Join the (Eco)Club: Examining the role of extra-curriculars for enhancing environmental education

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JOIN THE (ECO) CLUB: EXAMINING THE ROLE OF EXTRA-CURRICULARS FOR ENHANCING ENVIRONMENTAL EDUCATION

Abstract

Ecoclubs are often devalued in their effectiveness at promoting Environmental Education because of their extracurricular nature. In theory, extracurricular programs offer a flexible learning opportunity that is founded in constructive learning where students can actively construct meaning while relating what they learn to real world issues and concepts (Olusegun 2015; Loughland, Reid, & Petocz 2010). The purpose of this study is to explore the roles of Ecoclubs in secondary schools as a means of contributing to the improvement of Environmental Education within Ontario. This qualitative study examines the effectiveness of Ecoclubs in developing environmental behaviour and action in students. A secondary data analysis of two case studies based within India and Australia was used to explore Ecoclubs within secondary schools. The Ecoclubs within these countries are framed within different contexts of Environmental Education, but nonetheless provide informative perspectives on Environmental Education in extracurriculars as a whole. The findings of my study suggested that Ecoclubs effectively promote learners' environmental behaviour and actions through the development of the ecological self . The term 'ecological self' refers to connectedness with nature (Naess, 2005; Wilson, 1996) and existing *with* nature (Splitters, 2015). The findings of my study also highlighted the theme of interconnectedness through the cyclical progression and development of the ecological self and what I term 'new' environmental awareness. Integrating Environmental Education in extracurriculars suggests a need for more funding, improved management and execution of the program and more opportunities for the professional development of teachers in the field of Environmental Education.

Foreward

Through this Major Research Paper, I wanted to investigate informal ways of learning and methods of implementing Environmental Education in secondary schools. Specifically, I was curious about the role that Ecoclubs play as an extracurricular activity in Environmental Education. As a student who has participated in these clubs and as a teacher who has overseen some activities executed by them, I felt a need to give extracurriculars the attention they deserve and to discover alternate access points of effective Environmental Education within them. During the second term of my Masters of Environmental Studies program, I attended the Eco Links 2019 conference and left feeling inspired and encouraged because of all the resources available to teachers to implement in their Ecoclubs. Extracurriculars and specifically Ecoclubs are often considered informal teaching, as much of what a student learns within this context is typically not taught through a textbook. This experience at the conference became the catalyst for my study.

My graduate research connects to the three major components of my plan of study. My first component is Environmental Education for environmental behaviour. The analysis of data indicates a cyclical progression of the ecological self, which eventually evolves into environmental behaviour.

The second component, Social Constructions of Nature, is reflected in my analysis of the study's findings. Social constructions of nature, through personal life experiences or through formal education, influences one's perception of nature in turn impacting their connection to it. An analysis of student responses throughout both case studies highlighted this component.

The final component of my plan of study is Environmental Ethics. Studying David Orr (2004) taught me that we will not save what we do not care about or value. This led me to the question that fuelled my research: What behaviours need to be developed that lead to caring for and valuing the environment? This research paper fulfills this component through the study of values as a component to the ecological self and environmentalism. Environmental values influence environmental attitudes and becomes an intrinsic notion of environmental behaviour.

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CHAPTER ONE

Introduction

Changes in the Earth's environment and its natural systems have become increasingly alarming and thus deserve urgent attention. While the situation is complex, there is unanimous recognition that the necessary solutions lie in committed actions from global, provincial, and local authorities in addition to private, individual action. At the provincial level in Canada, the education system plays a vital role in educating and preparing future generations as engaged and empowered citizens who will be imperative in shaping the future of the global environment. Environmental Education has generally come to be seen as a world-wide solution towards solving the most pressing issue our of time, but many have contested its value and meaning. In reference to Western, formal education systems, Sauvé (1996) describes the goal of education as "the optimal development of people, with an emphasis on autonomy and critical thinking" (p.9). Within any form of education then, the broad goal (s) should always circle back to autonomy and critical thinking. The goal of Environmental Education in particular highlights the importance of autonomy as it is ultimately our behaviours and actions that will improve the current state of the environment and prevent further destruction. Effective Environmental Education is a tool that can be used to inform critical thought processes and actions so that we can actively achieve this goal. The moral values of Western Environmental Education are to inhibit negative environmental attitudes and ethical behavior and to change/criticize them when needed (Palmer, 1998, p. 10). However, policy makers too often segregate the goal of Environmental Education from its moral values leading to environmentally literate but inactive citizens. In reality, the moral values of Environmental Education may, in large part, be what will enable educators to achieve the goal of Environmental Education since it is essentially action based. Thus, to achieve this wide-ranging goal,

Western society must develop and produce environmental advocates, stewards, and citizens who will act on behalf of the environment. As Palmer and Neal further explained: "If the ultimate aim of Environmental Education is to sustain our planet and its resources for future generations, then a related aim must be to provide an education which encourages people to strive towards that goal" (Palmer & Neal, 1994, as cited in Loughland, Reid, & Petocz, 2010, p.187).

In its current state and measured by its own goal, Western Environmental Education is sadly unsatisfactory. This is evident simply through the current state of today's environment. Instead of an improvement, today we see further degradation to the environment causing significant damage to resources while contributing to climate change**.** As previously mentioned, Environmental Education can be a tool to combat environmental issues and achieve sustainability. Thus, the question becomes "How can Environmental Education be improved?" This is a very broad question that has been addressed by numerous professionals in the field of Environmental Education. As an attempt to answer this question in a unique way, I decided to further analyze a quote from David Orr (2004): "It is not education, but education of a certain kind that will save us "(p. 8).

Currently, the Ontario Ministry of Education holds environmentally literacy as the primary goal of Environmental Education. The Ontario Ministry of Education (2007) defines environmental literacy as an important outcome of environment education that teaches students the knowledge and perspectives required to understand public issues and place them in a meaningful environmental context (p.6). By this definition, there is no overt connection between environmental literacy and environmental action. If the Ontario school system is meant to teach students how to act in order to improve the environment, which is the goal most commonly shared among environmental educators, the Ministry's goal of environmental literacy needs to be paired with behavior that leads to action. As

Hudson (2001) further explained, "Environmental Education must lead from awareness to action. This message should be reflected in program design and implementation, as well as the way Environmental Education is designed and valued" (p.287). Thus, Environmental Education strategies need to be critically analyzed in order to effectively align them with the appropriate educational goals. If the system is only teaching students one component of Environmental Education through passive learning, how can they be expected to solve the issues that require not only environmental knowledge and literacy, but also environmental action? The restriction of this learning strategy means other strategies, such as active learning, and other components of Environmental Education, are overlooked. By what is excluded in the current attempt at educating students in environmental education, the students are taught the misconception that we can win the race without reaching the finish line. That is, students are taught that the pressing issues of our environment can be solved through passive learning. To reach the finish line, however, we must engage them in active learning that develops pro-environmental behavior and attitudes.

Environmental Education needs to evolve from its base in content knowledge to a more active and hands on learning experience. As Kollmuss and Agyeman (2002) argued, environmental knowledge is rarely linked to environmental behavior (p.250). Therefore, to focus on ways in which students can develop or strengthen their environmental behavior and attitudes (outside of the textbook) means to question the current practices critically and potentially shift the focus to a different type of learning experience. In actual practice, it is through the extra-curricular programs where students are participating in hands-on activities, such as recycling, gardening, watershed cleanup, and outdoor retreats, where they are engaged in an authentic and meaningful learning experience.

While the current attempt to teach environmental issues stems from provincial Ministry relayed documents related to curricula, research has determined that the way in which these courses are taught is critical to effectively engaging students in Environmental Education (Olusegun, 2015; Loughland et al., 2010; Jose, Patrick, & Moseley, 2017; Moseley, Summerford,Pashcke, Parks & Utley, 2019; James and Williams, 2017; Ardoin, 2006). Thus, both what we are teaching students and the method in which we teach them are important to the success of Environmental Education. Without an equal division of these two elements, Environmental Education will continue to find itself stagnant. Although the Ontario Ministry of Education has implemented some adequate environmental content to secondary curricula, there needs to be a stronger focus on how teachers can effectively teach it. Aside from curricula-based education, teachers are expected to participate in extracurricular activities within the school community. Often, extra-curricular activities are overlooked as providing a meaningful learning experience to students. In environmental-related extracurricular activities, strategies such as place based education and experiential education are often present allowing students to make learning meaningful and effective by connecting content knowledge to real world experiences through hands-on learning. However, taken less seriously than classroom-based learning, some extracurricular activities do not run as a result of the lack of student interest and/or teacher/student commitment to the program. As the goal of Environmental Education is essentially to develop pro-environmental behavior and actions amongst today's youth, the lack of focus and commitment to environmental-focused extracurricular activities is problematic. Considering what they have to offer, extracurricular activities should be taken more seriously in Ontario's school systems. Thus, Chapter Two will review the Ontario Ministry of Education's role in effective and comprehensive Environmental Education within Ontario, while highlighting the gaps in

this initiative. A further analysis will then flesh out the possibilities of extracurriculars as valuable programs that can further minimize these gaps.

Constructivist Framework

The framework for this study is a constructivist framework. Constructivism focuses on the learning by doing philosophy (Hudson et al. 2001), where students are presented with opportunities to learn by engaging in actions related to the intended goal or outcome. If the broad purpose of Environmental Education is taken to be teaching students the necessary skills to reach the end goal of preserving the environment, then the approach to Environmental Education should provide opportunities for students to learn how to adapt these skills. Constructivist learning enables students to construct their own meaning through their own beliefs, attitudes and experiences (Olusegun 2015, p. 66). Students may develop problem solving skills if what they are learning does not match with past knowledge or experiences. They are also exercising critical thinking skills in this way as they question their previous knowledge and strive to make deeper connections through personal experience. Constructivist learning teaches students to become active rather than passive learners. Therefore, the environment in which they learn should provide the opportunity for active learning (Olusegun, 2015, p.67). As the nature of extracurricular activities is based in active and hands-on learning, constructivism is naturally underpinned within these programs. Thus, this research is framed within a constructivist approach to learning about the environment. By experiencing the world directly, learners derive meaning from these types of experiences (Olusegun, 2015, p.67). Environmental extracurricular programs that engage in activities such as gardening, field trips, and creek cleanups are examples of how students experience the world directly. These activities are also examples of common environmental learning strategies, such as experiential learning and place-

based learning. Strategies underpinned by constructivism are often seen within Environmental Education case studies throughout the world. However, these strategies are not exclusive to extracurricular activities. Both extracurricular and co-curricular activities exhibit constructivist learning strategies, the difference being that cocurricular activities are limited in time spent within the activities as the first priority lies within reaching curriculum expectations.

Research Problem

I have highlighted how environmental literacy is the primary goal and initiative of Environmental Education in Ontario. It is also a problematic approach to Environmental Education because it is only one tool in the tool box needed to solve complex environmental issues. Potter (2009) suggests that environmental scholars, educators and policy makers need to improve the understanding of policy makers in what is needed to become environmentally literate, as well as thoroughly understanding what environmental literacy really means and why it's so important to Environmental Education (p.27). Although environmental literacy can benefit from improving its clarity, it is not problematic within itself. Rather, as the primary goal of Western Environmental Education it becomes problematic because it leaves no room in the curriculum for environmental behavior and action initiatives. In reality, it will be the environmental behavior and actions of today's Canadian youth that will help Western society reach tomorrow's goal of improving and preserving the state of the environment. These are important considerations if the goal is to implement effective environmental education into the context of formal schooling. The common saying "Do not reinvent the wheel" is relevant advice to follow in hopes of avoiding unnecessary and redundant edits to the current state of Environmental Education. Improving the wheel instead of reinventing it can be an

effective approach to improving current environmental education strategies and the effectiveness of Environmental Education. Paying particular attention to the role of policy makers in Environmental Education initiatives is a critical step to improving the 'wheel'. Loughland et al. (2010) and Potter (2009) support this approach as they argued that efforts of researchers in Environmental Education are better directed towards a critique of the values of the broader education system rather that the refinement of Environmental Education's own very small part of the curriculum (Loughland et al., 2010, p.195; Potter, 2009). The research problem of this paper is identified by this recommendation. The Ontario Ministry of Education's goal of Environmental Education does not align with the intended outcome of the general scope of Environmental Education. Many scholars within the field of Environmental Education agree that its intended outcome is to produce environmentally active citizens who have been given the tools through education to preserve the environment (Suave 1996; Palmer, 1998; Loughland et al., 2010; Hudson, 2001) . As a response to this flaw in policy, this research will examine ways to improve the Ministry's goal of Environmental Education by means of exploring environmental extracurriculars that develop environmental behaviour and action through the use of existing knowledge in environmental literacy. Specifically, I will explore the roles that environmental extracurricular activities can play in Environmental Education in Ontario. I draw support from environmental education scholars, such as Palmer (1998), who asserts that exploring practices of Environmental Education that are currently, and relatively widely, employed at schools in Canada is a better use of time and energy; therefore, I will suggest improvements and changes to implementing those current practices rather than wasting time and energy reinventing the wheel. Ultimately, I will examine how environmental extracurriculars can serve as a fundamental resource in

developing environmental behavior among students who participate in them and foster an engagement in environmental action through active and constructive learning.

Purpose of Study

The purpose of this research paper is to explore the role of environmental extracurricular activities within secondary schools as a means of contributing to the improvement of Environmental Education within Ontario. The lack of current research in high school environmental clubs and programs reveals a significant gap in literature. In researching case studies, it became clear that published studies focus mostly on environmental programs employed within primary schools. While these are indeed significant contributions in this field, as cultivating a relationship to the environment is critical at younger ages (Liefländer, Fröhlich, Bogner,& Schultz, 2013; Wells, 2006), research is lacking in the opportunities that teenagers have to engage in and further develop this relationship to the environment. This is problematic because if secondary schools are not continuing the work of their predecessors, students might not progress in their Environmental Education and as a result may be less inclined to participate in action-based solutions after graduation. As high school students become more aware of their potential impact on the world and begin to develop agency, they may be more willing to take action to improve the environment's current and future state, while improving their critical thinking skills and tackling issues that meet their learning capacity. In Canada and Ontario, specifically, secondary schools serve as the last four years of a student's mandatory formal Western education experience. Therefore, to properly equip them for the environmental challenges they will face outside the four walls formal education, education should engage them in real-world action-based environmental learning. As established above, in light of the current Ontario Ministry of

Education's goal of Environmental Education, which is so focused on environmental literacy rather than behavior and action, the best way to do that may be through extracurricular activities.

My goal as the researcher is to highlight successful and effective informal ways of active learning in Environmental Education so that they may contribute to future research, ministry documents and initiatives that combine the best ways of engaging students in Western Environmental Education. Specifically, this study aims to provide suggestions for improving the current goal of Environmental Education within Ontario by including both environmental literacy *and environmental behavior*. As a two-step process, environmental behavior can extend from a base of environmental literacy, and, in turn, environmental literacy can be informed by environmental behavior. Both goals are complementary to one another and need to be implemented together to ensure that Western, formal education in Canada is on the right path towards a common goal of improving and preserving the environment. Chapter Two includes a literature review that explores the current trends of Environmental Education within Ontario, providing a background to the current state of Environmental Education while signaling a much-needed transition to a goal that better reflects the needed and expected outcome of Environmental Education. The second subsection of the literature review focuses on the ideal outcome of Environmental Education, specifically addressing components of environmentalism.

