-reflection and a research journal which contributed to the validation of the research and the triangulation of data. The consideration of others’ opinions is also a way to create validity and trustworthiness. Triangulation of data sources and methods were part of the validation strategy to establish credibility: For the purpose of triangulation, diverse data sources such as interviews, observations, curriculum, and documents were used. Member-checking and looking for the opinion of others is another part of validation strategy to establish trustworthiness (Denzin & Lincoln, 2011): In this study participants reviewed the data for accuracy; peer review was obtained by the third reader who provided an external check of the research process by asking hard questions about methods, meaning, and interpretations. Researchers with EE experience read and comment on the data.

Internal validity also needs to be considered regarding participants and their experiences, mortality, instrumentation, and researcher biases. To treat the differences in the history of participants and maturation, experienced teachers who have taught for more than five years in the same range of grade level (four to six) participated in the study. The researcher needs to have a list of participants who agree to participate and who meet the criteria of the study in order to help account for mortality, which occurs when individuals drop out of the study. To treat instrumentation validity, I used the same instrument throughout the study. In this case, I used the
same questions in the interviews, the same protocol in observations, and the same analysis procedure to analyze the data. I closely examined my biases. Self-reflection and a research journal contributed to the validation of the research (Denzin & Lincoln, 2011).

**Protection of Human Subjects**

Protection of Human Subjects and ethical considerations were implemented at each stage of the study. Permission to conduct the research submitted to the Institutional Review Board (IRB) and included all the necessary information about the research: goals, significance, methods, and participants (Creswell, 2012). No participants were contacted and data was not collected until written approval from the IRB office was obtained. Because the research took place in Israel, permission from the schools was obtained. Protection of human subjects was addressed in the research during collecting the data, managing the data, and presenting the data as discussed above.

As mentioned in the data management section, in order to protect the privacy of research participants and improve the confidentiality of the research, data was managed by using encrypted and secured data storage and by providing pseudonyms for participants and their schools. Any information that may identify participants stayed confidential. Furthermore, limiting access to identification data is enhancing privacy and confidentiality: the researcher and the principal investigator are the only ones who have direct access to the data. Furthermore, a list of participants with their pseudonyms was stored in a separate location from the data. All the data was stored in paper form in a locked metal cabinet and on password-protected computers. Audio tapes were safely destroyed. Other data will be safely destroyed after a reasonable time.
Chapter 4: Results

In this case study I investigated the perceptions of two elementary schools’ teachers and principals about the relationship between environmental education (EE) and critical citizenship (CC), and the influence of that relationship on society. In this chapter I present the data I collected from the fourteen teachers and principals from those two Israeli elementary schools through interviews, observations, and documents. I report the qualitative findings regarding the research questions of how teachers perceive the relationship between EE and citizenship and how their actions have led to those perceptions. First, I present the contexts of both schools in this case study, including general, social, environmental, and participants’ background; Then, I answer the research questions according to the first and second cycle coding analysis, which captures the differences in paradigms and how the two schools are shaped as a result. Finally, I provide a cross-case analysis.

The Context of the Case Study: General, Social, and Environmental Backgrounds

The focus of this case study was EE and CC. Therefore, I intentionally selected two sites that had implemented EE programs for more than ten years. The use of two schools helped to ensure rich data about the way teachers perceive the relations between EE and CC. The school selection was based on information about the depth of implementation of EE programs for more than ten years, mainly schools with continue green school certificates (CGSC), as defined by the Education and Environment Ministries. The two sites met the criteria to serve as the schools for the case study. The first school is located in northern Israel and is referred to in this study as Beach School. The second school is located in central Israel and is referred to in this study as River School.
Beach School

Beach School is an elementary school located in the north of Israel in a city with a mix of Jews (64 percent) and Arabs (30 percent) (CBS, 2012). In the school, however, students are mostly Jews; 60 percent are Jews immigrants and only three students are Arabs. The school is located in a mostly Arab-populated neighborhood. This was not the case when the school was established in 1950 by Joseph Zalets who was a scholar of nature and science. In those days the neighborhood was mainly Jewish. Over the years, a demographic change occurred in the neighborhood, and more Arabs entered. However, the school remained a Jewish school. At the time of the study, the school consisted of 270 students and 30 teachers, and the socio-demographic characteristics of students’ parents were middle-low SES. Beach School’s principal had only served two years in this position. However, before her promotion, she spent 33 years as vice principal and as a teacher in the school.

Due to the decrease in Jewish families in the school’s neighborhood, and due to the fact that Beach School is a Jewish school, the school’s population started to decline in numbers, and it is considered a small elementary school in Israel. Consequently, the school opened its gates to families from all around the city, an atypical situation in the Israeli school assignment system. Usually school districts assign students to schools according to students’ address. In this case, because the school was open to everyone in the city, Beach School made a lot of effort to attract educated families by building its credibility and scores in standardized tests (see Appendix M). The school emphasized the high-quality level of teaching and learning. The beach, located near the school, and the inquiry approach emphasized at the school, also helped to build this credibility. Students from high (relative to the city) SES and with highly educated parents
(relative to the city) attend the school. As alluded to above, the school was considered to be one of the best academic schools in the city, at the time of the study.

Beach School has been involved in EE programs for the past ten years. However, it received the green school certificate (GSC) in 2009 and the CGSC in 2012 (Ministry-of-Environmental-Protection, 2012). The EE pedagogical approach of the school was based on science and inquiry focused on the Mediterranean Sea which located nearby. Consequently, the school encouraged outdoor learning and experiential learning, focused on knowledge about the environment mainly related to the sea. Despite the fact that EE was considered as one of the three main themes in the school, in reality EE was only one program among many including language arts, music, dance, computers, cycling, chess, etc. As mentioned above, EE was based on science approach and most activities across the school related to science and inquiry process. A student leadership group, particular to the school which was established as part of the GSC process- the green council (GC), was an extracurricular opportunity for students. The GC was particularly involved in many aspects of EE, such as citizenship, pro-environmental behavior, and creating more a sustainable school. This group will be discussed further later.

**Participant Introductions**

**Yura** had Beach School’s principal for two years at the time of the study, and before that she was a vice principal and taught at the school for 26 years. Yura wanted to develop the school and to get to know all the students. Therefore, she decided to teach all classes. Yura was very busy all day long however she created the time for the interview and to accommodate my study requirements. It seemed that she was only now starting to learn the ideas behind EE. As she explained, “When I was vice principal I was less involved in EE programs. I was in charge of other duties in the school…but now as a principal I am much more involved.” Yura emphasized
the efforts they put into developing each individual student, “participating in the GC is not related to cognitive ability of the students. It helps to empower students that are usually less strong in academic subjects.” Yura believed, “we need to give every student his own place… we need to emphasize the uniqueness of the school being sea inquiry school” In her management approach she declared, “I am working in total transparency and openness…I have a management leadership team…we develop the curriculum together… all the teachers are engaged.”

**Lola** had served as the vice principal at Beach School for two years at the time of the study and taught at the school as a homeroom teacher and a grade coordinator for the past fifteen years. She also served as the lead teacher of EE at the school. She was actively engaged with outdoor teaching and adopted the local beach with her students. She described the situation in which the students did not want to clean the beach, and she fought with their parents about the issue. She also emphasized that it is not only about cleaning the beach, “We stopped along the way. I am teaching about… the sand, the ecological system… and the animals. This is part of their inquiry process.” Lola seemed to be busy, charismatic, and active in the school, dealing with several tasks simultaneously. Despite her busyness, she was a positive thinker and tried to help everyone as much as she could, including teachers, students, and she even helped me when there were conflicts in the research schedule. Her presence was very noticeable: she walked fast, spoke quickly, and teachers appeared to like her when they approached and talked to her, hugged her, or commented on her personal life. Lola believed that for her school, “this change process [towards pro-environmental behavior] needs to be slow, step-by- step.” She seemed to believe that she needed to be a role model for her students, and consequently announced that “the GC leadership students group will become the role model for other students.” Lola seemed concentrated on the GC EE program and less on the whole school EE approach.
Dina was a fifth grade homeroom teacher for the past eight years at Beach School, at the time of the study. Before that, she taught at a different school in the same city for 21 years. Dina was an energetic teacher, talked very fast, and used her time during recess to meet other teachers and students as well as to solve students’ problems. She offered many examples about how the students are reacting to pro-environmental behavior and how she deals with the situation. For example, she described the following conversation in her classroom:

Dina: “David what do I see, a plastic bag? ... Did you stop bringing lunch box?”

David: “It is not me, it is my mom.”

Dina: “So what are you doing about it? Don’t you try to teach your mom?”

This example shows the way Dina seems to influence the students’ parents through their children. She started her personal pro-environmental behavior many years ago “when I studied my second degree in geography and environmental science.” Dina was an activist and when she did not like something, she acted to change the situation. She explained, “During the Israeli Independence Day I wanted people to hang Israeli flags on their porch. It is important to me that people show patriotism to Israel because it is a mixed Arab and Jew city, and sometimes the Israeli Independence Day is hidden. I wrote a letter to explain the importance of hanging flags and delivered it to all the people in the neighborhood, and they did.” This example reveals the social complexities of a mixed city. That the main symbolic holiday of Israel, the Independence Day, was not observed by its Jewish citizens- sheds light on the feelings of the Jews in the city. Dina believed that raising awareness is enough for EE, as she explained, “When I know about the polluted river… it is enough for me.” It seemed that Dina exemplified a personal-level relationship to the environmental problem, which has emphasized EE alone rather than a systems awareness that tends to lead to a critical consciousness that intersects with EE.
Ana was a homeroom fourth grade teacher at the time of the study, had participated in the management team for the past fifteen years. Ana was very involved in Beach School’s life and EE specifically. Ana appears to be afraid because of the environmental crisis. As she explained, “I’m reading a lot about what is happening in the world regarding the environmental crisis and it really scares me… I’m really worried for my children.” Scaring was part of her approach for teaching, too. When her students became scared she seemed to feel it was a success. As she said, “We went to the beach to create kites… the students were afraid that the kites will kill the sea creatures [the same as plastic bags do]. They were really scared… then I realized that I succeeded in teaching them.” She also used her fear to scare superintendent after studying about the extinction of the blue tuna. She pointed out for the superintendent, “Do you like sushi? So you should know that you are the cause of its extinction.” In her private life she recycled bottles and even approached the mayor’s wife, who taught in the school, to ask her husband to do something with the littering at the beach. Ana was teaching in an integrative way and made connections between the environment and other subject matters. For example, she explained, “We studied Genesis and we connected it to EE and the role of people to take care for the land.” She was engaged in outdoor teaching and emphasized activities that she and her students did at the beach. For example, she explained, “we clean the beach… It is important to me that it will be clean.” Ana discussed the local Arab community in a negative way several times. For example, she said, “they [Arabs] are coming to the beach with their families and litter… I’m sad.” In another example she said, “I can see in the mixed city that the Arabs areas are dirtier. They don’t care about the environment.” Ana did not seem to understand the idea of social justice and the relationship between EE and citizenship. She did not think it was important to emphasize citizenship to the students because “they are too young.”
Efi was a sixth grade homeroom teacher at Beach School for the past twelve years at the time of this study. She has taught for 35 years and seemed to be very tired. She was also a math teacher at the school. She was very slow in her actions and speech. She did not seem to be engaged in EE at all. As she said, “I am not very engaged in the EE program… this is more Lola and the science teachers… during the years there were projects that I was engaged in but never as much as the science teachers.” As far as her personal life, she did not live in the city but instead resided in a village nearby. She recycled in her village and encouraged her own kids to do that, too. However, she did not separate organic materials although she had a special trash can for that at her house. Efi emphasized recycling as the main pro-environmental behavior in her personal life and in her teaching approach. She also did not think that citizenship was an appropriate subject to teach in elementary school. She believed that “the students are not at the age that they could do something. They cannot vote, they actually cannot do anything about social justice or citizenship…this is far too early to deal with it.” When prompted about the conflict between Arabs and Jews, Efi simply said, “The students came to me and blamed the Arabs for littering the beach.” It seemed that the students’ approach reflected her personal approach because she did not explain the complex problem to the students, and she did not push her students to think about the problem in a deep way themselves.

Ebi was a fourth grade teacher at the time of this study. She had 28 years of teaching experience, fourteen years at Beach School. Ebi was a quiet and slow-moving person. In her personal life she was very aware of the use of materials, saving more and throwing away less. As she explained, “My parents didn’t throw away food. They use to do something with everything …and I’m the same…I have more awareness for the environment…In my home I really enforce saving water…and also in school.” Ebi’s citizenship teaching approach was to tell
the students what they can do: “We have suggested to put signs up against littering, to invite
volunteers to discuss the beach, to enforce police officers’ issuing of tickets for littering… but
we are not doing the activities…it is only to know about the possibilities.” Ebi was not very
engaged in outdoor teaching as she explained, “We are talking about environmental problems
and the possibilities of solving the problem…This is enough…I’m not so involved in the outdoor
teaching.” It seemed that her main approach for solving environmental problems is by enforcing
the law, “I would like the mayor and municipalities to enforce the laws…then our environment
will be better.”

Titi was a young new science teacher at Beach School and led the GC. She had only
taught at the school for two years. She did not know the school very well, and her description of
the GC curriculum was very vague. She emphasized, “I allow the students to choose from the
book what they want to learn about.” They had several outdoor classes. However, whenever I
asked her about activities, it did not seem that the students actually went outside for a variety of
reasons such as lack of time, weather, and lack of consistency in students’ participation. Titi
explained, “We went outside sporadically…the GC activities were mainly learning about
environmental problems…they need to know first, and then we could think about actions.” It
seems that her limited experience and the atmosphere in the school did not encourage her to be
active with the GC, as Lola was when she led the leadership group.

River School

River School is an elementary school located in central Israel and was populated mainly
by Jews (98.9 percent), of which thirteen percent were immigrants (CBS, 2012). The school was
established in 1992 and consisted of 454 students and 30 teachers, at the time of the study
(Ministry-of-Education, 2012a). The school is located near a stream (although water only runs in
the winter) and near archeological sites. The socio-demographic characteristics of students’ parents were middle-low SES to middle-high SES. The community of the school included 80 percent of originally Yaman families that were integrated with new immigrants in the neighborhood in the 1990s. The school attempted to influence the community regarding the environment to create sustainable society.

The principal has worked at the school since its establishment, first as a teacher, then as a vice principal, and as a principal for the past seventeen years. She believed in cooperation with the staff and community, and she was working with all the teachers together as a team. The school vision was represented by the principle of ‘train the youth according to his way’ (Mishlei 22:6), and the inherent differences between people and their abilities to use their special skills and talents to foster dialogue and mutual respect. The school was also being recognized as an innovative school for sustainability (ISfS).

The school focused on EE and sustainability through curriculum programs that emphasized using natural resources in a way that recognized and considered the needs of next generations. The school was awarded a GSC in 2005 and received the CGSC in 2009 (Ministry-of-Environmental-Protection, 2012). River school has been involved with EE since its beginning in 1992, and implemented different types of EE approaches: In the beginning it was intuitive, not organized, and mainly focused on outdoor learning. Later on, they started to call it EE. In the last ten years the school became an ISfS, which is a unique program designation led by the Ministry of Education. The leadership team that led the process of ISfS wrote the innovation proposal. Then, the entire staff studied for five years how to build the innovation. Afterwards they became distribution center, which means they were teaching others how to implement EE. The school vision was based on a humanistic, ecological, and citizenship approaches. The purpose of the EE
innovation was “education for engagement, influence, critical thinking, and social-environmental citizenship responsibility.” Therefore, these elements were presented in the vision and the activities of the school.

**Participant Introductions**

**Dalia** was River School’s principal for seventeen years at the time of the study, and she has been a vice principal and taught in the school for a total of twenty-three years. Dalia was very energetic and always very busy. However, whenever I came to the school she managed to talk with me for at least half an hour. Dalia was very firm but listened to her staff. She explained, “Today I’m very patient, but in my character I can get angry easily…but I learned how to listen and to give my staff their space.” She appeared to be a perfectionist while also being aware of her limits. As she explained, “I’m very bossy…it is very hard for me to let other people to think and participate.” In her personal pro-environmental behavior she was acting in both the private and the public spheres. She and her family collected bottles for deposit and brought the bottles to school. She built a new house and integrated a system to collect rain water and other environmental designs. She participated in the city council meeting and became an authority of environmental issues. Many people in the city came to her to get advice for environmental decisions. She helped to create a sustainable community center. As she pointed out, “The sustainable community center was established by a group of women that live in the neighborhood; all of them were parents of students in the school.” Dalia seemed to believe in sustainability education as she asserted, “Sustainability is a point of view…it must be democratic, active citizenship with critical thinking…everything is included in sustainability.”

**Irit** was the vice principal at River School for the past ten years and has taught at the school as a homeroom teacher for the past twenty years. She was part of the leadership team who
prepared the experimental school. Despite her leadership role, she was modest, quiet, and fluently talking while carefully building her sentences and ideas. According to Irit, EE is “everything… EE teaches us reality, enables us teaching about relationships and connections among disciplines and layers of reality.” Her personal approach to EE seemed to be wide and included all aspects of society and environment. She believed in giving responsibilities to students and helped them to become better people in the world. As she explained, “The environment is a good place to be engaged in creating an educational process.” As she presented her worldview, Irit emphasized, “I am a person who believes in acting, I believe in creating change. I believe that citizens can change reality… and that we need to fight for the environment…I really believe that we can change the world, and we need to change it.” She believed in the need to educate for environmental justice, but as she said, “I have a problem with social justice. I think we need to emphasize environmental justice without dealing with social justice… we have a long way to get there, but we need to walk in that path.” She noted, “I feel that this is a kind of a mission…When I am teaching…I know that it passes on and this influence is our hope for social-environmental change.” In conclusion, she described her good feelings about the school: “I feel lucky because in the [Israeli] education system this is not trivial…you can find yourself teaching a subject matter and not doing any meaningful educational process…we are in a good place that we can create a meaningful reality.”

Gili was a lead science teacher responsible for coordinating science education at River School for the past 19 years. She spoke so fast and enthusiastically that it seemed as if she had so much to say about her love for nature, environment, science, and teaching, that she was afraid she would not be able to say everything she wanted. She even said at the end of the interview, “This was very intuitively spoken. If I were to do it again now, it will be totally different.” She
appeared to love her work. She especially liked to be a mentor, as she explained, “I have always been the lead teacher in the school… I gave other science teacher support… everything that I can, to help them… I love to do that.” Gili conveyed a very deep understanding of environmental crisis, and she taught about it in engaging ways. She approached teaching creatively; for example, she found diverse approaches, such as building an exhibition of solar building models that the students investigated and created at home, leading student leadership groups, and taking the students outdoors. She said, “Since the beginning I liked to take students outside for learning…I got special permission to get outside whenever I want to…and I implemented the environment in everything that I could.” Gili was proud of her work and her students as she explained, “Students love my lessons…they come back to tell me about their path in life… some of them are going to study science in college.” She believed in the students’ abilities to create change and said, “This generation will be able to make a difference in the future.”

Yael was a fourth grade homeroom teacher at River School for ten years at the time of the study. She seemed to be polite but firm in her appearance and behavior. While teaching, she listened and engaged the students in learning, in a calm and supportive way, but strictly addressed parents who did not respect the class rules. She seemed to be interested in social issues and intertwined them into her approach to the environment in both her personal life and in her teaching. She seemed to be thoughtful person and for her MA thesis she explored the topic of school as a center for social change in the view of the parents. During interviews, she shared her belief that there is no separation between social and environmental issues, “I teach my students how to behave in society... I give them a personal example for how I behave in a caring way in my neighborhood and I encourage them to think about their own life… I emphasize not only knowledge but also the citizenship part… I teach them how to be a good citizen in this country.”
She summarized by saying, “First you need to be a good person who cares for your friends, society, and the environment.” In her classroom she emphasized the value of taking care of one’s community and being active in it. She taught students that “you need to act, to listen, to be part of, to think, to write a letter to decision makers if something bothers you.”

Yuli was an art teacher who worked at River School for twenty years at the time of the study. Yuli seemed to be a modest person and did a much related to EE without actually emphasizing it. She had a very unique way of approaching the combination of art and sustainability, which was different from other Israeli schools. As she explained, “I implemented environmental art into the school in an unexpected way…in the beginning they [teachers and principal] thought that I would just take pinecones and color them…I didn’t do that; I emphasized ground and environmental art.” Another example from the interview emphasized her unique way of thinking about EE: “One needs to enter the environment in [an] active way…but you have to look first at details carefully in the environment.” Yuli believed that this “special observation and engagement with the environment gives [us] the physical sense of belonging…which creates obligations to the environment.” This was how she fostered students’ engagement. She also incorporated democratic principles in her teaching, explaining, “Each group suggested what to do with a huge piece of wood… They voted and chose in a democratic way the best design.” Her teaching approach could be seen in her expression: “I’m only an apprentice; I help to solve problems… but I never touch the students’ work.” She seemed to believe that her work influenced students for many years as she said, “I see how the students are growing up to be very engaged… many of them are going to study art in college…they invite me to their exhibitions…I’m very proud of them.” Yuli was a humanist person and explained, “I’m a humanist and a liberal person who accepts all diverse communities without regard for religion,
gender, color...Everyone should contribute something... first to society, and then to the environment.” She appeared to believe that people are more important than nature, as she told her students, “If you help an endemic flower, it is nice, but it is better to help a person...I believe that the human part of the environment is the most important in EE...which means you need to create a just society.” Interestingly, despite her humanistic values and the deep approach to EE and critical citizenship, she did not think art should engage with social justice. As she emphasized, “Art is a limited language...it cannot educate for world perception.” Despite this approach, she did point out how art creates opportunities for students to excel who are not able to excel in other academic subjects. She pointed out, “A student that finds his own place, skills, and empowerment...this is for me social justice...otherwise he will get lost in school...the system has no answer for these types of kids.” Her pro-environmental behavior was reflected in the reusable materials her students use. The art projects were very impressive (as shown in the images in Appendix N). One of the most impressive elements in the school was that the artworks had never been vandalized. Yuli explained, “Since I’ve been here, no one has ever touched an artwork, which is very rare in Israel...This shows the respect students have for their environment.”

Eli had been a fifth grade homeroom teacher and a math coordinator, for the past 23 years at River School. Eli mentioned often EE on one hand, but on the other, she repeated that she was not involved so much in EE. As she explained, “I’m less involved in EE...In the beginning I wasn’t engaged at all...however, lately I’m more engaged.” Despite these declarations, it seems as if she is doing a lot about EE. EE for Eli is first of all contributing for community. She believes that “if a place is important to us we need to take care of it...take care of the environment and to make sure that the community is aware of the environment and its
importance...we need to understand that without the environment we will not be able to live.”
She liked to integrate EE in her math teaching. She looked at EE as integrative approach and
explained, “It is not just one thing in school or in the students’ lives; it is
everything...Sustainability is part of the whole schools’ life”. Eli thought that social justice is
very important to teach her students. For example, she explained, “I’m teaching the students
power relations in society, and the importance of justice.” Eli explained to her students through
math and social justice the injustice in society and asks, “Why should the public need to pay 17
million shekels for the company that caused the gas leak to recover the land? The company needs
to pay! I explain everything to the students and they get it.” Eli taught math outdoors often. For
example, she described one lesson, “Last week we made holes in poles for plants. It is math:
there are three groups of poles which are the multiplication of 240.” (See image Appendix O).
Eli summarized, “Sustainability is about the environment, community, people, economy,
consuming. It is everything...above all it is community: one for all and all for one.”
   
   Tom was a sixth grade homeroom teacher at River School for 23 years at the time of this
study. She was also in charge of the assessment processes and the school’s website. She seemed
to be calm and polite. She saw social and environmental aspects as connected to each other, as
she explained, “If you are aware of environmental justice you will later be an active citizen.” She
integrated social justice as part of her teaching: “We read an article during social justice event
about an apartment building in Tel-Aviv that did not want disabled people in their building...We
wrote letters to decision makers...we tried to influence and change the situation.” She
emphasized social issues in her classroom in other ways as well. For example, she recalled, “We
went to meet local elderly people before the Jewish new-year...It was very exciting to see the
relationship between the students, the people, and the sense of place it created for the students.”
Tom emphasized the importance for citizenship by describing the diverse activities they implemented in the school such as attending the city council and meeting the mayor. She explained, “It is very important to create citizenship…we write letters as part of language arts to decision makers…we integrated social and environmental aspects.”

**Beach School and River School – Distinctions and Commonalities**

In conclusion of the description of the research context, although distinctions existed between these two research sites (i.e. Beach School and River School)—the level of SES, the size of the school, the geographical location in relation to the center of Israel, etc.—there were some initial similarities that were identified during the preliminary mapping process. For example, both schools were certified as green schools and as continued green schools, had implemented EE for more than ten years, claimed that EE is important part of their missions, and had professional development for teachers about sustainability for several years. Both schools also have relatively tenured teachers. Appendix M summarizes the school descriptions and includes a few commonalities that exist between two relatively diverse schools.

**Answering Research Questions**

**Teachers’ Values, Beliefs, Norms and Behaviors and Social Aspects: Research Question #1**

*How do Israeli elementary school teachers’ perceptions, values, beliefs, norms, and behaviors related to the social and natural environment, affect their understanding of EE’s role in fostering citizenship for a more just and equitable society?*

Research question #1 can be divided into two parts. The first focuses on teachers’ values, beliefs, norms, and behaviors based on VBN environmentalism theory. The second, relates to teachers’ perceptions of social aspects of EE, namely the fostering of citizenship for a more just and equitable society. Therefore, analysis and findings are presented by following these two
parts. First, values, beliefs, norms, and behaviors are considered. Second, social aspects and their relationship to EE and citizenship, according to teachers’ understanding, are presented.

**Natural Science - Beach School, Integrated Natural and Social Sciences - River School**

Beach School focused on the natural science discipline, which characterizes the primary paradigm difference between the school and River School. River School maintained an integrative approach to the natural and social sciences. In turn, Beach School presented less evidence of social consciousness education. This emerged from the data which reflected the environmental values of the school, which focused on environmental awareness and care.

**Values at Beach School: General and Environmental Values.** At Beach School there was separation between general values that were presented in the school vision and other documents which were not directly related to EE programs, and environmental values which represented values for protection environment for its own sake, and values for protection environment for human being.

*General values* included development of students’ individuality and their social responsibility in a supportive school environment. As it emphasized in the educational vision of the school:

Beach School aspires to develop a person that believes in his ability to exercise control over his present and future according to his will, while also contributing to his society… as well as a person who learns something new every day about himself and about the world. This will happen in a caring environment that gives…belonging and acceptances, environment that enables individual freedom and social responsibility.

School values moved between the individual and social aspects, and between the personal and global dimensions. The mission statement emphasized knowledge (i.e., “a person who learns
everyday something new”), while not ignoring the feelings of the students and values such as belonging, acceptance and responsibility. Interestingly, the school vision included “social responsibility” which was presented separately and not emphasized as a part of environmental values.

**Environmental values: Awareness and taking care of the environment.**

*Environmental values* included two main values: *awareness* and *taking care of the environment* mainly focused on nature. These values represented protection of nature for its own sake as well as care for other human beings. *Value of awareness* was one of the main environmental values emphasized by most participants and the curriculum goals. The teachers wanted the students to be aware of environmental problems in diverse methods. As Ana mentioned, “When the students hear about animal extinction, their awareness is growing.” Being aware of animal extinction, and considering it as something about which students should care, represented the value of nature protection for its own sake, and not necessarily for human beings. The awareness value was also emphasized in the curriculum as one of the main goals of several programs. For example, in the GC program, one of the goals was to “raise awareness to prevent environmental hazards caused by individuals and society.” Another example that relates to awareness was demonstrated by the Beach School principal, Yura, who stated: “We want the students to love the environment and to know about the environment.” This is, as she explained later, “Part of being aware of the environment and protecting it for its own sake and not only for human beings”. Ana even said, “All what we want is awareness. We want the students to be aware of the damage we as human beings are contributing to the environment and to animal extinction.”

Often participants related to nature while talking about the environment. Usually they mentioned the ecological system of the sea. This could be explained by the uniqueness of the
school, which is an inquiry school of the sea. Consequently, most of the professional development programs emphasized the sea ecology. Therefore, most curriculum documents emphasized the sea environment, for example see Appendix P, in which the documents showcase parts of the third to sixth-grade inquiry program curricula emphasizing the sea (in Hebrew). The images focused on sea creatures and the curricula presented terms such as food chain, natural resources, pollution and its influence on sea creatures, etc. These examples could be seen as an example of the awareness of nature as the main value of Beach School, and the focus on scientific knowledge.

Value of taking care for the environment included several other values that related, such as engagement and nature protection that aggregated in data analysis. Taking care related mainly to the environment component, which participants emphasized; for example, Lola the vice principal stated, “We are creating in our students the care of and engagement for environmental issues.” Or as Yura, pointed out, “We are educating students to take care for the environment for a better quality of life.” This example represents value for human being and not only nature value. Dina presented another example for taking care for human being, “We have to take care for the environment for our children.” Taking care for the environment is a value that is more active than merely being aware of environmental degradation. It shows the emphasis on actions.

Social values were separated from environmental values. Due to the scientific approach of the school, its social values were reflected in the way that participants separated taking care for the environment from other values that relate to society in general. This reflects part of the separation between environment and society at Beach School. For example, the value of volunteering was mentioned by several participants as part of social values they wanted to implement in the school by encouraging students to volunteer, donate, and help communities that
needed support. However, volunteering was not considered to be an environmental value by participants, and they even mentioned occasionally as Ana said, “I do not think that the value of volunteering is related to environment or EE”. The sole example of a connection between donating and general pro-environmental behavior was the school’s week of donations for children in need. The program’s motto was “Why throw it away if you can share it?” However, this was an exception and not reflective of the school’s separation of social and environmental issues.

In conclusion, the two most important values of Beach School’s participants were: 1) *Being aware of the environmental crisis* (mainly related to biodiversity loss and ecological degradation), and 2) *Taking care of the environment to protect nature* for its own sake and for people today and for next generation. These values are aligned with the scientific approach of the school and the emphasis on inquiry-based learning around the sea.

**Social-Environmental Values at River School: Respect, Responsibility, Engagement, and Sense of Belonging.** At River School, the paradigm was different than at Beach School, which as a result influenced how the school’s culture, priorities, and pedagogies played out. River School integrated the natural and social sciences. Therefore, they did have evidence of social-consciousness education. Four main values emerged from the data, all of which are related to EE and to social issues: **respect** for the environment and for people, **responsibility** in personal behaviors and for the environment, **engagement**, and **sense of belonging**.