CHAPTER TWO

Literature Review

The Role of Environmental Education in Ontario

The role of Environmental Education in Ontario seems to be divided amongst teachers. Tan and Pedretti (2010) examine Suave's (2015) currents of Environmental Education, paying particular attention to naturalistic, activism, awareness, and problem solving. This study, based on 300 Ontario teachers, determines that the most common type of Environmental Education within Ontario schools is naturalistic. An example of this type of teaching in Ontario is the Environmental Studies Program as seen in Russell and Burton (2000) and Breunig's (2012) study. The Environmental Studies Program was introduced in 1981 and is an elective course that is incorporated into the secondary school curricula. This program centers on outdoor education, a facet of Environmental Education that specifically focuses on student experiences and relationships to nature. This program emphasizes connections to nature as well as learning about the natural environment. Although one type of environmental education, the naturalistic, seems dominant, Tan and Pedretti's (2010) findings highlighted multiple currents of Environmental Education found within Ontario schools, suggesting that the role of Environmental Education in Ontario varies. Some teachers focus Environmental Education on problem solving and critical thinking through case study explorations, while others focus on connecting with nature, raising student awareness and developing environmental activism (Tan & Pedretti, 2010, p.71).

Unlike the teacher responses of Tan and Pedretti's (2010) study, the role of Environmental Education as determined by Ontario's Ministry of Education is to develop environmental literacy among students. The Ontario Ministry of Education (2020) defines the purpose of Environmental

Education as one meant to "teach students about how the planet's physical and biological systems work, and how we can create a more sustainable future". On their website, they state how Environmental Education is taught within schools in Ontario:

> "Environmental education uses environmental issues and topics as a theme to weave into all subjects and grades. This ensures all students will have many opportunities to acquire the knowledge, skills, perspectives and practices they need to become environmentally literate citizens. There will also be opportunities for students to address environmental issues in their homes, in their local communities, or at the global level." (ibid).

It is interesting to note that that the term "behaviour" fails to be mentioned in any capacity within *how* Environmental education is taught or the role of Environmental Education. This is a significant observation because it influences how the Ministry of Education shapes its instructional strategies surrounding Environmental Education, which will eventually impact students in classrooms. However, the Ontario Ministry of Education does list fundamental concepts surrounding environmental behaviour relative to the course in the curriculum documents. For example, in the Ontario Science Curriculum (Ontario Ministry of Education, 2008), sustainability and stewardship are listed as fundamental concepts for all grades (p. 5). In the Ontario Canadian and World Studies Curriculum (Ontario Ministry of Education, 2015), environmental behaviour is listed as citizenship and environmental stewardship, which these courses are expected to enhance (p.14). Although secondary to environmental literacy, environmental behaviour does appear to have a place within Ontario curricula. The problem is that it is out of alignment with the Ontario Ministry of Education's goal of Environmental Education. Although still present within different capacities in different curricula, developing environmental behaviour should be a primary goal at every level within the

educational system to ensure students are learning through action-based experiences so that they can apply these experiences to future solutions. Environmental literacy will only take students as far as understanding important terms, currents and concepts related to the environment. It is environmental behaviour that will build upon and further this knowledge and ultimately nurture and empower citizens that are capable of using environmental actions to solve environmental problems. Ultimately, it is the teacher's responsibility to effectively teach these fundamental concepts and curriculum expectations by means of instructional strategies (Ontario Ministry of Education, 2008, p. 8). To assist with this task, the Ontario Ministry of Education provides different tools that vary in form. They include curricula, publications, resources, Specialist High School Majors and green schools, each of which is examined in turn below.

Curricula

Often, when thinking of the term "education" the first thing that comes to mind is the mainstream classroom. Within the classroom and Western mainstream curricula, there are only some units and courses that focus on elements of Environmental Education, rather than having environmental content that extends across courses. Palmer (1998) acknowledges the need for interdisciplinarity instruction in Environmental Education as she states: "Environmental Education is regarded as the embodiment of a philosophy which should be pervasive, rather than a subject which might be separately identified (p.9). Unfortunately, the steps that the ME has taken in terms of formal curricula seems to be in contrast to this philosophy. Currently, Environmental Education in Ontario schooling can be formally seen in two units of environmental science in the grade nine and ten science compulsory curriculum; one grade twelve elective course dedicated to "world issues," largely focusing on environmental degradation; and, two units in the compulsory grade nine

geography curriculum focusing on environmental degradation, population, and ecology. Clearly, Environmental Education in the Ontario curriculum is compartmentalized. Orr (2004) warns against this lack of interdisciplinarity as a danger of education as he writes " [Current education]… imprints a disciplinary template onto impressionable minds and with it the belief that the world is as disconnected as the divisions, disciplines and sub disciplines of the curriculum" (p.23). Environmental Education should not be restricted to a handful of units within one discipline, and one elective course in another, because students need to understand systems, connections and patterns and ask questions to get an effective education about the environment (Orr, 2004, p.23). Additionally, the curricula of these courses are designed to educate the students mainly through knowledge-based education. While an understanding of the science behind the environment and its components is imperative as the first step to understanding how to improve its current state (Fleer 2002, p.150; Hudson et al., 2001, p.284), this knowledge alone is not enough to influence behaviour or empower students to enact real change. Rather, it should be followed up with opportunities for students to learn how to *apply* this knowledge in active and real-world settings to further develop environmental behavior. According to the Ontario Ministry of Education, specifically in the Science curriculum (2008), "Throughout the courses and strands, teachers have opportunities to take students out of the classroom and into the world beyond the school, to observe, explore, and investigate." (p.36). The Ontario Ministry of Education has developed publications to be used as tools in an attempt to support teachers in engaging in these opportunities. The question remains as to how effective these publications are in providing that support.

Publications

The Ontario Ministry of Education provides multiple publications for educators focusing on alternative ways to teach Environmental Education. This includes the documents titled "Shaping our Schools, Shaping our Future" (Bondar et al., 2007), "Acting Today, Shaping Tomorrow" (Bondar et al., 2009), and "Environmental Education: Scope and Sequence of Expectations" (Ontario Ministry of Education, 2017). The purpose of these publications is to provide research on effective practices and an exploration of issues and recommendations for improvement. The publications share the similar goal of supporting educators in teaching Environmental Education, while improving the understanding and significance of Environmental Education at all levels of the system, including the Ministry of Education, school boards, schools, and teachers. As a starting point, in 2007 the Government of Canada created a Working Group on Environmental Education chaired by Roberta Bondar. The Working Group consisted of multiple professionals within the disciplines of both environment and education who were tasked with providing a report to the Minister of Education through the Curricular Council on Environmental Education in Ontario. The goal was to research successful and effective approaches to teaching and learning about the environment in Ontario schools. As a result, "Shaping Our Schools, Shaping Our Future" (2007) discussed issues and recommendations for environmental education that included the gaps between current practices and a comprehensive approach to Environmental Education. The Working Group stated that evidence of this gap exists within every level of the education system including leadership, and responsibilities of all roles in the educational system, policies, curriculum, and teaching/resources (Bondar et al., 2007, pp.11-12). Their recommendations to minimize this gap involved the need for interdisciplinarity

among curricula, active learning in policy frameworks, and more funding towards teacher training opportunities.

In the following two years, the Ontario Ministry of Education published another document titled "Acting Today, Shaping Tomorrow" (2009). The document was authored by an expert panel, chaired again by Dr. Roberta Bondar, and was given the same task as the 2007 publication, only the focus changed from a systematic approach at all levels within the education system to a narrower approach that highlighted environmental behavior and action as a policy framework (Bondar et al., 2009, p. 3). The authors stated that the concept of behavior is critical to helping students understand how individual and collective behavior effects the environment (Bondar et al., 2009, p. 4). The policy framework is based on an understanding that there is no universal model for the implementation of Environmental Education, rather, "specific goals and process must be defined locally to meet the differing environmental, social and economic conditions that exist within Ontario communities" (Bondar et al., 2009, p. 4). The vision of Environmental Education through this policy framework highlights the need to engage in actions that deepen the understanding of our fundamental connections to each other and the world around us (Bondar et al., 2009, p.6). The goals of this publication also indicate the significance of environmental action, which are identified as: student engagement and community connections, environmental leadership, and teaching and learning (Bondar et al., 2009, p.6). Each goal is also linked systemically as they are paired with the phrases "The Ministry of Education will…, The School Board will…, The School will…" (Bondar et al., 2009, p.14). Both publications from 2007 and 2009 address the roles of each level of the educational system within Environmental Education while exploring effective approaches and differing in their frameworks.

In 2017, the Ontario Ministry of Education published another document that is specifically helpful to teachers. The Ontario Ministry of Education updated its scope and sequence documents for Environmental Education. "Environmental Education: Scope and Sequence. Grade 9-12" identifies learning expectations in curriculum that relate to or provide an opportunity for Environmental Education (Ontario Ministry of Education, 2017, p.6). Educators are expected to use this to inform planning in order to take advantage of opportunities to support student's development of related skills and knowledge. As a consideration for program planning, a section titled "Learning in the Outdoors" is including as a means to familiarize all educators regardless of discipline to the roots of Environmental Education. Although limited, this section nods to Environmental Education strategies such as experiential learning, place-based learning, and active learning. The organization involves sections of each discipline ordered alphabetically. Curriculum expectations are presented by discipline area included in the curriculum document, then by course and strand. The Ontario Ministry of Education directly acknowledges that most of the expectations in secondary curricula that relate explicitly to aspects of Environmental Education are found in science, geography and technology courses (Ontario Ministry of Education, 2017, p.7). This document therefore serves as an attempt at including teachers from all disciplines and courses in Environmental Education while simultaneously engaging in interdisciplinarity. Another attempt at supporting teachers in the Environmental Education endeavor is through resources such as websites, programs, and symposium presentations. These resources are meant to aid teachers in connecting curriculum content to the environment, but can become meaningless if not connected to specific environmental education strategies.

Resources

The Ontario Ministry of Education further supports the goal of implementing Environmental Education through various links found on its website. These include links to World Wildlife Federation's "Earth Hour" teaching strategies, Ontario Teacher Federation archived webinars and lesson plans, Ontario EcoSchools program, "Resources 4 Rethinking" by Learning for a Sustainable Future "Acting Today, Shaping Tomorrow" symposium presentations (2009), and Ontario Principal's council online database and search engine. The resources listed by the Ontario Ministry of Education are meant to help teachers in curricular programming. A similar approach can be found in Specialist High School Major programs in Ontario.

Specialist High School Majors

Specialist High School Majors is defined as a "ministry- approved specialized career-focused program that allows students to acquire knowledge and skills that are of particular importance in specific economic sectors as they work towards meeting the requirements for an Ontario Secondary School Diploma" (Ontario Ministry of Education, 2009). Throughout these programs, students are expected to achieve a certain amount of credits related to the major discipline, complete a certification training course, engage in experiential learning and career exploration, and develop essential work skills and habits (Ontario Ministry of Education, 2016).

The Environmental Specialist High School Majors program has well-rounded requirements for the completion of the program. They include the completion of four environmental- related courses, completion of a specified number of compulsory and elective sector-recognized certifications and/or training courses/programs one of which is global positioning systems (GPS), three elective courses that range from watershed management to wilderness survival, and two credits in experiential learning. According to a presentation by the Ontario Ministry of Education (2009), in 2007-2008 this

program was implemented in 8 boards and 10 schools. In 2008-2009 that number increased slightly as 12 boards and 15 schools were now running this program. To offer this program, schools must apply to the school board. The Ontario Ministry of Education's presentation advised schools to ensure that there is a team of educators willing and committed to launching the program. In all, this program relies equally on student interest and teacher commitment for it to be implemented. As a result, it is likely the reason why this program does not run in every school. It should also be questioned whether this program should be restricted to only those who are interested in pursuing an environmental-related career or should be widely implemented as a curricular approach to Environmental Education. In its current state, the Specialist High School Majors program further compartmentalizes Environmental Education, risking its own purpose to be more detrimental than beneficial. While this program focuses on an experiential learning strategy that aligns with effective Environmental Education practices, the Green School initiative focuses on place-based learning, another strategy that also aligns with effective Environmental Education practices.

Green Schools

As of 2009, the Ontario Ministry of Education introduced various platforms that focus on Green Schools. Green Schools are schools that are energy conscious in their operations and are designed and built to be energy efficient. The Utility Consumption Database (UCD) was launched in 2009 as a part of the Ontario Ministry of Education's Energy Management Initiative (Ontario Ministry of Education, 2020). The UCD tracks the energy consumption of approximately 5,500 buildings across the sector, including electricity, natural gas, heating fuels, propane, wood, district heat, district cool and water. The UCD is an energy management tool that is used by both school boards and the Ministry as a means to reaching their government's goal of reducing energy consumption in Ontario

schools. On their website, the Ontario Ministry of Education lists green schools as a strategy of Environmental Education (2020) but does not acknowledge how this strategy can be implemented into curriculum activities. Rather, the focus is on the higher levels of the educational system, resting as the responsibility of the Ontario Ministry of Education and school boards to build and develop these schools. As mentioned various times throughout the Ontario Ministry of Education's Environmental Education publications, students can engage in Environmental Education through both natural and built environments. With no specific curriculum connection found under this strategy, teachers may not use green schools as an educational strategy effectively.

The Ontario Ministry of Education has provided sufficient publications and resources to support teaching staff in engaging in Environmental Education. Yet, environmental literacy as the primary goal of Environmental Education pushes it off the path of effectiveness. The Ontario Ministry of Education's goal should be improved to better reflect the outcome needed to improve today's environment. In other words, what is needed to reach an action-oriented goal (improving the current state of the environment while preventing further degradation) lies within the skills and knowledge of action-based education, opportunities, and experiences. Exploring school-based programs rather than curriculum or Ministry based programs has the potential to reveal important considerations that can further inform Environmental Education. As noted earlier in the publication "Acting Today, Shaping Tomorrow" (Ontario Ministry of Education, 2009), there is a clear link between environmental behavior and environmental action.

While it is often agreed upon that it is beneficial to learn about the environment first before cultivating a relationship to it (Fleer, 2002, p.150; Hudson, 2001, p.284), it may be worthwhile to think about how learning about the environment while developing a relationship to it can

materialize outside of curriculum-based teaching. This is a significant consideration because cultivating a relationship to the environment has the potential to lead to environmental behavior, in turn leading to environmental action. The problem is that policy makers prioritize environmental literacy, leaving environmental action as a secondary priority. While some documents mention initiatives and strategies to engage students in environmental action, the majority of the Ontario Ministry of Education's initiatives as seen through most curricula, publications, and resources are geared towards content knowledge and literacy. Environmental literacy is still needed to inform environmental behavior, but it should not be the forefront of Environmental Education. Rather, the goal of Environmental Education should be a two-step process in which students first a) develop environmental literacy and then continue to b) use that knowledge and literacy to enhance their environmental behavior and become active citizens. Currently, a version of this suggestion exists and is executed in the form of extracurricular programs.

Extracurricular Programs

Just as the roles of Environmental Education vary within Ontario, so do the methods of teaching Environmental Education. Extracurriculars are often used as a supplementary method to teach Environmental Education while satisfying school expectations of establishing a school community. Although extracurriculars have the potential to play an important role in Environmental Education within secondary schools in Ontario, research is lacking in this particular area. Interestingly, research focusing on co-curricular programs and activities, such as the Environmental Studies Program (Russell and Burton, 2000; Brejuing, 2012) and EcoSchools (Szostak & Lao, 2016; Igbokwe, 2012) are abundant. The difference in focus between extracurriculars and co-curricular methods of teaching Environmental Education, as current research trends suggest, is that extracurriculars are not taken

seriously as a useful practice in teaching Environmental Education. For this reason, a review in literature specifically surrounding environmental extracurricular activities in Ontario is limited.