**Respect for the environment and for people** was mentioned by all participants, it is part of the curriculum, school vision, and even the students’ responses as they appear in lesson plans. **Respect** related to the environment, to each other, and to people and society in general. **Respect** was considered a sustainability value as noted by Yuli, the art teacher, “We educate the students
to respect the environment.” When asked what are they taking from school and applying to their life, several sixth grade students mentioned respect. Below is an example stated by one student:

In the school it is very important to respect each other, and the environment. Respect for living creatures and human beings. In my school life at River School respect was an important issue, and I’m sure it will help me later in my life.

Environment and society were given the same emphasis through the value of respect. This could be also seen in respect between teachers, which was being established as part of the school culture. For example, in the teachers’ break room, the teachers all decided to respect religious differences as well as vegetarian teachers. Subsequently, in the kitchen and whenever a meal was shared among teachers, it would be Kosher and vegetarian.

Responsibility was emphasized by River School as a general value for students’ behavior, and as an environmental value which emphasizes the need to take responsibility for the environment. As Gili described it, “Everything is part of the environment…therefore we need to take responsibility for the environment and the people.” The value of responsibility was emphasized on the individual level, class level, parental level, and community level.

Responsibility at the individual level was presented in the leadership of student groups. Both students and teachers were encouraged to take responsibility in participating or leading a group. These groups were responsible of activities in the school such as saving water, collecting bottles for recycling, running the meteorologist station, leading the photography group, etc. Each individual chooses to be their responsibility, and once chosen, they cannot leave the group for the entire year as a way to show commitment to the environment. As Dalia, pointed out, “The students need to be responsible for the environment, for the school, for everything.”

Furthermore, the responsibility to influence others such as students, parents, and the
community was part of the school and students’ jobs. In this way the value of being responsible was both being used as a general behavior as well as a way to be responsible for the environment. At the class level, every class had its own responsibility; for instance, first graders were responsible for the birds in the yard, second graders were responsible for the water, and so on. At the parental and community levels there were attempts to influence parents and the community to be responsible for the environment through their children and through activities of the school.

*Engagement* was also part of the norms being emphasized in the school and therefore it is presented later as part of norms variables.

*Sense of belonging* represents the importance of having a sense of place, which in turn develops into a sense of belonging. Learning outdoors in diverse places and with diverse methods was one ways of the school emphasized the value of *sense of belonging*. There was a whole program named ‘children’s sense of place’ that was implemented by all the school teachers during the ‘ecological morning’ program. Students were engaged in specific place, such as archeological site that was located next to the school, and encouraged to take care of this place as part of emphasizing this sense of belonging value. The value of *sense of belonging* was not only part of curriculum and EE programs, but also it was part of teachers’ activities such as an end of year event for the teachers, which took place in a local restaurant with local food, meeting people from community, and connecting to the place through the food, people, and environment. As Dalia emphasized:

We went to a nearby local restaurant… Then, we went to a local food market to smell and feel the community…the teachers organized this… I was so proud of them…the most exciting part was meeting a local Ethiopian woman that told us her story about
immigration to Israel…It was amazing tour after a year in which we taught about locality, sense of place, and sustainability…it was wonderful to see how teachers are leading our locality approach in the events of our daily lives.

This example reveals the importance Dalia, the principal, gave to sense of place.

In conclusion, *respect* and *responsibility* values at River school, integrated altruistic, biospheric, and egoistic values regarding the environment and society. The school’s values related to the environment were all integrated, and in turn the values of serving and respecting the environment, people, and society were not seen as separate values. The *sense of belonging value*, however, is important mainly from an egoistic standpoint, which emphasizes the need for people to feel they belong to a place in order to take care of this place environmentally and socially. A person belongs to a place due to their connections to its nature, environment, history, people, society, and in turn they contribute to this place. River School emphasized these four values as passive and active values. *Respect* and *sense of belonging* are passive values that represent a state of feelings and not necessarily being active. *Responsibility* and *engagement* are active values that represent the need to act.

**General and Environmental Beliefs at Beach School.** As with values, beliefs at Beach School were divided into two subcategories: general beliefs and environmental beliefs. General beliefs mainly emphasized the belief in education’s ability to create change. Dina’s words demonstrated this:

As long as we have more education about environmental crisis it will be more effective and students will be more aware of environmental problems and will take more actions… several students that care about the environment and could influence others, enlarge the circles of influence… This is the power of education.
Environmental beliefs were divided to several sub-subjects according to VBN theory: beliefs that relate to ecological worldview, beliefs that relate to advancing consequences for valuable objects, and beliefs about the human-environment relationship, its consequences, and the individual’s responsibility for taking corrective action.

Beliefs related to ecological worldviews were part of the natural-science approach of Beach School, and were demonstrated in the value of awareness of the environment, specifically nature and the marine ecological system. The main belief was that “natural resources are not unlimited,” which most of participants emphasized. This belief is important for behavioral changes because, as Ana said, “we are using the resources as if they are unlimited and we have to change this before the resources disappear.”

Beliefs related to the consequences for valuable objects related to the awareness of environment and nature: participants expressed fear of the consequences of the environmental crisis. As Ana pointed out, “I am personally afraid of the environmental crisis…I am worried about my kids…What kind of environment we are going to leave them…We have to think and act to keep the world and environment for the next generation…I believe we can do it.” Another example was presented by Dina who emphasized, “If we will not change our behavior towards the environment, it will be destroyed.” This belief is more complicated than the ecological worldview because it involves the concern for next generation and the consequences of our actions, which need to be changed.

Beliefs about the human-environment relationship, its consequences, and the individual’s responsibility for taking corrective action were demonstrated in the EE program curriculum, which stated the importance of “students’ understanding of relationship between people and environment.” This belief was also presented in statements about the phenomena of
consumerism. The consequences of consumerism as related to environment were emphasized by Ebi, for example, who stated, “We buy more, consume more, and this negatively influences the environment. We need to think about it, change our behavior, and protect the world.” The individual responsibility for taking corrective action was emphasized by several participants. For example, Lola stated that she “believe[s] in this way of life of recycling, taking care for the environment” and “believe[s] that this is the right way for taking action.” According to the EE program curriculum, “green consumerism leads to a better environment – less garbage, less pollution and an understanding of the relationship between society and environment.”

In conclusion, beliefs at Beach School were mainly related to the influence of education on students’ ecological worldview and beliefs about the human-environment relationship, focusing particularly on waste and consumer characteristics. Participants had knowledge about several environmental issues, mainly related to the ocean ecosystem and recycling, and they understood the consequences of these issues for themselves and their families.

**General Beliefs in Sustainability and Environmental Beliefs at River School as a Base for the Whole School Approach.** Beliefs at River School represented the integrative of scientific and social sciences paradigm. Therefore, they included general beliefs in sustainability and environmental beliefs related to the three parts of beliefs component mentioned above in Beach School.

**General beliefs relate to society and sustainability.** General beliefs relate to creating a better society through the idea of sustainability. For example, Dalia stated, “I believe in big dreams…there is a chance to influence society and have a better life in society.” Even students in River School have big dreams. For example, one student stated, “Using education will change the world to be a better place”. The school vision emphasized sustainability beliefs, and stated
We believe that the optimistic worldview of sustainability, which focuses on valuing respect of humankind and its freedom, through understanding that we all part of a net of life that empowers all creatures on earth to build a better sustainable society that is good to live in.

This idea of the importance of sustainability is also stated by Dalia: “I believe…that sustainability is the key for life in the present and the future.” This general belief in sustainability is important because it constructs the whole school approach. It is also includes the idea of school’s role to create better sustainable society, which could be interpreted as part of social change.

**Environmental beliefs that relate to an ecological worldview, and include people and the environment,** were demonstrated in most of River School’s activities, vision, curriculum, and interviews. The ecological worldview was presented as holistic and includes people and the environment. As Irit, vice principal, stated, “Environmental education teaches us reality.” There are several examples for this approach as presented in these quotes expressed by participants: “we must do something because there are fewer environmental resources in the world…We cannot ignore the environment because everything is related to the environment.” The ecological worldview was focused on the belief that people can and must do something to change the social-environmental crisis.

**Beliefs that relate to the advancing consequences for valuable objects** are connected to the students’ ability to create social-environmental change. **Beliefs of advancing valuable objects** were represented in the teachers’ beliefs that the students’ ability to make a difference and to create social-environmental change. For example, Gili stated, “I believe in the students to make a
difference in the future.” This belief was also part of the school vision: “We believe that in every person there is an ability to make a difference.” It was also presented in student responses. As one student responded, “I am taking from school the belief in my success… the magic of this school is that every teacher, especially the principal, believes in you and believes that you will succeed.” This feeling of the student demonstrates how teachers in this school implement the school vision of believing in students to make a difference. River School values environment and society and understands the consequences of human activities both on society and nature. Moreover, participants believed that students can make a difference and can create social and environmental change. Students felt these beliefs and consequently believe in their ability to create change.

The Beliefs about the human-environment relationship, its consequences, and the individual’s responsibility for taking corrective action were presented previously in other beliefs. The individual’s responsibility for taking action could be seen in an idea presented by Irit, “I believe that change is possible and influence is starting to work and making the circles bigger…the circles of influence are our hope for change in the environment and in society.” Students also presented their responsibility for taking corrective action and wrote after doing a campaign for recycling, “We felt we have power in our hands to change society and its behavior. We have the responsibility to take action and we will continue to do so.” This idea of influence was very strong in the school’s beliefs. For example, the students believe they can influence decision makers. As one student stated after meeting the mayor, “I believe I can influence the mayor. I believe he will listen to me”.

In conclusion, the beliefs at River School represent the integrative approach of the school between natural and social sciences and are part of an ecological worldview, related to the
advancing consequences for social and environmental entities, beliefs about human-environment relationships, and the individual’s responsibility for taking corrective actions, which includes influencing others and leading social and environmental change. Beliefs at River School can be identified as holistic and integrative as they viewed society and the environment as equally important.

**General Norms in School Life and Environmental Norm for Taking Action at Beach School.** As presented in the values and beliefs categories, the norms category at Beach school was also divided to general norms that relate to school life and environmental norm that relate to a sense of obligation to take pro-environmental actions, focusing on individual responsibility for taking corrective action. Yula, the principal presented several norms related to school management and operations such as, “When something is important, everyone in the school is involved and is part of the actions.” This idea demonstrates that all staff was part of EE approach and school activities. However, it did not seem to be the norm with all participants. Several participants emphasized that they are only partly involved in EE programs, as Efi explained “I’m not involved in EE since I’m a homeroom teacher and not a science teacher”. In other words, this can demonstrate that homeroom teacher was not as involved in EE. In reality, teachers were only partly demonstrated the sense of obligation to take pro-environmental actions. This is further discussed below regarding pro-environmental behaviors.

**Norms: Engagement in Environmental Aspects and Democratic Principles at River School.** Two main norms emerged from data analysis: engagement in environmental aspects and democratic principles. *Engagement in environmental aspects,* as presented in VBN theory, relates to the sense of obligation toward taking pro-environmental actions, including: *taking care* of the environment; being *responsible* for the environment; and *taking pro-environmental*
actions were part of the norms at River School. Taking care of the environment was emphasized often by participants. For example, as Tom stated:

The sustainable yard is a place that we take care not only for ourselves but also for birds, animals, and plants…I care for people, I care for the animals, I care for the environment.

This is the norm in school – taking care

The general norms of taking care, engagement, and responsibility were visible while watching the students going outdoors or out of school activities. For example, Gili described how the River School’s “students are differently behaved than other schools’ students.” While observing the students in outdoor activities, it was clear that the students are being outdoors often; their behavior was very calm, curious, without fear even when they found a scorpion and other insects. This is not a regular behavior for students in Israel who usually act nervously outdoors. Respect for the environment is the first step before taking care of it.

Respect and taking care were values that had become a norm at River School. This norm can be recognized in the absence of vandalism. As Yuli emphasized, “There is no vandalism in school. Students take care of all art projects and the museum they built in and out of school.” The norms of taking care and engagement were also emphasized by Gili, the science teacher, “Students take responsibility for the environment by themselves and they are accounting for their actions.” Irit pointed out that the personal responsibility and engagement of third grade students, “They keep track of the rain… [they are] being responsible for and taking care of the animal zoo during vacations, holiday, weekends”, were very important.

Democratic principles were another important norm in River School. The students had the opportunity to be engaged in democratic principles in several activities, such as leadership groups. As described by participants, “The students convince others to choose them for the group
to which they want elected; they hand out stickers and have a democratic election.” This example is further explained by Dalia, the principal:

There are 26 leadership groups that gave the students the opportunity for taking responsibility after they choose the group and explain why they fit the group. The students were elected on a democratic based election. Every leadership group usually chooses its action according to participants’ desires. The norm and atmosphere included the idea of students’ rights – they wanted to do it, and not only talk about it.

In conclusion, River School’s norm of being engaged, taking responsibility, and acting with democratic principles relate not only to environmental norms of behaviors but also to social and individual norms of behaviors. This was a part of the whole school approach. Furthermore, implementing democratic principles was considered to be part of the school’s approach to citizenship. Educating students to be responsible citizens is important because the most effective actions on the environment are the pro-environmental behaviors in the public sphere. Therefore, integrating democratic principles may also help to achieve this goal.

Values, beliefs, and norms at River School were well aligned, integrative, and holistic. Values of respect, responsible, engagement and the sense of belonging were part of the belief that the students can make necessary social and environmental changes through implementing these values, which also could be seen as part of the environmental norms being implied in the school.

**Pro-environmental Behaviors and Critical Citizenship: The Goal of EE**

Pro-environmental behaviors were mentioned in connection with the following activities in two sub categories: a) the private sphere: such as recycling, saving water and energy, green consumer, conserve bio-diversity, etc., and b) the public sphere: three sub-categories of
activism, namely taking care of a place, influencing decision makers, and critical citizenship.

**Pro-environmental Behaviors in the Private Sphere: Beach School and River School**

*Teachers as role model.* Teachers as role model was a concept based on the idea that pro-environmental behaviors are very important to enhance environmental behavioral change. Teachers as role models emphasized both at Beach School and River School, as Lola, the vice principal of Beach School noted:

> I need to be a role model for the students…I am doing exactly what I asked my students to do. For example, I bring my food in a container without plastic bags… The green council is leading pro-environmental behavior change, and they also feel they need to be role models for the rest of the school

Participants also emphasized their own pro-environmental behaviors at home and at school as models for the students in a variety of ways. For example, Lola saved energy at home, while Dina saved water at home and in school. The latter stated:

> I really enforce saving water at my home. I check with my kids that the tap is not on. I’m constantly thinking how to save water. If I see a fountain that is on at school, I immediately go to turn off the water.

Teachers expressed several pro-environmental behaviors as part of being role models for their students, such as bringing batteries from home to recycle. They recycled at home, mainly bottles. Teachers did not bring their sandwiches in a plastic bag, just as they asked their students to do. They also did not print unnecessary papers, and while printing, they printed on both sides of the paper. It seemed that they were doing whatever they expected their students to do.

At River School, teachers as role models not only in their personal behaviors but also in the way they led and influenced others. As Gili pointed out, “teachers…see themselves as a role
model during and after they leave school”. For example, several teachers who left River School led EE programs in their new place of work. This emphasized the role of the school culture in changing behaviors and influencing other communities. As Irit pointed out, “We are teaching our teachers to be leaders with the skills for teaching other teachers.” This leadership approach was not presented at the beginning of the school’s establishment. They learned with the school’s development and became role models for their students. Yael, fourth grade teacher, presented this idea:

My awareness wasn’t so strong in the beginning. When I started to teach in the school I got into sustainability and it influenced my behavior at home. This year I’m responsible of recycling milk containers… so I’m doing it also at home...My family started to call me a crazy environmentalist... However, gradually it also influenced members in my family.

Teachers’ role modeling was presented by diverse pro-environmental behaviors, most of them in the private sphere. The role modeling was emphasized by Irit words: “I have to be a role model. You need to do what you ask your students to do. I can’t educate them to recycle and then not do it myself at home.” A personal example was presented by the principal, who was building a house and implemented a water system to collect rain water. Role modeling for pro-environmental behavior was also integrated in the teachers’ room in the school. Teachers separated organic and other recyclable materials in the teachers’ room. The teachers’ room included only reusable utensils there were no plastic plates or cups.

Reuse, reduce, recycle, and green consumerism: The most emphasized pro-environmental behavior at both schools. Reuse, reduce, recycle and green consumerism were the most pro-environmental behavior emphasized at both schools. There were many examples of the above behaviors given by participants, emphasized in the curriculum, and seen through my
observations. The main activities of this subject at Beach School mentioned by participants were:
(a) Collecting deposit bottles for recycling; (b) using lunch boxes container instead of plastic bags; (c) reusing plastic bottles for drinking; (d) collecting electronics, including batteries, for recycling; (e) holidays with emphasis on pro-environmental behavior (for example, during Passover the students were asked to bring reusable plates, and non plastic utensils).

The recycling of bottles was easier to implement while the compost and the organic waste were more difficult to maintain as presented by Beach School teachers at their home and at school. For example, Lola explained, “I don’t separate the organic parts because it is disgusting.” Efi, offered another example: “We have a special trash can for organic waste at home, but we do not use it. It is uncomfortable.” While trying to receive the CGSC, Beach School implemented sorting trash into three parts, one of which was for compost. However, after one year they did not use it anymore. A student’s college that volunteered in the school tried to restart the compost project, but it did not last. One explanation for its failure could be the fact that the teachers themselves reported that they did not separate organic materials and did not compost in their own homes. It seems that teachers did not compost perhaps because of a discomfort with organic waste maintenance.

At River School, such as the case of Beach School, *Reuse, reduce, and recycle* were the most common pro-environmental behaviors mentioned by participants. The students collected bottles for deposits, sometimes paid for a show with bottles, bought things for the small animal zoo, etc. They were studying about recycling in the morning ecological sessions, and some participates in the leadership group were in charge of the recycling in school. Parents and the local community were involved in collecting bottles for deposit. They did it in more diverse ways than Beach School, for example, they also collected empty milk bottles, and other
Recycle, reuse and reduce is a principle being implemented in every area of school life, such as art projects; the yard (making compost); as part of the school’s regulation; in holidays such as Purim (students are using reusable materials for creating their costumes); and decorations for Sukkoth were also made from reusable materials.

**Green consumerism** at Beach School was emphasized in special events and the curriculum. For example, the school created a: “Take what you need, give what you can” event. In this event, students and their families brought whatever they did not need and took whatever they needed. In one case, the college students tried to take the students after school to a mall to teach them about green consumerism. This experience did not work out so well, as she explained, “the students wanted to go shopping instead of learn about green consumers.”

Although activities were made to create awareness of green consumerism, according to observations and interviews, this was not the main emphasis of Beach School.

At River School, on the other hand, **green consumerism** was an important part of reuse, reduce, and recycle behaviors. It was emphasized by the school in diverse ways and became part of the everyday life of the school. There was one leadership group that was focused on green consumerism. Dalia emphasized green consumerism in school daily management, especially regarding purchasing items for the school. For example, she said, “I’m looking for the cheapest screens for the school that will also last long…We ask the students not to buy expensive and unnecessary equipment for school.” The school also emphasized as part of green consumer approach simple birthday gifts and decorations.

**Saving energy and water** are pro-environmental behaviors which were not as emphasized as recycling. However there were examples presented by participants and documents related to this behavior. For example, as the vice principal of Beach School, Lola, shared, “We taught the
students how to save energy at home, teachers came in with electricity bills, and it worked. We were able to convince teachers, students, and their families to save energy and money.” In this example, money and not necessarily the environment, was the motivation for saving energy. Another example related to water saving was presented by Ebi, a fourth grade teacher at Beach School, “If I see a student turn on the water fountain and don’t drink water, I immediately tell them to save water and to turn it off.” This example emphasized this teacher’s interest and passion about saving water. However, saving energy and water was mentioned occasionally, and it was not the focus of school pro-environmental activities. Whether it was discussed mainly depended on teachers’ specific interest, and it did not interest all teachers, at least they did not present it.

At River School, on the other hand, *saving energy and water* symbolized environmental resources that the school identified as important to saving for environment and for people. *Saving water* was implemented in school life and in the curriculum much more than at Beach School. River School integrated a water system that collected rain in the winter, which was being used for the toilets. There was a leadership group that was in charge of the water system. They checked every day how much water had collected in the containers. According to this group’s assessment, the school decided whether to use rain water or tap water. In the toilet the water containers were clear to enable the students observe the type of water being used: rain or tap water (rain water is not as clear as tap water). On one occasion one of the students realized that there was more water consumption than usual. They invited the people in charge of water supply from municipality who checked and did not recognize any problem. Finally, they found that one of the hoses was broken. If the students were not aware of water consumption, a lot of water would have been wasted. As presented in the example above, students at River School were well
aware of the need of water saving. As Yael pointed out, “When the tap is not turned off all the way, the students come to me and say: ‘The tap was dripping and we turned off the water.” This example differs from the case of Beach School because students reported open taps water at River School, while at Beach School, the teachers needed to remind students not to waste water. The curriculum at River School also emphasized saving water which was also integrated in an art projects. The art teacher, Yuli, for example, designed with the students a Japanese garden, and she described it:

The Japanese garden is giving a solution for the water problem in Israel because this garden does not need water… The garden is made out of pebbles, rock, and fence…The rock symbolizes mountain, the pebbles around it symbolize a lake, and the field is the small pebbles… The garden fits its surrounding and creates calmness and peacefulness.

Energy saving was mainly emphasized in science and was not as strong as recycling or saving water at River School. For example, the students built house models that needed to demonstrate energy saving. This project was based on problem-based learning, and the students were involved in finding solutions for insulation. Parents were also involved in this project, which helped to create meaningful learning process. As Gili, science teacher at River School, pointed out, “Students that were involved in this project will never forget the idea of insulation materials and saving energy.”

In conclusion, as in the case with recycling (but to a lesser extent), saving water was getting a lot of attention in River School’s programs, everyday behaviors, leadership groups, design, and art. All of these activities reflected the importance of this subject to the school. Saving energy, however, was not getting the same emphasis. It was a minor subject that was discussed from time to time according to the science curriculum.
Conserve bio-diversity. Conserve bio-diversity was an issue getting a lot of attention in both schools. At Beach School, students understood the problem with throwing plastic bags to the sea because animals such as turtles can die from swallowing them. The students saw a dead turtle in one of their outdoor activities on the beach. They expressed a lot of care, wanted to help and figure out what they could do to save other turtles. Ana, fifth grade teacher at Beach School discussed this occasion:

We went to the beach to fly kites that we made. Beforehand, we taught students about the danger of throwing plastic bags into the sea because animals may swallow them and die. Despite the fact we explained the students that the kites are made out of rice paper and they will decompose fast, before the animals will get it, the students shouted when the kites fell into the sea ‘Ana, No! The turtles will die’. This shows how the program has influenced the students.

Ana was very engaged in conserving nature and animals, as she stated “I will do my best to raise awareness of saving sea animals. I will teach about it and influence my surrounding,” so it is not surprising that her students were aware of the problem, and wanted to protect nature and animals. This idea of protecting nature was also emphasized by Ebi, Beach School fourth grade teacher, who pointed out: “Students do not pick flowers. They know that they need to conserve and protect nature.” The Beach School curriculum was packed with bio-diversity conservation exercises, stories, and scientific knowledge about sea pollution and ecological damage. In this pro-environmental behavior sub-category, the students cannot do many things. They mainly could be aware of the problem and have knowledge about it. Only on rare occasions can the students actually do something about protecting nature, such as keeping plastic bags out of the sea in order to protect marine life.
At River School Conserve bio-diversity was part of the school’s regular activities, which included three leadership groups involving in the subject. One group was in charge of the winter puddle created by students for learning purposes and for conserving biodiversity. The puddle received water only from the rain and depended on local weather. The second group was in charge of the pond that they created in the yard. The pond was full with water all year long with an electronic system that provided enough oxygen for the water and circulated the water. The last leadership group was responsible for the small animal zoo in the schoolyard which included goats, chickens, rabbits, and some other animals. Biodiversity was also emphasized in other school activities such as going outside to take care of a site. It was also part of the first and the second graders’ responsibility in the yard. They were responsible for giving bread to the natural animals and pouring water in a special container for birds. During one of the special environmental events, the students sold a plant field guide that they made to protect the natural plants in the area. In the same event, they also created with the public a bird feeder made out of pinecone and seeds, which emphasized the need to protect and conserve bio-diversity.

In conclusion, it seems that biodiversity was well integrated in both schools. At River School, it was not as emphasized by participants during interviews as recycling was, which can be explained by the fact that the school started with outdoor activities and biodiversity conservation. Later on, the school integrated environmental aspects, which they wanted to emphasize in order to further develop the school’s engagement with this topic area. Despite the fact that biodiversity was mentioned less in the interviews and was not explicitly part of the official, public-facing curriculum, it seems that it was an important part of school life and its culture through the implicit, day-to-day curriculum of outdoor activities and leadership groups.
Leadership and influence parent and community. Leadership and influence category includes two main sub-categories: influencing parents and influencing community. At River School Leadership and influence the community was one of the school missions. It was emphasized in the vision, goals, curriculum, and activities of the school. All students had the opportunity to guide and develop their leadership skills. The school also encouraged leadership activities from parents. In the city council meeting for example, often parents of school students or alumni were taking part. As Dalia the principal stated, “It is amazing to see how many parents from school are involved in environmental activities in the city.” At Beach School, on the other hand, leadership and influence was small part of school’s activities, and mainly emphasized at the GC leadership group.

Teachers at Beach School were influencing parents through students. Teachers gave many examples how they influenced parents. For example Dina demonstrated that one of her students told her about “influencing his father not to throw nuts and seeds on the ground in a soccer game. Instead, they are bringing a trash bag and collect the trash.” This seems to be small, but actually it is a big influence since throwing seeds on the ground in a soccer game in stadium for example, is part of the Israeli culture. If teachers are being able to change this culture maybe they will be able to change other behaviors, too. In general participants were saying that they hear from parents that students bring home pro-environmental behavior and it does influence.

At River School, Influencing parents was getting a lot of attention. Parents were fully involved in school activities and they actually changed their behavior. For example, Gili stated, “One of the parents came to me and told me that he can’t live anymore because he can’t smoke next to his child.” This example shows how much influence the students have on their parents and it was only small part of a science lesson about the respiratory system. As Yael described, “I
can see how it influenced the parents. For example, they are going for a picnic in the woods, which they didn’t do before, and collecting all the trash afterwards, which wasn’t the case before.” Irit offers another example, “One student is trying to convince his mom to save water and to implement a rain collection system like the school has… People are bringing bottles for recycling even during vacations because they understand we use it for the small animal zoo.” These examples demonstrate the influence students have on their parents.

_influencing community_ at Beach School was only observed once, shared by Lola. One of the restaurants used to throw its trash into holes in the streets. Lola stated:

I took the Green Council to check if they think that this was a hazardous problem that we should change. Together we figured out the problem and who could help us to solve it. We decided to work with the local community, the municipality, and the ministry of health. We took pictures, sent letters, and invited representatives of each group for a meeting. We decided to create a community garden to build the relationship between the local community and the school. The culture here is not of this type; we built the garden but people from the community destroyed it over and over again. We tried to invite them to join, but it didn’t work… In the end they stopped doing that… Eventually, we solved the problem of the trash in the holes of the street.

This is an example of citizenship involving the local community. However, Lola and the GC students are the only ones that mentioned this story. It was a rare example of Beach School activities.

At River School, on the other hand, _influencing community_ was occurring in diverse ways on a daily basis. For example, the ‘sequence for nature’ program the fifth graders were teaching the kindergarten students about waste, recycling, and bio-diversity. In the end of this process one
of the kindergartens teachers decided to become a green pre-school, awarded by the Ministry of Education and Environmental Ministry. This program was also presented by Gili: “After the ‘sequence for nature’ program, parents of the kindergarten students separate organic waste, bottles, and other materials…Participants who have gardens use the organic trash for creating compost and use it in the garden.” This shows that the school is influencing not only bottle recycling but also trash separation of organic and other materials and creating compost. Another example of influencing community was given by Yael, “We wanted to raise awareness to the need of bottle recycling and saving water. With one of the leadership group we went to the mall and explained to people the importance of recycling and saving water.” The students summarized their experience by saying “We enjoyed our ability to influence the community.” Influencing the community was part of many River School’s activities.

Another example of influencing the community was the fact that people from the community were “bringing diverse things for school such as bags with bread for the animals.” Other people were bringing unneeded items to the school. As Dalia summarized, “We became a transfer station, a recycling station without the resources to do that. But I never say no to people. I explain, and if I can, I collect the stuff such as televisions, computers, books, etc.” The ecological community center (ECC) developed in the school as part of the ISfS was also influencing community by giving lectures on such topic as saving water. As an innovative school, River School was dedicated to influence others. Because one of their missions was to influence the community they conducted tours of the school. Therefore, many visitors came to River School and the students guided them, usually in the ecological yard, and explained about sustainable activities in school. For illustration, some examples of international and Israeli visitors which visit the school in the past five years are presented (see Appendix Q).
In conclusion, influencing parents and the community was an important mission for River School, as part of the implicit and explicit curriculum. Teachers, students, leadership groups, regular curriculum programs, special EE events, and visitors to the school were all part of the way to achieve this goal. Influencing was implemented in the school’s daily management. Consequently, many events occurred almost every day all year long. Dalia’s statement may be seen as conclusion, “Our influence is starting from a drop, and then another drop. You start from nothing, but once you are doing things to change society and the environment, it’s as if you get this virus and get others infected by the same virus.”

The leadership model in both schools was based on the approach of leadership for and to the community, and not leadership with and from the community. This means that the leadership models the students learned try to change people rather than engage with people. The schools declared that they wanted to change the community through the children. This leadership approach may have led to the lack of a critical citizenship approach in both schools. Critical citizenship requires a leadership approach that comes from the community.

**Pro-environmental Behaviors in the Public Sphere: Critical Citizenship, Active Citizenship, and Activism at River School and Beach School**

*The critical citizenship* approach, which can be seen as a part of pro-environmental behavior, was not fully integrated at River School, as shown in the CC analysis (see Appendix R). Therefore, *active citizenship*, which emphasizes the civic education approach to citizenship, without the critical approach component, is being used for this analysis. *Active citizenship* at River School was well established and emerged from all data sources. The school was educating for citizenship, as Yael explained, “We encourage the students for citizenship. We encourage them to be responsible not only for their own belongings and tasks but also for the school.”
Another example is presented in the experiments documents:

Our education goals are to educate for civic responsibility and ecological leadership in the city; being aware of social and environmental values demonstrated by taking public responsibility; to connect between school, community, and place…we would like to encourage citizenship and activism.

As discussed before, the importance of role modeling was also important for educating for citizenship. Dalia was a role model in the school in her own behavior such as counting deposit bottles and taking care of them, taking the empty milk bottles to the post office in her private car, and bringing old items to the exhibition presented in the school. She also volunteered in the city council in the education, restoration, and the environmental committees.

Activism is part of active citizenship. When the school identified environmental problem they encouraged the student to act to solve the problem: write letters, meet decision makers, write petitions, and be involved. For example, the school was working in the nearby river in a longitudinal project for many years. One day, the mayor decided to create a tunnel inside the river and to construct a promenade along the river. The school created a campaign against this activity, planning, and design. The students wrote letters to the municipality, the Society for the Protection of Nature, and the Ministry of Environment. However, as Dalia stated, “In the middle of the night the municipality put concrete inside the river…we were very upset.” But there was nothing really left that they could do, as Irit pointed out, “The campaign on the river was very powerful. All students participated. The students wrote letters, and we went out to the river. We tried as much as we could to protect the river… When there was nothing to do anymore, we collected flowers that otherwise would be destroyed and saved the natural flowers.”

Activism was part of the curriculum and being emphasized in the innovation document.
goals of River School which stated, “Educate students to be engaged, to influence, to encourage activism, and to have an obligation for social environmental citizenship”. Participants also emphasized activism, such as Gili statement, “Students want to do more for the environment and get tools and skills to be more active.” Activism was also part of parents’ citizenship, such as Yael stated, “due to school activities parents tend to be more responsible citizens and are more involved in activism such as reporting running water in the street, taking care of environmental hazards, etc.”

The influence of the school on students’ activism could be considered as a success when students independently take action outside of River School. An example of student’s activism occurred when “one student saw a car dumping waste in the woods. He got angry and took a picture of the car, sent it to the municipality, and wrote a letter because he wanted to prevent this illegal activity.” This example shows that activism becomes a way of life, and the school culture influenced life outside of its walls. I observed another example of activism outside of school boundaries in one of the environmental activities in the woods. Students presented their actions to protect nature and the woods in front of the mayor, educational city manager, and other community members that came to participate in the environmental event. The school principal and the students were eager to explain and convince decision makers that their environmental protection of nature (activism) was important for nature and for people.

At Beach School, Activism as part of citizenship did not get strong emphasis, except the principal and the vice principal who mentioned it occasionally. It was mentioned a few times in curricular documents and was not observed at all. Instead, participants spoke about activism mainly by the GC, as Lola described it:

The GC goes every month and finds hazards that need to be changed. They inform the
right people that are in charge of taking care of the issue. The GC does not stop until they see the issue is being solved... For example, one day they found sewage running on the street. They entered a store that was near the sewage. The lady in the store told them she tried to solve the problem, but no one listened to her... We sent a letter to the Health Department in the municipality, which wanted to help... After a while we came back to check the place and it was clean... The lady in the store was grateful.

Generally, however, activism at Beach School was mainly mentioned as cleaning the beach. In one example, Dina discussed how several students clean the schoolyard at every recess. However, as she explained, “most of the students do not like cleaning because they feel as if they are being used.” Activism is usually not an integral part of a scientific approach, which might explain why it was used slightly less and received less emphasis at Beach School.

*Taking care of a place* is a part of activism at both schools in all grade levels. River School encouraged students to be involved in several places under the school’s care, such as archeological sites. River School had worked at its main site for about ten years and did diverse activities such as creating explanatory signs; building a path and keeping the path clear to prevent people from walking on plants and flowers and thus protecting nature; guiding bird tours in the site on weekends; and asking the authorities to introduce cattle to reduce the overgrowth of vegetation and prevent fire. In the past two years the outdoor learning area served as a place for the first and second graders to go weekly for several hours to learn and take care of the site. Another big archeological site was adapted by the older students, fifth and sixth graders, where they created a path in the site and learned about the area. In this event, I observed the enthusiasm of the teachers, parents, principal and students to create the path. It was a sunny, hot day, and the students worked very hard to collect stones and create the path. They were very proud by the end
of the day when they created a path that surrounded the archeological site.

Most participants at Beach School mentioned the beach near the school as a place they are taking care of. The relationship with the beach was expressed in two main dimensions. First, students were cleaning the beach from all grade levels, two to three times a year. Second, students studied the beach, created an inquiry learning process, and consequently, connected emotionally to the beach as part of a sense of place pedagogy. Participants saw this as an active way of adopting the beach. One of the problems with this activity was that sometimes students were angry because they were cleaning while other people were littering. Another problem rose with students that did not want to clean and got the permission from their parents not to participate in the activity. This emphasized the problematic situation in which cleaning the beach was the main way they engaged in taking care of the place. In the complex social and environmental reality of Israel and of the world, it is probably not enough only to clean the beach to help the environment. This was especially true when many students perceived cleaning negatively, which did not promote pro-environmental behavior but instead developed unfavorable feelings toward the beach and the activity. In turn, it seems that schools that emphasize being a role model for its students should choose a variety of pro-environmental behaviors to align with their environmental values but also to meet the interests of students.

The relationship between school and decision makers. The relationship between River School and decision makers were explicitly presented in diverse ways. At River School, influencing decision makers was a component of engaged citizenship, as all participants in the study emphasized. There were several examples of the relationship between the school and decision makers. The school’s most common action in this arena was to write letters followed by empowering students to be engaged and motivated to be active citizens, when they got answers.
Another example was the relationship with the municipality. Every year the fourth grade went to the municipality and met with diverse people. The students learned about the city and how they could influence the municipality. They were very excited to meet the mayor. As Tom, a sixth grade teacher described it:

The students met the mayor, and they were very excited. They asked him several questions. When they meet the mayor it is as if they met the prime minister. One student even asked him what is going to be with open spaces with the new building in the city.

The students had opportunities to meet the mayor not only at fourth grade. They also met the mayor in the school and in environmental events in the woods. When the students met the mayor or other decision makers it empowered them. As Dalia pointed out “the students are so excited to meet important people…They are not used to meeting these people…They understand that they got a present that they wouldn’t have received in any other place.” Dalia made efforts to allow the students to meet the mayor. “It makes a positive impression on the students” and they said, “We think we have the power to influence the mayor.”

Dalia was well aware of the importance of relationships with decision makers. In one of the observations in an EE event, a group of decision makers from the prime minister ministry happened to tour the area. She approached them to explain about school. Dalia, in several occasions emphasized, “We have a great relationship with the municipality. The mayor sends everyone that wants to do something in the city related to sustainability first to River School to talk to me and asking me what I think about it.” The importance of a relationship with decision makers can also be seen in Dalia’s office which includes many pictures with ministers that the students met during the years in diverse projects. As Dalia expressed it, “All municipality departments know about us: education, chief-executive-officer, environmental department, and
others.” Most volunteers were parents of alumni of the school. They even have one alumnus that
was part of the municipality advocating for environmental issues. The relationship between the
school and municipality could be seen in the community event as part of the ECC. For example,
the person that was leading the environmental subject in the municipality participated in several
events and was interested in how she could implement environmental ideas in projects the
municipality is leading.

In conclusion, pro-environmental behaviors in the public sphere at River School were
well established: being active citizens, writing letters, encouraging activism, giving opportunities
for meeting decision makers – all of which empower the students and develop their citizenship
skills. However, the critical approach was less integrated in the school. The willingness to create
social change was only related to environmental issues, and not being developed as part of bigger
social change.

Students at Beach School, mainly the GC, write letters to decision makers about
environmental problems that they find. The students do not usually meet with decision makers.
All participants emphasized that there is no need to meet decision makers. According to
participants it is enough to write letters and to get answers. Dina explained:

We have a GC which finds problems in the environment and they send letters to decision
makers, they usually get answers. They even sent a letter to the prime minister and got an
answer. This is not the job of other students.

Another example, which was not typical for the school, related to citizenship and the relationship
with decision makers was expressed by Yura:

We had a project with a small group of students. They went to the beach… they were
learning about future planning for the area that was meant to be closed for hotels... The
students were terrified by the idea that this amazing beach would not be open for the public. They…decided to do something about it. They wrote a petition to the mayor… a small group of students were invited to meet the mayor, who promised them not to build anything on the specific beach. Until today no one has built anything, but you can never know what will happen.

This example emphasized the educational potential that exists in being active citizens. However, these were very rare examples at Beach School of which only the principal and vice principal were aware. Another example, which represents the idea of critical citizenship, was the example of the Rio Hunger Dilemma presented in a curriculum PowerPoint presentation titled *Educate for activism as part of curriculum: Dilemma Rio*. In this document it was written:

What can we do about the dilemma of hunger? Is it the students’ job to be engaged and make the change or is it decision-makers role? It is the role of students as citizens to be engaged and make change [the students wrote a letter to the prime minister, created a lecture about the dilemma, and got an answer from him]. [Another group claimed:] It is not the students’ job, but decision makers. In conclusion citizens will encourage decision makers to take care of the problem until it disappears. This panel was presented by the Minister of Environment in Rio summit.

In conclusion, at Beach School, these were the only examples of meeting with decision makers. The meeting included a small group of students, with one teacher. These activities did not continue. As with the activism theme, the relationship with decision makers was not emphasized in the school, and when it did happen it was only a small group of students that were being engaged.
Social Complexities at River School and Beach School

To better understand teachers’ perceptions about EE’s role in fostering citizenship for a more just and equitable society, I analyzed and presented both schools’ relationship with social aspects of EE and discussed the analysis of teachers’ understandings of EE’s role in fostering citizenship. In the upcoming sections, social issues and complexities are discussed according to community, and social-environmental relations according to teachers’ perceptions.

Social, Community and EE as Part of a Whole School Approach: River School.

Social, community and EE was part of the whole school approach at River School which connected community and EE frequently. For example, one of River School’s goals was ‘to influence community to create a sustainable society that integrates pro-environmental behaviors as part of their culture.’ According to River School’s approach to community, EE was a connector between society and environment through the connection between the school and its community. In order to achieve the goal of influencing community, River School employed diverse actions. First, the school learned about the local community. After the school was established as an integrated community made from new and old neighborhoods, to better understand local culture and community, the school principal, Dalia, learned about the neighborhood and wrote a book about the culture and uniqueness of the place. Second, to present and restore local community roots and culture, River School developed and designed a cultural-historical museum at school (see images in Appendix Q). Third, after learning about the community’s culture, several years later, the ECC was established to influence the community. In this center there were lectures about environmental issues. The lectures were free of charge and attended by students’ parents, local decision makers, and other community members. The activities in the centre were led by volunteers from the community along with Dalia, the
principal. In 2015, the center had four lectures included 80 participants and a botanical course which included twenty participants from the community. The fourth action the school employed was adding an emphasis on community as part of its curriculum. The students were required to interview their parents and local people to get a better understanding about their community and to create a sense of place and a sense of belonging (see Appendix S for the social emphasis development process). The importance of the relationship between the school and the local community could be seen among parents and alumni involvement, engagement and participation. Alumni were part of the school on many occasions. For example, during one of my observations, they came to guide tours in the woods. They also came back to school to play in the orchestra or to help in environmental events. It could be seen from my observations that the school is very important to them.

Parents’ engagement was an important part of the school mission. The school acknowledged that parents’ involvement was crucial for influencing society to adopt an ecological culture. In the innovative school’s goals it was written, ‘Parents’ involvement in the program will be encouraged by going on tours together, attending lectures, encouraging parents with environment expertise to be involved, inform, and participate in ecological activities.’ Parents’ engagement in school life emerged from interviews and researches made by two teachers from the school, Gili and Yael. According to Gili, “parents of kindergarten students said that they were much more involved in activities related to the environment than they were before the program.”

Social and environmental aspects were part of the school vision which emphasized the relationship between the environment, society, and economy. This approach was emphasized by participants. For example Eli, in her Green Consumer Program, pointed out, ‘Students need to be
aware of prices and advertisement. This is part of green consumer.’ Social and environmental issues were also part of the curriculum. For example open space, which was part of the ‘Ecological Morning’ program, emphasized the economic aspects of open space such as the price of using open space, who can use open space? How should we deal with this problem?

According to Yael, “parents see the school as a social change agent.”

*Social justice* was discussed at River School as part of Israeli’s reality. However, usually the discussions were based on events that were far from school and did not represent immediate local issues. There was no discussion about social justice in the city in which they lived. For example, the issue of the ecological disaster occurred in the south of Israel in 2015 was discussed in the context of social justice. Students explored why rich and powerful people did not feel the need to reveal important information, and why the citizens had to pay for the crisis. This could be explained by an observation of Irit, who acknowledged the differences between social justice and environmental justice, and the way the school needs to deal with these issues:

Social justice is a judgmental point of view. Things that are good for one person are not necessarily good for others…we still have a way to go towards dealing with social justice issues…We need to figure out how to deal with it, because sustainability is not about only nature resources, but also social resources.

Participants at River School were well aware of the relationship between social and environmental issues. For example, Yael emphasized connections between EE and social justice: “In EE, when you educate for citizenship and social balance, you are educating for a type of justice, for an equality that we need to have in society.” Irit, preferred to relate to environmental justice, rather than social justice. As she explained:

We are educating students to use critical thinking, we are listening to all aspects of the
issues and we judge according to the situation. We do have values that lead us, such as the common place idea… we are leading to this place, and usually we will find environmental justice there… I am more confidence about environmental justice… I am not so sure about social justice… maybe we need to develop more in this direction.

Irit’s perspective about environmental justice and social justice summarizes very well the situation of the school. River School claimed that it wanted to create social change and it worked towards influencing the community in diverse ways and methods to create sustainable society. The integration of environmental and social subjects was apparent at River School, and therefore fostered social and environmental consciousness simultaneously. The integration of EE and social consciousness together are mutually supportive and may help students develop critical citizenship. However, without directly dealing with social justice issues, as occurred at River School, the subject will keep students from engaging those issues, and will not create the real change society needs.

**Social, Local Community, the Arabs, and EE: Beach School.** Social complexities at Beach School were closely related to the Arab community in the mixed Arab-Jewish city, and in the school’s neighborhood. These complexities were related to the following factors: beliefs about Arabs; interactions with Arab community; fear and resistance to including Arabs; the Arab-Jewish conflict; and the city-led Jewish-Arab program. These factors are discussed below.

**Beliefs about Arabs.** The beliefs about Arabs at Beach School stems from the Israeli-Arab conflict in general and the experiences with the community that surrounded the school in particular. The community at Beach School can be divided into two populations: the local community that lived near the school and the community that participated in school (school community). As discussed before, the school community was mainly Jewish and separate from
the predominantly Arab local community living near the school. School community was different than the local community, not only by religion, but also by educational and environmental behaviors. According to participants, the community near the school, the Arabs, did not care about the environment and did not keep the neighborhood’s environment and the nearby beach clean. As Efi, sixth grade teacher, pointed out:

The community here does not care for the environment, which makes me so sorry. We can see here many hazards around the school. The community near us, the Arabs, does not throw the trash in the right place—in the trash can—but instead in the streets. Even on the beach litter is everywhere and it is not nice.

Ana added that near the school, there was a lot of litter in the streets and said, “In our school area you will see litter everywhere. The people are not aware and they don’t care.” It seems that the participants’ assumptions that the Arab community “doesn’t care”—especially in light of the racial divide present in the area of the school, and in light of participants’ hidden perspectives toward Arabs—may have hid more negative assumptions about Arabs and the Arab community that they did not explicitly discuss. The participants’ beliefs, biases, and prejudices toward Arabs might explain the implicit curriculum in the school’s EE, which excluded Arab perspectives or experiences and ignored social complexities related to the Arab community and Arab-Jewish relations. This might also explain why despite the litter and environmental hazards surrounding the school, there was no big effort by the school to influence their Arab neighbors and to create change. It seems that the school was implicitly ignoring its surroundings both socially and environmentally which was demonstrated with the lack of information about Arab perspectives, Arab-Jewish relations, or any social problems in the EE curriculum.

It seems that Beach School preferred to clean the beach and develop its EE activities...
along the beach, rather than act in its surrounded neighborhood. This may be part of the implicit curriculum which may prefer not to deal with the Arab-Jewish conflict. This may also reflect the scientific approach of EE at River School, for which the beach created more opportunities for science activities than the nearby neighborhood.

**Interaction with Arab community.** Interaction with Arab community is important, especially because of the Arabs living near the school. Despite the fact that Beach School is a Jewish school located in an Arab neighborhood, there was no relationship with the community or inclusion of social justice ideas in the school curriculum or values related to the local community as part of the EE program. It seems that an equitable society is not part of the school and participants’ agenda. EE remains in the science pedagogical approach, emphasizing inquiry learning without combining social aspects, which I did not expect. These findings may be explained by the location of the school in a mixed Arab-Jewish city, in dominantly Arabs neighborhood. It may be difficult to create connections with a community that may differ culturally from the school and expressed hate and violence to students, as pointed out by Efi, “Students rarely walk to school due to Arab attacks in the area. Most of the students come by bus or are driven by their parents.” There are hardly any interactions with the Arab neighbors.

**Fear and resistance to including Arabs.** Fear and resistance to including Arabs could be another explanation for these findings. The school’s participants and families may lean right politically, and therefore, they would not want to find solutions that could foster social equality for the Arab community. They would like to be a school with high achievement standards and they may have felt that Arabs would not help achieve this mission, especially the low-SES community that lived by the school. Participants would not directly state it. However their body language, such as moving uncomfortably on the chair, or whispering, during interviews while
mentioning the Arabs in the neighborhood may explain their perspectives on the issue. Further discussion on this issue will be presented later in this chapter.

Consequently, it seems as if Beach School tried to avoid dealing with social issues, especially the ones that related to Arabs. Specifically, participants at Beach School did not perceive social issues as part of the environment; they were presented separately from EE. In the explicit curriculum, the school presented many examples about how human beings cause sea pollution and damage to animals. In the hidden curriculum, however, teachers and the school did not connect environmental problems to social problems and instead, implicitly, these topics were presented as if they were outside of students’ everyday experience and their ability and responsibility to solve. Furthermore, social justice had not been the usual focus of the school. Several participants explained that the students are too young to deal with and understand social justice issues. Other participants did not “know how to explain what social justice means.” However, one example of grappling with social justice issues, as presented earlier, was emphasized by Lola, the vice principal:

We had a project named ‘From the Global Village to My Local Place.’ This project was presented in Rio. We chose world hunger as a subject. We saw that there is no social justice in the world. Then we checked the situation in Israel. The students realized that even in Israel there are hungry children.

This example reveals, again, how social justice’s role in EE is deliberately avoided due to the multiple factors at play at Beach School. If it was discussed, it was only with a small group of students—the GC—and framed as a distant or vague national problem, rather than a local one. Thus, they avoided dealing with the social justice issues and huge social gaps existing near the school. Nevertheless, there was hardly any other examples in the interviews besides the one
above that connects social justice and EE in school. Furthermore, this project was created when the school was in the process of receiving a CGSC. This process and its criteria probably influenced the school to engage with this subject. However, there is no evidence in the curriculum or in participants’ interviews of continuing these programs or ideas. On one occasion the curriculum included an environmental justice example. In this case, the sea and the beach are mentioned as places people could go even if they do not have money. This document is stated, ‘The beach should be for everyone and not only for rich people.’ This is almost the only occasion environmental justice was mentioned as being a component of social justice. It did not seem that participants use or mention this curriculum example.

**Arab-Jewish conflict.** The Arab-Jewish conflict—which dominates much of the social landscape of Israel—of course affected Israeli and Arab citizens, that make up Beach School and its surrounding community. Participants in the study usually mentioned Arabs without a positive connotation and implied them as the social problem. For example, Ana stated that Arabs litter more than Jews. She tried to explain this phenomenon and identified environmental understanding as the key to wanting to take care of the environment, “They [the Arabs] don’t care about the place because this is Israel and they don’t care about Israel. However, they don’t understand that we have only one world and it belongs to them and to us.” The relationship between the school and the local Israeli-Arab community was discussed by participants as a social problem for which the Arabs are at fault. For example, Ebi states: “There are Arabs that bother students and Jews.” Ana added, “I don’t tell the students what I think about Arabs. But, I think they do not care about the environment due to the Arab-Jew conflict.” Even the students raised the subject of Arabs and littering. Efi said that her students complained, “We cleaned the beach, and afterword the Arabs came and littered it again… I told them, I’m sure they also clean
the beach… [The students answered] It’s not true.” The teacher did not say anything to her students, while actually agrees with them. The student beach cleaning activity was part of the pro-environmental behavior promoted by the school. This involvement did not always elicit positive responses from students because they did not see any progress in the beach actually getting any cleaner. For these students, cleaning the beach may not have been the most effective way to act in light of the complex social problems they faced. The students felt that while they cleaned, the local Arab population continued to litter. Instead of empowering the students to take action, this activity may have contributed to a larger social problem by creating tension and misunderstanding between the two groups. Despite the complicated situation between Jews and Arabs in Israel in general and around Beach School in particular, and maybe because of the fear of Arabs, the school did not demonstrate real intentions of understanding Arabs and did not try to solve the tense relationship with the community in different ways. Instead, they chose to deal with the scientific knowledge of the sea, which may be an understandably simpler approach to take in such complex situation.

**Jewish-Arab program led by the city.** The Jewish-Arab Program led by the city was not helpful according to participants. Despite their separation of social issues and EE, the school was involved in a program led by the city to create a bridge between Arabs and Jews at the city level. In this program, Arab and Jewish students from diverse schools in the city (but not from the community around the school) met several times during the year. The goal of the project was to create co-existence in the city and create multicultural dialogue. Despite this Jewish-Arab program, participants did not relate it to EE. This may be explained due to how Beach School characterized EE, which emphasized EE as a science-focused strand of the curriculum and not as an integrated framework across it. This approach to EE was not an avenue for thinking about
community interactions the way an integration of the two (i.e., EE and social issues) could provide. Furthermore, participants mentioned the Jewish-Arab program as a negative experience. Dina explained, for example, “These Arab and Jewish programs are not working.” The principal, Yura, on the other hand did not mention this program at all. After the interviews and data analysis I reached her again to learn more about the program. Yura explained, “In the beginning it was a municipality program and we worked with one elementary Arab school in the city.” Even in this conversation Yura did not relate the Arab-Jews program to EE. It was, as other programs implemented at Beach School, viewed as a separate program.

In conclusion, since Beach School did not feel social complexities were related to EE and did not acknowledge that the integration of EE and social consciousness together are mutually supportive and help students develop critical citizenship. Consequently, they could not foster a more equitable society through EE programming. The difference in paradigms between Beach School and River School influenced the different schools’ cultures, priorities, and pedagogies as a result. Beach School focused on science while River School integrated natural and social science, which may have influenced the social-consciousness education of both schools. Beach School, as part of its science approach, had less evidence of social-consciousness education when compared to River School.

Furthermore, the overarching Arab-Jew reality in Israel has influenced the education system and these schools in particular. The fact that the two Jewish schools were situated in two different communities may majorly influence the different social approach of the schools. When the school location is in the middle of an Arab neighborhood (as was the case of Beach School), which causes individuals to grapple with the Arab-Jewish conflict on a daily basis, it can be a vastly different experience from those living in a predominantly Jewish city (as was the case of
River School), despite the fact that the predominantly Arab city is five-minute drive away. Therefore, physical place might influence schools’ approach to social issues, particularly the Arab-Jewish conflict, as part of EE.

Structures and Strategies to Promote Active Involvement: Research Question #2

What structures and strategies do teachers employ to create opportunities for active involvement as part of their approach to EE?

Answering research question 2 is based on two categories: 1) the strategies a school employs to create opportunities for active involvement as part of the approach to EE and 2) the structures teachers employ to create opportunities for active involvement. The strategy category focuses on school culture as one of the main sub-categories that express the strategies employed by the school for implementing EE and creating opportunities for active involvement. School culture includes: the uniqueness of the school and the way EE is expressed explicitly and implicitly in school life, school management approach, leadership, professional development and organizational involvement. The structure category is working to create opportunities for active involvement as part of their approach to EE includes four sub-categories: pedagogical approach, curriculum, experiential and outdoor learning, and knowledge construction approach. Not all sub-categories create opportunities for active involvement. However, all sub-categories help to get better understanding of the structures that are barriers to active involvement as well as structures that create opportunities for active involvement.

Strategies Employed by Beach School.

Commitment to the environment across the curriculum: School uniqueness and school culture. The commitment to the environment across the curriculum was strong in theory as reflected in Beach School documents, especially the EE curriculum. School uniqueness and
school culture were traits reflected in the participants at Beach School, who described the uniqueness of the school as a science-inquiry school. This uniqueness was part of the school paradigm which related to their commitment to the exact sciences (‘hard science’). It seems that the participants in the study attended to these school priorities because they interpreted a divide between the exact sciences (‘hard science’) and the ‘soft sciences’ such as social sciences (which may include topics related to social justice). The commitment to the environment across the curriculum was reflected in the principal and vice principal’s emphasis on sustainability and the environment as important components of school life. Other participants, however, did not emphasize this commitment nearly as much. Nevertheless, when I specifically asked participants, it was clear that Beach School had engaged in EE programs and had implemented diverse EE activities for many years. The uniqueness and focus of the school was best described by Yura, the principal (an image of the model presented at Appendix T):

Sustainability, science, technology in the ecological sea environment, based on inquiry learning approach is the school focus. The school is based on a model called relation (in Hebrew ‘YACHAS’). It is the individual’s relationship to each student and it is the place for each student to present his skills. We use ‘YACHAS’ as an abbreviation which is uniqueness, society, and environment (translated from Hebrew).

It seems that some of participants were very engaged, such as the vice principal and Ana, while some are not connected at all and hardly say anything about the environmental uniqueness of the school, or EE in general. This is in contrary to what the principal proclaimed:

All teachers are connected to the EE program in the school, not only homeroom teachers, but also expert teachers and the logistics staff of the school... All teachers in this school are speaking the same environmental language and want to participate in EE activities.
In other words the principal assumed or wanted to think that all her school teachers had motivation and engagement in EE programs and spoke the same language. Interestingly Lola, the vice principal, thought the same about the students and pointed out, “The students’ language is a sustainable language, they know what they are doing, and they talk in the same environmental language.” Contrary to the principal’s declarations, in the interviews several teachers pointed out that they are not engaged in EE program. For example, they made such statements as “Now I am a homeroom teacher so I am not as involved as other teachers” and “I am not engaged in the EE program.” Despite these contrasting perceptions about teachers’ engagement, there are some roots of change in the school around EE, such as the guard who volunteered to water the plants and who was also responsible for the recycle bins that located next to him.

As presented above, the environment across the curriculum existed implicitly and explicitly in the school, but it was not the main focus of it. For example, EE was mentioned in the school vision and educational perspective document not as the main focus of the school, but as part of four activities that made the school successful. These activities included: “being excellent in the values education program [not directly related to EE program], getting second place in the Israeli invention program as part of being an inquiry science school, and getting CGSC.” In the CGSC document, however, there was another vision statement of the school:

We believe that we need to educate for well-being and protect the local and global environment. We need to raise awareness and be active about the waste accumulation and treatment problem. We need to empower the school community and do more for the school environment. We need to address the needs in advancing environmental problems and integrate them everyday into school life.
This vision could partially be viewed in the school culture. However, this vision was not fully implemented in school’s everyday life as I observed. For example, the school possessed a composter but did not use it, did not make saving resources such as energy or water a part of its everyday behavioral culture, and I hardly observed green consumer saving materials, except for saving paper (which also saved money), and using lunch boxes and not plastic bags.

*The belief that the physical space reflects environmental values* was another characteristic that reflected the school’s EE culture, namely through the aesthetic of the walls, yard, and decorations in and outside of school. The school’s main focus was partially displayed on the entrance to the school both outside and inside. As I observed, outside was a hanging garden, due to lack of soil space for making a large open garden, and because they wanted to make the school entrance green and welcoming, the school, with help of a volunteer college student, decided to use the fence to hang white plastic containers with flowers and other plants (see image in Appendix U). The security guard, who sat next to the fence, tended and watered the garden. Indoors there was a corner with an aquarium, which reflected the school’s uniqueness. This corner was painted in blue and captured the unique atmosphere of the beach and offered visitors, teachers, and students a special feeling when entering the school. Besides these items, as well as two more trees made out of reusable materials and two screens in the corridor showing movies about the sea, the school in general looked and felt empty. The yard was made out of concrete and included only a small place for playing basketball or soccer, with hardly any shade, and a wooden outdoor classroom. The empty yard did not offer many opportunities for kids to explore or to play. The wooden outdoor classroom was hardly used due to its location in the sun, which made it very hot to sit. There was a small garden which was locked and students could not enter. The appearance of the school was implicitly neglects
environmental culture, since environmental culture is not only pro-environmental behavior, but also the school atmosphere and appearance.

**Pedagogy as related to the physical space of Beach school** was only partly used. The students wrote on notes, and hung them on reusable trees, what they would like to do for the environment. Other than that, in my observations, the physical environment was not used by students. During my observations I did not see students watching the movies played on the screens during recesses and during lessons or answering the worksheets that were part of the screen corners. When I asked participants about the screens, they confirmed that they hardly use those areas. The students worked in the physical space outside of the school, which enabled integrative learning at the beach. However, inside of the school the lack of use of the physical space suggests challenges for creating a truly integrative learning experience. According to teachers, “the approach to EE in school and the general esthetic appearance of the school EE is not yet a norm in school. Therefore, it is not part of the school culture yet.” The fact that EE was not consistently included in school life and culture could be interpreted as a barrier for creating opportunities for active involvement, because EE itself was only partially integrated into the school and active involvement requires teacher engagement.

**Management approach:** *Enhanced active involvement.* As part of the management approach, the principal enhanced the teachers’ *leadership* team. Lola, the vice principal, is an example of a leading teacher in the school, as she emphasized, “I am the leader of sustainability in the school, so I wanted all teachers in school to be part of the needed change. Slowly the teachers joined me and became a role model for the students.” However, according to observations and interviews, it seems that she was doing a lot by herself and the other teachers were not involved as much as she presented. Management and leadership are strategies the
school can employ to foster active involvement. Supporting leadership team was one step and professional development was another strategy to enhance EE and active involvement.