Generally, extracurricular programs are programs within schools that are outside of curriculum content. This usually includes sports teams and clubs. Since Environmental Education has become a province-wide initiative as of 2007, schools within Ontario have been encouraging programs that focus on the environment. At the secondary level, these include programs such as "Ecoclubs," "recycling clubs," and "eco teams." By being an extracurricular program, these programs are able to, and in fact, encouraged to teach students different skills that are not a dominant focus in curricular-based classrooms. Environmental behavior and action are skills that can be developed through extracurricular activities since most environmental extracurriculars are based on an action approach to learning. Environmental behavior is not an outcome measurable by the standards set by the Ontario Ministry of Education and perhaps this is the reason why it is not more widely implemented in curriculum structures. Students cannot be formally assessed on their environmental behavior, but they can and are assessed on their environmental literacy through connections to the curriculum, specifically in the main environmental related courses of geography, science and technology. As environmental literacy is the Ontario Ministry of Education's main goal of Environmental Education, the curriculum offers little room to deviate from it. Thus, the need for programs that focus on environmental behavior and action are even more relevant. Hudson (2001) validates programs based in active learning through what he calls a "learning by doing" philosophy. He concludes that teaching about the environment is most effective if it incorporates activities that seeks to produce tangible results (Hudson, 2001, p. 286). Extracurriculars provide the perfect opportunity to develop important environmental skills because there is no curriculum guiding the

direction. While there is still a need for a pedagogical approach (M. Root-Bernstein & R. Root-Bernstein, 2014), the development of environmental behavior can flourish without the restriction of the curriculum heavily influenced by environmental literacy. In contrast, co-curricular programs are linked to curricula, and therefore influenced more directly by the Ontario Ministry of Education's objectives and goals.

Co-Curricular Programs

The EcoSchools program is considered to be co-curricular and not extracurricular because it is linked to formal curriculum. According to the EcoSchools' website, curriculum connections are built into all aspects of the EcoSchools program (EcoSchools Canada, 2020). Although this is seen as a benefit to teachers because they can capitalize on their time in the classroom by doing two things at once, curricular linked programs are restricted to the goals of the curriculum. There are approximately 102 secondary schools, both public and catholic, within the Greater Toronto Area that participate in the EcoSchools programs and have achieved the certification of an "Eco School" (EcoSchools Canada, 2020). To become certified, teachers must create an application and find a group of students committed to the program. In other words, teachers are creating "Ecoclubs" to do this. A brief look at the requirements to be a certified Eco Schools and depending on the level of certification shows that it is a lengthy and time-consuming process. There are six steps to the process which include connecting classroom learning to EcoSchools concepts through lesson plans, building an Ecoclub/team, assessing and reviewing their school's current environmental impact, planning a yearly calendar, engaging the school community, reflect on the current year and plan ahead. As can be seen, environmental extracurriculars that are engaged in the EcoSchools program most likely dedicate a majority of their time to this program only. This is problematic because the point of

extracurriculars is to be separate from the curriculum to make room for non-curricular learning; that is, learning not limited to formal curriculum roles and goals. But by participating in EcoSchools programs, these extracurricular programs are becoming co-curricular as EcoSchools is based heavily on curriculum links. This means that the opportunity to engage in activities that focus on environmental behavior and action is again, limited. Thus, I believe it will be useful to research extracurricular activities that are not tied to curricula expectations. However, limitations of Environmental Education programs, both extracurricular and co-curricular, can be attributed to the lack of effectiveness of the teaching strategies within them. Effectiveness of Environmental Education, then, is another important and complex component to consider when evaluating Environment Education programs.

Effectiveness of Environmental Education in Ontario

While there are many effective approaches and strategies in Environmental Education, research in Ontario highlights three as most common: constructivism, experiential learning, and place based learning, as seen the case studies of Russell and Burton (2000), Breunig (2012) ,Tan and Pedretti (2010) and Purc-Stephenson, Rawleigh, Kemp, and Asfeldt, (2019). Although these case studies do not focus on extracurricular programs, they still provide insight in how Environmental Education is taught and what approaches and strategies are effective. Each case study is inherently rooted in the theoretical approach of constructivism, through strategies such as outdoor learning and experiential learning. The following sections will: a) explore general approaches and strategies of effective Environmental Education and b) focus on current research specifically within Ontario as seen through the aforementioned case studies.

Constructivism

Current research in Environmental Education in Ontario is often underpinned by a constructivist approach (Loughland et al., 2010). For example, the studies of Russell and Burton (2000), Breunig (2012), Tan and Pedretti (2010) and Purc-Stephenson et al. (2019) focus on strategies of active learning such as outdoor learning and experiential learning. Each study has determined that these strategies are effective at developing at least one important component of environmental education in students. Each case study highlighted the constructivist learning approach through their emphasis on both outdoor learning and experiential learning.

Experiential Learning

The term informal education refers to education that is not restricted by a classroom setting where the teacher is not acting within their role as a formal educator (teaching to the curricula). There are many strategies used within informal Environmental Education that often get confused with meaning the same thing. In fact, for many educators, the terms 'outdoor,' 'experiential,' and 'Environmental Education' are perceived as interchangeable (Bierle and Singletary, 2008). Although each field is separate in its own purpose, they all share similar foci. Adkins and Simmons offer an explanation in how these terms overlap:

> "Outdoor education is a direct antecedent of Environmental Education but can include other subject matter than learning about the environment. Experiential education often employs outdoor settings but can take place anywhere individuals learn by doing. Environmental education can take place outdoors using experiential approaches or indoors using a standard textbook" (Adkins and Simmons, 2002, as cited in Bierle & Singletary, 2008, p.19).

Kolb explained how experiential learning is rooted within a constructivist framework as it upholds the learning by doing philosophy. It can be described as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, as cited in Moseley et al., 2019, p.2). The studies of Moseley et al. (2019) Jose et al. (2017) and James and Williams (2017) support the claim that experiential learning in the form of outdoor education is beneficial to environmental knowledge, beliefs, and relationships to the environment. These case studies highlight how effective experiential learning takes place whereby students are engaged in active learning. As Falk and Dierking highlighted, experiential learning also aids students in constructing new knowledge through exploration and building upon prior knowledge and beliefs (as cited in Moseley et al., 2019).

As evident in the research above, there are clear links between the strategy of experiential learning and the general goal of Environmental Education. To sustain and preserve our environment, students must learn how to engage in environmental actions, thereby exhibiting environmental behaviour. Through their experiences in active, hands on and real world learning, students can: a) develop more knowledge about the environment that can influence their understanding of it, leading to stronger relationships; b) develop stronger relationships to the environment that can influence their wants to preserve it and thus lead them establish pro-environmental behaviour and actions; c) develop more meaningful and memorable experiences to the environment that can further influence both points in a) and b).

In Ontario case studies, outdoor education is often characterized by experiential learning. Russell and Burton (2000), Breunig (2012), Purc-Stephenson et al., (2019) and Tan and Pedretti (2010) all emphasize experiential learning within their case studies through outdoor education. Outdoor education characterized by the Environmental Studies Program in high schools have been effective at

enhancing interpersonal skills and relationships (Russell & Burton, 2000, p. 298; Breunig, 2012, p.38). The development of these interpersonal skills relies on experiences that focus on the relationships among humans and between humans and other life (Russell & Burton, 2000, p. 298;). Interpersonal skills are useful in facilitating a connection to the environment as students begin to understand the interconnectedness of all beings, further developing components of environmentalism, such as (new) environmental awareness and behaviours. Likewise, Breunig (2012) found that the Environmental Studies Program allowed students to develop a strong sense of community and ideas of social and environmental justice (p. 38).

Breunig's study also highlighted environmental values, another component of environmentalism, as students in these programs have acted on environmental values through participating in local campaigns and petitions (Breunig, 2012, p.38). The results from Purc-Stephenson's et al. (2019) study not only recognized outdoor education (and by extension experiential learning) as effective teaching pedagogy, the results also indicated that outdoor education had a positive impact on students' improved environmental knowledge (pp. 365-366). Outdoor education also improved the development of what Purc-Stephenson's et al. consider 'green skills', skills that founded in environmental awareness. Outdoor education initiatives have also been connected to place-based learning and praised for its usefulness in developing a sense of place (Tan & Pedretti, 2010). Place-based education ultimately contributes to the effectiveness of environmental education by promoting connectedness to places in the environment.

Place-Based Education

Place-based Learning is a form of constructivist learning. Students are expected to construct meaning while building a relationship to a specific place within the environment. Similar to experiential learning, Place-based education is an effective strategy of Environmental Education that exposes students to the experience of a place outside the classroom. As a result of this experience, students have the opportunity to understand what place means to them and to create a sense of place through their connections to the dimensions of place. Many scholars have found that Place-based education is linked to environmentally responsible behaviours. For example, Ardoin (2006) cited the steps that Mueller, Worster, and Abrams (2005) explain lead to environmental behaviour: "(1) ecological knowledge of the place, which leads to ecological identity; (2) knowledge of the local institution/social context; and (3) place attachment to a region," which "theoretically leads to the environmentally responsible behavior" (Mueller, Worster, and Abrams, 2005, as cited in Ardoin, 2006, p. 119).

Moreover, Kudryavtsev, Stedman and Krasny (2012) find a number of scholars have suggested that sense of place fosters pro-environmental behavior, and related emotions, attitudes, and behavioral intention (Heimlich & Ardoin 2008; Hungerford & Peyton 1986; Hungerford & Volk 1990; Monroe, Andrews, & Biedenweg 2007). In the same vein, Orr (1992, 1994) builds on Tuan's (1977) theoretical framework and contended that people will act responsibly towards their immediate environment if they have a sense of rootedness. Gould (1991) argued that people would not fight for what they do not love while Walker and Chapman (2003) proposed that 'a positive relationship may exist between a person's sense of place and pro-environmental intentions he or she has in regard to that place (Walker & Chapman, 2003, p.74).

Data from an Ontario study based on teacher experiences data suggested that outdoor education is the most popular form of Environmental Education within schools, aligning with the naturalistic current as founded by Suave (2015). Further, Tan and Pedretti (2010) make a coherent connection between outdoor education and place-based education. Specifically, their study found that outdoor education is effective at developing a sense of place, and by extension, a sense of care for the local environment. Moreover, several researchers examined the effect of place meanings on pro-environmental behaviors, attitudes, and awareness. For example, Manzo and Perkins (2006) reviewed the environmental and community psychology literature and concluded that people are motivated to protect places that are meaningful to them. (p. 234). Clearly, Place-based education is generally found to be an effective strategy in achieving the ultimate goal of environmental action through the development of environmental behaviour. Having identified what makes environmental education effective, I turn now to look at the barriers that have been identified that impact effective implementation.

Barriers to Effective Implementation

In general, barriers to effective implementation of Environmental Education often begin from misconceptions of the theory and/or strategy. Some scholars highlighted the flaws of the constructivist approach through an educational and philosophical perspective. Novak pointed out that each learner makes sense of their experiences in a unique way, varying widely in their individual views about the world (Novak, 1987, as cited in in Loughland et. al.,2010, p.34, 188). In Environmental Education, this is a significant point to consider as some students may view the environment as an object rather than a subject based on their experiences. The research of

Loughland et al. (2010) found that the majority of young people do in fact view the environment as an object, having major implications on Environmental Education as a whole. Thus, constructivism in Environmental Education should ensure that the experiences these students have, whether formal or informal, are questioned and challenged in order to construct a better understanding of the environment which may inform their future actions and behaviour.

Gordon (2009) further supports this point as he argued that the misconception of constructivism is often that the student should be the only agent in the learning process. The misconception provides reasoning behind how students construct distorted views of the environment as they do not have support in the learning process that challenges or questions this view. Gordon explained that the classroom should have a balance between teacher and student directed learning, where the teacher takes on an active role in the learning process (p.739). Although the constructivist notion encourages students to construct their own meaning, this does not mean students should teach themselves (Gordon, 2009, p.740). This risks the false notion that the meaning they construct through their individual interpretations is separate from absolute truths.

Another misconception of the constructivist approach is seen through teachers who encourage the idea that there are no wrong answers as knowledge is in the eye of the beholder (Gordon, 2009, p.740). In reality, while constructing meaning from experiences is a sound approach to learning, separating the absolute truths from individual learning constructs is detrimental not only to Environmental Education, but to education as a whole. Robottom (2005) highlighted this as a flaw of constructivism as he argued that effective constructivism requires separating the subjections of this method from the absolute truths (p.93). While students can construct their own meaning to theories and concepts, they cannot construct or change the meaning to absolute truths or facts. The point is

to use this way of teaching, constructing meaning from concepts, to get to an understanding of how the absolute truth exists. Effective constructivist teaching includes a number of specific criteria and as Gordon (2009) argued, raises the bar and demands far more from students than many teacher-centered models of learning (p.741). Constructivist teaching is employed through a variety of teaching strategies. Effective teaching strategies of Environmental Education that are framed within the constructivist approach should harbour the main ideas that both teachers and students need to be an active part of the learning process and that students' perceptions of the environment need to be questioned and challenged.

Although an effective strategy for student learning in Environmental Education, experiential learning faces some barriers to implementation. Multiple scholars have explained how lack of funding and administrative support, liability concerns, curriculum inflexibility, poor student behaviour and attitudes, lack of venue options, teacher training and experience, time commitments, and the schools' focus on standardized testing contribute to the limitations of experiential learning (Behrendt & Franklin, 2014; Martin, 2003; Moseley et. al., 2017, p. 2). Clearly, the authority (or lack thereof) of certain levels in the education hierarchy (policy makers, administrators, teachers and students) have a direct result on the effectiveness of Environmental Education. Environmental Education initiatives should reach all levels within public education in order to move forward while on the same page. A facet of Environmental Education, outdoor education, experiences some of the same barriers to effective implementation.

As outlined by Tan and Pedretti (2010), Ontario schoolteachers have voiced their concerns in being able to access and use the outdoors, student apathy, and the nature of sociopolitical action (p.72). Through this study it is clear that Ontario teachers want to use the

outdoors as a means of teaching Environmental Education, but are faced with relentless challenges such as limiting and overcrowded curricula that does not grant them the time to take their students outside, unless it is directly linked to a learning goal or expectation (p.73). Student apathy is another barrier found within this study where one teacher discussed her concerns that high school students exhibit a lack of care for environmental issues such as climate change, and regard these issues as irrelevant because, as they see it, it will not affect them (p.75). Other barriers surrounding effective Environmental Education within Ontario include a lack of interdisciplinarity in courses touching upon environmental related issues and concepts, single teacher programming, time management (Russell & Burton, 2000) and an oversimplification of environmental problems leading to unmotivated students (Breunig, 2012). Outdoor education also shares a barrier of effective implementation to place based learning, as teachers are restricted in their attempts to venture outdoors with their students (Tan & Pedretti, 2010), limiting the ways one can effectively teach about local environmental issues while also developing a sense of place.

While Place-based education seems promising, there are some relevant issues that can formulate critique and suggestions for improvements. According to Ardoin (2006), many current place-based educational efforts represent only one dimension of place (the biophysical) and heavily privilege only one avenue to developing a sense of place (rootedness). The tradition of writing about place has tended to privilege a rooted perspective, reifying an ancestrally based sense of place above all others (p.120). By privileging one dimension over the other, the development of holistic, healthy, and fulfilling relationships with places is stifled. To realistically and honestly assess, address, and explore sense of place, Environmental Education initiatives must recognize the multiplicity of meanings, sources, and expressions of sense of place (Ardoin, 2006, p.121). In general, Environmental

Education can benefit from Ardoin's suggestion of a more holistic approach to learning. Through teaching strategies such as Place-based education and Experiential Learning, holistic learning can offer support in the development of the components of environmental action. According to recent literature, these components are what determines the environmental actions of students. As seen throughout the case studies based within Ontario and around the world, the effectiveness of Environments Education programs typically result in what is known as a component of environmentalism. As such, the following section will review components of environmentalism in detail to provide a backdrop for the analysis of this study.