**Teachers as learners: Professional development.** Teachers as learners are an important way to promote the idea of sustainability. The action of learning and the awareness of constant change are important in creating better understanding of the environment and society. It is also important for the process of implementing EE. Professional development is one of the ways to develop teachers as learners, and was part of the Beach School principal’s acknowledgment of the importance for better implementing EE programs. Therefore, EE professional development was implemented for all teachers and was facilitated by the GN NGO. Participants, such as Ana, also acknowledged the importance of being involved in professional development, mainly for attaining more knowledge about the environment. She stated, “We are teaching our curriculum over and over again, but things are changing in the world… We need the knowledge about these changes. If we have better knowledge, we will be able to give our students more.” This example demonstrates the way participants’ role modeled for students.

The professional development also required teachers to investigate issues related to the sea. This is aligns with the uniqueness of the school of being inquiry school that focuses on the sea ecological environment. Professional development was another example of administrative support for teacher’s learning and the encouragement for implementing EE. However, fostering active involvement is based also on the professional development focus. At Beach School, the professional development program emphasized protecting sea ecosystems and to a lesser extent active involvement in environmental protection and hardly any dealt with social issues as part of environmental issues. Therefore, the professional development program did not fully seize the opportunity emphasizing active involvement. However, according to the school culture, it may
not have been ready for such an emphasis, and thus GN’s choice not to emphasize active engagement and social aspects may have been a wise decision.

Organization involvement of implementing EE successfully usually is based on school organizations and other resources that help schools to lead the change. Beach School was assisted by diverse organizations in the implementation of EE ideas. The Jewish National Fund (JNF), for example, helped the school in creating environmental activities during the holidays and donated the outdoor classroom for the school located in the yard. The GN, as mentioned above, has consulted for the school for many years. The person consulting the school was an ecological expert and EE advisor who led the professional development and helped the principal to better implement EE in school for the past seven years. There were other people and organizations that helped the school, such as a professional expert in inquiry learning, a special organization who taught the school how to grow algae and investigate it, specialists in environmental and sea pollution, a birds’ expert, and the Ministry of Environment and Ministry of Education. NGOs are potentially a good way to learn how to employ active involvement. There are some attempts that had emerged from the professional development led by the GN, such as dealing with social aspects and helping to create the integrative EE curriculum. However, not all organizations can contribute to active involvement.

Strategies Employed by River School

Commitment to environment across curriculum: School culture and school uniqueness.

Commitment to the environment across curriculum is manifested through the school’s culture and its sense of being “unique.” The uniqueness of River School relied on the fact that it was a sustainable school. River School has focused on the environment and has had a sustainability orientation which has grown and developed over the years. River School seems to have
integrated social sciences and the exact sciences to a greater extent than Beach School. The best example of the *sustainability uniqueness* of the school was presented in its vision:

We believe that the optimistic worldview of sustainability, which emphasizes the honor of a person and his/her freedom, through the understanding that we are all part of the life net that enable live for all the creatures on earth, which will be able to build a sustainable society that is good to live in.

In the last eight years, the school entered a unique program for innovative schools. As discussed before, its innovation was focusing on EE and ways to influence others’ environmental behaviors. Therefore, the school was making a lot of efforts to spread its knowledge and understanding among the local community, other schools in Israel, and worldwide. The school’s uniqueness is well known in Israel and many schools’ teachers, principals, and other groups were coming to visit and learn from the school (see in Appendix Q). The uniqueness of the school was emphasized by all participants, most of the documents, and in observations. Even students acknowledged the uniqueness of the school, as was expressed in an end-of-year activity: “the uniqueness of the school is being an ecological school that protects the environment”, “as alumni of the school I’m taking for my life the uniqueness of the school.”

School vision was sustainability oriented from a large perspective, including many humanistic values such as the importance of creating “dialogue in society, patience, and peace,” and respect for others, for the world, and for the environment. *School culture*, was explicitly presented and was very important to Dalia the principal as she pointed out:

School sustainability as a whole school approach could be seen in every aspect of the school. It is part of the organizational structure, the pedagogical approach, staff engagement, in the structural shape of school, in the way of life in the school, and it
empowered the teachers… When a teacher is part of sustainability approach, you will see it in all dimensions. You will recognize it in her behavior, in her teaching, in her outdoor teaching, in her searching for new ways to implement EE. We are living the idea of sustainability. This is part of school life…This is the school culture, it is not only me.

Part of school culture was the good rapport between teachers, the eagerness to help each other, and the cooperation between teachers. Every part of school life was seen as part of sustainability values according to the participants. The school culture was emphasized through teachers and students behavior, the aesthetic of the school and the yard, and every part and item related to school life. In the innovation documents of the school there was an emphasis on ecological culture, ecological leadership, aesthetic culture, public dialogue, ecological professional development, and parental engagement. The goal of the ECC as presented in the innovative school documents was:

We disseminate the ecological culture and develop the civic responsibility of the students and community. An ecological culture emerges from a long-term, future-oriented approach that considers social and environmental issues in a process to create a sustainable society…ecological culture is based on ecological thinking that destroys hierarchy structures, develops curriculum that connects different topics, enables integrative, multilevel programs, connects school, community and place, creates cooperation with different organizations…The center will encourage activism, community involvement, develop an equity approach through the understanding that the future belongs to all of us.

The goals presented above, emphasize the whole school approach, the idea of the relationship between social and environmental issues, and the need to be engaged and
responsible for the environment and society, which represented the school’s culture of sustainability. According to this finding, there is a difference between merely trying to influence the community and actually engaging with it to identify environmental issues and assess their impact. River School attempted to influence the community on one hand, but on the other, they involved the community in decisions about school life and did not only try to influence them.

**Management approach: Enhanced active involvement.** The management applied by Dalia in recent years was a firm but listening approach, which supported active participation of teachers. All participants expressed their feelings of being part of the process. As Irit, vice principal, described Dalia, “Dalia is the center of the school. She is like an octopus with many arms and everything is connected to the head in the center.” Even Dalia was saying that she learned over the years “to give the opportunity of participation to the teachers as well as be patient, wait, compromise, and not do everything in her own way.” Dalia was not only the center of the school, but also a role model in her own behavior as discussed above. Her simplicity but firmness guided the management line presented at the school. She did not compromise on aesthetics or pedagogical idea. The management approach included organizational change to enable better implementing of EE according to the vision and goals. Dalia added more hours, diverse ecological issues, and subjects in which the teachers were interested such as math, art, and language arts. She organized the school schedule in a way that groups will be able to go outside on a weekly basis, and every week there was an ecological lesson in which all school students and teachers participated in an integrated grade level. Dalia created work teams according to subject, interest, or grade level. These changes led the school’s teachers to “study the ecological subject and to be more involved.”
**Teachers as learners:** Professional development was part of the River School culture since 2000. Each year emphasizes a different aspect of sustainability. All of the teachers and staff were involved in the professional development which was employed by diverse experts. In the beginning the emphasis of professional development was on outdoor teaching and learning. Later, other subjects were implemented such as learning about the process of becoming an innovative school, sustainability, and pedagogy of place as part of place based education approach.

**Structures Employed by Teachers for Active Involvement – Beach School**

*The science-based pedagogical approach* being used at Beach School integrated general pedagogy and environmental pedagogy. The general education pedagogy was based on Learning Cycle Approach which is integrated and includes learning about learning and reflection processes (see Appendix V, which reveals that EE was based on learning cycles). At Beach School, which was located five minutes walking distance from the beach, the beach and sea were emphasized and they used the scientific approach to create their curriculum and to educate their students as presented in the curriculum. Knowledge about the sea and ecology were part of the EE program (see Appendix W for example of the EE program).

*Curriculum,* as part of its environmental pedagogical approach, was developed through special EE program which focused on science and the sea ecological environment. This special program was developed as part of the professional development with the GN. All teachers were involved in developing this interdisciplinary program. Several leading teachers developed teaching materials for diverse subject matters that were part of this integrative program (example of subjects included in the EE program: The Bible, literature, language art, geography, ecology, music, art, computers, and even cultural food related to the sea - see Appendix W). For example,
The Bible emphasized the sea, including its importance, and several biblical stories mention the sea. Additionally, there were songs, lyrics, mythology, and stories about the sea, and other courses focus on ecology, including topics related to bio-diversity, pollution, and the need to protect the sea environment. There were lesson plans, worksheets, and explanations for the teachers and the students. The curriculum incorporated diverse subject matters to create an integrative approach. Despite this integrative EE program, most participants did not emphasize the integrative and holistic aspects of EE.

The hidden curriculum seemed to avoid social issues related to social justice, environmental justice, and the relations between these two. This may reflect the system-level inequities, since the avoidance of social issues—especially the Jewish-Arab conflict—is prevalent in the Israeli education system in general. Programs that engage with the Jewish-Arab conflict are rare throughout the country, and the attempt to understand the Arab culture is ignored in the Zionist approach of the Israeli education system. Therefore, it is not surprising that it may be hard for a school to explore this complexity, especially when its location is in an Arab neighborhood. However, EE may be an inroad to deal with this issue and complexity as part of the environment that Jews share with Arabs.

Pro-environmental behaviors are the main component of EE that could be related to creating opportunities for active involvement as part of an EE approach. In the curriculum and lesson plans there were goals that related to pro-environmental behaviors, such as suggesting solutions for the environmental crisis, that the students could implement. One of the outcomes of this unit was to create legislation, during which students must demonstrate pro-environmental behavior. Despite this idea, carefully analysis of the examples suggested in the curriculum revealed a list of activities related to land, water, and air pollution that the students cannot really
enact. The solutions suggested in the lesson plan mostly related to technological solutions such as dealing with air and water pollution in factories. In other words, most of the solutions mentioned in the lesson plans were not in the students’ ability to implement, except recycling. The need for action remains at the declaration level, rather than rising to something that is applicable for students’ personal behavior or active involvement. This may also reflect the scientific approach of the school which emphasized technological solutions to the environmental crisis.

Knowledge construction was the main theme that appears most, both in curriculum documents and interviews. The knowledge process was very organized and presented step-by-step according to the school’s pedagogical approach. Knowledge construction at Beach School was based on the positivistic approach, focusing on numbers and proof for describing and understanding reality, which aligns with the scientific approach of the school. Environmental knowledge at Beach School was focused on environmental crisis, air and water pollution, animal extinction, waste, etc. There were many examples of the emphasis on pollution in the sea and ecological damage; The information delivered in the curriculum included general geographical characteristics of oceans, the Mediterranean Sea’s ecological characteristics, the oceanic natural resources used by people, and fishing. The curriculum and teachers emphasized environmental crisis, the destruction of the environment by humans, and frightening the students regarding the consequences of these actions. There are components of the knowledge about technology and citizenship skills that could solve ecological problems. For example, Efi, sixth grade teacher, pointed out:

We tell the students the tools that citizens could use to solve environmental problems. We suggest to putting into place explanatory signs, staff to help to explain the environmental
problems, adding policemen to enforce the law, informing the municipality about hazards, etc.

Knowledge construction as part of the scientific pedagogical approach was an important structure in Beach School which received much emphasis specifically in the curriculum. Teachers, in general, were talking about the tools without giving the students the opportunity to actively use them.

**Experiential learning and outdoor** were other structures integrated into Beach School. Sea inquiry engaged experiential learning because it had to be done outdoors, in a laboratory, and in places other than the classroom, involving diverse research methods. All participants mentioned experiential learning as something unique and important at the school for constructing knowledge. Outdoor learning occurs in the school every two months; students were going to the beach to study and clean. Outdoor learning can create great opportunities for students to be actively involved. The students were being engaged in learning and actively involved in cleaning the beach.

In conclusion, as is the case for strategies, structures being implemented by teachers were not fully offering opportunities for active involvement. Outdoor learning and taking care of a place specifically could create active involvement. However, as presented in the strategies category, the school culture and goals were not emphasizing active involvement. Therefore, it is also not a major part of the structures category.

**Structures Employed by Teachers for Active Involvement – River School**

**The Pedagogical approach** of River School was directly developed from the school vision and innovative school goals. The pedagogical approach was based on the assumption that society and environment are strongly connected. EE was integrated as holistic and integrative at
River School. All participants emphasized the holistic and integrative way of teaching in the school. Environmental issues were even integrated in a regular subject matter such as science, math, language art, and social studies lessons. Participants acknowledged that EE is the school’s whole picture. As Irit, the vice principal, stated, “Sustainability is the whole, it supposed to be everywhere, and when you teach environment, everything is connected and you get the whole.” It is not only the curriculum and the teachers’ perceptions that are integrative. The school also integrated the students across diversity and classes. In the ‘ecological morning’ program, students from different classes and grades were mixed and met teachers they did not study with usually. It was an integrative way to get to know more teachers and students. The integrative approach was in each program but also as a whole. As Eli, fifth grade teacher, pointed out:

The sustainability approach is being implemented not only during the ecological morning program but also it is being emphasized in everything we do… For example, we have the environmental art in the school and the yard… In geography, we asked them to create collaborative games made out of reused packages. We integrate the environment in math and holidays… today it is integrated everywhere.

Eli’s words emphasize the way EE was part of the whole school approach. It was holistic, as Irit pointed out, and was part of everything being implemented in the school including outdoor activities and sense of place and not just in a specific EE program.

The holistic and integrative approach could also be seen among teachers who work together. For example the program ‘The Story of an Item’ was developed as collaboration between the art teacher and a homeroom teacher. They integrated language art, geography, art, and the sense of place into the program. The idea of the integrative and holistic approach was emphasized in the curriculum and in reality. During an observation of one of the tours, for
example, there were connections made between math, history, geography, environment, heritage, art, science, and culture—both social and economic aspects. As Dalia explained to sixth-grade students while on a high mountain with a view, “You can see here the geographical area of Tel-Aviv, and its massive urban sprawl. Compare that to the open space in the south…You can recognize circle shapes, and we can calculate the circle circumference…This place was built 2000 years ago…it is part of the history and heritage of our community.” This integrative and holistic approach was emphasized in many documents such as the innovation document of the school. They not only spoke about it, they really did it - sustainability becomes the school culture.

Curriculum as an opportunity for active involvement. The curriculum was integrative and holistic, as mentioned above. There were many environmental programs in the school, several were whole school programs and some of the programs were specific to grade levels or to leadership groups. There was a weekly lesson, named ‘ecological morning,’ as discussed above, which integrated various grade levels of students and teachers. Another program focused on a leadership group of students based on teachers’ interest in creating such groups. These groups were also a mix of students from different grade levels. Other programs were grade-level based such as ‘the Story of an Item’ (see Appendix x which presents the special EE programs of River School and its opportunities for active involvement).

As presented above, the whole school approach included place-based education (PBE) as the school’s main focus and included the humanistic current. The pedagogical approach was implemented in diverse subjects and ways. For example, in the ‘Sequences for Nature Program’, fifth grade students teaching kindergarten students about birds, trash, and other environmental issues. They met in the kindergarten’s yard and connected the activity to the place. The
pedagogical approach also included reflection related to the process, a requirement for many activities in the school. Inquiry-based learning was also implemented in science and other subjects. For example, the students were asked to build an energy-saving house which they designed, researched, and built as discussed in the saving energy pro-environmental behavior.

One unique program which demonstrates the pedagogical approach of the school was the art specialist program for fifth and sixth grades. In this program the students needed to design their art work, explained which instruments and materials they needed for the project (it must be made of reusable materials without buying materials). In the art specialist program there were processes of learning-teaching in which the students need to choose their idea and ways to create the idea. The teacher, as Yuli described it, “serves as a consultant and professional advisor. This program enables the students to experience choosing, designing, and creating the art project from the beginning to presentation of the project in a display in the school” (see Appendix N for examples of students’ art works). In this program many of the pedagogical ideas of the school were integrated, such as the democratic principle of choice, writing a reflection, and the teacher was more like a guide than a regular teacher. The students were so engaged as Yuli explained, “they are coming on their own time, during recess and sometimes even during other lessons.”

Exploring the hidden curriculum of River School revealed that, despite integrating social issues, active citizenship, and environmental justice, social justice was beyond the parameters of the immediate community. This gap may be connected to a larger issue of system-level oppression, as the school’s municipality and the Israeli education system tend to ignore or avoid social justice issues. Despite the fact that the principal understood the importance of these issues, her understand did not seem to transfer to the teachers and students.
Knowledge construction at River School was very important characteristic of EE and considered to be the prerequisite condition students need before they are encouraged to be actively involved. River School’s definition of knowledge was constructivist in the sense that students’ meaning-making was knowledge construction rather than knowledge dissemination. Knowledge is emphasized in participants’ personal point of view as well as in the curriculum and in participants’ perspectives about EE in school. Knowledge also appeared in the school vision: “We believe that a literate student will succeed to express his knowledge and develop his skills.” Social-environmental knowledge was also important personally to participants, and two of the teachers earned their second degree and made their final project on the EE program at River School. One teacher focused on the relationship between the community and the school, and the other focused on the ‘sequences for nature’ program implemented in the school. This program, for example, emphasized knowledge about environmental issues as the first step. As Gili stated, “The students first need to study about the issue, and then they need to prepare an activity for the kindergarten students.” In this way the knowledge was often presented as a path for understanding, awareness, and then action, or in other words as Dalia said, “teach others, influence others, and create- pro-environmental behaviors.”

While teaching a subject teachers started usually with teaching about environmental issue such as water, energy, air pollution, biodiversity, diverse ecosystems, ecological crises, open-space, sense of place, waste, and sustainability. After learning about the issue they usually looked for what they can do to improve the situation about problems they figured out in the issue. Knowledge often starts from scientific or ecological knowledge and then continues to social aspects. For example, in the ecologic crisis in the south of Israel that was mentioned earlier. The curriculum started with the animals and plants that are common in this environment,
then students engaged in a discussion about social and economic aspects, and finally the students wrote letters to decision makers to support or to get more information about the case, as part of their environmental justice concerns.

**Critical and creative thinking** was emphasized in the school as part of educational and sustainability approach. As Irit explained, “Environmental learning and sustainability involves critical thinking that we as teachers are exposed to and the students too. I need to judge the information I get exposed to.” Dalia also emphasized critical thinking, “It is very important to us that the students will learn about different interests.” Creative thinking was part of inquiry process and the art program. Although it is not directly related, the students can develop creative thinking without critical thinking, however, combining the two skills can help the students to develop creative solutions for problems they study and critique.

**Experiential and outdoor learning** was emphasized almost in every activity in the school. Inquiry learning was part of many subjects and programs. Students were taught to observe scientific and natural phenomena in nature and the yard. Whenever possible, participants give the students to experience and to practice active involvement in learning processes, citizenship, and pro-environmental behaviors. For example, the mayor came to visit the school, and the students created lemonade from the lemon tree in the school yard. They realized how hard it was to squeeze lemons and explained the mayor the process. Another example is in the ‘Sequence for Nature’ program. Students were encouraged to create experiential activities, games, inquiry, stories, outdoor activities, etc. All this creativity and experiential learning were opportunities for active involvement. Some of them were related to citizenship while others related to EE behaviors or learning processes.
All participants used outdoor teaching in diverse ways including observing animals in the nearby environment such as ants, tortoises and following them for two years. As Irit explained, “we use to go to the nearby river.” Dalia added, “We went outside… to feel the environment, we drew pictures… then we started to learn about the environment.” The outdoors was part of the classroom. Teachers were teaching outside and bringing their knowledge and passions. Often the outdoor activities emphasized nature and natural knowledge, such as the event in the woods which focused on birds, flowers, and animals. However, art and math were also part of outdoor activities. Several places in the yard were developed as an art spaces with an ecological message, such as the tubes with plants that save place and teach the students math measuring lenses (see Appendix O). The students at River School were going outside almost every day.

**Cross-Case Analysis**

Cross-case analysis was based on all of themes that emerged from the data analysis, including the characteristics of school, its demographics, its community, and its EE program; values, beliefs, norms; behaviors in the private and public sphere; social complexities, school strategies, and teachers structures (Appendix Y). Several similarities were found in both schools, and simultaneously many differences emerged from cross-case analysis. Similarities are presented first differences are presented next, followed by a deeper discussion of the differences between schools, and finally, a cross-case analysis summary table is presented (see Table 1).

There were several similarities between River School and Beach School. For example, both schools integrated EE in their school and were awarded the highest level of CGSC, which means they met several criteria such as an EE curriculum for all classes (both schools had specific and integrative EE programs for all grades); pro-environmental behaviors in the private sphere such as conservation (energy, paper, etc.), reusing materials (such as using reusable lunch
boxes); creating a community project for the environment; and student leadership groups (e.g., GC). EE was also part of the schools’ visions. Both schools declared that sustainability and EE was a priority. As part of the strategies employed at the schools, both participated in professional development for more than five years related to EE. As part of structures used by teachers to offer students opportunities for active involvement, both schools used experiential learning emphasizing outdoor learning. Both schools received assistance over the years from the GN organization and other organizations such as the JNF.

According to the environmental ethic approach, both schools emphasized natural ecosystems as part of their school’s EE values. Both schools had beliefs related to an ecological worldview with the understanding of that change was needed to activate more pro-environmental behaviors. Both schools’ participants believed that teachers needed to be role models in demonstrating pro-environmental behaviors. Both schools emphasized recycling and reusing as pro-environmental behaviors as well as bio-diversity conservation. In both schools parents were engaged and involved in the schools’ activities. Both schools emphasized knowledge about the environment as important component of EE (see Table 1 for similarities and differences according to the VBN, pro-environmental behaviors, and critical citizenship parameters).

Despite these similarities the schools were more different than alike. For example, the schools locations were different. River School was located in central Israel, in a mainly Jewish community. Beach School was mainly Jewish school located in an Arab neighborhood in a mixed Arab and Jew city in north Israel. River School was characterized by a middle SES community (6 out of 10), and Beach school was characterized by a middle-low SES community (4 out of 10). Two main overarching differences that influenced the rest of EE’s appearance and the development of students’ active involvement emerged from data: (a) the EE pedagogical
approach, (b) the relationship between social and environmental issues and the role of school in EE.

**Approaches of EE implementation:** *EE pedagogical approach.* The EE pedagogical approach at River School was a whole school approach, as part of the holistic current which included PBE and civic education. The pedagogical approach influenced many other factors that emerged from the data analysis such as structures related to the integrative and holistic implementation of curriculum and strategies such as school culture, which made EE visible in every aspect of school life. Beach School, on the other hand, had a different pedagogical approach. It was an inquiry-based learning rooted in science educational pedagogy, and while it actually implemented EE as one, integrative program, it was not part of the whole school. There were intentions to influence pro-environmental behaviors in the whole school, mainly in recycling. However, EE was not yet part of school culture at Beach School.

**Pro-environmental behavior types:** *Social and environmental relationship.* The relationship between social and environmental issues was clear at River School. Sustainability, according to River School’s approach, integrated social and environmental issues and asserts that sustainability and environmental awareness should be human endeavors. This was the main focus of the school. Furthermore, the role of the school in EE was creating environmental social change. Therefore, the school gave many opportunities for students to be actively involved, to influence parents, and their community. Moreover, integrating components from civic education such as democratic principles and active citizenship as part of the school culture was another way the relationship between environmental and social issues was being built at River School. At Beach School, on the other hand, there was a different approach which separated social and environmental issues. Participants did not see the connections between social and environmental
issues and they engaged with them separately at the school. Their EE program was based on a pedagogical scientific approach which focused on the knowledge and awareness piece. There was a relatively small student leadership group – the Green Council— which gave opportunities for active involvement and several active citizenship examples. According to Beach School’s EE approach, the role of school was to foster a change in behaviors in the private sphere mainly through recycling, green consumerism, and taking care of the beach by cleaning activities.

*The ontological perspective of knowledge and critical citizenship.* In conclusion, a cross-case analysis revealed that multiple, diverse approaches to EE are crucial for the positive outcome of the program as it relates to fostering pro-environmental behaviors. EE, when approached via scientific inquiry, as it was in this case, did not include social issues but focused more on ecological knowledge and a positivistic knowledge construction. However, integrating EE across the entire school’s culture, including promoting pro-environmental behaviors in the private and in the public sphere and implementing the goal of social change—as was the case at River school—is not enough to actually foster a more just and equitable society. Combining EE and social issues and employing pedagogical structures and strategies for active involvement, as part of a constructivist approach for knowledge construction, while effective and necessary for educating for social justice, do not cover all the complexities of implementing successful EE.

There is a spectrum of approaches to EE which Beach School and River School fall along. This spectrum consists of the various pedagogical, knowledge, pro-environmental behaviors, citizenship, and social-environmental integration approaches an institution of learning can take. When studying this spectrum, we need to consider the Israeli context, namely the complicated systems and histories that polarize Arabs and Jews. In Beach School’s case, we must consider not only the complexity of being in an Arab community, but also the difficulty of fostering
critical consciousness, which is not common in or expected by the broader Israeli culture or education system. River School’s use of the Hebrew construct was different because it highlighted a value structure that stretched beyond the school and connected with the broader religious and cultural community’s values. At the same time, River School did not look outside of its local boarders for what social justice means. At Beach School, a lack of understanding about Arab values and culture and an absence of that exploration in the curriculum made the natural science focus in their EE program more ethical.

Table 1

*Cross-Case Analysis - Summary*

<table>
<thead>
<tr>
<th>Categories of Comparison</th>
<th>River School</th>
<th>Beach School</th>
</tr>
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</table>
| Environmental values, beliefs, norms | - Values: respect, responsibility, and sense of belonging  
- Beliefs: society, believe in the students’ ability to be a change agent  
- Norms: engagement, democratic principles | - Values: awareness to environmental crisis, taking care, and engagement  
- Beliefs: about natural resources  
- Obligation to take action - not a norm |
| Behaviors in the private sphere | Recycling, reusing, green consumerism, saving water and energy | Mainly recycling and bringing food in lunch boxes |
| Behaviors in the public sphere | Part of citizenship approach: writing letters, meeting with decision-makers | Not emphasized by participants |
| Critical Citizenship (CC) including: skills, values, dispositions | Active citizenship was presented included: critical thinking, democratic values and practices  
The critical component of CC – acting for social justice was not emphasized | Active citizenship – cleaning the beach  
CC was not part of the school agenda |
Chapter 5 - Revisiting the Problem of Practice

The environmental crisis in the past four decades led the United Nations to declare EE as one of the approaches to solving the problem (UNESCO/UNEP, 1977). Consequently, research and practices about EE are growing worldwide and in Israel (Pizmony-Levy, 2011; Rickinson, 2001; A. Tal, 2002). In this study I focused on the relationship between environmental education (EE) and critical citizenship (CC). According to the literature, developing effective EE relies on combining social and environmental aspects in what is taught, both the human environment and the ecological environment (Paige & Cogan, 2002). Consequently, in order to create a stronger link between the two, scholars and educators must study and get a better understanding of how CC and EE intersect.

Understanding of the relationship between EE and CC can shed a light on the way to implement EE more effectively in order to get better results in creating a more just and equitable world, both environmentally and socially. Therefore, the goal of this particular research was to better understand and describe how EE, when paired with civic education in Israeli elementary schools, can foster social action toward a more just and equitable society. More specifically, I designed this research effort to examine how teachers perceive the relationship between CC and EE in two elementary schools that had implemented EE for more than ten years.

My assumptions, at the beginning of the study, were that schools that implemented EE for more than ten years in a ‘deep’ way would incorporate the idea of CC as important role of EE and would try to foster a social change for a more equitable society. It was surprising to learn that in reality the situation is much more complex, and although neither of the schools in this research incorporated CC fully into its EE program, River School incorporated part of the elements of CC (the components that relate to knowledge about CC as well as the importance of
considering the national and global communities in the effort to reach environmental justice), but they did not incorporate equity in the local community into their program. Beach School, however, hardly made any connections between CC and EE.

With the above understandings, I used human ecology development theory (Bronfenbrenner, 1977) as a way to illustrate and portray the findings and discussion of this study. This theory is particularly fitted to my study because, as with the relationship between EE and citizenship, it deals with the relationship between humans and their environment and humans’ relationships with each other. It is also integral to my research because it emphasized the importance of environmental changes and their implications for the human being (Bronfenbrenner, 1975), which are key elements of sustainability and EE. The complex reality as presented by the human ecology development theory can also well reflect the complex influences I found in both schools in this study that enabled or disabled the implementation of CC as part of EE.

The human ecology development theory (Bronfenbrenner, 1977) is focused on the developmental process involved in attaining developmental outcomes while also considering the importance of social class and race (Rosa & Tudge, 2013). This theory is concerned with layers characterized by different contexts: microsystem, mesosystem, exosystem, and macrosystem. The microsystem is the most proximal setting. It includes the physical context in which a person is situated, such as the home and school, where a person can interact face-to-face with others. The mesosystem and exosystem are the inner layers of the theory, and the macrosystem includes the outer context. The mesosystem includes interactions, among families and schools for example. The exosystem is an extension of the mesosystem, which may include the local community and embracing other specific social structures. The macrosystem is different from the
other layers of context as it includes cultural, economic, social, educational, legal and political systems (Bronfenbrenner, 1977). Bronfenbrenner's (2009) extension of the theory includes four components: process, person, context, and time. There is a special emphasis on interactions between participants and between layers and the four components.

My research findings reveal four main layers that reflect the human ecology development model, and may provide explanations for the relationship between EE and CC, and the barriers to include CC as part of EE for the participants in the investigated schools. The model may also help to identify approaches to changing the complex reality in Israel and beyond. These findings include:

I. **The microsystem** includes students, teachers, and the interactions among them in the context of EE and civic education. The interactions between students and teachers may be presented according to the knowledge approach of the school, their pro-environmental behavior, and their pedagogical approach. The microsystem includes these aspects as part of (a) ontological perspective on knowledge, which includes positivist knowledge approach that embraces ecological literacy and constructivist knowledge approach that incorporates civic literacy; (b) pro-environmental behaviors including citizenship, both in the private and public sphere; and (c) the pedagogical approach for EE which includes the structures and strategies teachers and schools used to enable active involvement.

II. **The mesosystem** is represented by the parents of the students and their relationship with the school and their children. This layer includes SES characteristics of the families, demographic factors such as immigration status and their civic approach, and the relationship between the microsystem and the mesosystem layers.

III. **The exosystem** represents the influence of the local community—mostly Arab in one
case and mostly Jewish in the other—on the mesosystem (the families) and the microsystem (the schools, namely students and teachers). The exosystem also includes NGOs that worked with the schools and the municipalities’ approach and relationship with the schools.

IV. The macrosystem includes the political situation of Israel, the Israeli social and cultural reality, the Israeli educational system, and the approach of the ministry of education to social justice and the Arab community. It is not only the education system, but also the Jewish-Arab conflict that influenced the microsystem (i.e., students and teachers) and the mesosystem (i.e., parents and local community), which are part of the macrosystem.

In this chapter, I first discuss each of these findings, followed by conclusions, implications, and recommendations as well as the limitations of the study. Finally, I explore the significance of this study and share my personal actions and reflections as a result of this study.

1. Microsystem: Schools’ Knowledge Approach, Pro-environmental Behaviors, & Pedagogy

My first finding focuses on students and teachers, who represent the personal component of the microsystem layer as well as the process and the context of the school along three considerations: (a) the schools’ approach to knowledge—that is, ontological perspective on knowledge—as part of the context component; (b) pro-environmental behaviors including citizenship as part of the process component, and (c) pedagogical approaches to EE as part of the process and the context component.

(a) Ontological perspectives on knowledge. The first finding in the microsystem explores two ontological perspectives related to knowledge: constructivist and positivist. The first—the constructivist notion of knowledge—focuses on the knowledge production of learners, using experiential learning, citizenship, and knowledge creation through action. This approach to
knowledge, as found at River School, supports the idea that individual representations of knowledge are socially mediated (Banks, 1995; Hyslop-Margison & Strobel, 2007) and that knowledge is constructed by people, who are socially and culturally embedded in their interactions with the world (Gordon, 2009). According to this approach, knowledge does not exist in a vacuum, waiting for humans to discover it, and no fixed truth can exist when knowledge is separate from practical activity (Golding, 2011). Dewey (1929), as an influential constructivist, emphasized that it is important to combine actions and knowledge and to integrate thinking and doing. Consequently, the constructivist approach to knowledge, which is part of directed action, emphasizes constructing knowledge in critical engagement and applying current scientific thought to relevant topics and contexts, particularly when it comes to citizenship, community, and being a change agent in society (Gordon, 2009).

The second perspective—the positivist notion of knowledge—emphasizes the need for core and general knowledge, which correlates with a general ability to learn (Hirsch, 2001), was found at Beach School in this study. Therefore, it is important, according to this approach, to enable students to get as much broad knowledge as possible by teaching general principles with diverse examples (Hirsch, 2011). According to this approach, it is more effective to teach the broad concept before moving to the details, and it is important to emphasize science in the positivistic approach, which includes tests and a core curriculum, all of which will enable economic success and maintain the social status quo (Stevenson, 2007). According to Hirsch (2001), it is essential for citizens to learn the elite core curriculum because this is the way to understand the hegemonic culture. This is a profound difference between the constructivist and positivist approaches. The constructivist approach promotes a student-centered approach to building knowledge, rooted in students’ cultures and offering opportunities to learn by doing,
which in turn will guide learners to explore diverse subjects. On the other hand, the positivist approach, as mentioned above, emphasizes a core curriculum and broad knowledge before—or even without—the active part of doing.

In my study, I found that River School demonstrated a constructivist notion of knowledge, focusing on students’ knowledge creation by emphasizing critical thinking and learning through experiential learning, hands-on application and testing of current scientific thought. Educators at River School viewed their role as offering the basic foundations of knowledge to equip students with what they needed to know to take an action or produce their own knowledge. The school also supported students in contextualizing the application and analysis of scientific thought in the local contexts. Knowledge acquisition was only the first step and not the sole goal at River School. Beach School, meanwhile, demonstrated more positivist notions of knowledge and approached scientific study from a more conservative stance. Beach School emphasized the acquisition of science-oriented knowledge without offering many opportunities for students to connect that learning with society. For Beach School, knowledge acquisition was actually the main goal of their inquiry-based EE program. The differences between these two ontological perspectives to knowledge is important because they influence how researchers and educators define knowledge, how those definitions affect practice, and how educators’ ontological perspective on knowledge can lead to or restrict EE’s effectiveness to foster social and environmental change.

Focusing on _knowledge in the old conservative paradigm_ revealed that many schools, including Beach School in this study, focus on the role of preparing workers to compete in the new knowledge-based economy (DeYoung, 1995; Jickling & Wals, 2008; Stevenson, 2007). In this approach, as found at Beach School in regard to its emphasis on standardized tests and
national ranking, the role of schools is to create a centralized curriculum which emphasizes literacy, mathematics, and science, and demonstrates standard measures of student performance as indicators of the quality of education (Apple, 2008). Beach School was very proud of its’ relatively (to other schools in the city) high national ranking and its prestige as a high-quality educational school. Research found that this focus on standardized metrics causes schools to stay in the old paradigm of educating students for working in industrial roles by using traditional education approaches (Darling-Hammond, 2010; Goodlad, 1984; Sahlberg, 2011). The role of schools, according to this approach, is social reproduction through the implementation of curriculum and pedagogical practices that transmit disciplinary-derived factual information (Stevenson, 2007). Since Beach School adopted this approach, they implemented EE as a scientific program, emphasizing factual information about the environment. By focusing schools’ agenda on students’ knowledge and skills in the traditional content areas of literacy, mathematics, and science, the school may undermine the social and active goals of EE (Stevenson, 2007), a phenomenon I observed at Beach School.

In addition to the two schools’ approaches to knowledge, this study revealed two primary types of EE-related literacy: ecological literacy and civic literacy, which is strongly connected to the knowledge construction approach of the schools. Ecological literacy is the ability to use ecological understanding, thinking, interaction, and study to protect the environment; civic literacy is the ability to use an understanding of social systems, social skills, and the study of and participation in society to change social and environmental problems (Berkowitz, Ford, & Brewer, 2005). Beach School focused mainly on ecological literacy and emphasized the need to protect the environment. In many schools worldwide and in Israel, including Beach School, the civic component of knowledge is usually de-emphasized due to high-stakes testing which has
narrowed the curriculum to emphasize the basic skills of literacy and numeracy and to frequently neglect subjects outside those core areas, such as creative arts and citizenship (Stevenson, 2007). Consequently, this narrowing phenomenon has limited the purpose of teaching and learning to the preparation of students for tests to determine their individual life chances (Hargreaves, 2008) rather than trying to prepare them to become responsible environmental citizens who work collectively to contribute to a better society (Stevenson, 2007). As civic literacy was not present in the school, Beach School served as an example of these findings.

*Civic literacy* includes knowledge of how to affect and create change. This procedural knowledge includes competency in citizen action skills needed to participate in civic life.

According to my study’s findings, River School promoted civic literacy and incorporated knowledge about the environment and how to affect change throughout the school’s curriculum and programming. As was the case at River School, educators can help develop this procedural knowledge by providing opportunities to determine if action is warranted, identify others involved in the issues, select appropriate action strategies, and create and evaluate an action plan. Educators can also provide opportunities to build skills in oral and written communication and leadership as well as opportunities to participate in the political process (Athman & Monroe, 2001). Constructivist knowledge and critical thinking, as found at River School, could be adopted for the purpose of increasing students’ understanding of the environmental crisis, and preparing them to determine which kind of civic action is most appropriate in responding to both social and scientific challenges (Berkowitz et al., 2005).

(b) Pro-environmental behaviors in the private and public sphere and citizenship.

The second aspect of the microsystem relates to pro-environmental behavior and participation as part of the process component in the microsystem, which in turn were recognized as one of the
most important goals of EE in the Tbilisi declaration (UNESCO/UNEP, 1977). According to this definition, *participation* means that an institution provides opportunities to students to be involved in working toward the resolution of environmental problems (Hungerford & Volk, 1990). Therefore, it is not surprising that I found pro-environmental behaviors to be key characteristics both at Beach School and at River School, particularly since they both have implemented EE for more than ten years and since pro-environmental behaviors are part of EE.

There are two types of pro-environmental behaviors discussed in the literature and found in this study: the private sphere and the public sphere. The first—pro-environmental behavior in the private sphere—focuses on the private actions people incorporate, such as turning off lights, recycling, composting, and green purchasing, etc. (Stern, 2000). Although these actions have their place in the multifaceted solutions to environmental problems, the effects of private actions are limited unless they are combined with the second type, pro-environmental behavior in the public sphere, and unless society focuses on influencing decision makers, signing petitions, and influencing other stakeholders in the community (Chawla & Cushing, 2007). It is important to be aware of these types of pro-environmental behaviors due to the fact that focusing in schools on private sphere action may have little influence on the environment and on society, while teaching students about and incorporating into the curriculum actions in the public sphere may position schools to influence the community, improve the environment and learn how to be change agents in society.

According to my findings, EE educators and scholars must understand and emphasize across the school the importance of creating opportunities for students to take corrective action in the public sphere. This can be very complicated and challenging for schools, since most schools do not have an action component in their EE curriculum specifically or in their educational
approach in general. Furthermore, since the positivistic (as discussed in the first part of microsystem above) and content-delivery approaches common in environmental studies, the EE programs do not tend to be oriented toward action (Jensen, 2002). Despite the barriers to implementing pro-environmental behaviors in schools, Beach School and River School made a lot of efforts to change this reality by integrating pro-environmental behaviors, mainly in the private sphere. This aligns with research that shows that schools typically focus on pro-environmental behaviors in the private sphere, especially reusing, reducing, and recycling. Despite the fact that research found that the private sphere behaviors seem to have the least significant effect on environmental quality (Gardner & Stern, 2002), they are easier to implement than pro-environmental behaviors in the public sphere (Steg & Vle, 2009).

Encouraging students and providing them with the skills and knowledge about pro-environmental behavior in the public sphere may lead them to be more socially involved. More importantly, helping students understand complex social systems and inequities as well as how those in power make decisions, may empower them to work toward creating a more just and equitable society. Despite the fact that neither schools in my study reached the point of fostering social justice, the emergent findings indicate that if a school does not engage with social issues or with pro-environmental behavior in the public sphere, it will definitely not have any meaningful engagement with social justice. Beach School’s internal school focus limited its reach and potential to impact the community and society more broadly. River School, by contrast, deliberately incorporated public-sphere pro-environmental behaviors. In fact, River School alum became a municipality member working on environmental issues. This example demonstrates that a school’s approach to EE can lead to opportunities for engaging social and environmental issues through civic duty and participation, which may have an impact on
achieving on social justice. We cannot solve environmental problems without solving social problems. Therefore, it is crucial to deal with pro-environmental behavior in the public sphere because social inequity and environmental problems are inextricably linked and must be addressed in the public sphere.

*Environmental citizenship* as one of the goals of EE may be discussed as part of pro-environmental behavior in the public sphere. Pro-environmental behavior in the public sphere, as an embedded part of EE is only one step toward greater social consciousness and action. Being critical and aware of what we mean by pro-environmental behavior is important to understanding why pro-environmental behavior needs to include citizenship and critical citizenship; otherwise these behaviors may not be effective in fostering social change. Findings of my study revealed two types of citizenship presented in the schools: environmental citizenship and critical citizenship: *Environmental citizenship* was a concept with which both schools engaged in this study. Environmental citizenship is a broader concept than citizenship, includes the concept that what is good for the individual, or also known as self-interested behavior, is not necessarily good for society or the public good (or in this context, for the environment) (Dobson, 2007).

*Environmental citizenship* often includes environmental justice but it does not always include social justice (Berkowitz et al., 2005). Interestingly, both schools in this study engaged with the beach as part of their environmental citizenship. However, they dealt with the subject in totally different ways. River School emphasized social and environmental justice, while at Beach School students cleaned the beach without dealing with any social aspects. For example, while learning at River School about and acting to return the beach land to the public, participants emphasized the idea that the beach is part of the common good and it should not be given to rich people that want to build along the shore. At Beach School, on the other hand, environmental
citizenship was reflected mainly in the GC activities and in the cleaning of the beach by the whole school. Cleaning the beach, however, did not include grappling with any social or environmental justice.

This finding is important because it can point to one of the reasons EE had not succeeded in changing social and environmental crisis for more than four decades (Gigliotti, 1990). Several researchers explained the unfulfilled goal of changing behavior through EE, claiming that changing knowledge and attitudes does not lead to changes in pro-environmental behaviors (Bamberg & Möser, 2007; Chawla & Cushing, 2007; Yavetz, Goldman, & Pe'er, 2009). When schools such as Beach School and many other schools worldwide and in Israel implement EE, what is emphasized is scientific knowledge, and aspects related to social justice or pro-environmental behavior remain in the private sphere (Rickinson, 2001; Tubin & Ofek-Regev, 2010). Subsequently, major social and environmental changes are unlikely to occur in this context. Educating for environmental citizenship with a focus on social and environmental justice is the entry point to fostering a more equitable society.

River School emphasized both the private and public spheres by encouraging pro-environmental behaviors such as recycling and conserving water while also creating opportunities for students to meet with decision makers and influence them. These actions in the public sphere—practicing active citizenship and engaging with public issues at the local level—is an effective way for children to learn about government and politics, and they can see democratic processes in action and the effects of their contributions (Chawla & Cushing, 2007). According to research, public issues gain personal meaning when young people confront the social inequities and environmental problems in their own communities. These pro-social experiences help young people develop a sense of civic identity (Chawla & Cushing, 2007). An
example of this effect was reflected in River School’s students, who took action to ‘save’ the river located next to the school by working to have the government label it as a natural area. Despite the fact they did not succeed in this campaign, participants were very engaged and thought it was a good opportunity for implementing and experiencing active citizenship. River School, in general, was more oriented towards environmental citizenship than Beach School, which focused almost exclusively on pro-environmental behavior in the private sphere.

According to environmental citizenship, in order to create more just society it is important not only to change one’s lifestyle, but also to change societal structures that reproduce injustice. The template for environmental citizenship should be emphasized in the EE curriculum, namely, the importance of rights, the centrality of justice to environmental citizenship, and the significance of transnational and intergenerational responsibility (Dobson, 2007). Despite the fact that River School’s students learned about government, they did not focus as much on local politics or the need for change to foster a more just and equitable society in their city. Even the actions to help save the river did not emphasize an equitable society but only environmental justice. Similarly, Beach School only engaged with environmental citizenship with a small leadership group of the GC—during their work on a hunger program—and there was little to no emphasis of equitable society or other social complexities.

The critical citizenship (CC) conceptual framework is an approach that combines civic education and critical pedagogy related to social justice. According to the CC lens, teachers may do the following: develop their students’ critical thinking and active participation skills; encourage acting collectively to challenge the status quo; encourage their students’ commitment and motivation to change society, and foster their sense of responsibility for decisions and actions (Johnson & Morris, 2010). CC, in the context of EE, is focused on the human
environment as part of the natural environment, and the concept is founded on the assertion that sustainability can lead to a more equitable society. In this study, River School did address equity issues. River School developed critical-thinking skills and active participation but did not place as much emphasis on encouraging collective action to challenge the social status quo, and if they did, it was in an environmental context. They developed the commitment and motivation to change society but only regarding the environment, not related to social justice. At Beach School, however, there was a very small connection between the human environment and the natural environment, and very little implementation of the idea that EE is a way to foster a more equitable society. Despite the schools’ engagement with EE programs for so many years and with so many activities, they were not connecting to the concept of critical citizenship (see Appendix R for a critical citizenship analysis).

(c) Approaches to EE Implementation: Vehicles and Limits to Integrating CC and EE

The whole school approach versus the scientific approach to EE implementation. The literature has described more than fifteen diverse EE pedagogical approaches such as a whole school approach, the scientific approach, the PBE approach, the natural approach (Sauvé, 2005). According to the findings of this study, pairing whole school approach with multiple diverse approaches to EE, as was observed at River School, is the key to enhancing more effective pro-environmental and active-environmental citizenship behaviors which are the main goals of EE and may lead to integrating CC as part of EE. At Beach School, the EE pedagogy followed Sauve’s (2005) scientific approach. The objective of the scientific approach is for learners to identify and explain scientific phenomena and identify cause and effect relationships (Sauvé, 2005). According to this approach the students make observations, create hypotheses, and
conduct experiments. This approach emphasizes the development of knowledge and skills in environmental science and is predominantly based on cognition and knowledge. At Beach School, the teachers’ embraced the scientific approach, emphasizing the environmental crisis and humanity’s destruction of nature and frightening the students about the consequences of their actions (Sauvé, 2005).

Hungerford and Volk (1990) suggested six components to include in EE pedagogy to change a learner’s behavior. The six concepts were (1) teaching ecological concepts and the relationships between the concepts; (2) creating opportunities for learners to achieve environmental sensitivity; (3) emphasizing curriculum that focuses on knowledge about the environmental crisis; (4) teaching the skills of investigation and analysis; (5) teaching citizenship skills; and (6) developing an internal locus of control in learners. It should be noted that I observed some of these components at Beach School; the teachers and staff emphasized teaching sea-related ecological concepts and going outdoors to the beach often as part of the curriculum that would foster students’ environmental sensitivity or empathetic perspective toward the environment (Hungerford & Volk, 1990). Furthermore, the school also emphasized inquiry learning, which included citizenship skills and activities such as occasionally writing letters to decision makers and cleaning the beach. Nevertheless, as Hungerford and Volk (1990) have explained, the internal locus of control in learners’ development is difficult in schools, because it differs substantially from the typical education practices. Therefore, I did not observe this concept in action at Beach School.

The whole school approach is especially important to this study due to its characteristics that focus on human and environment relations. This approach also takes into account the whole psychological state of students, teachers, parents and community (Sauvé, 2005). In a whole
school approach, school and local communities promote EE in all aspects of school life, which helps to organise the school as a caring community for all its members (Kennelly, Taylor, & Serow, 2011). This approach helps to create supportive school environment through the entire staff’s collaboration, peer education, parental involvement, and community participation, leading to more effective EE outcomes (Sauvé, 2005). When a school, such as River School in this case, commits to implementing EE, this integration influences the community, makes teaching EE a norm among teachers, and is more likely to become part of the school culture, which in turn, is the whole aim of whole school approach (Shumacher & Fuhrman, 2012). This approach was well presented at River School, which integrated EE, pro-environmental behavior, and citizenship as a whole school approach becoming the culture of the school. Beach School, however, only implemented EE as one of many programs. This is important because to foster a social change, EE needs to be holistic and integrative in all school aspects, it cannot be a part of a small program in the school, even if it is an important one.

Research findings have suggested that when the administration supports the implementation of EE, it is more likely to become a norm in the school (Shumacher & Fuhrman, 2012). In both schools there was an administration support in diverse ways. One of administration’s support to the successful implementation of EE was by offering opportunities for professional development. Professional development was one strategy for employing active involvement that develops teachers’ confidence. Professional development is part of the key to successfully establishing EE programs as the norm in the culture of the school (Shumacher & Fuhrman, 2012). Professional development was part of both schools for the whole staff more than five years. The professional development of teachers is a critical component to a sustainable whole school approach. Teachers are core agents of change in innovative and transformative
educational processes. However, some research has indicated that there is still a bridge between theory and practice, and while teachers think that they undertaking EE, what they do in practice is not aligned with the participatory pedagogical approaches advocated by the literature (Henderson & Tilbury, 2004). These findings reflected the case of Beach School in that they implemented EE without using the participatory approaches. There was an administration support to implement EE, however, this apparently is not enough for EE that creating more equality in society.

*The Humanist Current, Place Based Education, Sense of Place, outdoor learning.*

Several pedagogical and EE current were presented in the schools as part of their approaches to EE: the humanist current, place based education, and sense of place. These currents are important to be discussed due to their influence on the type of EE which implemented in the school and the approaches that vehicles or limits to implement social justice as part of EE and foster social change. Sauvé (2005) has discussed the *humanist current*, which could be applied to River School. This theory has emphasized the human dimension of the environment, focus on nature and culture. According to the humanist current, the environment corresponds to a place of living with all its historical, cultural, political, economic, emotional, and other aspects. In other words, humanist current is based on the symbolic value human project on their relationship to environment, seeing place as a ‘heritage’ of natural and cultural roots (Sauvé, 2005). At River School there was much emphasis on natural and cultural heritage. School activities engaged students in investigating and discussing the relationships between humans and nature. This emphasis also helped to combined social and environmental aspects which are one of the keys to using EE as a way to promote social change.
Place-based education (PBE) is related to the humanist current as it emphasizes a sense of belonging to a specific place (i.e., place attachment), as a step towards developing a sense of responsibility (Sauvé, 2005). PBE refers to education programs in which students learn about local natural and social environments through inquiry, environmental action, experiential learning and other hands-on activities in a specific place (Sobel, 2004; Tanzer, 2011). PBE acknowledges students as producers rather than consumers of knowledge and includes hands-on, community-engaged learning, active participation in democratic processes, and solution creation of social and environmental problems (McInerney, Smyth, & Down, 2011). River School exhibited all of these elements, which in turn emphasized that its pedagogy was partly based on PBE. Beach School also used the PBE approach by implementing several elements such as hands-on activities, experiential learning, and community engaged learning. However, the participants in the study did not emphasize PBE during their discussion of the school and its approach to EE. It seems that the PBE was part of the school approach implicitly and not explicitly.

Sense of place is a component of PBE. It is about the relationship between humanity and place. From a psychological perspective, sense of place is based on place attachment. Place attachment is “the extent to which an individual values or identifies with a particular environmental setting” (Kudryavtsev, Stedman, & Krasny, 2012). In other words, place attachment is about the degree to which a place is important to people. Place attachment is a multidimensional concept, including both physical and social components. Attachment to nature relates to the physical, and attachment to people in city is related to the social (Scannell & Gifford, 2010). A strong sense of place was one of the outcomes of both schools in this study as the participants outlined how they engaged students in taking care of a place and using
experiential and active learning near the schools. Sense of place was particularly interesting in
this study because of the influence it had on pro-environmental behaviors.

Scholars have emphasized sense of place as leading to pro-environmental behaviors from
both theoretical and practical points of view, asserting that this idea can foster pro-
environmental behavior (Hungerford & Volk, 1990). For example, Orr (1994) expanded on this
idea by arguing that “people will act responsibly towards their immediate environment if they
have a sense of rootedness.” Other empirical research supported these theoretical statements by
presenting significant correlations between place attachment and pro-environmental behavior
(Kudryavtsev et al., 2012; Scannell & Gifford, 2010). According to Scannell and Gifford (2010),
the relationship between place attachment and pro-environmental behaviors depends on natural
more than civic relations. According to their study, people have more pro-environmental
behaviors when they are attached to nature in their place than people that are attached to the civic
component (Scannell & Gifford, 2010). Therefore, it is important to educate and create
opportunities for place attachment through nature activities. Both schools in this study integrated
nature activities. However, the civic component is very important for the social change, and
therefore it is also important to use other approaches to EE, which will lead to other aspects that
are not emphasized enough in PBE and its place attachment component. Subsequently, despite
its importance, River School did not solely employ the PBE approach, but mixed approaches
such as bio-diversity, nature conservation, and civic education. Meanwhile, Beach School did not
emphasize PBE or a sense of place, although this may have been a by-product of their inquiry-
based learning at the beach.

Outdoor learning is a tool to achieve effective PBE and a sense of place. Outdoor
learning is crucial in PBE, especially when creating sense of place focusing on nature (Scannell
Globally, new educational places and spaces such as virtual spaces are emerging while simultaneously outdoor spaces are disappearing. The outdoor environment is disappearing from youths’ experiences due to the elimination of fieldtrips and other outdoor activities in order to create more instructional time for test preparation. More significant is children’s increased consumption of electronic media as well as parents’ concerns about security which have instilled fear and resulted in ‘nature deficit disorder’ (Stevenson, 2008). Due to the disappearance of the outdoor environment—which is very important for environmental development and fostering a sense of place—outdoor learning has become ever more important to EE. This concept was presented both at River and Beach Schools while at the same time being an uncommon phenomenon in Israel. According to Dreyfus and Veinberger (2011), schools typically have not allowed students to go outdoors, especially in Israel, due to security problems, not to mention other issues that have prevented teachers from leading students outdoors. Despite the importance of outdoor education according to the findings of this study, it alone is not enough to help develop pro-environmental behavior or citizenship in students or to foster a more equitable and just society. Beach School demonstrated this finding in its inclusion of outdoor learning and a sense of place without adding in the component of citizenship and social justice.

II. Mesosystem: School Community

My second finding reflects the relationship between the school community, which is part of the mesosystem (mainly parents) and the microsystem (mainly students and teachers). Parents have a crucial role in educating their children and their approach may influence teachers; on the other hand, schools can have a big influence on the school community especially in the EE arena (Flowers & Chodkiewicz, 2009). Even though both schools attempted to engage students in pro-environmental behaviors, understanding the motivations for and possible parental influences on
that implementation may partly explain the ultimate differences found between Beach School and River School. The SES, demographic characteristics, and locations of both schools were different and may have influenced their approaches to pro-environmental behavior, knowledge, and CC.

(a) SES characteristics and pro-environmental behaviors. According to the literature, there are connections between SES and pro-environmental behaviors (Rickinson, 2001). While low SES families often will act in pro-environmental ways (usually private sphere behaviors such as reusing water bottles, saving energy, less consumption of resources, etc.), this is often due to the economic benefits rather than a sense of environmental awareness (Bucher & Pizmony-Levy, 2012). This could be one explanation for the pro-environmental behavior in the private sphere in both schools, which represented middle to middle-low SES communities. At River School, for example, they used the money from bottle deposits to maintain a small animal zoo, because they would not have had enough money otherwise.

At the same time, students from low SES communities will have less pro-environmental behavior than students from high SES (Banks, 2008; Dejaeghere, 2008; Ichilov, Salomon, & Inbar, 2005). However, at Beach School and River School, participants did not recognize, while asking specifically, any differences in attitudes or pro-environmental behaviors between students from higher SES and students from lower SES. Moreover my findings suggest that teachers may have a great influence on students’ pro-environmental behavior in low SES communities, as presented in other studies (Campbell, 2008). Sustainability and pro-environmental behavior that emphasize green consumerism, for example, may even help students and families from low SES, as demonstrated at both schools by participants who emphasized that, for example, using the same backpack year after year is becoming a trend, and the poor students do not feel bad about it
but instead receive good feedback for their pro-environmental behavior and wise consumer behaviors.

SES may also be related to the knowledge approach of the schools in a broader perspective. Beach School’s approach to knowledge, as presented above, mainly reflected the traditional approach of education. Therefore, the school’s implementation of EE was fact-oriented and focused on providing students with knowledge for economic success in society, led to that society’s failure to sustain environmental resources, for example (Orr, 1994). This emphasis may be due to Beach School’s location in a low-SES community, and the school’s implementation of a curriculum focused on literacy, mathematics, and science—widely considered to be a key for economic success in society—was an attempt to change the economic outlook of the local citizens. Researchers have documented that using knowledge as a key to socioeconomic success occurs widely in Israel and worldwide, particularly in schools in low-SES communities (Hargreaves, 2003). As a result, the knowledge approach of the school may be influenced by the low-SES of the school’s community, and consequently, may influence the lack of pro-environmental behaviors in the public sphere.

(b) School community characteristics and civic engagement: Another important aspect in the mesosystem layer, the school community level, is the origin of Beach School families, 60 percent of whom were immigrants from the Soviet Union. EE was not a common practice in their country of origin, and the civic approach of these parents may be different from the Israeli democratic-based approach (Ichilov, 2013; Silcox, 1993). This may partly explain and may demonstrate another reason that Beach School did not emphasize civic engagement. Furthermore, the culture of learning of the Russian community is authoritarian, based on the positivistic approach, and rooted strongly in the assumption that it is very hard to change reality,
and therefore, there is no point to taking action (Silcox, 1993). Again, this may influence the school’s agenda and its focus on the positivistic approach to knowledge.

Schools that approach knowledge from a scientific positivistic perspective tend to strongly relate to the traditional approach discussed above, which seeks universal truth and believes in rationality. This form of knowledge can undermine students’ opportunities to develop social consciousness and commitments to social change. The emerging conclusion from my analysis is that schools with a scientific positivistic approach to knowledge, such as Beach School, rarely expose their students to social origins and traditions. In the western society, scientific knowledge is considered to be superior to social knowledge (Gough, 2003). Beach School implemented this perspective and emphasized scientific knowledge over social knowledge and society. This also may be due to the mainly Russian immigrant families that sent their children to the school. This population’s culture strongly emphasized math and science, which might influence the school agenda. This is important because the school and community’s approach to knowledge may have influenced the school’s agenda and how it related to knowledge, EE, and social change.

The fact that Beach School’s student population was 60 percent immigrant made it crucial for the school to engage the concept of multicultural citizenship, but it did not relate to any EE programs, and focused only on the multiculturalism of the Jewish community. At River School, there were many multicultural citizenship concepts infused in the curriculum as they engaged with diverse cultures in the school’s neighborhood. Israel, in general, is a multicultural environment, and inequality between diverse communities is the highest among advanced countries (OECD, 2010). Therefore, it is important to integrate citizenship and the aspect of multiculturalism into schools and the education system.
During my research, River School expressed a strong feeling of community with Yemen individuals who immigrated to Israel forty years ago, which demonstrates a social relationship between people in the community. The school used the robust cultural history of the community as a platform for teaching and engaging students. At Beach School, as mentioned above, 60 percent of the new immigrants mostly originated from the Soviet Union. Therefore, their sense of cultural identity was weaker and less connected to the place, which contains a lot of Arabs symbols that were not part of the immigrants’ culture. This may explain why River School adopted PBE and why Beach School did not focused on PBE.

(c) Influencing the community for pro-environmental behavior. According to community influence approach (Shumacher & Fuhrman, 2012), there are three levels of influences for pro-environmental behavior: the individual level (teachers as role models and students); the community level (influencing parents, families, and local community); and the societal level (creating broader social change). In this study, teachers from both schools served as role models by implementing pro-environmental behaviors in their private lives (personal pro-environmental behavior in the private sphere), and role models are essential to the process of changing behaviors (Bandura, 1993; Chawla, 1999). Role models enable students to observe the success of others, see the process others use to achieve their goals, and then assess their own behavior (Chawla & Cushing, 2007). In this study, most participants at both schools emphasized the importance of being a role model as part of their educational approach in general and for pro-environmental behaviors in particular, especially when focused on the private sphere.

The second level, influencing community, was reflected at both schools in students’ influence on their parents’ pro-environmental behaviors at home (again, mainly in the private sphere), and in turn they may have fostered pro-environmental behavior in the public sphere by
the extended influence teaching their parents may have had on the broader community and key
decision makers (Jensen, 2002). This trend was observed at River School and, to a lesser extent,
at Beach School. Both schools made efforts to influence parents and to engage them in school
activities and in sustainable, pro-environmental behaviors, mainly in the private sphere. There
were two approaches to engaging parents in EE and school life according to the findings of this
study. The first mainly includes parents’ participation in a wide range of school activities, which
was the case at Beach School. The other approach, taken by River School, included engaging
parents’ in pro-environmental behavior mainly in the private sphere, influencing them to adopt
pro-environmental behaviors as well as social commitment to the community, and also
encouraging them to be part of the community center for sustainability led by the school.