Components of Environmentalism

What does it mean to be an environmentalist? The term is often described as dedicating one's actions towards the good of the environment. Environmentalism, then, has environmental action at the center of its existence. The question emerges again: how does one become environmentally active? Research within Environmental Education indicates that there are many components to achieving environmentalism in students. Environmental knowledge, awareness, attitude, value, behaviour and action are components that are relevant within the field of education. When learning about the environment, students often exhibit one or more of these components which in some cases can signal a significant part of the learning process: motivation and action. Literature within the field of Environmental Education has found that research studies are often dedicated to only two of these components, namely environmental knowledge and attitudes (Martin, 2003). The current trend in research shows that the components of environmentalism are being compartmentalized and are often ineffectively linked to the goal of environmental action. This debate in this field further highlights this problem as many scholars dedicate their work to proving which component of

environmentalism is the most significant. For example, Martin (2003) argued that research should focus on environmental behaviour as it is ultimately behaviour that will help us achieve the goal of environmental action (ibid). Although the statement is true on the surface, there are many components responsible for the development of environmental behaviour that deserve to be explored deeper. Research in environmentalism should be dedicated to discovering how these components are all interrelated and have a place in reaching the end goal of environmental action. Currently, some research studies attempt to address the connections (or lack thereof) of some components.

Environmental Knowledge

"*Entails knowledge of physical and ecological systems; social cultural and political systems; environmental issues; multiple solutions to these issues; citizen participation and action strategies" (North American Association for Environmental Education, 2011).*

As Littledyke (2008) emphasized, environmental knowledge is not directly linked to environmental behaviour. Rather, it seems as though it is indirectly linked through other components of environmentalism. Environmental knowledge is directly influenced by a constructivist approach (Garrecht, Bruckermann, & Harms 2018). For example, outdoor experiences, usually heavily based in the constructivist learning theory, have been shown to improve student learning in a variety of subjects especially in the transmission of environmental knowledge (Jose et al., 2017, p.269). Similarly, environmental awareness is also dependant on the constructivist approach. When preluded by environmental knowledge, environmental awareness strengthens student's understanding of the environment and connects learned content to real world experiences.

Environmental Awareness

"Knowing of the impact of human behavior on the environment" (Kollmuss and Agyeman, 2002).

Environmental educators usually aim to increase awareness and understanding of the natural environment (Garrecht, 2018). Littledyke's (2008) claim that constructivist teaching enhances environmental awareness was confirmed to a certain degree in Garrecht, Bruckermann, and Harms; 2018 study. The results of this study show that schools in which science is taught in a more hands-on manner are associated with a high rate of student environmental awareness. Furthermore, Lester, Ma, Lee and Lambert (2006) specified that teaching science in a personally meaningful way and providing students with authentic learning experiences increases awareness of environmental issues. Once environmental awareness has been adopted, students can begin to develop attitudes towards the environment, which enable them to engage in more -pro environmental behaviour.

Environmental Attitudes

*"The enduring positive or negative feeling about the environment" (*Kollmuss & Agyeman, 2002).

Positive attitudes towards the environment can be developed at early stages in life through constructivist teaching and outdoor experiences. Littledyke (2008) emphasizes that active learning through constructivist pedagogy can enhance [pro-]environmental attitudes. Garrecht, Bruckermann, and Harms (2018) highlighted how schools can engender more pro-environmental attitudes in their students by focussing on environmental learning projects like outdoor education or trips to the museum (p.517). Outdoor learning environments have been effective in altering attitudes and behavior (Bogner, 1999). It should be noted that continuous, repeated activities with recognizable natural surroundings can have a stronger effect on student learning than occasional experiences in

novel natural areas (Martin, 2003, p. 22). In his study, Martin concluded that program length does appear to have an effect on developing positive environmental attitudes. Many scholars are critical about the link between environmental attitude and behaviour. For example, Lucas' argument challenges the link between environmental attitudinal changes to behaviour modification (Lucas, 1982, as cited in Scott & Oulton ,1998). Kollmus and Agyeman (2002) furthered this point and agree with Fietkau and Kessel (1981) in that there is no strong correlation between environmental attitudes and behaviour. Instead, they argued that there are many external and internal factors that influence attitude towards the environment, in turn influencing behaviour (Kollmus & Agyeman 2002, p.243). Environmental values can sometimes be regarded as both an external and internal factor, as values can be developed both internally and externally, and may influence behaviour.

Environmental Values

"A set of beliefs related to protecting the environment for its own sake or for the benefits of human society" (Stern 2000, as cited in Chawla, 2007).

As Orr (2004) has stated, we will not save what we do not value. Scott and Oulton (1998) asserted that value education is central to the process of developing learners' attitudes and behaviours towards the environment (p.211). Scott and Oulton (1998) attempted to connect several components of environmentalism, from knowledge to values to behaviours: "… given sufficient knowledge and skills, and the opportunity to develop their values, learners will necessarily make appropriate choices in their behaviour relating to the environment" (p.211). Lucas made the critical point that this notion is oversimplified, reinforcing his suggestion that evidence linking attitudinal changes to appropriate behaviour modification is not strong (Lucas, 1982, as cited in Scott & Oulton,

1998). Scott and Oulton used this critique to further highlight their argument in that environmental values is the missing puzzle piece in what links attitudinal and behaviour changes. They argued that if we are clear in how our values underpin our decision making, then making decision in complex matters will be helped. Identifying a set of environmental values will be an important first step in this process. Thus, environmental values education needs to be central to the school curriculum, and to the life of the school both as an entity in itself and as a reflexive part of its community. Schools could play a central role in helping to prepare citizens who are capable of valuing, thinking and acting in a positive, pro-environmental way.

On a separate note, Gardner and Stern (2002) have also tackled the connection between action, behaviour and values and have noted that whether or not people take action in line with their values and concerns depends to a large degree on the scale of the barriers that they face in terms of the time and resources that action will cost. According to Chawla (2007), many barriers are structural, or built into the fabric of everyday life through government regulations, business practices, or the physical form of human settlements. With these barriers in mind, extracurricular programs in schools can act as vehicle, teaching students how to navigate around obstacles that inhibit them from acting on their environmental values.

Environmental Behaviour and Action

"Behaviour that consciously seeks to minimize negative impacts of one's actions on natural and built environments" (Kollmuss and Agyeman 2002 p. 240*)*

Most scholars agree that there is a strong connection between environmental behaviour and environmental action. Past programs have shown gains in young people's reported environmental

behaviors or their stated intention to protect the environment also include an action component, such as writing letters to advocate wildlife protection, making nesting boxes for birds, carrying out energy conservation activities, or initiating community projects that investigate local environmental issues and implement ways to address problems (Scott & Oulton, 1998, p.214). According to Chawla (2007) the most effective action for the environment is collective political engagement because it is the force that moves major actors like business and government, from local to national and even international levels, to take responsibility for the environment and to dismantle barriers to action in private life. People cannot purchase energy efficient cars, use public transportation or travel on bikeways, for example, unless business and government make these choices available.

Scott and Oulton (1998) pointed out that change of circumstances can be barriers if we do not understand that they can change the pattern of behaviours (p.214). To combat these barriers, Scott and Oulton suggest the need to have a means of analysing new and existing circumstances in order lead to environmentally sustainable behaviours and inform actions (ibid). Another barrier as highlighted by Loughland et al. (2010) is that the majority of young people see the environment as an object. This has immediate implications on the teachings of the environment, in which Loughland et al. (2010) explained as focusing on specific topics or ideas concerning the environment rather than promoting a more meaningful orientation towards Environmental Education where a student's own experience of the environment is explored and then challenged.

Understanding the components of environmentalism is important to the process of understanding how best to teach Environmental Education. In the following chapter, my research methodology focuses on case studies that will be critically analyzed with reference to the

components of environmentalism as well as effective teaching practices, goals of Environmental Education, and political/ educational barriers to these goals.

CHAPTER THREE

Methods

As outlined in the introduction, this MES Major Research is designed to meet the following research objectives, through an exploration of the subsequent major research questions:

a) To understand the range of current extracurricular programs/activities that focus on the environment;

b) To explore Environmental Education strategies that may be used in extracurricular environmental programs; and,

c) To identify the contributing factors of a successful/unsuccessful environmental programs/activities in developing environmental awareness/behaviour.

Research Questions

1. What are the current extracurricular programs/activities that focus on the environment?
2. What does it mean for extracurricular environmental programs/actives to be successful or effective?
3. What Environmental Education strategies make extracurricular environmental programs/activities effective/successful?

4. What are the barriers to an effective/successful extracurricular environmental programs/activity?

Data Generation

My research methodology included a qualitative assessment of secondary research on the use and efficacy of extracurricular activities in Environmental Education. A focus on extracurricular activities at the secondary level is the primary criteria for the case study selection. As a result of the lack of literature found within Ontario, I included case studies from two other geographic locations. Nonetheless, together, these studies provided a good base for comparison as well as a highly contextual and in-depth analysis of extracurricular activities in Environmental Education and can greatly contribute to an improved plan for Environmental Education in Canada, specifically in Ontario.

I chose two cases studies from the peer reviewed journals of *Environmental Education Research (2009), and The Journal of Environmental Education (2019)* where the research is based in India and Australia. Both case studies, "*Impacts of the National Green Corps Program (Eco-Clubs) on students in India and their participation in Environmental Education activities"* by Nina S. Roberts and "The role of environment clubs in promoting ecocentrism in secondary schools: student identity and relationship to the earth" by William Smith were used to explore extracurricular activities employed within secondary schools in India and Australia. Each case was analyzed individually, highlighting important key words that aligned with my research questions. I created two models to illustrate my findings.

The first model illustrates how I compared the two case studies against each other in order to identify how to focus the next stage of analysis for the results of each (please see Figure 1). The second model illustrates my exploration of the Ecoclubs *within* each case study (as shown in

Figure 5). Additional research was then needed to address the gap in literature within Smith's case study concerning the government of Australia's initiatives in Environmental Education. This additional research is also provided in Figure 5. Lastly, I critically reviewed key documents and resources from the Ontario Ministry Environmental Education components, as described in the literature review in this paper, which provided a basis for discussion and created recommendations for current and future programs based within Environmental Education. An overview of both case studies follows.

Overview of the Case Studies

Case Study A: Roberts, N.S. (2009). Impacts of the National Green Corps Program (Eco-Clubs) on students in India and their participation in environmental education activities. *Environmental Education Research, 15(4), 443-464.*

Ecoclubs provide children and youth with the opportunity to engage with the environment, which is necessary to "mitigate an often- sedentary indoor lifestyle" (Roberts, 2009 p.449). Hence, the purpose of Roberts' study was to "evaluate these programs to determine if current efforts are successful, and if so, how. If not, why and what corrective measures are essential for further consideration" (ibid). Roberts did not include any research questions other than this and did not elaborate on the measurement of a successful Ecoclub program.

The framework of Roberts' case study is based on 'pro-environmental consciousness'. Kollmuss and Agyeman's (2002) found that the factors that create and form pro- environmental behaviour are so complex that 'it cannot be visualized through one single framework or diagram (p. 239). Relying on this data, Roberts (2009) explores internal factors that may have some influence on behaviour,

namely environmental knowledge, values, attitudes and emotional involvement are combined to create this concept. (p. 447).

The methodology and research design of Case Study A involved a two-phased evaluation design. The first phase employed secondary research in the form of a document review of four previously completed evaluations (12 states) and activity highlights from all 35 states. The four agencies that completed these reviews were: Centre for Media Studies, Development Alternatives , The Energy Resources Institute and World Wildlife Fund. These four organizations were tasked with conducting evaluations based on previous experience of these entities. Each agency explored seven factors: 1. Role of teacher-in-charge (I.e. strengths and weaknesses); 2. Eco-Club impact on student members in terms of sensitization towards the environment; 3. Usefulness of resource materials; 4. Coordination between nodal and resource agency; 5. Role of resource agency; 6. Overall implementation and monitoring mechanisms; and, 7. Suggestions for improvements. This secondary research provides some clarity as to how the success of Ecoclub programs are measured. Roberts (2009) indicated that the term "sensitization" in the second factor refers to environment awareness- i.e., students become more *sensitized* to how environmental issues affect their environment as their awareness increases (p.450). The second phase within Roberts' methodology utilized primary research by employing two qualitative methods: Semi-structured interviews with key informants, and focus groups with student members of three Ecoclubs in two states. 45 students were interviewed. The key participants within the focus study groups were students from four secondary schools.

Considering there was no specific research question guiding Case Study A, only a research purpose, the findings of this study adhere to the purpose. Ecoclubs were adequately explored to determine if these programs are successful in terms of their impact. The measure of

successful or impactful Ecoclubs remained ambiguous throughout this study. Roberts addressed it in her discussion of the findings: "the question here is whether the impact is being assessed in terms of changing the attitudes or the community or public or resolving some local environmental problems." (p.455). Findings did suggest, however, an alignment with Kollmuss and Ageyman's (2002) theory of pro-environmental consciousness. The examples Roberts' paired with the outcomes (awareness, action, knowledge etc.) indicated some form of pro-environmental consciousness. In her concluding remarks, Roberts highlighted how the results of this study show how environmental awareness lead youth to possible behaviour changes once a level of awareness and cognizance of issues are gained (p.462). Moreover, Roberts emphasized how Ecoclubs can engage students in a deeper understanding of the inseparability of humans and nature, as students realize the connectedness to the ecosystem (ibid). Roberts concluded that future research would benefit from exploring how Environmental Education in schools can lead youth to becoming activists in their community and can also benefit from comparisons with other countries.

Case Study B: Smith, W. (2019)**.** The role of environment clubs in promoting ecocentrism in secondary schools: student identity and relationship to the earth*. The Journal of Environmental Education, 50(1), 52-71.*

The purpose of ~~this~~ Case Study B is to investigate secondary school students' relationship to the earth using an ecophilosophical lens. As such, Case Study B addressed three questions: 1. Do environmental clubs promote anthropocentric beliefs in secondary school students, or ecocentric beliefs consistent with Deep Ecology; 2. Do students in environment clubs show evidence of developing a situated identity consistent with an ecological self?; and, 3. What social, cultural,

ecological, and metaphysical factors influence environment club student's relationship with nature? Smith utilized Deep Ecology as a philosophical framework that focuses on the relationship between nature and humans, namely within an anthropocentrism vs. ecocentrism context. Anthropocentrism is generally defined as a view of a relationship to the earth that centers humans whereas ecocentrism centers the environment in the relationship. Both anthropocentrism and ecocentrism are discussed as two major concepts in environmental philosophy and environmental ethics. To set the stage for his research, Smith discussed these two concepts through the lenses of sustainable development, ecocentrism, wilderness biodiversity preservation, environmental ethics, and critical pedagogy.

Smith's study proposed that secondary schools encourage students and teachers to discuss anthropogenic harm to the earth, both during formal and informal Environmental Education, and that schools promote an ecocentric world-view to students (Smith, 2019, p. 54). The case study focused on these issues and involved 30 students from environmental clubs at three Victorian secondary schools in Australia. Semi-structured open-ended interviews, a questionnaire, and the Deep Ecology Spectrum (DES) all based on anthropocentrism and ecocentrism were used to generate data. The Deep Ecology Spectrum is based on the Deep Ecology world view coined by Naess in 1973. Deep ecology is a philosophical worldview that encourages an intimate relationship with nature by means of experience both in and with nature.

Case Study B focused on how the participants situated themselves within the school sustainability setting, their place relative to world ecosystems, and how they were affected by events that impacted the global environment (Smith, 2019, p. 58). The aim was to "investigate biographical trajectories and to understand their sense of agency within the greater ontology of environmental sustainability" (ibid). The Deep Ecology lens was used to analyze participants ideas about issues

including biodiversity, resource sharing with other species, abiotic components of ecosystems, and humans that excessively purchase consumer goods. The study focused on participants' narrative views and the sociocultural meaning of the data. Interviews focused on the metaphysical aspects of Deep Ecology, looking for evidence of connectedness to the earth. The questionnaire addressed the key areas if Deep Ecology including wilderness protection, bio spherical egalitarianism, the intrinsic value of nature, lifestyles that harm the earth, ecological wisdom, the ecological self, and empathy for the earth (Smith, 2019, p. 59).The Deep Ecology Spectrum non-binary assessment was created to allow for a range of responses. 25 students responded to this instrument. The Deep Ecology Spectrum, had anthropocentrism and ecocentrism on opposite ends and participants were placed along the scale based on their degree of anthropocentrism/ecocentrism within their responses.

The findings of Case Study B indicated that students' attitudes were orientated towards ecocentrism. Only two students gave an anthropocentric response that natural resources should be preserved for future humans (Smith, 2019, p. 65). School environmental clubs provide a critical opportunity for students to develop an ecological identity. Students are building an ecological self, moving from ego to social self, and from social self to a metaphysical self. Smith asserted that students in this study, in part, meet the requirements of an ecological self. The study supports the argument that students can connect to earth along a metaphysical path, rather than taking a much narrower anthropocentric way. Smith claimed that connecting to nature seems useful and perhaps necessary if students are to be empowered to act for the earth (p.66). Smith concluded that "although participants expressed sentiments that align with the Deep Ecology philosophy, there is no attempt to conclude that all Environmental Education should become ecophilosophical" (ibid). The study is limited because of the small number of participants and requires further investigation to

confirm the data. There is some suggestion in Smith's data that environmental philosophy might be useful to Environmental Education. After reviewing each case study, I proceed to analyzing each report paying particular attention to themes and concepts.

Approach to the Case Study Analysis

The research tradition of my study consisted of a thematic analysis approach. The importance of the themes lies within their ability to address the overall research questions (Ritchie et al.,2014, p. 271). This research approach called for a systematic exploration of the case studies wherein key themes emerged. These themes were then progressively integrated into the analysis and discussion of the research.

To begin the analysis, I familiarized myself with the content and the context of each study. This meant highlighting themes significant to the individual case study, research questions, and purpose of that study. Identifying the frameworks within each study provided insight into the authors analysis and reasoning. The overview of each case study revealed that Roberts' had a general approach to extracurriculars in Environmental Education while Smith's approach was narrower, focusing on a specific idea within Environmental Education in the context of extracurriculars.

Progressing from the familiarization stage, I then began to look for reoccurring concepts, themes, and key ideas within each individual case study. These themes were supported by data from the study. A Venn diagram was used to organize the individual themes that differed within the case studies as well as the overlapping themes (Figure 1). The relationships between components of the ecological self and the interconnectedness between the environment and humans were the overlapping themes that were evident between the two case studies. Further connections were

made regarding anthropocentrism and barriers to effective Ecoclubs, as well the forming of a new model of the ecological self.

Although the framework of each case studied differed, my analysis revealed that the exploration of Ecoclubs from different lenses is beneficial to the overall understanding of the contribution of Ecoclubs to Environmental Education.

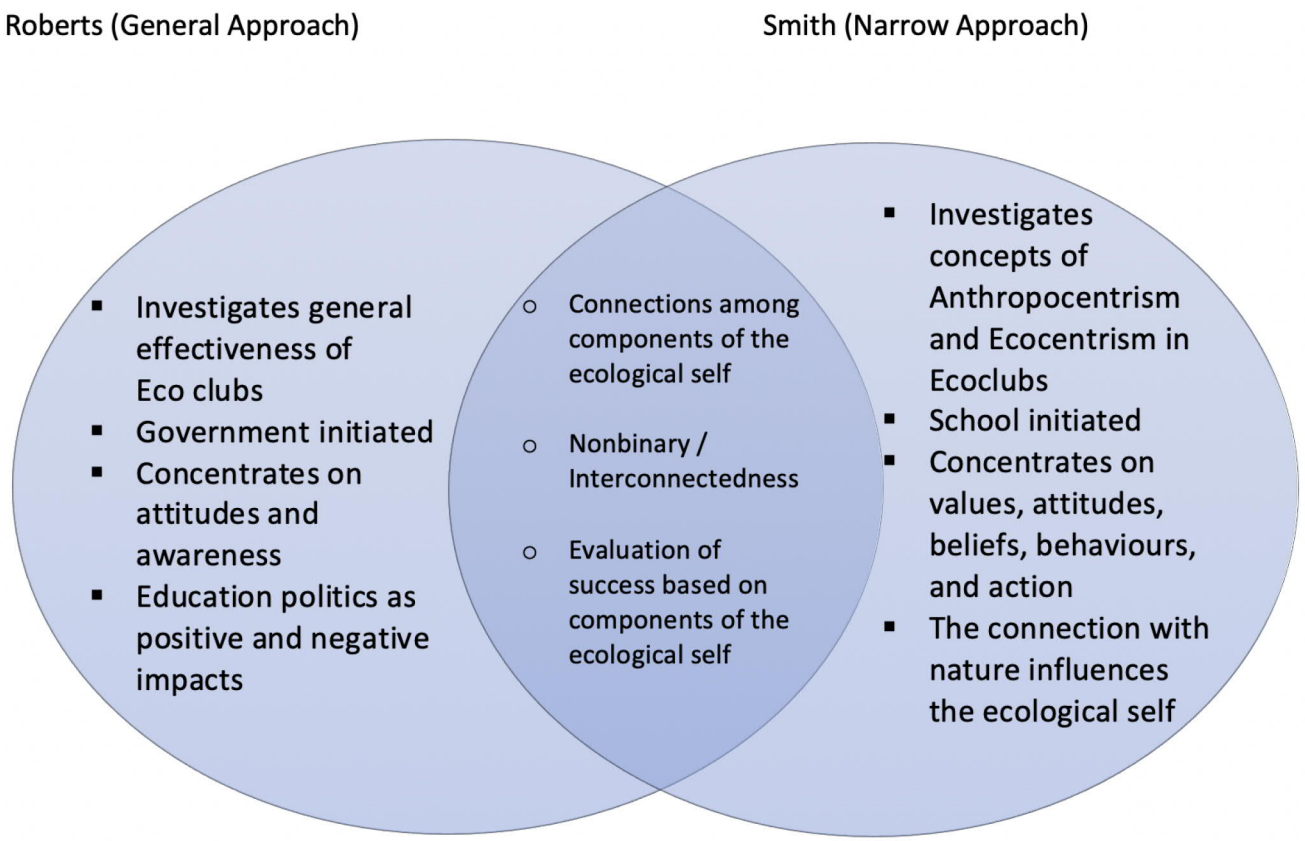

Figure 1 Comparison of Major Concepts in Both Case Studies

CHAPTER FOUR

Analysis and Results

The following section provides a detail analysis of the emerging and overlapping themes found within both case studies by focusing on participant responses. A discussion of these themes in relation to their connection and purpose in response to the research question will follow in chapter five.

Interconnectedness: Components of the Ecological Self

The literature review included in this paper outlines the components needed for students to become an environmentalist. It is clear that the development of an ecological self is crucial to becoming an environmentalist. They are bonded concepts where one cannot exist without the other. Thus, this analysis concentrates on the development of the ecological self and therefore the development of an environmentalist. While it is apparent that many components are needed to develop an ecological self, this analysis attempts to address a connection amongst these components. Rather than compartmentalizing, this analysis serves to develop a holistic theory that promotes the interconnectedness and systemic flow amongst environmental knowledge, awareness, attitudes, values, behaviour, and action.

According to Smith (2019), requirements of an ecological self consists of feelings (attitudes) towards the environment, behaviour, action, awareness and knowledge (p.65). Intrinsic in both environmentalism and an ecological self is the environment as a central belief. The connection between the two is significant because one cannot be present without the other. That is, to become an environmentalist, one must create an ecological self. An appropriate question following this format is how does one create an ecological self? We know the components of environmentalism are

the ingredients in the recipe, but we are lacking the instruction. Thus, we must ask how these components come to fruition, and are they dependent upon another? The answer to this question is significant because it provides insight to how Ecoclubs can be organized in order to get the best possible outcome (being environmentally active).

Environmental Knowledge and Awareness

Many students in Smith's study understood the concept that we should share the earth with non-human life and the idea of whole ecosystems (Smith, 2019, p. 61). One participant showed a high level of awareness about the issues surrounding rainforests and palm oil. Smith revealed that this awareness was attributed to a project completed by this participant on the same topic. The response indicated a high level of awareness, in turn highlighting a high level of knowledge. Roberts also showed how awareness is based on knowledge. Students became more aware of environmental issues such as effects of degradation, benefits of trees, dangers of dump sites, need for habitat protection, recycling (Roberts, 2009, p.455). By exploring the consequences of their actions, students became knowledgeable and aware of the problems caused by humans and the potential solutions to fix them (Roberts, 2009, p.456).

Environmental Awareness, Values and Attitudes

Smith (2019) states there is a code of values that guide our decisions (behaviours) through ecosophy (p.54). Inherent in both ecosophy and Deep Ecology is the concept of value. Value underpins the ideological view of connectedness with nature. In promoting an ecological self, Smith

infered that the participants had an inherent sense of value towards the environment. Orr (2004) reinforces this idea as he argued that one will not save what they do not value.

One particular participant (year 8) in Smith's (2019) study reported that she joined the environmental club partly because of her love for animals, which she developed from feeding chickens on her grandparent's farm (p.60). Feeding chickens (action) resulted in the participant loving (and therefore valuing) animals, leading her to engage in pro-environmental behaviour (joining the ecoclub). Smith suggested that this life experienced ultimately influenced her attitude towards the environment at this young age.

Environmental awareness takes on a multifaceted definition. In addition to becoming aware of environmental issues, environmental awareness refers to recognizing that humans are not separate from nature, they are an integral part of it. (Roberts, 2009, p. 455). Knowledge and awareness sparked an attitude change in Robert's study. For example, students exhibited a willingness to help find solutions to environmental problems, change public opinion on sanitation issues, and make a difference in their local communities (p.456). Clearly, attitudinal changes have the potential to develop pro-environmental behaviour and action. This link is further explored in the following section.

Environmental Attitudes, Behaviour and Action

Kollmuss and Ageyman (2002) argued that there is no clear link between environmental attitudes and behaviour. However, both case studies bring forth an alternative view. In fact, both Smith and Roberts' case study revealed a link between environmental attitude and behaviour. Smith's investigation showed that participant attitudes towards the environment are aligned with an

ecocentric view of the world. An ecocentric view is based upon a connection with nature, underpinning values and influencing attitudes. This discovery gives partial insight into the reasoning behind their behaviour and actions (i.e joining the Ecoclub). Smith's findings can also be applied to Roberts results as they show natural progression from an attitude change to a distinct behaviour change amongst participants, such as proactive action towards the conservation of power and water, increased community service, recycling, reduced littering and efficient use of rain and water compost (Roberts, 2009, p.457). This is a reflection of Ecoclub activities, and they reported changed behaviour and action beyond the Ecoclub, at home and through community-based opportunities. There is a significant consistency between the participants of both case studies in that they all harbour the progressive view of environmental awareness, and almost all align with an ecocentric view of the world. This means that the students had a significant connection with nature, one that is needed to encourage them to act for the earth. (Smith, 2019, p.66). Connection with nature seems to be useful tactic in enhancing the relationship between environmental attitudes and behaviour.

The Ecological Self- Linear vs. Cyclical Progression

Kollmuss and Ageyman (2002) have argued that illustrating the creation of pro environmental behaviour is too complex and therefore cannot be visualized through a single framework or diagram (p.239). In light of the completion of their research in 2002, many more theories and studies have emerged that have provided adequate research that enables Kollmuss and Ageyman's perspective to be challenged. Figure 2 illustrates the connections among each component of the ecological self and the roles that a connection with nature and life experiences play within the ecological self. Figure 2 indicates that components of the ecological self are engaged in a cyclical progression, where each

stage influences the ecological self while simultaneously evolving into the next stage. The cycle indicates that this is an on-going process. In a typical cycle, there is no starting or ending point. However, Figure 2 has two potential starting points that furthers the progression of the subsequent stages. Smith's case study showed that one can start building an ecological self from the knowledge or action point of exposure. For example, two students in Smith's study discussed their progression towards an ecological self, starting from an action point. One student fed chickens (action) which led to becoming knowledgeable about their surroundings (this context took place on a farm) becoming aware of the needs of this particular animal, developing positive attitudes towards them, valuing their presence and life, and ultimately leading to positive behaviour and action (joining the Ecoclub). Another student created a project (action) about palm oil and deforestation, which followed the same progressive path. Conversely, mainstream classrooms often start from a knowledge point where the teacher formally teaches students about the environment. This can then engage them in a similar progressive cycle of creating an ecological self, only starting from the knowledge stage as opposed to the action stage. The arrow connecting knowledge and action is a two-way arrow, indicating that the cycle can progress from either of these starting points. It is important to point out that while knowledge will eventually lead to action, it must progress clockwise through the stages that immediately follow. On the other hand, action can immediately inform knowledge in turn continuing clockwise towards the next stage in the cycle. From these examples within the case studies it is clear that life experiences (informal or formal) may influence the starting point of the development of the ecological self, but the extent to which remains unclear and requires further research. As all components of the environment are connected, the way we understand the environment and issues surrounding it must follow suit. Thus, the shape of Figure 2 represents a

holistic, interconnected approach becoming an environmentalist through the development of an ecological self. Learning about one topic concerning the environment and following the cycle of the ecological self can continuously inform other topics related to the environment through any stage.

Connectedness with nature informs values which in turn informs attitude towards the environment. It is important to analyze what a true connection with nature means. Fletcher (2017) stressed the paradoxical meaning of a connection *with* nature. He argued that the way nature is predominately defined is binary. People view nature as separate from themselves. Fletcher emphasized that this view of nature is counteractive to the goals of Environmental Education that uses a connection with nature to mobilize environmentalism. This separation from 'nature' is in fact paradoxically reinforced in current Environmental Education strategies. Thus, Fletcher calls for a heavier interrogation of the concept of 'nature'. The phrase 'connectedness with nature' in Figure 1 refers to a connection with and in nature that is non-binary and interconnected. This type of holistic connection, a connection that does not separate the living from the non-living, is what is needed to encourage one to value the environment. That value further influences environmental attitudes. Value is therefore the missing link between attitudes and behavior. Both case studies show that values that are influenced by a connection with nature ultimately influences behavior, thus progressing further in the cycle of the ecological self. Life experiences have the potential to influence each component, while connectedness with nature particularly influences values, in turn influencing attitudes. Each component influences the ecological self while evolving into another, more significant component. While the components of environmentalism seem to be inherently linked, without the component of "new" environmental awareness, the cycle of the ecological self cannot progress.