III. Exosystem: The Local Community, NGOs, and Municipality

My third finding reflects the relationship between the local community and the schools.
The local community includes the people living nearby the school, organizations that work with
the school, and the municipality of the school’s city. This exosystems for River School and
Beach School were completely different in this study.

(a) Jewish-Arabs relationships in respect to CC in the local perspective. Despite the
multicultural characteristics of the community in River School’s neighborhood, and despite the
middle-low SES of school community, it was a Jewish neighborhood. As a Jewish neighborhood,
the school did not need to deal with a daily fear of Arabs, and they could integrate Arab-Jewish
programs as part of their EE program because they could drive to meet this community and then
to come back to the safe environment of their Jewish neighborhood. Moreover, the Arabs’
violent attacks that were a part of the Israeli reality at the time of this research did not happen in
River School’s city, so they felt comparatively safe. At Beach School, the situation was different.
They were located in an Arab neighborhood, in a mixed Arab-Jewish city. They never really felt safe. The fear of Arabs and dealing with the Arab-Jewish conflict was part of their everyday life.

One striking example related to the Arab-Jewish conflict occurred in 2008, when there was an incident, in Beach School’s city, in which an Arab person drove into a Jewish neighborhood during a religious holiday (the Kippur Day) when driving is not allowed. This caused the Jews to throw stones at the Arab’s car. Afterwards, Jews and Arabs threw stones at each other and burned one another’s property all around the city (Fund, 2002). This tense situation required action to reduce hate. In fact this emphasizes more why EE is so important and could help to change Israel’s current racial and religious climate. EE, when integrating social justice, may contribute to changing current sociopolitical realities and tensions, particularly if it also includes ethics and encourages responsibility and respect for society and the environment. Consequently, critical social and environmental consciousness is important, and EE would help foster that consciousness through collaborative, cross-cultural activities, such as the garden the GC built together with the community at Beach School. On the other hand, when a school needs to deal with the tension on a daily basis between Arabs and Jews—a situation that was present at Beach School—it is much harder to create EE that integrates social issues, especially social justice as it relates to Arabs. At River School the tension was not a part of everyday life due to the distance between the Arab and Jewish communities (about five kilometers), therefore it was probably easier to include Arab-Jewish programs and activities. Understanding these kinds of different contexts is essential to mobilizing social change.

The comparison between Arabs and Jews also reveals injustice across Israel. This phenomena is also present in mixed-cities (Arabs and Jewish) in Israel (Omer & Or, 2005). Students, in this case, from the comparably affluent community (Jewish as compared to Arabs)
need to understand the injustice in their city, where Arabs are in the disadvantaged situation. Despite the importance of this subject, it is very difficult to implement in the traditional school system, including at Beach School. First, due to the Beach School participants’ point of view, they did not see their Arab neighbors as equals. Although they did not say that explicitly, it was clear in their reactions that they held dislike for and distrust of Arab, and preferred that they lived apart from them (most of participants in this study did not live near Arabs). Second, the Israeli school system and policy has not encouraged exploring social justice topics in the curriculum. Therefore, it was not surprising that social and environmental justice were not part of Beach School agenda, not only as it related to their positivist approach to knowledge, but also as part of their political agenda, as part of their city municipality’s approach, and as part of the overall Israeli education system’s approach.

The local community may also influence the citizenship characteristics of openness to otherness. Both schools in this study incorporated several elements of citizenship, which refers in this context to particular kinds of social rights and obligations. According to Turner (1997), any effective approach to citizenship in a democracy, requires openness to difference and otherness as an essential ingredient. Israel Ministry of Education has encouraged openness to difference and otherness by implementing educational programs such as ‘The Other is Me,’ which explores the diverse cultures of the Jews and the Arabs (Ministry-of-Education, 2014). However, like many other educational programs, it seems as if it is a policy without deep implementation by schools (Menken & García, 2010). In fact, sometimes, these national programs have diverse interpretations at schools. At Beach School, for example, there was openness to other Jews, but not toward Arabs. At River School, however, civic education and citizenship was implemented as part of the whole school approach to sustainability. There were many activities with Arab
communities to create openness to otherness.

(b) **NGOs’ role in implementing CC and decision makers:** Another aspect of local community relates to NGOs and their role in enhancing EE and pro-environmental behavior, especially by influencing decision makers. Schools are part of communities and can have an important role in influencing the community. Behavioral change at schools is most effectively achieved through initiatives delivered at the community level. Pro-environmental behaviors tend to happen along four levels of influences, including: the community; organizations; decision makers; and education systems. In Israel, the education system is receiving help from organizations such as environmental NGOs to build programs that influence the community (Blum, 2012). In this study, both schools tried to influence the community and received help from the GN, an environmental NGO to do so. Furthermore, both schools made various attempts to influence decision makers. At River School, teachers integrated these attempts into the EE program; however, at Beach School these attempts were rare and occurred mainly at the hands of the school’s GC, which consisted of a small group of students. The differences between the schools’ approaches may illustrate the difficulty of shifting the curriculum to incorporate environmental action in the public sphere, especially in such a tense social situation as discussed above.

(c) **The role of municipality to enhance CC.** Another aspect of the exosystem may be the role of municipalities in both of the investigated schools and their integration of CC elements in their EE programs. At River School, the principal and school community participated in many educational and environmental committees in the city. They tried to influence the municipality in diverse ways, and the city decision makers considered them to be the area’s sustainability experts. However, they were afraid to engage with social justice in the city, maybe due to budget
support and other relationship challenges with the municipality. At Beach School, however, participants chose not to be in a direct relationship with the municipality, even though the mayor’s wife was a teacher at the school, and the mayor’s son studied at the school. Maybe, although there is no direct evidence for this, they received other benefits indirectly from the mayor, and they did not want to reveal their relationship with him. Furthermore, in other mixed cities in Israel in which a Jewish school is located in an Arab neighborhood, the municipality did not want to give the school building to the Arabs, and therefore supported schools even when they were too small, which may have been the situation at Beach School, despite the fact that no one told me this directly. This may also explain why they did not want to have and open and direct connections with the mayor, in order to hide such trends. Furthermore, when a school receives funding from municipalities and support from the community, they are not able to implement programming or approaches that may threaten the school or educator’s positions, especially when dealing with potentially controversial issues such as social change and equality.

IV. Macrosystem: Social, Political, and Environmental Context in Israel

My last finding reflects the relationship between the social, political, and environmental context in the Israeli culture, society systems. The macrosystem is influencing each of the other layers and important for understanding the complexities of the context EE is being integrated and may influence or may not influence society. First is presented EE and its relations to social and environmental justice, than integrating social justice into EE in the Israeli context is presented, lastly the Jewish-Arab conflict is discussed.

(a) Environmental education and its relationship with social and environmental justice. It is important to note that we need to emphasize the type of knowledge which best affects environmental change which is highly connected to and is an inherent part of social
justice (Furman & Gruenewald, 2004). Environmental sustainability is actually a necessary condition for justice (Dobson, 2007; Langhelle, 2000). The World Commission on Environment and Development (WCED, 1987) presented the connection between sustainable development and societal wellbeing problems almost three decades ago in the following definition: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (p.25). This idea, which emphasized society’s important connection to environmental resources, was farther developed over the years to include social and environmental justice as integral aspect of EE, including the need to enact change in society and not only in the environment (Tilbury, 2010). This was partly presented at River School in this study.

(b) Integrating social justice into EE in the Israeli context. EE and citizenship as social justice agents are especially important to Israel due to its environmental degradation and social gap. Due to its small size, density, lifestyle of consumption, and industry, Israel faces substantial environmental degradation. It is badly polluted and more than a thousand people die each year from air pollution (Tal, 2002), mainly in the center of Israel, where River School was located. The water is also polluted, and there is large gap between the ability of poor and wealthy people to avoid the effects of environmental harm, yet Israel lacks the necessary investment and focus on social-environmental problems (Tal, 2002; Weinthal & Parag, 2003). All of these factors call for corrective action and an integration of social justice and pro-environmental behaviors, particularly citizenship, into EE to foster social and environmental change.

Although society as a whole suffers from environmental degradation, certain groups suffer more than others. Usually, the poor have no choice but to live near environmental pollution, while the wealthy possess the means to move away from these problems. The wealthy
also have the political influence needed to prevent introducing toxic pollutants (Veenstra &
Kelly, 2007). This phenomenon is demonstrated in Israel, especially when comparing the center
of the country, mainly the Tel-Aviv area which is wealthier, to other peripheral areas which are
less affluent (Levi & Cohen, 2011), such as the northern mixed-city (Arabs and Jews)
investigated in this study. Some research have claimed that due to Israel’s small size and high
environmental degradation, it is often difficult to show evidence of environmental injustice, and
sometimes it is not possible to prove that one population suffers more than another, as is the case
in Tel-Aviv, and other central cities, such River School’s city, where all citizens suffer from air
pollution (Sharf, Plaut, & Ben-Ari, 1999). However, there are other factors at work that

demonstrate the environmental injustice in Israel. Rich people with high social capital have

minimized the environmental impact on themselves in various ways such as installing filters in

their air-condition systems to avoid air pollution. For example, some of the students at River

school, and the principal, were more affluent than others in the local area and in comparison to

Beach School. Some of them were able to influence their parents to implement a rain-water

collecting system in their houses, which means they had the money to build a private house,

while most students at Beach School did not have such opportunity because their parents, from a

lower SES community, did not have the money to build a house.

The people that can better understand the problems and can afford more will suffer less

than the poor and the disadvantaged communities, such as those examined in this study. It is

crucial for students to understand this environmental justice phenomenon since it influences the

society and the environment in general and in the microsystem in particular. At River School,

students were taught about social justice and environmental justice in the Israeli context, but

they did not engage in social justice in the local context. At Beach School, where sewage was
running in the school’s neighborhood, for example, the social and environmental situation was so complex that they only tried to deal with the environmental hazardous (on one occasion) and did not relate it to the social complexities and inequalities it represented. The women in the grocery shop located near the sewage tried to deal with this problem, but it did not work for months. When the GC of Beach School wrote a letter, the problem was solved. The vice principal of the school chose to attribute their success to the fact that they were children. We might assume that the fact that they were specifically Jewish children also helped the municipality take an action, especially if we consider that the wife’s mayor was a teacher in the school and the son of the mayor studied in the school. This might show the social injustice that is inherently part of the daily reality of Beach School.

The findings of this study reveal a gap between theory, international declarations, and practice in reality, which in turn presents many challenges for integrating social justice into EE. The findings are not surprising because a socially critical ideology with a political agenda for social change and a teaching approach for critical thinking are in opposition to current practices. EE curriculum and pedagogy have been set in opposition to the more dominant orientation, progressive, educational ideology (Stevenson, 2007) that is common worldwide and in Israel. Despite the need to integrate EE and citizenship, research has found that building knowledge for action and citizenship is not a common phenomenon in Israel (Lemish, 2003), and thus River School’s perspective on knowledge as a way to foster critical thinking, pro-environmental behaviors, and citizenship may be key to reforming and strengthening EE in Israel and beyond. Therefore, it is important to understand the relations between EE and social justice and to figure out how to improve EE programs to include social and environmental problems rooted in the environmental and social justice situation in Israel.
(c) Israeli Jewish-Arab conflict. The complex situation in the Israeli society is not only related to social gaps and environmental degradation; there are social complexities related to Jewish-Arab relationships and conflict. There is a difference between the Palestinian-Israeli conflict and the Israeli-Arab-Jewish relationship. While there is a tension between both populations, there is an understanding that Israeli Arabs are different from Palestinian Arabs, and there is a willingness on both sides to create better relationships between the two populations (i.e. Israeli Arabs and Israeli Jews). This, however, is not the same situation as the Palestinian and Israeli Jew conflict, which is more complicated politically and socially and has a strong influence of other hostile Arab countries in the region (Omer & Or, 2005). Despite this general relationship and understanding between Israeli Jews and Israeli Arabs, 46 percent of Jews do not want to live near Arabs, and 55 percent of Jews think that they should receive more budget funding than Arabs, which means that the majority Jewish citizens prefer to maintain inequality and the status quo in Israel (Fund, 2002). These findings reflect the approach of Beach School participants and may further explain their relationship with Arabs in general and their neglect of them in their EE program.

Conclusions

In conclusion, EE should not simply focus on the natural sciences, as was the case at Beach School, but rather it should explore the interaction between human and environment, particularly the relationship between environmental critical citizenship and human wellbeing. River School took this latter approach and its participants sought to integrate more social complexities into the curriculum (e.g. pro-environmental behavior and citizenship skills) rather than scientific knowledge and approaches around the environment. Furthermore, it is important to incorporate diverse approaches to EE to enable the best fit for the school, community, and the
social change, which is desired. This approach needs to consider school community characteristics as well as nature environment and complexities in the local, national, and global perspectives.

Limitations

The greatest limitation in this study was that the case study was limited to two schools that despite their similarities were very different. Therefore, it is important to read the study with an understanding of the varying contexts. However, this does not reduce the usefulness of the study, which presented a clear picture of what happened in these two schools as related to EE and CC, according to my observations and analysis.

In addition, due to my involvement in the EE field in Israel for more than twenty years, I may have biases about my findings, mainly as regard to knowledge approach and CC, and the way they are interpreted and presented. With knowledge of this limitation, I did the best of my ability to overcome my biases and analyze the data in a systematic way to reveal the findings and conclusions. Additional research would need to be conducted to determine to what extent my findings and recommendations are reflective of and applicable to other schools in Israel and worldwide. The findings of the study should lead to further research to identify and examine the gaps between participants’ claims and their actions during time of interview and observation.

Giving the small sample size and demographic of participants in this study, claims cannot be made regarding the scalability of the results. The results may not be representative of all EE programs in schools in Israel, let alone globally. However, the approaches to knowledge, pro-environmental behavior, and pedagogy are all EE characteristics globally and locally, and therefore, results may be used to identify the type of schools and the directions schools may consider for enabling the integration of CC.
This study cannot show one specific way to implement CC into EE or point to one specific explanation of the differences between River and Beach schools. The qualitative characteristic of the study is part of this phenomenon. The complex reality is that it is also very difficult to isolate factors that solely contribute to the schools’ situations. This limitation is partly overcome by using the human ecology development theory, which enhances systematic analysis through its layered model. This representation of the findings helps to identify the layer that influences the schools’ EE implementation.

**Significance and Possible Implications of the Study**

The two research questions at the heart of this study were: *How did Israeli elementary school teachers and principals understand EE’s role in fostering citizenship for a more just and equitable society, and what structures and strategies did teachers employ to create opportunities for active involvement as part of their approach to EE?* The individual interviews, observations, and review of school documents provided answers to how to improve EE by integrating CC and social perspectives and knowledge to foster a social change.

**Implications for schools and educators.** This study could potentially provide other schools with the tools, methods, and knowledge for creating more effective EE programs. Some of the elements that have emerged from this study can be incorporated into EE programs, such as the constructivist knowledge approach, integrating pro-environmental behaviors in the public sphere, and implementing CC elements throughout the whole school approach. However, it is very complicated, especially given the context of the schools, the communities, and the Israeli sociopolitical context. According to the research findings, the following ideas are the key roots of the relationship between EE and CC, and are important implications for schools.

*Knowledge approach:* It is important to identify the knowledge approach of the school
and change it if necessary. Two main different knowledge approaches were identified: positivist knowledge approach, which emphasizes knowledge acquisition for economic success and simple environmental knowledge with little to no action, and constructivist knowledge approach, which emphasizes civic knowledge for active engagement in the public sphere as informed citizens. A school’s approach to knowledge strongly relates to how it perceives and teaches social issues, and it is an important component that can dictate how a school implements and understands EE.

According to the study findings, we must understand and emphasize the importance of establishing what we mean by knowledge since it may likely affect a school’s practices and actions toward social engagement and change. The way the schools in my study framed knowledge radically informed their philosophy and practice. In some ways, being critical and aware of what we mean by knowledge—do we want to emphasize knowledge as a neutral and objective entity (positivist), or do we prefer to enact knowledge to guide action that will create a humane and just world (constructivist) (Banks, 2004, 1996)—is one step toward the greater social consciousness embedded in the goals of EE. If we would like to use knowledge to guide action for social consciousness, we need to be able to identify the creators of knowledge and their interests (Apple, 1993; Banks, 1996), and to uncover the assumptions about knowledge (Bank, 2004), which in turn will help to deepen our understanding of the social environmental crisis and the actions needed to address it.

A constructivist and critical philosophical approach to knowledge as presented by Gordon (2009) and based on Freire (2000) may foster social change. Implementing this approach at schools that use EE may provide students the opportunity to become social change agents and not just adapt to the status quo (Gordon, 2009). River School’s commitment to framing their EE program with constructivist and critical-thinking approaches led to the integration of
environmental understanding, social knowledge, and their implications for action. Although River School mainly implemented environmental justice and their social change efforts only related to the environment, this approach may have transferable implications for the students and faculty to develop critical citizenship toward a more equitable society in other arenas. This is important because constructivist justice-focused priorities may be implemented through curriculum and school culture in order to provide students the opportunity to integrate critical social consciousness into their critical thinking, citizenship skills, and consequently into their actions in society.

The implications of how we define knowledge in teaching practices are important for understanding how to better implement EE programs that lead to social change. If all EE programs critically examine what is considered knowledge, who decides, what the source of knowledge is, and how it is transmitted or created, other aspects of teaching practice and the assumptions embedded in them will become more transparent. In turn, such transparency may allow for a greater degree of innovation and social change. It is important to note that EE alone is not necessarily a transformative educational opportunity unless it is set within a broader value structure and social commitment. In fact, EE may perpetuate the status quo unless it is approached more holistically.

(2) **Pro-environmental behaviors**: An institution’s knowledge approach is only one part of a suite of factors that can affect its EE goals of pro-environmental behaviors and CC. According to the study’s findings, pro-environmental behaviors in the private sphere are more common than pro-environmental behaviors in the public sphere. This may be strongly related to the emphasis or lack of focus on social aspects as part of EE and citizenship. Knowledge is not the only goal of EE and is not the only parameter that promotes pro-environmental behavior
(Athman & Monroe, 2001), which is the focus of this study. Knowledge is a “necessary, however, not sufficient precondition for developing pro-environmental moral norms and attitudes” (Bamberg & Möser, 2007, p.22). Many educators believe that increased knowledge will lead to behavioral change and responsible environmental action. While knowledge, attitudes, and behaviors are related, the relationship is not a simple cause-and-effect progression from knowledge to attitude to behavior. Environmental knowledge is not a prerequisite for pro-environmental behavior (Kollmuss & Agyeman, 2002). An action is much more complex than knowledge (Hungerford & Volk, 1990).

Despite the need to integrate EE and citizenship, research has found that building knowledge for action and citizenship is not a common phenomenon in Israel (Lemish, 2003), and thus River School’s perspective on knowledge as a way to foster critical thinking, pro-environmental behaviors, and citizenship may be key to reforming and strengthening EE in Israel and beyond. Therefore, it is important to understand the relations between EE and social justice and to figure out how to improve EE programs to include social and environmental problems rooted in the environmental and social justice situation in Israel. Teachers and principals need to better understand the relationship between social and environmental issues as well as the relations between sustainability and a more just society. Understanding is only the first step; school-staff need to be role models for pro-environmental behaviors in the public sphere as well as serve as change agents in society. School administration needs to support EE and CC, not only by promoting professional development, but also by incorporating these issues into everyday life in school, creating diverse opportunities for students to be engaged with decision makers, and implementing experiential learning that encourages the constructivist knowledge approach. River School may serve as a good example of implementing environmental citizenship that can be
replicated in other schools, not only related to EE. Meeting the mayor and presenting their questions and concerns about the city is an example of a skill for students to learn in order to be active citizens.

(3) The whole school approach to EE implementation, which River School reflected, seeks to integrate more social aspects into the curriculum (e.g. pro-environmental behavior and citizenship skills) rather than only focus on scientific knowledge and approaches related to the environment, reflected in Beach School’s programming. Students learn by doing with practical applications such as hands-on activities, place-based education, project-based learning connected to the community, and outdoor learning. The whole school approach is a useful way to implement EE that incorporates CC. It is imperative to change the education system if there is going to be any real change across our local, national, and global communities. River School has demonstrated its capacity to serve as a model for EE for other schools in Israel. Nevertheless, it is important to remember that even in schools such as River School, there is still a long way to go in combining CC into the EE.

Beach School focused its science study on inquiry-based learning, and on the value of conserving bio-diversity but without the full social commitment and without the whole-school approach. There were attempts to create an integrative EE program, but it remained tied to a single specific program and was not throughout the entire school curriculum and its programs. At Beach School, the EE program created several changes in the school, but it needed to go further to be a social change agent in the society. The value of constructivist education and social integration is part of Dewey (2004) idea that the central objective of education is to create a democratic agent and not social, cultural, and occupational conformist. Therefore, students’ understanding of cultural norms and processes are a necessary condition to be a change agent in
society (Hyslop-Margison & Strobel, 2007). This may be the route toward justice. Understanding and changing the present approach may help Beach School to be a change agent for more just and equitable society, and maybe even change the social inequality between Arabs and Jews in their city.

(4) **Critical Citizenship**, which in the context of EE, is the idea that the human environment is an integral part of, fostering a sustainable natural environment and an equitable society. Currently, CC is a small part of EE, even in schools that have implemented EE for more than ten years in a ‘deep’ way. River School showed evidence of exploring issues of equity. However, this approach is less common than teaching and encouraging students to engage with environmental issues by saving resources (e.g. water, energy, and paper), recycling, and other pro-environmental behaviors in the private sphere. At Beach School, there was a very small connection between the human environment and the natural environment, and very little implementation of the idea that EE is a way to foster a more equitable society.

Despite the schools’ engagement with EE programs for so many years and with so many activities, EE was not becoming part of the concept of CC. Again, while River School saw the connections between EE and citizenship and tried to implement citizenship skills as part of its EE approach, the critical component of CC—the idea that an educated person can be a social change agent towards a more equitable society—was not a major part of River School’s approach. In other words, the main emphasis at River School was more on citizenship towards improving the environment and less on improving social justice. Citizenship was hardly seen at Beach School, and only with one or two participating teachers who were be slightly involved with a small activity with a small group of students.

In conclusion, it continues to be difficult to fully implement EE in countries such as Israel
that emphasize high-stake tests, narrow subject matter, and have a wide range of social and security problems. However, I believe that there are enough people that want a change to truly implement EE and change environmental and social inequality in Israel.

Educators and scholars need to choose the constructivist critical citizenship approach to knowledge in both philosophy and practice if they are truly interested in EE as a transformative educational approach for more equitable society (1) in the context of Israel and its environmental degradation and social complexities; (2) in the context of the economic disparities of the schools; and (3) in the context of the contemporary world which needs to value social justice, environmental justice, and compassion to be sustainable, as presented in this chapter. We need to create schools as social-environmental change agents through promoting EE’s relationship with social issues and connecting it to the overarching dialogue about knowledge approaches, particularly knowledge construction and integration. Due to EE’s role in enhancing pro-environmental behavior, it is important to understand which approach schools use for developing knowledge, because a knowledge approach has a significant influence on behavior in general and in this case, pro-environmental behavior. In this sense, a school’s approach to knowledge may or may not position EE as a trigger to create a more equitable society.

Implications for policymakers and decision makers: It is important for both policymakers to be aware of their knowledge approach in order to better understand and identify the type of EE they wish to implement. Policymakers should give schools more freedom to focus not only on high-stakes testing but also on encouraging critical thinking, outdoor teaching, experiential learning, EE, and CC. Furthermore, the CGSC award should include CC components in order to create distinctive factors for diverse schools. There are many differences between how Beach School and River School implement EE, so it is crucial to create more
parameters for the CGSC, especially parameters that take into account critical thinking, critical citizenship, knowledge, and citizenship approach.

**Implication for NGOs.** The findings of this study may suggest an opportunity for the GN—and other environmental NGOs in Israel and worldwide—to influence and change school agenda. Maybe in the beginning it is possible only to implement social and environmental aspects broadly and vaguely, and as a second stage integrate social and environmental justice starting from the global perspective because it is easier to deal with such problems from a distance rather than deal with the local issues. EE has the opportunity to make a difference by integrating social and environmental aspects and may be one of the ways to change environmental injustice in Israel. Therefore, it is important to include social aspects as part of EE in order to (1) learn and understand these phenomena, and (2) to give students the skills and the motivation to be social change agents for a more equitable society.

**Scholarly Contribution**

**Theory:** To address the theoretical disconnect between EE and civic education, this research examined links between teacher perceptions of EE programs and their attitudes, values, beliefs, norms, and behavior toward the environment, using the VBN theory and focusing on citizenship as defined by the CC conceptual framework. The key premise was that increasing teachers’ pro-environmental behaviors will increase the probability that they will teach and implement EE effectively (Berkowitz et al., 2005; Chawla & Cushing, 2007). This may lead to increased student civic engagement as a result of EE (Ernst, 2007; Lieberman & Hoody, 1999; Paige & Cogan, 2002). This was not found in this study. To achieve these results, schools require more support from their administrations and local and national policymakers to implement the social aspects of EE.
This research has also added information about the linkages between citizenship and civic education with respect to demographic and socioeconomic factors (Ichilov, 2007). This study suggests that increased civic knowledge leads to increased citizenship. Schools’ socioeconomic characteristics are important in understanding civic education outcomes (Campbell, 2008). Once again, however, there is a long way to go to achieve this desirable linkage and to develop these directions in schools and in commonly accepted theory. As revealed in this study, combining EE and civic education research is important to understand and re-envision teachers’ roles in educating for pro-environmental behavior and citizenship.

Research: This study contributed to wider research by combining literature and approaches to EE and civic education. It is important to study EE with diverse methods in order to gain a better understanding of social-environmental issues and their impacts (Scott, 2009). Furthermore, it is important that this study investigated teachers’ values, beliefs, and norms toward the environment and their perceptions of effective EE with a focus on behavior (Paige & Cogan, 2002), because it is not a common research perspective. Literature has indicated that there is a lack of research that investigates relationships between sustainability, society, and learning processes (Scott, 2009). Teachers’ ability to implement theories, ideas, and knowledge about the environment and society makes them important agents of change in the education system (Cotton, 2006a, 2006b). Therefore, it is valuable to understand their perspectives on EE and citizenship, particularly through the lens of their school SES (Hungerford et al., 2000; Kandir et al., 2012).

Practice: This research is important for teachers and educators, administrators, and policymakers in Israel and beyond. It is urgent to encourage teachers to educate students with an emphasis on promoting pro-environmental behavior and citizenship (Osler, 2011). There is a
need for research to make EE more effective, especially in places like Israel, where there is substantial environmental degradation, wide social gaps, and a clear need for better EE and better society. It is important to understand teachers’ perspectives on EE and civic education to better implement these programs (T. Tal, 2010; Yavetz et al., 2009). In this study, there was a clear link between educators’ approach to knowledge and the integration of social aspects, pro-environmental behavior in the public sphere, and active citizenship. This may help practitioners to emphasize constructivist knowledge to promote EE and CC.

Understanding teachers’ perspectives may help to create better EE programs that teach toward effective citizenship and other pro-environmental behaviors. This research may enable practitioners and decision makers to implement comprehensive EE programs that more fully incorporate teachers’ perspectives of pro-environmental behavior, civic education, and EE teaching practices in Israel and worldwide. Understanding the impact of EE on low SES schools through the perspectives of teachers could help education in other nations facing similar challenges related to wide achievement gaps between low and high SES schools. Interestingly, the study’s participants did not recognize any connections between the students SES and their own school’s environmental attitudes and behaviors. Increasing pro-environmental attitudes and behaviors among teachers could increase their EE teaching effectiveness and therefore lead to greater student civic engagement (Ernst, 2007; Lieberman & Hoody, 1999). This is important because it is valuable to educate for pro-environmental action and not just knowledge (Rickinson, 2001).

**Future Study**

The findings from this study will hopefully encourage further research on how to implement CC into EE programs in effective ways. In addition, developing such EE programs
could potentially increase justice and change in society. It is my hope that other schools in Israel and worldwide read this study and will be inspired to make the needed changes to improve social and environmental problems.

The following list represents recommendations for further study that would begin to address the universality of the findings and the importance of the role of EE to foster social and environmental change. Future studies could include

- conducting multiple case studies to look at context, SES, community engagement, and citizenship in Israel and worldwide;
- gathering quantitative data related to schools that incorporate civic education and critical citizenship;
- exploring other schools internationally who have implemented CC as part of EE to learn best practices for effective implementation of social change;
- continuing the exploration of teachers’ perspectives on students as social change agents;
- identifying the characteristics of principals’ leadership styles that integrate CC into EE;
- investigating specific EE professional development programs to improve them and to incorporate social aspects; and

Examining pedagogy that could be replicated at other schools, such as PBE, outdoor learning, in a whole school approach.

**Personal Reflection and Being a Change Agent in Society**

I have worked in outdoor education implementing EE programs in diverse ways since I was twenty years old. I was passionate about nature, ecological systems, and later added the social justice to my understanding and work. I realized that EE without social justice is simply
another educational program which has little effect for me and for society. I advocated for the integration of social and environmental issues, as well as citizenship for many years. Until I started my doctoral program and conducted a literature review, I was not aware of the critical theory approach and critical citizenship.

With my EE experience and practical knowledge about the impact of projects that integrated citizenship, I was sure that every school that had implemented EE for more than ten years would arrive at the same conclusion as I did once I learned about the critical approach: we cannot separate environmental from social issues. My subsequent research, however, proved this hypothesis wrong. Even schools that engaged with EE for more than ten years and integrated some social issues were not dealing with local social justice problems. During the analysis and conclusions phase of writing this dissertation, I realized that I must act to change the EE approach of schools in Israel and maybe worldwide as well.

Therefore I have started to try to influence schools, communities, governmental entities, and NGOs with my findings in Israel. I started to integrate my findings for creation of transformative education through direct action in the Israeli EE field. I met with the GN NGOs leaders and counselors, which has been working with Beach School and with many other schools in Israel. I gave a clear reference guide for what I had learned and what I witnessed through lectures about the study to all instructors of the GN, emphasizing their important role in enhancing an EE approach focused on pro-environmental behavior in the public sphere, the social components of EE, critical citizenship and how they should approach the EE program at Beach School to incorporate first social issue and later social justice. I also spoke with the instructors of Beach School and consulted with them about how they should approach EE.