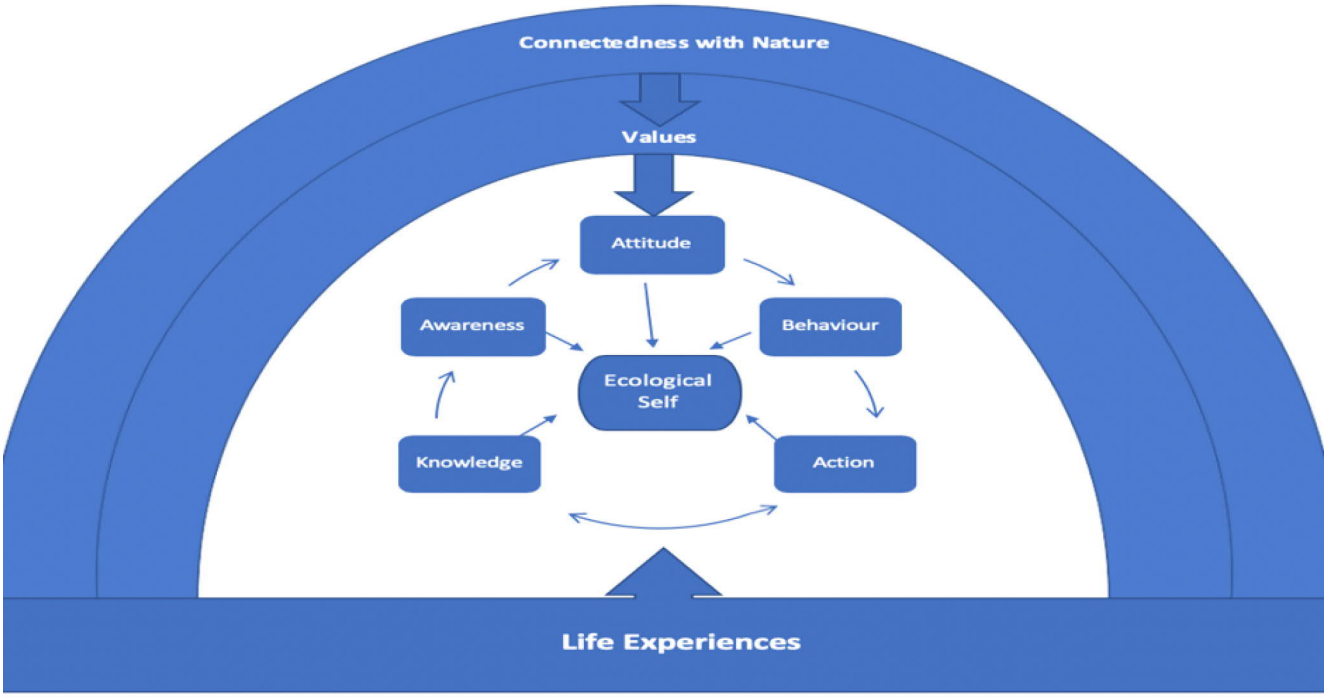

Figure 2. Model of the Development of the Ecological Self

Interconnectedness: The significance of (New) Environmental Awareness

There is a consistency between both case studies in that they share environmental awareness as the CenterPoint of Environmental Education. The term 'environmental awareness' in the context of both case studies refers to the progressive concept wherein awareness of environmental issues has evolved to also include awareness of ourselves as dependant on the earth, and therefore interconnected. In both case studies, the participants demonstrated some or all components constituting an ecological self. The common factor of each case study is that awareness of the interconnectedness between humans and the earth is what ultimately propels the creation of an ecological self. Smith (2019) argued that the ecological self is underpinned by the awareness of the interconnectedness amongst the living and non-living world and was supported by his participant

responses that correlated to the development of ecological self. Roberts (2009) highlighted the same idea of interconnectedness through her participant responses as well. This new awareness influenced attitudes, behaviour, and action related to the environment in both case studies. Environmental awareness should therefore be a main goal of Environmental Education.

The government of India indicated this new environmental awareness as their main focus in Environmental Education (Roberts, 2009). In contrast, the government of Australia provides resources for teachers and schools to become involved in Environmental Education, but without a specific goal in mind. While both governments differ in their approach to Environmental Education, interestingly the participants of these case studies still exhibit high levels of new environmental awareness. This non-binary view of the environment is clearly effective in promoting an ecocentric view of the world, one where students are encouraged to willingly engage in Environmental Education at each progressive stage of the cycle in Figure 2. This will help to view humans as part of the environment, not separate from it. The ability to recognize the interconnectedness relationship between living and non-livings things is promising for a future of non-binary perceptions of the environment. Adapting this skill of awareness means that students can begin to think about ways in which the environment is at the center of concern and not humans, straying away from an anthropocentric view and moving towards an ecocentric view of the world. In addition to highlighting the significance of new environmental awareness to Environmental Education, these studies have contributed to Environmental Education by providing responses to the research questions of this paper, by exploring of the role eco clubs, their effectiveness, their strategies and their barriers.

CHAPTER FIVE

Discussion

This section aims to respond to the research questions of this study.

Q1: What are the current extracurricular programs/activities that focus on the environment?

In response to this research question, Figure 4 was created to illustrate the specifics of each Ecoclub studied. Although Roberts' case study involved a specific exploration of Ecoclubs whereas Smith used Ecoclubs as a backdrop to investigate anthropocentrism and ecocentrism, both case studies provided an adequate exploration of the nature of Ecoclubs. However, because of the true focus of Smith's case study being anthropocentrism and ecocentrism in Ecoclubs and not the exploration of Ecoclubs in specific, some information regarding Australian state Ecoclubs was missing. In order to effectively respond to this research question, further researched was needed.

History

Both case studies focus on Ecoclubs that are extracurricular in nature. This means that they are separate from curriculum goals. The National Green Corps program in India was developed in 2001 and provided a framework for school run Ecoclubs to progress effectively. As India suffers from a rapidly growing population and a depletion of resources, deforestation, soil erosion, pollution and overall environmental degradation, significant pressure was placed on India's infrastructure and natural resource committees to contribute to ongoing efforts towards education and seek overall pro-environmental behaviours (Roberts, 2009, p. 444).

Although not mentioned in Smith's case study, Resource Smart Schools is a program that funds environmental initiatives in schools in the state of Victoria. In 2003 Victoria and New South Wales concluded a pilot that resulted in the Australian Sustainable Schools Initiative (AuSSI). This program was funded by federal and state governments. Initially, the Department of Education and Early

Childhood Development (DEECD) was responsible for rolling out AuSSI in Victoria. Following the establishment of *Sustainability Victoria* in 2006, DEECD formed a partnership with *Sustainability Victoria* to deliver AuSSI under the name Resource Smart Aussi Vic in 2008. Sustainability Victoria was keen to set up Resource Smart AuSSI Vic as an 'umbrella framework' capable of encompassing the many existing Environmental Educational programs. In other words, schools could participate in any environmental program or initiative and receive recognition through Resource Smart AuSSI Vic. In 2012 DEECD and Sustainability Victoria set up local service providers and coordinators across Victoria to help schools deliver Resource Smart AuSSI Vic. For the purpose of this research and because of the gaps in the history and structure of environmental clubs within Smith's case study (although possibly beyond the scope of his research), I will focus on Resource Smart Schools as the program and structures for school run Ecoclubs.

Goals

The goal of India's The National Green Corps program is to promote environmental awareness that leads to pro-environmental behaviour and action. The goal of Resource Smart Schools is to reduce resource use, make cost savings, integrate sustainability into the curriculum and share learning beyond the gate. Both goals play a role in influencing the programs' activities and operations. For example, Resource Smart Schools is focused on sustainable living and so only includes topics based on water, waste, biodiversity and energy on their online learning hub. The National Green Corps program centers on environmental awareness, specifically the awareness of the interconnectedness between the living and non-living. Thus, the types of activities vary widely yet still adhere to the environmental awareness principal. The Resource Smart Schools program seems somewhat restrictive of the type of Ecoclubs that run in Victorian state schools as they push for only one type of Environmental Education. In reality,

Ecoclubs should engage in a wide variety of Environmental Education strategies, from outdoor learning to sustainable learning. Only through this way will students have the opportunity to engage with different parts of the environment as a whole, breaking down the compartmentalized barriers to holistic learning. If students are only ever engaged in sustainable learning, they will only view themselves as helpers of the environment and possibly even see themselves as separate from it as well.

Funding

Resource Smart Schools is funded by the Victorian State Government. Seeing as the programs are different in terms of their approach to Environmental Education, it is worthwhile to investigate the source of funding. Following the money, so to speak, may reveal barriers to implementation and may give reasoning to the restrictive nature of the Resource Smart Schools program. The opportunity to be fully funded is an appealing marketing strategy for teacher coordinators of Ecoclubs. Being fully funded means having the funds to engage in environmental related activities with students while also engaging in professional development. The only catch is that the Ecoclubs funded by the Resource Smart Schools program must adhere to their brand of sustainable education. That is, the programs will be funded if they focus on a sustainable related topic. As indicated by the Resource Smart Schools website, there is no picture or mention of non-sustainable topics such as Indigenous learning, or environmental philosophy/ awareness (Resource Smart Schools 2020). Granted, the later may only be suitable for secondary school students and may not have as big of a role to play seeing as the majority of schools involved in Resource Smart Schools are primary. Nonetheless, funding is only allocated to a specific program type. The question that naturally follows is why is this the case?

While Resource Smart Schools funds every Ecoclub (that fits its brand) The National Green Corps does not. The National Green Corps is funded by the government of India's Ministry of Environment

and Forests. Funding is often seen as a barrier to effective implementation of Environmental Education programs. Roberts' (2009) supports this point as she stated that fundraising is immensely important for improvements to The National Green Corps program to take place (p 458). Fundraising initiatives are lacking, and schools need assistance regarding how and where to look into alternative funding avenues to fulfill Ecoclub objectives. Furthermore, it was also found that there was a need for more reliable and ongoing financial assistance in order to implement these programs over the long term (Roberts, 2009, p.455). Also, financial assistance is only provided by the Ministry of Environment and Forests. to a certain number of clubs per districts. This means that respective state governments are free to set up as many Ecoclubs as desired to support the goal of Environmental Education as set by the Ministry of Environment and Forests. Therefore, many Ecoclubs are running ineffectively from lack of funding resulting in poor implementation and structure, poor teacher training, and lack of access to materials. Funding as a barrier to effective Environmental Education implementation will be further explored in response to research question number 4.

Structure

The structure of India's National Green Corps consists of 6 different committees and agencies. The Ministry of Environment and Forests initiates and funds the following committees and agencies:

- National Steering Committee: gives overall direction to the program and ensures linkages at all levels
- State Steering committee: overseas the implementation of the scheme
- State resource agency: provides Ecoclubs with resource materials and small monetary grant for organizing different activities

- State nodal agency: coordinates the schemes implementation in the state and organizes related activities (e.g., training for master trainers)
- District Implementation agency: supervises the program, organizes the training for 'Teachers in Charge' and periodically monitors the implementation of the scheme at district levels.
- Ecoclubs in schools: includes 'Teachers in Charge' and 30-50 children.

This structure is clearly organized and geared towards the active implementation of The National Green Corps programs in Ecoclubs across India. Each stage of the model is organized to inform the following stage until the final implementation at the school level. In contrast, Australia's school run Ecoclubs do not offer any organizational structure similar to The National Green Corps. They are however similar in two respects: they each have a teacher in charge or sustainability coordinator, and they both aim at reaching their countries goal of Environmental Education It is likely that the Ecoclubs studied in Smith's research may not have been a part of the Resource Smart School programs, considering their activities based on topics that are not concerned with sustainability practices. However, because the relationship between Ecoclubs and Resource Smart School program in Smith's study is uncertain, an attempt to map out what these organization structures look like in the state of Victoria was added to further explore the generic structure of Ecoclubs.

- Sustainability Victoria Board: appointed by the Minister for Environment and Climate Change. Establishes effective government practices of promoting responsible decision making, sector values, and enhance the performance and delivery of its strategies and outcomes
- Leadership Team: Experienced industry leaders at the helm in sustainable communities, businesses, industry and local government. Leaders drive a constructive, achievement-oriented culture and set the vision for change toward a sustainable and thriving Victoria.

- Regional Coordinator: Responds to school applications and requests in being part of Resource Smart Program
- School Facilitator: Facilitates and supports schools on implementing sustainability operations and providing support on how to measure and track the school's progress
- Eco-Clubs in Schools: includes teacher coordinator, students, principal and parents.

Eco Clubs Comparison Chart

India (Roberts)	Victoria State, Australia (Smith)
Program Type: Extracurricular, Volunteer Based	**Program Type**: Extracurricular
Name of Program: National Green Corps (NGC)	**Name of Program:** None specified in case study *ResourceSmart Schools
History: Developed In 2001 and provided Eco clubs a framework needed to succeed	**History:** Eco-clubs began to develop with the emergence of "Bringing School Grounds Alive" program in 1975 * ResourceSmart Schools developed in 2008
Program Goal: Spreading environmental awareness amongst school children; to impart EE while encouraging and mobilizing participation	**Program Goal**: Not Specified * ResourceSmart Schools: reduce resource use, make cost savings, integrate sustainability into the curriculum and share learnings beyond the school gate.
Funding: funds allocated to certain amount of NGC programs, funded by Government of India	**Funding:** Not specified *ResourceSmart Schools funded by Victorian State Government
Structure: MoEF, National Steering Committee, State Steering Committee, State resource agency, State nodal agency, District Implementation agency, Teachers, Students	**Structure:** Students, Sustainability coordinator, other interested teachers, parents, principal *ResourceSmart Program Structure: Sustainability Victoria Board, Leadership Team, Regional Coordinator, School Facilitator, Eco-Clubs in Schools
Activities: cleanliness drives, setting up bird baths and feeders, visiting natural and cultural spaces, creating databases on land use pattern, species diversity and medicinal plants to help planned conservation efforts, testing soil, water and air quality and studying	**Activities:** Projects opposed to environmental disasters that killed wildlife, Urban forests, Frog Bog, solar panels, conservation energy, recycling, composting, promoting awareness through Australian Youth Climate Coalition

Figure 3 Ecoclubs in Case Studies: A Comparison Chart

(indicates supplementary research needed to complete this chart)*

Activities

Figure 4 shows that the breadth of activities in The National Green Corps programs are far more extensive than the school run programs in the state of Victoria. Factors that may contribute to this are

the funding and structures of these programs in terms of accessibility to materials, and teacher training and knowledge. The more activities and experiences students are exposed to in the context of Environmental Education, the more real-world connections they can make, leading to a more effective connection to nature and the environment, and ultimately a more effective learning experience.

Q2: What does it mean for extracurricular environmental programs/actives to be successful or effective?

Success of Ecoclubs is measured differently by the researchers between the two case studies. The response to this research question will outline how the authors individually measure effectives as well as how I, as the researcher, measure the effectives of Ecoclubs in both studies.

Roberts (2009) measured success in term of 'effectiveness' although it is unclear what she means by this term. Roberts stated that it is unclear if the impact of Ecoclubs is being assessed in terms of changing the attitudes of the community or public or resolving some local environmental problems (p.455). If the former is the case, Roberts' measurement of success is based on a component of environmentalism and the ecological self. However, she believed it was unrealistic to expect a change in the community attitudes so early in the program. Nonetheless, the results of this study indicate positive outcomes in regard to attitude and behaviour changes, knowledge gained about the environment, interest in providing public awareness, and personal awareness of environmental issues and values. It is interesting to note that Roberts' study does not focus on environmental action or activism as an outcome or a measurement of success. Although the context of the outcomes of the participants in the study highlight indicators of perceived activism at an early stage, Roberts' does not indulge in this idea. She does however acknowledge the fact that activism is not a focus of her research

because of India's history and its overall value to her article (Roberts, 2009, p.462). This is significantly problematic. As stated earlier, environmental activism is the ultimate goal of Environmental Education and should therefore be considered an integral component to any environmental program, whether as a distant progressive goal or an immediate one. In contrast, Roberts states that action is not integral to the study and questions its overall value to the focus of the article and relevance of its role in student learning. As I pointed out earlier, compartmentalizing components of environmentalism in the context of education is harmful to the holistic approach Environmental Education requires to be effective. I argue that environmental action was not beyond the scope of her study. In fact, although not explicitly mentioned by participants, environmental action was an important and overlooked component to the outcomes of participant responses. I assert that environmental action could have been the missing link to the discrepancies in the measurement of success of Ecoclubs. Although overlooked in her study, Roberts acknowledges the importance of environmental action by stating that future research could benefit from exploring how Environmental Education in schools can lead to youth becoming activists in their community (Roberts, 2009, p.462).

While Roberts' (2009) study was partially concerned with the effectiveness of Ecoclubs, Smith's (2019) study did not explicitly share the same concern. Rather, by means of exploring anthropocentrism and ecocentrism in Ecoclub participants, Smith revealed an alternative way to measuring success of Ecoclubs. Based on the Deep Ecology Spectrum smith measured the responses of Ecoclub participants. On opposite ends of the spectrum lies an anthropocentric and an ecocentric view. In each participant interview, an attempt was made towards looking for evidence of connectedness to the earth. Connectedness to the earth signals the development of the ecological self, in which participants adopt a holistic view of the interconnectedness between the living and non-living.

(p.66). All but two respondents indicated an orientation towards ecocentrism revealing the notion that the Ecoclubs are in fact effective at developing an ecological self in students. Thus, the effectiveness of Ecoclubs is measured by the presence of an ecocentric view in Smith's study. If we further this and use environmental action as the big picture goal for all environmental clubs, then Victorian state Eoclubs can at least be partially responsible for contributing to environmental activism. As Smith states "connecting to nature seems useful, and perhaps necessary, if students are to be empowered to act for the earth".

Both studies of Ecoclubs indicated an effective approach towards environmental activism. India's Ecoclubs, although not inclusive in Roberts' (2009) study, indicate some movement towards environmental activism in participant responses. In addition, Robert's analysis on the outcomes of Ecoclubs indicated the development and progression of the cycle ecological self as seen in Figure 2. Using environmental activism as a measure of success, Ecoclubs in India are effective at promoting components of the ecological self that can be developed into environmental activism if given the opportunity. Likewise, the Ecoclubs studied in Victoria state in Smith's (2019) study also indicated an effective approach to environmental activism. The student responses in Smith's study highlighted environmental actions derived from other components of environmentalism, such as awareness, knowledge and behaviours which can ultimately result in the development of an ecological self. It is clear that through the exploration of Ecoclubs in both Roberts and Smith's studies, an extracurricular activity that is effective at developing environmental activism in students thrives. Seeing as the approach to Environmental Education from the governing countries of Australia and India differ, the question here is why do both countries have similar results in their students in terms of new environmental awareness and a development of the ecological self? An answer to this question lies

within the environment education strategies outlined in response to Q3, that are also present within both studies of Ecoclubs.

Q3: What Environmental Education strategies make extracurricular environmental programs/activities effective/successful?

In the context of these case studies, various types of teaching strategies are used in Ecoclubs to engage students in Environmental Education. All listed activities completed by Ecoclubs in both Robert's and Smith's case study highlight constructivist teaching strategies through the employment of, experiential learning, place-based education and active learning. Figure 4 illustrates the Ecoclub activity and its corresponding teaching strategy under the umbrella of constructivism.

Experiential Learning

Experiential Learning is a strategy of Constructive Learning. In case study A and B, some activities of Ecoclubs highlighted these types of learning strategies. For example, creating awareness amongst others through campaigns (Roberts, 2009., p. 456), conserving water, participating in outdoor education and community service, and acting for the environment through the Australian Youth Climate Coalition (Smith, 2019, p. 65) are all strategies of active and real-world learning. Students that are engaged within this type of learning are experiencing the world while making meaning of it and connecting their past knowledge to newfound knowledge. Experiential Learning also acts as a catalyst of developing an ecological self, as the students are engrossed in an experience with nature, one that can develop their knowledge, influence their attitude, and allow them to continue in the cycle of the ecological self. Ultimately, this connection with nature has the potential to feed a connection to place.

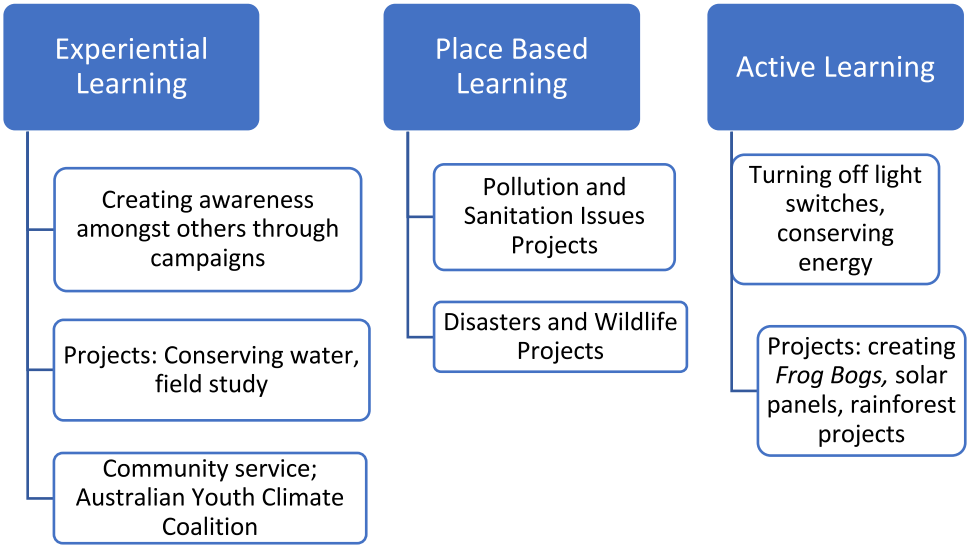

Figure 4: Activities of Ecoclubs and their Corresponding Teaching Strategies

Place Based Education

The activities concerned with local issues are examples of place-based education. Roberts' study showed that some Ecoclub activities were concerned with pollution and sanitation, a major issue across India. Smith's study showed that disasters and their effect on wildlife was also a cause of concern for Ecoclubs, primarily seen at the time of study in the destruction cause by wildfires on animal lives and habitats. Focusing on issues that are placed locally allow students to make meaningful and real-world connections between the material they are learning and their experiences in place. These activities also provide an opportunity for authentic learning, where students learn skills and solutions needed specifically to combat similar types of issues that happen so close to their home. Researching or involving themselves in projects that educate them in issues surrounding a place that is important to them can also fuel and develop a more intricate relationship to that place.

Walker and Chapman (2003) proposed that "a positive relationship may exist between a person's sense of place and pro-environmental intentions he or she has in regard to that place" (p.74).Thus, students become more motivated to act on behalf of a place where they have developed a connection to. As mentioned, theoretical frameworks of researches in this area contend that people will act responsibly towards their immediate environment if they have a sense of rootedness (Orr, 1992, 1994; Tuan, 1977). As well, students engaged in place-based education also improved their environmental awareness skills. Through studying local environmental issues and impacts they become aware that the living and non-living are interconnected, and that what happens to one impacts the other.

Active Learning

Active learning directly correlates with the learning by doing philosophy and can therefore be seen within the philosophy of experiential learning and place-based learning. However, some learning strategies do not necessarily fit within the experiential and place-based learning categories. Instead, some activities were an extension of constructivist teaching and learning that can best be summed up as active learning. Conserving energy by turning off light switches, (Roberts, 2009) creating *Frog Bogs,* solar panels, and researching human impact on rainforests (Smith, 2019) are all examples of active learning and by extension constructive learning where the student is an active part in the learning process.

The strategies that underpin the activities of the Ecoclubs are perhaps the greatest contributing factor to the success/effectiveness of these clubs. Although both case studies differ greatly in the structure of their Ecoclubs and the goals, the results of each study indicated a positive development

of some component within the ecological self. This is because the clubs in both studies were engaged in constructivist learning, either through experiential learning, place-based learning, or active learning in general. Thus, the effectiveness of clubs is highly dependent on the type of activities that are rooted in sound environmental and pedagogical theory.

Q4: What are the barriers to an effective/successful extracurricular environmental programs/activity?

Past studies have indicated that the barriers to effective Ecoclub implementation include various factors. Funding, the structure of the program and teacher training are often contributing factors discussed within current research.

Funding

Both India's National Green Corps and Australia's Resource Smart School programs are funded by their respective governments. Lack of funding and selective funding are two of the main issues seen within both Roberts' and Smith's case studies. Robert's clearly indicated that The National Green Corps program in India struggles with lack of funding. While there is a limit to the funding allocated for Ecoclubs, there is no limit to how many Ecoclubs can run. Thus, some Ecoclubs that run under The National Green Corps program is not funded by the government, and because of fundraising issues may not be funded at all. In 2005-2006, the Ministry of Environment and Forests allocated 2500 rupees per annum per Ecoclub, until the spending limit is met. Currently, there is no information regarding the entire spending limit for The National Green Corps program. In 2005-2006, 2500 rupees translates into roughly $32.78 USD per year per Ecoclub. India's per capita Gross National Product at the time of study (2005-2006) was an average of $750 USD (World Bank, 2020). This number can also be used as the average standard of living within the study frame. Relative to an

average standard of living of $750 USD, the government of India's grant of $32.78 USD per year, per club seems decent. However, Robert's (2009) study found that there was a need for more reliable and ongoing financial assistance (p.455). Students had also voiced concerns of such low funding in which they made reference to the inability to do more activities based on limited funds. They also expressed their desire for more trips away from their school setting. To address these barriers, Roberts' suggested fundraising, although this too presents its own barriers. Fundraising, at the time of this study, was lacking in schools. Robert's then suggested that schools may need some assistance regarding how and where to look into alternative funding avenues to fulfill Ecoclub objectives (Roberts, 2009, p.458).

Unlike Roberts' detailed account of the funding structure of The National Green Corps program, Smith's (2019) study did not go into such detail. As it remains unclear whether the Ecoclubs in Smith's studies are funded by the government, it is useful to address the funding structure of government-initiated programs, so as to facilitate a discussion regarding similar barriers in similar contexts. The Resource Smart Schools program focuses itself on the topics of sustainability such as energy consumption, water management, and waste management. To be clear, the focus of these Ecoclubs is warranted and provide students the opportunity to make real world connections and solve real world problems. However, to run a government-initiated program that *only* focuses on these topics raises some questions. The Resource Smart Schools program in the state of Victoria in Australia is not fully funded by the government. The program relies on sponsorships for partial funding. The sponsors involved in this may provide insight into the reasoning behind the funding of Ecoclubs that only focus on the topic of sustainability. Sponsors include State Government, local councils, education organisations and local businesses (Ceres Sustainability Hub, 2020). It is possible

that the government of Australia was not willing to fund the program in its entirety, perhaps for budgeting purposes, calling for alternative funding measures to be put into place. It seems likely that corporate sponsors will fund a program beneficial to them in some way, aligning with their current or future interests. While the businesses that sponsor the Resource Smart Schools programs are not listed and therefore restricts the research needed to validate this connection, it can be logically assumed that, considering they are private and for profit businesses, they likely have some stake in the topics of sustainability they have chosen to sponsor.

The key take away here is that budget conveys priorities. If funding at the school level is lacking and in turn harming implementation of effective programs, then the priorities of Indian and Australian government lies elsewhere. Following this point, analysing where funding is being ineffectively spent can provide some clarity as to how the flaws in management structures contribute to lack of funding and therefore lack of implementation. In analysing the funding of The National Green Corps programs specifically, it seems as though the majority of it is spent on ineffective management structure. As Roberts' pointed out, the structure can be better developed to implement Ecoclubs into schools more effectively. I argue that in doing so, funding can be better spent at the school level as opposed to the unnecessary management levels currently in place.

Structure

Roberts indicated that the structure of The National Green Corps program has its own flaws and thus contributes to barriers of implementation. For example, one of the key findings in Robert's study was the recognition of the need to pause program expansion in order to first improve the present organizational structure and hierarchy of program management and implementation (Roberts, 2009,

p. 455). The current system is considered “too top heavy” and suffers from a lack of communication and accountability (ibid). This can be seen through a participant response that highlighted the lack of communication between top level management to school levels resulting in resources being delivered late to the school, or sometimes not at all (Roberts 2009, p.458). In its current structure, The National Green Corps program does not include educational specialists at any of its stages. As educational instruction and strategies contribute greatly to the success and effectiveness of Ecoclubs, educational specialists should be a critical member of the management structure. The term ‘Environmental Education’ refers to two disciplines combined to create an educated and environmentally conscious citizen. If only one discipline is present at the management levels, then a distorted concept of Environmental Education will be put into place furthering the ambiguity of its purpose and goal. Clearly, the current management structure has room of improvement specifically in communication and implementation areas. Roberts suggested a restructure of this current system, eliminating most levels and implementing only few effective roles to ensure a more successful flow of communication between all levels. Roberts also argued that an educational officer highly qualified in Environmental Education should be dedicated to the Ecoclubs within the state department of environment and forests (Roberts 2009, p.458). Not only would this suggestion make the implementation process run more smoothly through a more effective communication approach, it will also free up more funds as the structure becomes smaller. These funds can then be relocated to the school level, where Ecoclubs are currently suffering from the opportunity for fieldtrips outside of school premises, materials and resources due to lack of funding.

The National Green Corps and the Resource Smart Schools programs have similar organizational and management structures. Both organizations are based on a hierarchy structure and have a national, state, district and school level of implementation. As both are structured similarly, the Resource Smart Schools can also improve from the suggestions Roberts made for the National Green Corps program. The Resource Smart Schools can utilize educational specialists in the same way as the National Green Corps, where the structure is condensed to include only effective management roles occupied by highly qualified candidates. This in turn releases funds that can be more effectively used at the school level. While it is clear that the structure of extracurricular environmental programs can negatively affect their funding, Roberts stated that financial considerations are not the only concern and found that teacher education and training is another barrier to the implementation of Ecoclubs.

Lack of Time, Resources, and Professional Development Opportunities for Teachers

Roberts findings highlighted a barrier to effective implementation of Environmental Education, particularly in extracurriculars, that has been supported by other research. Lack of time is a consistent issue for teachers implementing these programs, and some feel as though both curricular and extracurricular programs are competing for the same time (Ernst, 2007, p. 17, 29). Roberts findings showed that the majority of schoolteachers are overwhelmed with other commitments and thus report a lack of free time to dedicate to Ecoclub projects (Roberts, 2009, p. 458*)*. This barrier can be addressed through team teaching as professional development strategies but not without their own barriers (Russell & Burton 2012, p. 299). Team teaching gives teachers the opportunity to share their workload in terms of extracurricular activities, resulting in more time evenly distributed across commitments and possibly a lesser sense of feeling overwhelmed. However, this strategy

jeopardizes what students of these program value. The elementary school model is often adopted by extracurricular activities, where the ratio is typically 1:30 for the duration of the program. Jeopardizing this model may lead an unwillingness to participate in activities that push students outside of their comfort zones, particularly in outdoor education, ultimately resulting in a less effective Environmental Education program.

The lack of professional development opportunities is another barrier seen within Roberts' case study. Roberts asserts that the lack of free time needed to dedicate to Ecoclubs is due to the availability of trained teachers and lack of quality training (Roberts, 2009, p.458). This issue also demonstrated a lack of inconsistencies with program supervision and delivery. The position is also supported by Ernst (2007) and more recently Berger et al. (2015) who both described a lack of training as a major barrier to incorporating Environmental Education within school curricula. Lack of training can also be categorized as lack of preservice education and lack of professional development. Marcinkowski (2009) called for a need to professionalize the field of Environmental Education (p.34). This can be done through preservice teacher education that focuses on the introduction of environmental education so as to prepare future teachers to engage their students in Environmental Education while utilizing effective strategies. Improving pre service teacher education also means Environmental Education can accelerate in the classroom by means of implementing professional development courses that require a solid understanding of the field as a prerequisite and that concentrate on in-depth topics related to Environmental Education that can immediately be applied to classroom goals, structure, and activities. Following this improvement, professional development courses and opportunities can take the form of a support system where mentors provide a sense of

accountability, personalized support, and encouragement of reflection and assistance with navigating barriers (Erikson & Ernst 2018, p.359).