In the future I plan to present my main findings to Beach School’s principal and teachers
and share with them my understandings and ways to integrate social and environmental justice as well as pro-environmental behavior in the public sphere in their school. I have already presented part of my findings to River School, which is eager to participate in collaboratively writing an article about the school and about my findings. This is a project in which I am more than happy to participate, and the school has encouraged me to write and publish my findings.

I presented the research findings and several aspects of the study such as critical citizenship to another NGO, the Society for the Protection of Nature, to their guides, instructors, and management staff. The purpose of the lectures and discussions was to emphasize the importance of integrating CC and social justice into their EE programs. We are planning to work together on a continued professional development program that relates to EE and CC that will start next academic year.

I tried to present some of my findings to elementary school principals in professional development programs I have led, but this was also quite a difficult experience. Principals in Israel are working in very hard conditions (e.g., accountability for standardized test; changes in program and focus by each new Minister of Education, which changes every two years due to unstable government; parents; and much disrespect and violence in their schools) which causes them to be able to think about EE only in terms of private sphere pro-environmental behavior and environmental knowledge. Implementing social ideas and especially social justice ideas as part of their EE program was not acceptable. There were even Arab principals in these professional development workshops who declared that due to their students’ low achievement levels they must use every hour for teaching literacy and math without any ability to implement EE at all.

I also presented the findings to the Ministry of Environment in order to influence their
Continue Green School Certificate criteria to include CC. This was not successful, mainly due to the Israeli Ministry of Education which does not want to deal with social justice in schools. As the Ministry of Environment is working together with the Ministry of Education in Israel, there is no way, for now, to change the way they approach EE.

I incorporate the research findings into my teaching in the largest teacher college in Israel, where I teach EE classes for undergraduate and masters’ students. The idea of CC and social justice is a core idea which I present in every class I teach. I am very proud to meet students that enthusiastically discuss implementing sustainability into their classes. They understand the relations between EE and social justice, but they also face the same problems as the principals to integrate it into schools. I hope I will find ways to help them overcome this barrier.

I have realized during my efforts to disseminate my research findings and advocate better EE practices in Israel that it will be very difficult to change the current situation. However, with persistence and by continuing to advocate for CC to foster social change in Israel in all the places that will accept me, I am confident that I will be able to change the entire school system in Israel one day. I know that I can do it, because I was able to implement my initial EE program into the Ministry of Education after a ten-year effort. I assume it will take more than ten years to implement social justice and critical citizenship into schools in Israel now, but hopefully I will lead a real change in the education system and help to create a more just society in Israel.
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Appendix A

Participants, Observations, and Documents Analysis

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<th>River School</th>
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<tr>
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<td>Current/Former Position: Principal</td>
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<td>Yura 33 in total, 2 as principal</td>
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<td>Current/Former Position: Vice Principal</td>
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<td>Lola 15 in total, 2 as vice principal</td>
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<td>Eli 23</td>
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<td>5th grade</td>
<td>Tom 23</td>
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<td>6th grade</td>
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<td>Efi 35 in total, 12 in the school</td>
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<td>Titi 2</td>
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Data Sources

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Appendix B

Letter for Participants: Principals

Dear Principal,

My name is Dafna Gan, and I am a doctoral student at Northeastern University, Boston, Massachusetts. I am writing to ask your help in my current research.

I have a strong research interest in the role environmental education and citizenship has played in enhancing social change in Israel. I am currently working on my dissertation on environmental education and citizenship in elementary schools, and I am especially keen to interview principals and teachers in your school about how they promote environmental education and pro-environmental behaviors.

The research process includes three steps: review environmental education curriculum documents, observe environmental education events and lessons, and interviews. In the interview, I will collect some basic background information, ask questions that focus on how environmental education looks on the ground, as a principal, and what you think about it in relation to citizenship and social justice. The interview will last between 60-90 minutes. All responses will be kept confidentially—identifying information will never be published. Any interviews I conduct will be under stringent university protocols, which give the interviewee the right to remain confidential if they wish and to withdraw from the study at any time.

If you agree to participate, I would need a permission letter, via email, allowing me to: review curriculum documents, recruit individuals (teachers from your school), perform observations, and conduct interviews (with you and your teachers). I will be happy to explain you this request in more details in a phone call.

If you are interested in participating in this study, please contact me at 053-303-2006 or gan.d@husky.neu.edu.

Thank you in advance for your time and consideration.
Sincerely,

Dafna Gan
EdD Candidate
Northeastern University at Boston, MA
Cell: 053-303-2006; gan.d@husky.neu.edu
Appendix C

Transcript of Initial Conversation: Phone Call and E-mail with Principal

Request for Permission for Support from the School (Phone Call Conversation Protocol)

Thank you for expressing interest in this study. My name is Dafna Gan, and I am a doctoral student at Northeastern University. This research project is my doctoral thesis, and the goal of the study is to understand teachers’ and principals’ perceptions of the relationship between environmental education and citizenship and their abilities to foster social change in order to better implement such programs. I would like to make it clear that I am not going to evaluate, neither your school nor your environmental education program.

As the Student Researcher, I am the person who will be conducting the interviews as well as the conversations before the interviews, like the one we are having right now. The principal investigator is my thesis advisor, Dr. Jane Lohmann.

This is a case study. There are a few reasons I’ve chosen to do this study: First off, I’m very passionate about environmental education and social justice. Secondly, from my experience of implementing environmental education programs in the past, I think it is not easy to implement environmental education which focuses on pro-environmental behaviors at schools and I would like to know how you manage to do that. The third reason I chose to do this particular research is because there have been no previous studies which focus on the relationship between environmental education and citizenship in Israel, and I think it’s about time we start to explore this topic.

The research process includes three types of data I am planning to collect: 1. interviews with you and some of your staff members (approximately 60-90 minutes), 2. curriculum data collection: I will ask you and your teachers to send, to me via e-mail, documents that describe the environmental education curriculum and how it relates to the school, and 3. observations of environmental and social justice education lessons, activities and events: I will need dates and types of activities from you, so that I can join in order to observe.

Therefore, as I mentioned in my initial letter, I need a permission letter from you, allowing me to collect the data mentioned above. Do you agree to send me this permission letter?

Thank you very much! I really appreciate that.

That is a very brief overview of the research. Do you have any questions in regards to the research itself?

Great!

I would like to set up the time to do the interview with you (will last a maximum of 2 hours). What times work for you? __

Thank you, so that is it for now. I will send you an email explaining the next steps I need your help, and I look forward to our interview on ___. Thank you very much.
Recruitment for Interview (e-mail to the principal)

Dear principal,

Thank you for your permission letter to conduct my research in your school. I need your help in reaching out to your teachers using the following steps:

1. Joining a staff meeting for 5-10 minutes to explain my research and the steps involved in it (review curriculum documents, observe environmental education events and lessons, and interview your teachers conducted by me). Can we set up a time to meet your teachers in a staff meeting to explain the research?

2. Identifying six to eight teachers, according to the following criteria: teachers who have been actively teaching and implementing environmental education in their classrooms (for more than five years), and teachers who care about environmental education (e.g. teachers who behave in pro-environmental actions such as recycling, saving energy in their home, etc.).

3. Sending the letters for participating teachers. A letter for your staff that explains my research is attached. I would appreciate it if you can deliver the letter to your teachers that explains my research, and help me reach out to your staff.—is that acceptable?

Thank you for your help,

Dafna Gan
Appendix D

Transcript of Faculty Meeting Conversation with Teachers

Thank you for letting me present my study in your faculty meeting. My name is Dafna Gan, and I am a doctoral student at Northeastern University. This research project is my doctoral thesis, and the goal of the study is to understand teachers’ and principals’ perceptions of the relationship between environmental education and citizenship. I would like to ask you—the teachers—how environmental education looks on the ground and what you think about it. I would like to make it clear that I am not going to evaluate, nor is your school or environmental education program. I would like to emphasize that I don’t have the actual picture of the school based approach to environmental education and citizenship. Therefore, you will be the experts that will help me to uncover and explore your perceptions about the relationship between environmental education, citizenship, and social justice.

As the Student Researcher, I am also the person who will be conducting the interviews as well as the conversations before the interviews, like the one we are doing right now. I’m happy to say that you meet all of the criteria in regards to participation in this study which include: a) Environmental education is implemented as a whole-school approach including environmental education curriculum for all grades in your school, b) Environmental education is integrated at least an hour each week in the school year calendar, c) Environmental education community projects are integrated on a regular basis, d) School have a “green council”, e) Principal and teachers emphasize pro-environmental behaviors, f) Environmental education curriculum is implemented for more than five years, g) School from low SES. Now I would like to tell you a bit more about the scope of this project.

This is a case study, which involves a process of collecting three types of data: 1. interviews with some of the faculty members, 2. curriculum data collection: I will ask you to send me via e-mail documents that show the environmental education curriculum and how it relates to the school, and 3. observations of environmental and social justice education lessons, activities and events: I will need dates and types of activities from you that I could join to observe. In the interview, I will collect some basic background information, ask questions that focus on how environmental education looks on the ground and what you think about it. The interview will last between 60-90 minutes. All responses will be kept confidential—identifying information would never be published. There is no compensation for participating in the research. You will get the letters for faculty participants and I will appreciate, if you agree to participate to contact me.

That is a very brief overview of the study. Do you have any questions in regards to the research itself?

Great, so that is it for now. I look forward to meet you in my interview.

I look forward to it…have a good day!
Appendix E

Letter for Participating Teachers

Dear Faculty Member,

My name is Dafna Gan, and I am a doctoral student at Northeastern University, Boston, Massachusetts. I am writing to ask your help in my current research.

I have a strong research interest in the role environmental education and citizenship has played in enhancing social change in Israel. I am currently working on my dissertation on environmental education and citizenship in elementary schools, and I am especially keen to interview teachers about how they promote environmental education and pro-environmental behaviors.

The research process will include the following: review environmental education curriculum documents, perform observations on environmental education events and lessons, and interview teachers (approximately 60-90 minutes).

If you are interested in participating in this study, please contact me at 053-303-2006 or gan.d@husky.neu.edu and I will send you a consent form. Any interviews I conduct will be under stringent university protocols, which give the interviewee the right to remain confidential. You do not have to participate if you do not want to and if you wish and to withdraw from the study at any time.

Thank you in advance for your time and consideration.
Sincerely,

Dafna Gan
EdD Candidate
Northeastern University at Boston, MA
Cell: 053-303-2006
gan.d@husky.neu.edu
Appendix F

Consent Form

Northeastern University, Boston, MA

Northeastern Department: College of Professional Studies (CPS) - Curriculum, Teaching, Learning, and Leadership (CTLL) concentration

Name of Investigator(s): Dr. Jane Lohmann (Principal Investigator), Dafna Gan (Student Researcher), Oren Pizmony-Levy (Third Reader who will help with translation)

Title of Project: Environmental Education and Citizenship: A Case Study of Elementary Teacher Perspectives in Israel

Request to Participate in a Research Study

You are cordially invited to participate in a research study on environmental education and citizenship. You have been invited to participate because you are a principal/teacher in a school that has participated in environmental education programs for more than five years. This form will tell you about the study, but the researcher will explain it to you first. You may ask the researcher any questions that you have. When you are ready to make a decision, you may tell the researcher if you want to participate or not. You do not have to participate if you do not want to. If you decide not to participate, there will be no impact on you professionally. If you decide to participate in this study, you will be one of several participants in this research. Before agreeing to participate, we ask that you read this form carefully, sign this statement, and we will give you a copy to keep.

The study is being conducted by Dafna Gan, Doctoral Candidate in Educational Leadership at Northeastern University, Boston. This study is conducted under the supervision of Dr. Jane Lohmann, the co-chair of the Curriculum, Teaching, Learning, and Leadership concentration.

The purpose of this research is to better understand how environmental education, when paired with civic education in Israeli elementary schools, can foster social action toward a more just society. I invite you to participate in this research and seek your consent to interview you, use documentation of the environmental education program in use at your institution, and collect additional data, which I will describe below.

As part of the informed consent process, I would like to explain that there is no compensation offered to participants, so you will not be paid for your participation in this study. There is also no risk to participating in this research; I will keep responses confidential and all audiotapes of interviews will be destroyed following transcription and analysis. Any reports or publications based on this research will only use pseudonyms, and will not identify you or any other participant as being part of this project.

There are no direct benefits to you for participating in the study; however, this research study is designed to obtain new knowledge, and your answers may help to promote environmental
education in Israel in the future. Moreover, it highlights principals’ and teachers’ perspectives and experiences with environmental education in Israel.

I will offer you the opportunity to review the transcript of the study interview and to request that any of your contributions be withheld from analysis.

Participating in this interview and research is entirely voluntary. You can refuse to answer any question and may withdraw from the research at anytime.

Specifically, I am seeking your consent for the following:

**Documentation:** I would like your permission to analyze your environmental education curriculum and lesson plans.

**Interview:** I would like you to participate in a semi-structured interview that I will record and transcribe. The interview generally takes 60-90 minutes and will take place at a location of your choosing. I anticipate this interview will take place during spring 2015. The interview will consist of 9 main questions.

**Observations:** I would like your permission to observe special environmental events and lessons. My goals for observations are to explore how environmental education and citizenship fits into your classroom and into the overall school program.

Please note that your responses will be kept confidential to the best of our ability, and will only be used for the purpose of this research. Any reports or publications based on this research will not identify you or any individual as being of this research. Participants’ names will be changed.

My focus in this research is on principals and teachers and their perspectives, so I will not actively seek input from students, but rather will depend on your reflections on your own and your student reactions and results.

Finally, your review of my interpretations of research data, particularly as it represents your perspective, is critical to the credibility of my research. At the end of the interviews, I will ask you to review the findings and conclusions and ask for your thoughts about my interpretations of the data. I will do my best to limit the time required of you, but your input about my findings will be valuable.

Please let me know if you have any questions or concerns about participating in this research. You may contact me at: gan.d@husky.neu.edu or 053-303-2006. You may also contact my advisor, Dr. Jane Lohmann at j.lohmann@neu.edu.

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University,
Boston, MA 02115. Tel: 617.373.4588, Email: irb@neu.edu. You may call anonymously if you wish.

I truly appreciate your participation. Thank you very much!

*Dafna Gan*

---

**Participant's Agreement:**
I have read the information provided above. I understand the information presented on this form. I have asked all the questions I have at this time, and my questions so far have been answered. I voluntarily agree to participate in this research study. My signature below indicates my willingness to participate in this study and my understanding that I can withdraw at any time.

Please indicate your consent by signing below

______________________________  ____________________________
Signature of person agreeing to take part  Date

______________________________
Printed name of person above

______________________________  ____________________________
Name (printed) and Signature of Person Obtaining Consent  Date
Appendix G

Permission Email for Conducting Environmental Education Research for River School

April 9th, 2015

To whom it may concern,

My name is Dafna Rudick, I am the principal of Afek school, Rosh-Hayin, Israel. I am giving my permission to Dafna Gan, a Doctoral student at Northeastern University, to conduct her study in my school.

I am giving Dafna Gan the permission to do the following:

1) Review curriculum documents regarding environmental education programs and lesson plans in my school.
2) Recruit teachers from my school (according to my advising, and the teachers’ willingness to participate).
3) Participate in a staff meeting to explain the research.
4) Observe environmental education events and lessons in my school.
5) Conduct interviews with me and the school’s teachers.

Sincerely,

Dalia
## Appendix H

### Type of Documents: River School and Beach School

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<td><strong>No. &amp; Type of Documents</strong></td>
<td><strong>Name of Program / Activity</strong></td>
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<td>Special programs</td>
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<tr>
<td>The Story of an object (4&lt;sup&gt;th&lt;/sup&gt; grade every year for half of the year)</td>
<td>4 documents: curriculum, lessons plans, community event plan, expedition of objects description</td>
<td>Ecological story, life in the ocean, Mediterranean Sea as bridge between cultures</td>
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<td>Sequence Program (5&lt;sup&gt;th&lt;/sup&gt; grade every year the whole year)</td>
<td>10 documents: curricula related to different subjects (e.g. birds, waste, water), lessons plans, visiting the school plans, research studies about the program</td>
<td>Language art in related to the sea (1st &amp; 2nd; 3rd &amp; 4th; 5th &amp; 6th grades program)</td>
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<td>The Glob Program (leadership group)</td>
<td>4 documents: curriculum, projects awards, newspaper articles</td>
<td>Program Recipes (4&lt;sup&gt;th&lt;/sup&gt; grade)</td>
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<tr>
<td>Energy Project (5&lt;sup&gt;th&lt;/sup&gt; grade in science)</td>
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<td>Ecological Morning – Evrona (a place in the desert) Program (whole school whole year)</td>
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<td>Name of Program / Activity</td>
<td>No. &amp; Type of Documents</td>
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Appendix I

Principal Interview Protocol

**Interview Protocol**

Interviewee: Dafna Gan
Interviewer: Date: Location (name of school):

**Introductory Statement:** This interview is part of a study on environmental education and citizenship. Thank you for your participation. Because your responses are important and I want to make sure I capture everything you say, this interview will be recorded. I will also be taking some written notes during the interview. Is this process acceptable to you?

To meet our human subjects’ requirements at the university, you must sign the form I have with me (provide the form). Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm (allow time to review form). Do you have any questions about the interview process or this form? I would also like to audiotape this interview and have a consent form related to this as well (provide form).

* I can assure you that all responses will be confidential – I will only use your pseudonym when quoting from the transcribed text. This will be the only interview. We already discussed the research goals in our first meeting, and you have read the Consent Form. Do you have any other questions about the process at this time? Do you agree to sign the Consent Form? Thank you.

**Interview questions:**

1. What is your role in the school? If you teach as part of your role:
   - What grade/s do you teach?
   - Which subject/s do you teach?
   - How many years have you been principal in the school?
   - How many years has your school been involved with EE programs?
   - How many years have you been involved with EE programs?

2. What makes Environmental Education important to you?

3. Describe a time when you saw teachers connect deeply with an EE experience or lesson.
   - What was the experience/lesson? How did you know they were connecting in a deep
way?

4. Describe some of the ways you have changed as a person as a result of your engagement with Environmental Education.

5. Tell me about a time when you realized that your actions were in line with what you teach and lead in Environmental Education. What makes that example stand out?

6. What changes in your school community have you noticed that seem to be connected to the Environmental Education curriculum or commitment (E.g., pro-environmental behaviors). Please describe an example of what that looks like.

7. How do you understand and think about the relationship between environmental education, citizenship, and social justice?

8. How do you incorporate those connections into your managing and leading your school?

9. Describe a time when students or teachers drew connections between environmental and social issues. What sparked those connections?

10. What else would you like me to understand about the role of EE in your school?

Closing the Interview: I am finished with my questions at this point. Is there anything that we did not discuss that you think would be important to add at this time?

Before we wrap up this interview, I’d just like to ask you to consider if you know of any other school principals who also might meet the criteria for this study, and be interested in participating? If so, I would definitely appreciate it if you tell them about this study, and give them my contact information.

I thank you again for spending this time with me. Your participation in this study has been very helpful. I will be back in touch with you when I have your transcripts and you can review them at _____
Appendix J

Teacher Interview Protocol

Interview Protocol
Interviewee: Dafna Gan
Date:
Location (name of school):

Introductory Statement: This interview is part of a study on environmental education and citizenship. Thank you for your participation. Because your responses are important and I want to make sure I capture everything you say, this interview will be recorded. I will also be taking some written notes during the interview. Is this process acceptable to you?

To meet our human subjects' requirements at the university, you must sign the form I have with me (provide the form). Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm (allow time to review form). Do you have any questions about the interview process or this form? I would also like to audiotape this interview and have a consent form related to this as well (provide form).

I can assure you that all responses will be confidential – I will only use your pseudonym when quoting from the transcribed text. This will be the only interview. We already discussed the research goals in the faculty meeting, and you have read the Consent Form. Do you have any other questions about the process at this time? Do you agree to sign the Consent Form? Thank you.

Interview questions:

1. What is your role in the school?
   - What grade/s do you teach?
   - Which subject/s do you teach?
   - How many years have you been teaching in the school?
   - How many years has your school been involved with EE programs?
   - How many years have you been involved with EE programs?

2. What makes Environmental Education important to you?

3. Describe a time when you saw students connect deeply with an EE experience or lesson.
   What was the experience/lesson? How did you know they were connecting in a deep
way?

4. Describe some of the ways you have changed as a person as a result of your engagement with Environmental Education.

5. Tell me about a time when you realized that your actions were in line with what you teach in Environmental Education. What makes that example stand out?

6. What changes in your school community have you noticed that seem to be connected to the Environmental Education curriculum or commitment (E.g., pro-environmental behaviors). Please describe an example of what that looks like.

7. How do you understand and think about the relationship between environmental education, citizenship, and social justice?

8. How do you incorporate those connections into your teaching?

9. Describe a time when students drew connections between environmental and social issues. What sparked those connections?

10. What else would you like me to understand about the role of EE in your teaching and in your school?

Closing the Interview: I am finished with my questions at this point. Is there anything that we did not discuss that you think would be important to add at this time? I thank you again for spending this time with me. Your participation in this study has been very helpful. I will be back in touch with you when I have your transcripts and you can review them at ____
### Appendix K

**Observation Protocol**

<table>
<thead>
<tr>
<th>Date &amp; Time:__________________</th>
<th>Participant (pseudonym):__________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place (indoor/outdoor, in/out of school):</td>
<td></td>
</tr>
<tr>
<td>Type and Goals of Activity (lesson, special project)</td>
<td></td>
</tr>
<tr>
<td>Description of Activity including sequence of events</td>
<td></td>
</tr>
<tr>
<td>Key Quotations</td>
<td></td>
</tr>
<tr>
<td>Examples of Pro-environmental behaviors that happen during observation (teachers, administrators, school staff, and students) such as saving water, saving energy, saving paper, using recycling bin, lunch covered with boxes</td>
<td></td>
</tr>
<tr>
<td>Visible evidence for pro-environmental behaviors (e.g. posters on the walls, recycle bins, community garden, water saving signs)</td>
<td></td>
</tr>
<tr>
<td>Opportunity for pro-environmental behavior in the public sphere created by the teachers and principals (e.g. writing a letter to decision makers, meeting with decision makers, meeting with people from the community to create social-environmental change)</td>
<td></td>
</tr>
<tr>
<td>Researcher personal view, reflection and emotion:</td>
<td></td>
</tr>
</tbody>
</table>
Appendix L

Categories & Codes: Title and Descriptions

<table>
<thead>
<tr>
<th>Category</th>
<th>Family Code Name</th>
<th>Family Code Description</th>
<th>Code</th>
<th>Code Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EE Pedagogy &amp; School Characteristics</strong></td>
<td>Environmental Education in School life</td>
<td>The way EE is being implemented, integrated, and reflected in school life</td>
<td><strong>EE S</strong></td>
<td>Uniqueness of the school; culture; curriculum; management; professional development; teachers as a role model in EE; students leadership (GC); organizations that helped to implement EE;</td>
</tr>
<tr>
<td></td>
<td>Environmental Education Characteristics</td>
<td>The characteristics of EE as being used in school</td>
<td><strong>EE C</strong></td>
<td>Knowledge (about environment, bio-diversity &amp; citizenship); critical &amp; creative thinking; engagement; democracies principles; experiential &amp; outdoor learning; holistic; pedagogical approach</td>
</tr>
<tr>
<td><strong>Social Aspects</strong></td>
<td>School and Community</td>
<td>The relationship between school, parents, and communities</td>
<td><strong>SC</strong></td>
<td>Arabs &amp; Jews relationships; school &amp; community integration; parents engagement; community participation; working with other schools</td>
</tr>
<tr>
<td></td>
<td>Social and Environmental aspects: Socio Economic Status &amp; EE</td>
<td>The way the teacher perceived the relationship between SES and EE in school</td>
<td><strong>SES &amp; EE</strong></td>
<td>Social and environmental justice; critical citizenship and EE; relationship between community and environment</td>
</tr>
<tr>
<td><strong>VBN &amp; P-E B (Values, Beliefs, Norms &amp; Pro-environmental behavior)</strong> (stern, 2000)</td>
<td>Values: Personal values (especially altruistic values), biospheric, altruistic,</td>
<td>General values, values that relate specifically to EE, sustainability, civic &amp;</td>
<td><strong>V</strong></td>
<td>Respect to students, people, environment, and to the differences between people and communities; a value of life, and relate to the environmental crisis; taking care, and being responsible for the environment;</td>
</tr>
<tr>
<td>Category</td>
<td>Family Code Name</td>
<td>Family Code Description</td>
<td>Code</td>
<td>Code Details</td>
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<td>--------------</td>
</tr>
<tr>
<td>egoistic</td>
<td>general education values</td>
<td>value of belonging to a place</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Beliefs</strong> about general conditions in the biophysical environment, ecological worldview, adverse consequence for valued object, perceive ability to reduce threat.</td>
<td>General belief of participants: own beliefs &amp; the school beliefs including beliefs that relates to EE &amp; civic education &amp; general educational beliefs</td>
<td>B</td>
<td>General educational beliefs; believe in the student to make the environmental difference; belief in the environmental crisis and EE importance as a way to improve social and environmental situations; beliefs that when we managed to create more influence we will get more results regarding the environment</td>
<td></td>
</tr>
<tr>
<td><strong>Norms:</strong> the personal norms for pro-environmental behavior, sense of obligation to take pro-environmental action. The individual responsibility for taking action</td>
<td>General norms that reflect participants: students, parents and the community</td>
<td>N</td>
<td>General norms - behaving in school; environmental norms – care about others and the environment; norms of student behavior; environmental and responsibility norm as related to students and the public; norms of student involvement and engagement; norm of involvement, being active and engaged; democracies principle; living in a healthy way as a norm</td>
<td></td>
</tr>
<tr>
<td><strong>Pro-Environmental Behavior &amp; Critical Citizenship (CC)</strong></td>
<td>Pro-environmental behavior: teacher, student, parent, and community behaviors. Behaviors in the public sphere- CC and behaviors</td>
<td>PEB &amp; CC</td>
<td>CC examples of activism by students or community; the relationship between school, students, parents, and teachers to decision makers; teachers’ personal citizenship; donations; community garden; conserve biodiversity; reduce car driving; influence students, parents, community; leadership; pro-environmental in the private sphere such as reuse, recycle,</td>
<td></td>
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<tr>
<td>Category</td>
<td>Family Code Name</td>
<td>Family Code Description</td>
<td>Code</td>
<td>Code Details</td>
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<tr>
<td></td>
<td></td>
<td>in the private sphere-such as recycling.</td>
<td></td>
<td>reduce, green consumer, saving water and energy; taking care of a place</td>
</tr>
</tbody>
</table>
Appendix M

School Descriptions: River School and Beach School

<table>
<thead>
<tr>
<th>Theme</th>
<th>Characteristic</th>
<th>River School</th>
<th>Beach School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic &amp; School Characteristic</td>
<td>Location</td>
<td>Central Israel</td>
<td>North Israel</td>
</tr>
<tr>
<td></td>
<td>City Population</td>
<td>99% Jews, 1% others</td>
<td>64% Jews, 30% Arabs, 6% others</td>
</tr>
<tr>
<td></td>
<td>SES - City</td>
<td>6 (out of 10, 1 is the lowest)</td>
<td>4 (out of 10, 1 is the lowest)</td>
</tr>
<tr>
<td></td>
<td>School Establishment</td>
<td>1992</td>
<td>1960</td>
</tr>
<tr>
<td></td>
<td>No. of students</td>
<td>454</td>
<td>267</td>
</tr>
<tr>
<td></td>
<td>No. of teachers</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Average No. students in classroom</td>
<td>31.8</td>
<td>20</td>
</tr>
</tbody>
</table>
|                                | Standardized tests                  | 2\textsuperscript{nd} grade- Hebrew Language (4)- 2012  
  5\textsuperscript{th} grade- Math (9)- 2012  
  5\textsuperscript{th} grade- Hebrew Language (10)- 2012  
  5\textsuperscript{th} grade- Science (8)- 2010  
  5\textsuperscript{th} grade- English (3)- 2014 | 2\textsuperscript{nd} grade- Hebrew Language (1)- 2014  
  5\textsuperscript{th} grade- Math (2) – 2013  
  5\textsuperscript{th} grade- Hebrew Language (6)- 2013  
  5\textsuperscript{th} grade- Science (10)- 2011  
  5\textsuperscript{th} grade- English (5)- 2014 |
|                                | Years of Principal experience       | 23 years in other roles, 17 years as a principal in the same school | 33 in other roles, 2 years as a principal in the same school |
| EE characteristic in School  | Awarding GSC                        | At 2005                             | At 2009                           |
|                               | Awarding CGSC                       | At 2009                             | At 2012                           |
|                               | Special EE Programs & Events (Examples) | Whole school approach; Students leadership groups; Sustainability center for the community; Art & Yard sustainability program. | Sea Inquiry & adapting the sea shore; Green council – leadership students group; Recycling in the school; Outdoor learning; |

**Similarities Between Schools:** Continue green school certificate (CGSC) award, sustainability and environmental education is a priority in the school, participating in EE professional development for more than five years, implement integrative EE programs, using experiential learning, emphasizing outdoor learning, received assistance from the green network (GN) organization.
Appendix N

River School: Art Projects Examples

*Figure J1.* Example of art works made out of paper-Mache, which presented in the school’s staircase.
Figure K1. Tubes in the yard for learning about plants and math, measuring lenses, calculating ratio
Appendix P

Beach School: The Treasure of the Sea Curriculum

Figure L1. Curriculum that emphasis the sea environment – Images

Sea Inquiry Third and Fourth Grade Curriculum - Examples

תווכנות עבודה לחקור ים - שב酺 'ד
מותח ים עזרות ווירוס
המושג הים: מבנה הים, המים של הים, גושי ים, ימי קבוצות, ימי חוף, ימי נחלים, ימי ים, ימי הים התיכון.
השם של ים: עירום, ים, ים כחול, ים אדום, ים לבן, ים אדום, ים צהוב, ים סגול.
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Sea Inquiry Third and Fourth Grade Curriculum Examples (continue): Learning Process

- Serve motivational speech.
- Introduce and summarize key concepts.
- Identify student contributions, providing feedback.
- Watch a video on the sea, share observations and discuss.
- Excursion to the beach for data collection according to the requirement in reports.
- Work in class using information pages and related activities.
- Research work in every section on the chosen topic.
- Grades C: Jellyfish and corals, Grades D: Strange fish.
- Learning process:
  - Asking questions and selecting a research question, hypothesizing, designing and conducting the research—collecting data and information, processing and analyzing, summary and conclusions.
  - Rejection or support of the hypothesis, discussion.
- Presentation of research works.