Implication of Findings

My research study explores the role of Ecoclubs in the Environmental Education movement reveals benefits to and barriers of extracurricular Environmental Education. The answers to my research questions show the complexity of Ecoclubs and that their development and execution are highly dependent on government hierarchies. Exploring the role of Ecoclubs has highlighted the complexity of components such as structure, funding, and planning. As the government essentially influences the components of these clubs, either directly or indirectly, any suggestions to improve Ecoclubs must first be implemented at the highest level of involvement. This study also indicates that the government plays a critical role in the effectiveness of Ecoclubs through determining the amount of funding, distributing of funds and the structure of programs that are responsible for the implementation and longevity of Ecoclubs. Therefore, the government becomes a barrier to effective implementation if no improvements are made at this level. Moreover, the study indicates additional barriers from participant responses such as lack of teacher training and preparedness. Teachers also reported a lack of free time to engage in extracurricular activities. The measurement of success remains an ambiguous topic in the management level of Ecoclubs and highlights critical flaws of these programs. An analysis of my research findings suggests that measurement of Ecoclubs should be aligned with both the goals of government Environmental Education and the over-arching goal of Environmental Education in general. In other words, environmental activism becomes the

overarching goal of global Environmental Education and the government's goals becomes smaller steppingstones in achieving that goal such as environmental awareness or behaviour.

The findings of my research study also reveal that the components of environmentalism, or components of the ecological self, are engaged in a cycle where one evolves into another. The cycle is continuous and is influenced by life experiences, a connection with nature, and personal values. As evident in participant responses in both Roberts' and Smith's case studies, students engaged in this cycle at either the knowledge stage or the action stage, where life experiences allowed the clockwise progression of this cycle and thus the evolution of the ecological self. The findings of my study also suggest that effective teaching strategies of Environmental Education resulted in the engagement of this cycle and contributed greatly to the development of the ecological self. Thus, the constructivist learning theory remains a valid framework for this research as the effective teaching strategies seen within these case studies are extensions of constructive learning strategies. The findings of my investigation support the argument that, in general, Ecoclubs play a significant role in developing environmental activism in students an argument supported by the studies of Roberts (2009), Smith (2019), and Puri and Joshi (2017).

My study supports the argument that improvements to Ecoclubs and Environmental Education in general must be made at the government level, so as to influence the remaining stages. This means that the goal of Environmental Education as initiated by the government must have a valid and relevant goal and thus should be structured as a solution to local/state/national/global issues while being reflective of the ultimate Environmental Education goal of environmental action. The normative question that follows from these findings is "Should Ecoclubs remain extracurricular if the government's Environmental Education initiative is valid, or should they become co-curricular to

increase student involvement?" The answer to this question requires a larger scale of study of more schools, across different countries, and including both private and public sector providers of education. In all, this study presents an exploratory assessment of Ecoclubs that can inform Ontario's Environmental Education programs and provide a basis for future programs and improvements.

CHAPTER SIX

Recommendations for future studies

In the context of Ontario, Tan and Pedretti (2010) and Campigotto and Barrett (2017) indicated similar barriers to India and Australia's Environmental Education programs. For example, lack of funding and poor teacher training seem to be the common issues surrounding program effectiveness across these areas (Tan and Pedretti, 2010; Campigotto & Barrett, 2017). As well, the program structure of some of Ontario's eco-clubs is similar to both case studies in that they are extracurricular. As Ontario's Ecoclubs share some unfortunate similarities with the Ecoclubs in both case studies, the results from this study can inform current Ecoclubs in Ontario. Despite the lack of current research surrounding the exploration of secondary school extracurricular eco-clubs, this section can serve as recommendations for the improvement and/or creation of Ecoclubs so that they can be effective in developing environmentally active citizens. To generate these recommendations, I have contextualized the findings of this study within Ontario eco-clubs and Ministry related documents. The recommendations for improvement are as follows:

1. Fix problem (government goals)
2. Develop and improve programs in alignment with this goal
3. Professionalize the field
4. Create a new program: Fuse extracurricular and co-curricular programs

Fixing the Problem

The findings of my research show that eco-clubs are made up of complex components that constitute the program. Goals, structure, funding, and implementation are all equally important to the successful execution these programs. Therefore, future research should focus on these components as barriers to effective implementation. Seeing as the decision-making processes take place at the government levels, addressing the highest level of the structure of Ecoclubs will be most effective in ensuring Ontario Ecoclubs run smoothly and effectively. Challenging the Environmental Education goal of the Ontario Ministry of Education means improving Environmental Education as a whole. For example, changing the goal of Ontario's Environmental Education to be in alignment with environmental action will improve all elements of Environmental Education, from eco-clubs to co-curricular programs and interdisciplinary lessons. In doing so, documents from the Ontario Ministry of Education in the form of teacher resources and curricula will change to adhere to environmental action, meaning more opportunity for teachers to engage in the strategies most effective for Environmental Education. This then changes the dynamics of professional development for teachers and preservice teacher education. Once Ontario has aligned the goal of Environmental Education with environmental action, every element related to the education in Ontario will follow suit.

Aligning the Goal of Environmental Action With New and Improved Programs

The findings of my study indicate that success/effectiveness of eco-clubs is effectively measured when aligned with the ultimate goal of Environmental Education. For example, India's Environmental Education goals focus on environmental awareness, which can eventually evolve into environmental action following the cycle of the ecological self. Understanding this measurement tool

can be a useful means of improvement for Ontario Eco-clubs and programs as these clubs can be assessed in their effectiveness. The Specialist High School Major program is part of Ontario Ministry of Education's attempt to integrate Environmental Education into the school system. This program is measured by the completion of its required courses. Instead, I propose that Specialist High School Major programs should be measured by a combination of course completions and the development of at least one component of the ecological self/ environmentalism. Only then will these programs truly serve a purpose to Environmental Education. I recognize that it may be challenging to measure such abstract concepts, however this study can serve as a novice template for future studies to continue addressing this challenge.

Professionalizing the Field

The results of this study also suggest that strategies play a significant role in the success of Ecoclubs. For this reason, future studies should focus on Ecoclubs within Ontario in order to explore the type of teaching strategies being used while assessing their effectiveness. Some studies have explored the Environmental Studies Program in secondary schools that offer a variety of Environmental Education teaching strategies such as experiential learning and outdoor education. However, these studies are dated and provide no real context to today's political climate. Green schools are another government attempt at implementing Environmental Education. Green schools are a form of sustainable living and learning and research has highlighted the potential of green schools to be an effective strategy of Place-based education. However, with no specific curriculum connection found under this strategy, teachers may not use green schools as an educational strategy effectively. To combat this, professional development opportunities that focus on specific

Environmental Education strategies across all grade levels and curricula should be available to teachers. Otherwise, as this study reveals, lack of knowledge and teaching training becomes another barrier to implementation of Ecoclubs.

The findings of this research conclude that the barriers impeding program implementation and effectiveness are a result of a lack of professionalization in the field as well as free time to dedicate to extracurriculars. Ontario's attempt to provide teachers with ministry documents to inform their Environmental Education instruction is clearly not effective and needs to improve and develop towards more professional learning opportunities. In this way teachers can engage in a hands-on learning approach where they learn how to incorporate Environmental Education strategies into their lessons. Additionally, pre-service teacher education should focus on the interdisciplinarity of Environmental Education in order to prepare teachers with knowledge about environmental issues and most importantly how that knowledge connects to their teaching discipline. Programs that focus specifically on teacher training regardless of their teaching status should be developed and consistently implemented in schools to encourage Environmental Education across all disciplines. Future studies will benefit from addressing these concerns with specific regard to the thematic undertone of political education.

Creating a New Program: The Fusion of Extracurriculars and Co-curriculars

As a final suggestion, the idea of combining extracurricular programs with co-curricular programs is supported by the effectiveness of each type of program. Extracurriculars are effective because of their hands-on nature, while co-curricular programs are effective because of their compulsory nature. Combining both into a program that is based both in active and hands-on

learning while becoming compulsory is a step in the right direction towards effective Environmental Education. This idea is grounds for future research that may develop a new curriculum that is in alignment with the goal of environmental action, either through new government goals and curricula or, if possible, a separate forum of learning. It should be noted that the same barriers of extracurricular programs are transferable and will still impact this type of program. Therefore, regardless of how the program progresses these barriers must be a primary concern of Environmental Education programs within schools. I recognize that reaching the goals of these improvements are complex, time consuming and require further research. It is therefore expected that these recommendations serve as rough template to guide future studies towards significant but gradual improvement. With that said, there are additional recommendations that are relevant to addressing the study limitations of this paper.

Study Limitations and Additional Recommendations

Working with secondary data has inherent limitations, most notably working with information that has been framed by the initial researcher. The generalizability and validity of this study is restricted to the validity of the results of both case studies in focus. Working with two different case studies proved to be challenging as both were limited to their own purposes, frameworks and methodology. It was also challenging to adopt the findings of both case studies equally and relate them to the constructivist framework of this study. For example, Robert's (2009) study provided a more in-depth exploration of Ecoclubs in which adequately responded to all of the research questions. Smith's (2019) study further exemplified some of Robert's findings while providing further insight into some components of Robert's study through the framework of Deep Ecology. The

difference in their frameworks caused this unequal contribution in response to the research questions. Moreover, the reason behind selecting two case studies whose findings were framed vastly different was due to the limitation of research surrounding extracurricular Ecoclubs and particularly set within secondary schools. My study adheres to some of the requirements of a theoretical generalization in that constructive learning improves Environmental Education, a finding consistent with many studies and therefore generalizable. However, despite the promising premise that eco-clubs contribute to effective Environmental Education, this study requires further inquiry and research in order to be established as a generalizable theory and externally valid. Despite the restriction of the validity of both cases studies, I believe that the findings and conclusions of my study were logically reached and thus promote internal validity.

Although the findings of my study address many important components of the role Ecoclubs play in Environmental Education, they are limited to this. A question that can inform future studies while addressing this study's limitations is "What kind of questions are we *not* asking?*"*. It is useful to address what has not been said by this study in order to generate more recommendations for studies that can emerge as a unique perspective on the challenges of eco-clubs in Environmental Education. There are other factors that can further contribute to the ineffectiveness of Ecoclubs that were beyond the scope of this study. Student participation remains a significant but hidden barrier to program effectiveness and through a sociological lens other factors that contribute to this barrier become apparent. Race, poverty, care ethics/genuine interest, and anthropocentrism are topics in which were beyond the scope of this particular study but still have relevance to the overall topic of Environmental Education, and more specifically to the effectiveness or ineffectiveness of eco-clubs.

Poverty and race are factors that can negatively influence relationships to the environment and thus become other hidden barriers to participation. Environmental burdens and calamities affect people disproportionally. Poverty can result in lack of student participation of Ecoclubs, as they may have prior commitments to help in supporting the household. Additionally, some programs such as Environmental Studies Program were funded by students, a reality not possible for a child in poverty. As a result, participation in Ecoclubs would suffer. Poverty can also lead to a distorted but necessary view of the environment, one in which the environment is an object that produces income, or one where the environment is seen as a job to cultivate. Race can also contribute to a lack of participation in Ecoclubs. Finney addresses this topic through her book *Black Faces, White Spaces: Reimagining the Relationship of African Americans to the Great Outdoors* (2014). Finney's premise is that African American history in the US informs their identity which in turn informs their relationship to the environment, ultimately influencing their willingness to participate in environmental initiatives or the great outdoors. Thus, relationships to the environment are critical aspects of participation in environmental related activities and should therefore be analyzed critically to determine the factors that influence these relationships.

According to Smith (2019), adopting an anthropocentric view means that it is in our best interests to live sustainability to ensure the ability to maintain the balance between the earth's resources and human wants/needs. Programs that are funded based on the benefit of humans drive us further away from truly becoming environmentalists. Therefore, the anthropocentrism in government programs must be questioned. Relationships with sponsors and their motives must be questioned. Smith proposes a question for future studies, which continues to be relevant and in need

of acknowledgment “can anthropocentrism ever be nonexistent?”. This critical thought calls for a realistic analysis of what is achievable in today’s political climate and values.

Care ethics and genuine interest are other factors influencing participation. A significant component to engaging in environmental initiatives and activities is the notion of care and value. Understanding the notion of care can benefit Environmental Education by means of its intrinsic connection to the notion of value, and the role value plays in the ecological self. Roberts’ study concludes that The National Green Corps program helps unite students with genuine interest in learning about the environment, but there is no further explanation on how to develop genuine interest. Randall (2019) highlighted a critical issue in care ethics concerning the environment as he states that motivation to save the environment is limited to any would-be parents, considering the fact that much of what we attach to valuing the environment is due to the possibility of future generations to inherit it. Genuine interest and the notion of care/value directly influences participation in Ecoclubs. Future studies should therefore critically analyze these concepts and explore how they can be effectively developed in secondary students.

CHAPTER SEVEN

Conclusion

This study potentially contributes to research within the field of Environmental Education through its comparison of extracurricular environmental programs in different countries, a call for future studies highlighted by Roberts (2009, p.463). Additionally, it also responds to the need of exploring Environmental Education in schools to understand how school programs can lead youth to become activists in their community (Roberts, 2009, p.462). This study contributes to theories based

on the ecological self that highlights the necessity of the linkage amongst each component. The ecological self and environmentalism are inherently linked and thus the development of one contributes to the development of the other. Teaching strategies play a significant part in the effectiveness of Environmental Education and in the development of the ecological self. Much work is still needed to ensure the goals of education as initiated by the government are practical, relevant, and above all else, encourage environmental action. Once this is achieved, the goals of environmental clubs will become more evident allowing the measurement of the success/ effectiveness of these clubs to become coherent and transparent. Barriers impeding the effectiveness of these programs range from systemic issues such as funding, structure and professional development and are complex issues to solve. Despite this complexity, extracurricular activities prove to have merit when the government initiative is flawed as extracurriculars by nature do not follow these goals and thus have the opportunity to employ their own individual goals, which if managed by educated individuals, can potentially contribute greatly to the Environmental Education movement. On the other hand, once the government initiatives are improved to incorporate environmental goals that correlate with environmental action and by extension environmental solutions, then extracurriculars can become complementary to this goal rather than in opposition. Future research can benefit from the idea of extracurriculars evolving into co-curricular programs as highlighted by India's National Green Corps program. The development of co-curricular programs that are aligned with an improved Environmental Education goal set by the Ministry of Education the Ontario government can benefit Ontario schools immensely. Future efforts should be geared towards effective teaching strategies based in validating theories, measurement tools, opportunities for teacher professional development and an improved structure of programs of Environmental Education. Only then will Ontario students

have the chance to become the most important generation of our time. However, the future is often illustrated gloomily. Russell and Burton (2000) provides a pessimistic outlook for the future when adopted by today's teenagers. In presenting Hart's findings on children's ideas about the environment, Russell and Burton recounted a recurring theme in the stories of elementary students: that teenagers were self-involved and had no concern for others or the environment (Hart,1999 in Russell & Burton, 2000, p.301). It is my intention and hope that this study offers a more positive and encouraging glimpse of this often devalued but yet vastly promising age group.

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