Figure L2. Curriculum that emphasis the sea environment – Geography and Literature

The life of the sea

**What is the ocean?**

The knowledge on the ocean

The ocean is not a collection of “isolated” habitats, as some may think. The continual exploration of our ocean floor by ships and submarines has revealed a much larger and more diverse environment than we knew existed. The ocean is a dynamic and changing place, constantly evolving and adapting to the forces that shape it. The ocean is not just a collection of isolated habitats, but a continuous ecosystem that is always changing and adapting to the forces that shape it.

The ocean not only provides a home for an incredible variety of life, but it is also a vital source of food and resources. The ocean is home to a vast number of species, from tiny plankton to massive whales. The ocean is also a major source of oxygen, providing about 70% of the oxygen that we breathe.

The ocean is not just a collection of isolated habitats, but a continuous ecosystem that is always changing and adapting to the forces that shape it. The ocean not only provides a home for an incredible variety of life, but it is also a vital source of food and resources. The ocean is home to a vast number of species, from tiny plankton to massive whales. The ocean is also a major source of oxygen, providing about 70% of the oxygen that we breathe.

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מי עוד חי פה במעמקי הים?
יש פה עוד הרבה יצורים! חשבת שאנחנו לבד???
הسدיה הימית כוללת כמה בתי גידול הנבדלים האחד מהאחר. בין בתי הגידול השונים ניתן למצוא את:
שוניות האלמוגים, אזורי הגאות והשפל, קרקעית הים, צד.
רגע של התבוננות
עכשיו כשאתם יודעים, התבוננו מחדש בים – עד לאופק...
חישבו: איך קשורים היצורים החיים במי הים לכינוי "הריאה הכחולה"?
החיים בים
א. מי אחריות לאספתקע עיקר שלמה החמצ opciones של דליל אוזן? çift זה משועשע ואית?

ב. הת _$[\text{לחישו}]$ בחומרים-eyed הנמצאים בנוסח יידי המכתב של הים-band: "הריאה הכחולה"?

ג. פירוש הביטוי ה"הריאה הכחולה" הוא:
  • ריאה בצבע כחול.
  • איבר כחול בגופם של יצורים זעירים בים.
  • יצור חמצן על ידי יצורים זעירים חמצן על מיני האריונטטיים.

סשתרי הים עמוקים
1. מחקרים שנעשו במעמקי הים גילו שקיימים יצורים מוזרים החיים בתנאי חשכה מוחלטים. איך הם יכולים להתקיים ללא קרינת אור?

2. ממחשים התנאים הדרושים לקיומו של יצור חי:
   __________________________________________________
   __________________________________________________
   __________________________________________________
   __________________________________________________

3.כתבו דוגמאות ליצורים החיים במעמקי הים:
   __________________________________________________
   __________________________________________________
   __________________________________________________
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 ldap בנוון החזקות, ואינוירום כמיה הדולפינים, שנוהגים לקפוץ ו"ל交流合作" על פי המים, והם נוהגיםмедицин שוס.

זיד, או יצורים אחרים. הדולפינים (ולואיתנוני המים) הם האורגון היפני והדולפינים יוצרי化妆品.

שושית במותו האקוטווס ולהם זוכים למים. והזוכים למים באת אנדונד השוכן של בל תום קרונ טפונים (מוא-פלקוטום).

יתרי-הגלסים בני היצורים הימיים לאחר:

1. קרא את הקטע "מארח המוביל" respond ב blanc:
   1. בני זום של צייתים חיות והזוכים של האורגון הים: מיתוס הפיטו-פלקוטום: מהalnumון הנושן?
   2. מה קוליסים הפיטו-פלקוטום? לאיזו צורה?
   3. הוזאה-פלקוטום - מהalnumון הנושן?
   4. מות ספרית-החיים짦ים הקטנים של היצורים הימיים: קרונ טפונים: המים הגלים של בתי ממון.}

הتعبぬ בתרשים שRails תורניший-המזון והשלימו את סדר-היזורים הכל הוליה:

השמש

החליה הראשונה, המקבלת אנרגיה מאור השמש, __________________________..

ה.testng את היצורים בחוליה הראשונה __________________________.

אנחנו אוכלים את הדגים הקטנים __________________________.

אנחנו החוליה הלאומית, בשרשרת המזון בחיל __________________________.

אנחנו החוליה הלאומית, בשרשרת המזון בחיל __________________________.

הכרישים ויונקים ימיים שונים, נמצאים בחולית __________________________.

2. מי אני? מי אכתי?

א. החולית הארוחת, המקבלת אנרגיה מתוך השמש, __________________________.

ב. אוכלי אוכלוסי את הדגים בשילול החולית __________________________.

ג. אוכלי אוכלוסי את הדגים בשילול החולית __________________________.

ד. __________________________.

ה. __________________________.

ב. __________________________.

ג. __________________________.

ד. __________________________.

ה. __________________________.

3. פירמידה-המזון
התבוננו בפירמידת המזון. קרא את קטעモות محمود וענו על קלסר:

א. מהו שם החוליה הנמצאת בבסיס הפירמידה?

ב. מדוע היצורים בחוליה זו נקראים "יצרנים" (העזרו גם בקטע "דג אוכל דג...").

ג. מספר הקומות בפירמידת המזון הוא 5 קומות, מדוע?

ד. סרטטו את פירמידת המזון וציינו בה את 5 הקומות, שמות היצורים בכל קומה והחיצים.
Appendix Q

Tours at River Schools in the Past Five Years

International examples:

- CEO of Ben & Jerry’s ice cream factory visited in 2012;
- Students from South Africa visited and participated in several activities with the students;
- College and schools principals from Kenya came to learn about how to implement EE in schools;

Visitors from Israel examples:

- Art teachers from Israel that came for professional development related to sustainability art;
- Principals from Israel that came to learn about EE implementation in school;
- Pre-service teaching students come on a regular basis to learn about sustainable schools and how to integrate sustainability in school life.
- The Minister of the Environment

Figure M1. The Minister of Environment visited River School. The Ministry is playing with the student, after getting explanation about the museum.

Figure M2. The heritage museum
Appendix R

Critical Citizenship Analysis

<table>
<thead>
<tr>
<th>Element of Critical Citizenship</th>
<th>Politics / Ideology</th>
<th>Social / Collective</th>
<th>Self / Subjectivity</th>
<th>Praxis / Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge – River School</td>
<td>- Programs emphasize the local history, society, community, and its heritage. - Most programs are not directly dealing with oppressions however injustices and power are discussed. - There is a discussion about the relationship between power, mainly economic and the bad influence on the environment of this power. - The principal is very careful while talking about the local politics and politicians. She cannot attack directly the mayor, because she needs the municipality funding.</td>
<td>Social interconnection is not part of the program and is not revealed in any of the curriculum documents, observations, or interviews.</td>
<td>- Sense of identity is presented with influence of the Zionism and the patriotism “proud to be Israeli”. - The culture is strongly implemented in the whole school identity without emphasis on own position. - Respect for the past and the immigrants from the neighborhood. - A mixture of culture and identity, but not going through the “own position” of the students.</td>
<td>- Many Engagement opportunities, which lead to the knowledge of how collectively to effect systematic environmental change. - Students use critical thinking in general and to attack school decisions and actions too. - There is hardly any remark of dealing with how behavior influences society and injustice.</td>
</tr>
<tr>
<td>Knowledge – Beach School</td>
<td>- History is taught in an Israeli orientation emphasizing the Jews history in general and in the</td>
<td>- Focus on knowledge of interconnections between culture of Jews immigrants</td>
<td>- There is emphasize of own position in the individual level, with creating an</td>
<td>- Emphasis on knowledge in its science and inquiry orientation, and is very proud</td>
</tr>
<tr>
<td>Element of Critical Citizenship</td>
<td>Politics / Ideology</td>
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<td>city in particular.</td>
<td>- Understanding the importance of giving knowledge and power to the Jews immigrants, but ignoring Arabs.</td>
<td>Israeli-Jew identity focusing on connecting to the land of Israel.</td>
<td>with the success of its alumni.</td>
<td></td>
</tr>
<tr>
<td>- Making efforts to connect Jews immigrants to the city and the country: special program &amp; events (tours in the city) only for immigrants’ families.</td>
<td>- No exposure to non mainstream writing and ideas.</td>
<td>- Teachers were exposed to the relationship between culture, globalization and sustainability during professional development. However, this is not come across the curriculum or programs in the school.</td>
<td>- Understanding that knowledge is power.</td>
<td></td>
</tr>
<tr>
<td>- There is no mention of oppressions and injustices not related to society, and not related to environmental justice.</td>
<td>- When students declare hate for Arabs, often teacher ignore it.</td>
<td>- Teachers were exposed to the relationship between culture, globalization and sustainability during professional development. However, this is not come across the curriculum or programs in the school.</td>
<td>However there is no specific emphasize of how collectively to effect systematic change.</td>
<td></td>
</tr>
<tr>
<td>- Power, structures and macro structural relationship are not emphasized and sometimes even hidden. While asking about the relationships with Arabs, the teachers emphasized that they are not reveal their own thinking about the situation. Only in few occasions there are connections between environmental and social justice in the curriculum document.</td>
<td>- In a program held in 2012 there was an emphasized on the hunger phenomenon in Israel and worldwide. This program was directed by the GC, other students and teachers were not exposed to the program, and it did not reoccur.</td>
<td>- The GC group as a leadership group is creating systematic behavioral change towards the environment. This is a small group that not reflects the whole school.</td>
<td>- The GC group as a leadership group is creating systematic behavioral change towards the environment. This is a small group that not reflects the whole school.</td>
<td></td>
</tr>
<tr>
<td>Skills – River School</td>
<td>- Program is based on critical thinking skills, students are</td>
<td>- The whole school approach is based on</td>
<td>- There is no emphasis on the capacity to</td>
<td></td>
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<td>- There are skills developed to enable active</td>
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<tr>
<td>Element of Critical Citizenship</td>
<td>Politics / Ideology</td>
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<td>using it to analyze and learn about structural social analysis.</td>
<td>dialogue, cooperation and interaction. With the capacity to think holistically including diverse point of views. - Holistically way of teaching and learning. - Including skills in critical interpretation of others’ viewpoints.</td>
<td>reflect critically on one’s status within communities and society. - Independent critical thinking. - Students think and speak in their own voice.</td>
<td>participation, skills in acting collectively to challenge the status quo. - Focus is on nature and not social order. - Students have the opportunity to imagine a better world: Emphasize the optimistically view of sustainability that includes human respect as part of the environment, to create a better society.</td>
<td></td>
</tr>
<tr>
<td>- No emphasize on relationship between knowledge and power. - Capacity to investigate deeper causalities is emphasized in the meteorology station. - Emphasizing on science, but also on the relationship between the human and environment. - Not going all the way to deal with structural social analysis in their world, or their city, only in bigger cases such as social justice examples in Israel.</td>
<td>- City program: meetings between Jews &amp; Arabs students in the city. Emphasizing dialogue, cooperation and interaction. - Teachers do not believe in the Jews-Arabs program. When a meeting between Jews and Arabs students is going</td>
<td>- No emphasizing on capacity to reflect critically on one’s ‘status’ within communities and society. - Understanding among the teachers that pro-environmental behaviors and smart consumer</td>
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<tr>
<td><strong>Skills – Beach School</strong></td>
<td>- Emphasis on inquiry and science skills, without emphasizing structural social analysis. - Teachers think that the students are too young to understand and to use skills of critical and structural social analysis, and definitely students do not have the capacity to politicize notions of culture,</td>
<td>- Active participation is being emphasized mainly in adopting the beach, recycle, and lunch boxes for school snack. - GC group, are looking for environmental</td>
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<tr>
<td><strong>Skills – City Program</strong></td>
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<tr>
<td>Element of Critical Citizenship</td>
<td>Politics / Ideology</td>
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</tbody>
</table>
| knowledge and power, and capacity to investigate deeper causalities.  
- According to the teachers the students blame the Arabs for litter in the beach and in the neighborhood, without effort to create deeper investigation of the reasons and the skills to deal with this phenomenon. | well, it usually gets to the point that it doesn’t work anymore.  
- The capacity to think holistically (from a specific point of view) is being emphasized while studying about the sea and creating holistic program that includes inquiry process and adopts a place action related to science and focusing on biodiversity. | often helps students from low SES because they can see that the fact they did not get a new school bag is actually a benefit according to sustainability approach. | problems in the neighborhood and the beach and writing letters to decision makers.  
- Acting collectively can change the situation but only related to environmental problems without making the connection to social aspects.  
- The skill in acting collectively to challenge the status quo was rejected by teachers, who emphasized that students do not need to meet the mayor to influence and create a change (writing a letter is enough). |
| Values – River School | - Commitment to values against injustice and oppression is part of teachers and principal care.  
- It is not emphasized to the students. The teachers and | - Implementing inclusive dialogical relationship with others’ identities and values such as creating activities with local Arabs, and Arabs in the | - Not enough spoken, written, or taught concern for social justice or consideration of self-worth.  
- There is concern for environmental | - Teachers emphasize responsible actions.  
- Mainly for the environment and society, but from the position of helping the poor people or |
<table>
<thead>
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<tr>
<td></td>
<td>principal have strong opinion about it. However, they don’t use it as part of their curriculum, or even school culture.</td>
<td>desert. - Special relationship with the cleaning lady, an Arab woman, which they choose especially because her values. This is not spoken, however it is part of the school culture, and is part of school characteristics</td>
<td>justice, which is far from the daily life of the students. - Teachers prefer to deal with environmental justice because this is easier. - Not sure that they can or should deal with social justice in their community.</td>
<td>people in need by donation, without connection to social and environmental aspects, or social justice. - Ethical action and reflection is discussed in the ecological morning program.</td>
</tr>
<tr>
<td>Values – Beach School</td>
<td>- Values that are emphasized by the school related to the individual and society. - Emphasis the value and feeling of belonging to a place. - Values against injustice and oppression are rarely appearing.</td>
<td>- Mention once in the school vision: knowing the uniqueness of each students and others. - No other mention of inclusive dialogical relationship with others’ identities.</td>
<td>- No concern for social justice. - In one case the hunger program there was concern for social justice with less consideration of self-worth</td>
<td>- There is a call for responsibility but this is in the view of nature, taking care and responsibility on your own learning and environmental behavior. - No mention of ethical actions.</td>
</tr>
<tr>
<td>Disposition – River School</td>
<td>- Seek out and acts against injustice, but mainly injustice for nature, and less about oppression. - They deal with economic interest but in examples that are not in the immediate surroundings of the students.</td>
<td>- Partly socially aware, for people in need-&gt; collecting donations, emphasizing responsibility towards others. - Willing to learn with other through the Globe program and people that</td>
<td>- Emphasis critical perspective, autonomous, responsible in thought, emotion and action. In touch with reality.</td>
<td>- Commitment and motivation to change society is strong in the environmental aspects and less on the social justice aspects. - Civic courage: an example of the students that became a city</td>
</tr>
<tr>
<td>Element of Critical Citizenship</td>
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<td></td>
<td>are coming from around the world to visit.</td>
<td></td>
<td></td>
<td>member in the municipality. - They don’t go all the way to change society in its social injustice aspects.</td>
</tr>
<tr>
<td>Disposition – Beach School</td>
<td>- Disposition was not observed in the school. In several cases when the students thought that the beach is not clean, they wrote a letter to the municipality, and the answer was to send inspectors to give fine to the people that leave the trash on the beach. - These actions did not include any aspect of oppression (except from the hunger program), and most of the teachers do not think that it is appropriate to do so because the students are too young for that.</td>
<td>- Students socially aware about other Jews cultures that are studying in the school willing to learn with others. - No explicitly socially aware towards Arabs.</td>
<td>- Critical perspective is only related to science and inquire program. No relationship with the social aspect.</td>
<td>- There is commitment and motivation to change society mainly related to recycling and growing the awareness for the environmental crisis emphasized biodiversity. - Civic courage is hardly seen, in one case a student wrote to the prime minister about the hunger in Israel including data about hungry kids in Israel, and the prime minister answer the student.</td>
</tr>
</tbody>
</table>
Appendix S

River School – Social Emphasis Development Process

- Learning about community
- Writing a book about the local community

- Restore local community roots & culture
- A learning space & community events

- Influence the community, led by volunteers
- Lectures about environmental issues

- Interview parents and local people
- Learning about community – creating a sense of place
**Figure O1.** Sustainability, science, technology in the ecological sea environment, based on inquiry learning approach is the school focus. The school is based on a model called relation (in Hebrew ‘YACHAS’). It is the individual’s relationship to each student and it is the place for each student to present his skills. We use ‘YACHAS’ as an abbreviation which is uniqueness, society, and environment (translated from Hebrew).
Appendix U

Beach School’s Hanging Garden in the School Entrance
Appendix V

Educational Learning Model: Experience, Observation, Implementation, Reflection

*Figure Q1.* Learning Cycle Approach which is integrated and includes learning about learning and reflection processes (EE is based on learning cycles).
Appendix W

Beach School: EE Program, Sea Curriculum

*Figure R1.* Learning process: what do I know before starting to learn, during learning – what do I want to study: inquiry learning; End of process – reflection (cognitive and emotional)

*Figure R2.* Example of subjects included in the EE program (integrative curriculum): The bible, literature, language art, geography, ecology, music, art, computers, and even cultural food related to the sea.
Appendix X

**EE Programs: Opportunities for Active Involvement, River School**

<table>
<thead>
<tr>
<th>Program / Project</th>
<th>Grade level</th>
<th>Frequency &amp; Duration</th>
<th>Program Description</th>
<th>Structures opportunities for active involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological morning</td>
<td>whole school in intermixed age groups</td>
<td>weekly program</td>
<td>Focusing on environmental issue (e.g. open space, sense of place, waste, birds, etc) chosen by all teachers Teachers’ team leader creates lesson plans.</td>
<td>Creating opportunities for active involvement such as writing letters to decision makers, identifying social-environmental problems and actions to solve them.</td>
</tr>
<tr>
<td>Sequence for nature</td>
<td>Fifth graders and kindergarten students.</td>
<td>Every three weeks</td>
<td>Fifth graders teach kindergarten students about environmental issue (e.g. birds, biodiversity, pro-environmental behavior to protect animals, recycling).</td>
<td>Students teaching about pro-environmental behaviors. One of the pre-schools became a certified green pre-school after participating in the program.</td>
</tr>
<tr>
<td>Leadership students groups*</td>
<td></td>
<td></td>
<td>The students are being elected to the groups. Integrating democratic principles</td>
<td>Most groups encouraged in diverse methods to be actively involved.</td>
</tr>
<tr>
<td>Water pond group</td>
<td>Multi grades mix students</td>
<td>Weekly program</td>
<td>Learning about moisture ecosystems; Responsible for taking care and developing the water pond with the company that is maintaining the pond.</td>
<td>Explaining about the uniqueness of the ecosystem for school students and other visitors in the school.</td>
</tr>
<tr>
<td>The global program - meteorological group – GLOBE program</td>
<td>Every day</td>
<td></td>
<td>International program managed by the ministry of education, ministry of environment, and other environmental organizations; Measure meteorological data (i.e. participation, temperature, and cloudiness) and enter the data to global data base;</td>
<td>The global program’s goal is to enhance students’ awareness of environmental degradation problems, and involve them in protecting the global environment. The students collect environmental information which will help</td>
</tr>
<tr>
<td>Program / Project</td>
<td>Grade level</td>
<td>Frequency &amp; Duration</td>
<td>Program Description</td>
<td>Structures opportunities for active involvement</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Understanding of data collection methods.</td>
<td>researchers around the world to understand global environmental phenomena.</td>
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<tr>
<td>Agriculture group</td>
<td></td>
<td></td>
<td>The students experience agricultural activities.</td>
<td>Taking care of a vegetable garden &amp; community garden.</td>
</tr>
<tr>
<td>Young Photographer</td>
<td></td>
<td>Weekly Program</td>
<td>Learning about photography. The students get cameras from school, which they are responsible for.</td>
<td>Taking pictures and documenting activities and events in school (e.g. taking pictures with the mayor).</td>
</tr>
<tr>
<td>Green consumer group</td>
<td>Multi grades mix students</td>
<td>Weekly Program</td>
<td>Learning about the ecological footprint. Engagement in activities that show them how to be wiser consumers.</td>
<td>Before the holidays, the students investigated where to buy special food (e.g. donuts for Hanukah).</td>
</tr>
<tr>
<td>Recycle group</td>
<td></td>
<td></td>
<td>Learning about recycling is part of the team (encourage collecting bottles and recycle).</td>
<td>Responsible for raising the awareness of recycling in school and community.</td>
</tr>
<tr>
<td>Community group</td>
<td></td>
<td></td>
<td>Responsible for community relationship, creates events for special holidays</td>
<td>Connect with diverse communities and help communities.</td>
</tr>
<tr>
<td>Math group</td>
<td></td>
<td>Weekly Program</td>
<td>Working together to solve problems; developing mathematical thinking; investigate and inquire.</td>
<td>Making hypotheses and investigate them. Connect ideas of math to EE.</td>
</tr>
<tr>
<td>Art group</td>
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<td></td>
<td>Using imagination and creative thinking. Collecting items and organizing them according to a theme</td>
<td>Creating and developing the museum site in the school. Creating and changing exhibitions in the school.</td>
</tr>
<tr>
<td>Program / Project</td>
<td>Grade level</td>
<td>Frequency &amp; Duration</td>
<td>Program Description</td>
<td>Structures opportunities for active involvement</td>
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<tr>
<td>Ecological Yard</td>
<td>According to teacher, curriculum &amp; students leadership groups</td>
<td>According to the program</td>
<td>Was built in 2009; Designed according to sustainable principles; Includes diverse areas (e.g. small animal zoo, feeding birds’ containers, rain collecting system, natural nests, &amp; community garden).</td>
<td>The students are learning in the yard diverse subject matter related to the programs, projects, events, and EE activities.</td>
</tr>
<tr>
<td>Taking care of a place</td>
<td>Leadership groups &amp; Whole school</td>
<td>Between one to several times during the year</td>
<td>School students guide the community in the woods, orchestras and choir perform, the mayor gives a speech, and other people from municipality, community, and NGOs give speeches. The JNF created bird boxes which the community could take home.</td>
<td>The school created a community event in the woods. This event was adapted by the mayor and other schools in the city. This became a community event tradition as part of city activities in a holiday.</td>
</tr>
</tbody>
</table>

*Students Leadership Groups - This is only a sample out of the 26 groups working in the school.*
## Appendix Y

### Cross Case Analysis: River School and Beach School

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Categories</th>
<th>Beach School</th>
<th>River School</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Values</td>
<td><strong>Awareness</strong> of environmental problems such as animal extinction and the fact that human beings are responsible for environmental crisis. <em>Taking care of the natural environment: Protection</em> of nature for its own sake and for human beings, including <em>engagement</em>.</td>
<td><strong>Respect</strong> for the environment, for each other, for people, and for society. <strong>Responsibility</strong> for the environment, at the individual level and as a community – integrative value of altruistic, biospheric, and egoistic. <strong>Engagement</strong>. <em>Sense of belonging</em> having a sense of place, a sense of belonging – egoistic value which included environmental and social aspects.</td>
</tr>
<tr>
<td></td>
<td>Beliefs</td>
<td><strong>Beliefs relates to ecological worldview</strong>: “natural resources are not unlimited” <strong>Beliefs relates to advance consequences for values objects</strong>: The need to change behaviors towards the environment for our sake and for the next generation. <strong>Beliefs about the human-environment relationship, their consequences and the individual’s responsibility for taking corrective action</strong>: “we buy more… this negatively influences the environment. We need to… protect the world”.</td>
<td><strong>General Belief</strong> – creating a better society through the idea of sustainability. <strong>Beliefs that relate to ecological worldview</strong>: holistic and include people and environment. “We must do something because there are less environmental resources in the world”. <strong>Belief structures that relate to the advancing consequences of valued objects</strong> - teachers believe in the students’ ability to make a difference and to create social and environmental change, correlated to the value of responsibility and engagement. <strong>Beliefs about human-environment relationship, their consequences, and the individual’s responsibility for taking corrective action</strong> – the sense and obligation to influence others, not only taking individual corrective action.</td>
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<tr>
<td></td>
<td>Norms</td>
<td><strong>Leadership and being a role model</strong> is a norm in Beach School which represents the individual responsibility for taking corrective action in the environment. The sense of obligation to take pro-environmental behavior is still not the norm in school.</td>
<td><strong>Engagement</strong>- part of the norm in school. <strong>Respect, taking care for the environment, being responsible for the environment</strong>- parts of environmental norms in school. <strong>Democratic principles</strong>- part of sustainability norm in the school. The sense of obligation to take pro-environmental behavior is part of the school’s norms. The democratic principles are part of the citizenship approach.</td>
</tr>
<tr>
<td></td>
<td>Pro-environment</td>
<td><strong>Reuse, Reduce, Recycle</strong>: implemented widely in school.</td>
<td><strong>Reuse, Reduce, Recycle &amp; Green Consumer</strong>: most common pro-</td>
</tr>
<tr>
<td>Research Question</td>
<td>Categories</td>
<td>Beach School</td>
<td>River School</td>
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<tr>
<td><strong>Environmental behaviors in the private sphere</strong></td>
<td>– main actions: collect deposit bottles for recycling; using reusable lunch box containers; collect batteries; holidays. <strong>Saving Energy &amp; Water:</strong> depends on teachers’ interest. Less present than recycling. <strong>Conserve bio-diversity:</strong> gets a lot of emphasis but stays mostly at the awareness level because students cannot do much for this issue.</td>
<td>environmental behavior in school. Students and community collect deposit bottles for recycling. Leadership groups are dealing with recycling (batteries, paper, and bottles). Green consumerism is part of behavior and the curriculum. Holistic approach. <strong>Saving Energy &amp; Water:</strong> Rain collecting system, students’ leadership group, art. Saving energy- less emphasized; part of the curriculum; projects about saving energy. <strong>Conserve bio-diversity:</strong> integrated into school life. Three leadership groups.</td>
<td></td>
</tr>
<tr>
<td><strong>Pro-environmental behaviors in the public sphere - citizenship</strong></td>
<td>Is not emphasized by school. Several examples lead by the Green Council (GC). <strong>Activism:</strong> taking care of a place - cleaning the beach <strong>School and decision makers:</strong> GC is writing letters. Met with the mayor once.</td>
<td>Principal as a role model for citizenship <strong>Active citizenship:</strong> encouraged by school <strong>Activism:</strong> well established (e.g. river campaign, Evrona); part of school culture. Taking care of a site – archeological sites. <strong>School and decision makers:</strong> All students participating in writing letters to decision makers and meeting decision makers.</td>
<td></td>
</tr>
<tr>
<td><strong>Social Issues</strong></td>
<td><strong>Social characteristics:</strong> Separation between school community (Jews) and local community (Arabs); Arabs-Jews conflict; Middle-low SES <strong>Community Participation:</strong> High level of parental participation; Working with other schools in the city; Special programs with Arabs <strong>Social issues and EE</strong> Social issues including social justice are not part of EE; Only one example of small group of students dealt with hunger in the world; Dealing with Jewish social problems. Slight differences between students from low or middle SES, as relates to saving money</td>
<td><strong>Social Characteristics:</strong> Jewish school in a Jewish neighborhood; Middle low to middle high SES; Social and environmental issues strongly related <strong>Community participation:</strong> Influencing the community to create a sustainable society; Learning about community; museum of local community; Sustainability Center for the community; High level of parents participation; Parents are being influenced and change their behaviors; Working with other schools in the city, in Israel and worldwide. <strong>Social issues and EE:</strong> Social issues are integrated in EE; Social justice is being discussed; only on issues that are not directly to school, city and the students’ life; Emphasis on critical thinking No differences between students from low or middle SES students; Participants understand the relationship between citizenship and EE.</td>
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<td>Research Question 2</td>
<td>Categories</td>
<td>Beach School</td>
<td>River School</td>
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<td>School Strategies</td>
<td><strong>School Culture</strong>: inquiry-based, located by the beach; EE is not integrated into the school culture in behaviors and norms. It is a separate although important program. <strong>Management Approach &amp; Leadership</strong>: collaborative leadership team; EE is only one aspect of the management approach; Supportive administration <strong>Professional Development</strong>: for all teachers; focus on ecological systems and the sea, did not emphasize active involvement</td>
<td><strong>School Culture</strong>: a sustainability school; an experimental school, creating a sustainable society. A whole school approach includes aesthetics, art, and music. “Living the idea of sustainability.” Combining social and environmental issues. <strong>Management Approach &amp; Leadership</strong>: The teachers are participating in decision making related to sustainability. Teachers have their own voice: they can choose what and how to teach; very clear lines of behavior in school, led by the principal; The principal is a role model in school, at home, and in the public sphere. <strong>Professional Development</strong>: since 2000 a professional development about sustainability for all teachers.</td>
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<td>Teachers Structures</td>
<td><strong>Pedagogical Approach</strong>: scientific based current, EE inquiry learning <strong>Curriculum</strong>: special interdisciplinary EE program for all grades. EE is an important program but not holistic and integrative. Pro-environmental behaviors in the curriculum are not focusing on the ability of the students to influence; students are only learning about the environment and not acting. <strong>Knowledge</strong>: is an important structure component; Diverse ecological and environmental issues are presented; knowledge about citizenship and pro-environmental actions, it is not at the students’ level of change <strong>Experiential &amp; Outdoor Learning</strong>: important component; Going to the beach once a month; Emotional connections.</td>
<td><strong>Pedagogical Approach</strong>: Whole school approach; place-based education; biodiversity conservation; civic education. <strong>Curriculum</strong>: Integrative and holistic; diverse programs for the whole school, for grade levels, and special EE events <strong>Knowledge</strong>: important structure in school. Knowledge as a path for understanding, awareness, and personal active involvement; Knowledge starts from the issue, and moves to the action they could implement to solve the problem; Knowledge starts from scientific or ecological knowledge, and then continues to social knowledge. <strong>Critical &amp; Creative Thinking</strong>: to help students judge the information they get, to think in critical ways about social-environmental issues; Learning about different interests; Creative thinking help with issues revealed by critical thinking. <strong>Experiential &amp; Outdoor Learning</strong>: integrated in school culture; Outdoor is part of the classroom; includes diverse methods; opportunities for active involvement; occurs on a daily basis. <strong>Democratic principles</strong>: enhance active involvement in decision making and being active; pro-environmental behaviors.</td>
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