The Characteristics of Effective Environmental Education Programs

An exploration of the perceptions of environmental educators in Southern Ontario

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

The intensification of Ontario's communities through recent policies such as the Greater Golden Horseshoe Growth Plan (GGH) will reduce the amount of local natural spaces for residents. Presently many of Ontario's youth experience the natural world primarily by visiting environmental education centres. This study used sequential exploratory mixed methods to discover the perceptions of environmental educators concerning the realities of their daily practice. The first phase of the study utilized a grounded theory approach to construct an understanding of environmental education in Ontario. The interrelated themes of increasing environmental consciousness, evaluation of programs and centres, influence of visiting adults on program effectiveness, and programming were revealed. The second phase utilized the themes derived to construct an online survey in order to measure the actual practice of environmental educators compared to their perceived best methods. The results indicate that the scarcity of effective program and institutional evaluation, ineffective communication between supervising adults, and the conflict over pedagogical aims lead to some centres potentially only achieving mediocre increases in the environmental consciousness of the participants. The need for explicit, accessible areas where youth can engage in repetitive unstructured activities in the natural world is highlighted as an area for community stakeholders to focus their efforts on if pro-environmental behaviour is a desired trait in residents.

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Chapter 1 – Introduction

This project is intended to explore environmental education in Ontario's environmental education programs. Additionally, it seeks to provide a reflective opportunity for environmental educators to examine some of the assumptions that drive their practice. In this introductory chapter, I detail my argument that urban intensification policies reduce the number of human to nature interactions experienced by residents, and then declare that if society desires residents that are environmentally conscious, then it must provide education opportunities that are effective in building this consciousness. This project seeks to understand the present practicing realm of Southern Ontario's environmental educators and to examine if their perceptions of efficacy are consistent with their practice. I will complete the chapter by defining environmental consciousness, and by providing the province's definition of environmental education.

1.1.0 Statement of the Problem

The latest planning legislation of the Province of Ontario, the Places to Grow Act, allows for the identification and designation of growth plan areas and the development of strategic growth plans for those communities (Ontario Ministry of Infrastructure, 2012). The policies developed in response to the Places to Grow Act direct municipalities to plan future population growth inward toward the present built-in areas (Ontario Ministry of Infrastructure, 2012). The consequence of cities undergoing population intensification is that the number of human to nature interactions will decrease (Turner, Nakamura, & Dinetti, 2004). Presently, many Canadian youth only experience natural spaces through school trips to environmental education centres simply because they do not spend time outdoors. Though opportunities exist for youth to learn about the environment through recreational park use,

scout or guide activities, and summer camp programs, a nationwide survey of 664 young Canadians conducted for the David Suzuki Foundation reported that:

> Seventy per cent of the youth surveyed spend only about an hour or less per day outdoors … Schools also play a pivotal role in getting kids outside, with over two thirds having accessed outdoor or nature programming through their school or a field trip.
> (David Suzuki Foundation, 2012)

If youth in the future cities primarily experience the natural world through formal education trips to environmental education centres, then it is vital that each experience is as effective as possible in increasing their familiarity with the natural world. Ontario's environmental educators may or may not be operating in a mode or domain that result in the most effective means to achieve improved environmental ethics and consciousness in their program participants.

1.2.0 Research Goal

The goal of this research is to delineate the current situation within Ontario's environmental education programs using a mixed methods approach. Three primary questions are asked:

1. What are the present working conditions of Ontario's environmental educators with regard to their practices as pedagogues?
2. What are the perceptions of environmental educators as to the most effective method to foster environmental consciousness?
3. To what extent are environmental educators working in a manner which supports their perceptions as stated in question 2?

1.3.0 Research Scope

This study examines the situation in Southern Ontario's environmental education programs. The interview participants were all professional, paid, or volunteer environmental educators employed at either a non-profit or for-profit organization. All online survey participants self-indicated to be employed

as environmental educators within environmental education centres. No participant self-identified as working at a provincial or national park setting.

1.4.0 Limitations

The observations of this study directly pertain only to a portion of Ontario's environmental educators. The observations and results could be relevant in other jurisdictions, but the effects of a different ethos, laws, regulations, and traditions should be considered. Despite having reached theoretical saturation (continuing data collection did not result in new insights) during the qualitative (interview) phase of the project, it is possible that alternate viewpoints are held by some of Ontario's environmental educators. Alternate themes could also be discoverable from the transcripts since grounded theory method involves the researcher as much as the study participants. The quantitative portion of this study was conducted using a convenience non-probability sample. The results derived from the survey cannot be considered representative of the entirety of Ontario's environmental education community, but rather a description of a segment of that population.

1.5.0 Definition of Terms

1.5.1 Environmental consciousness

In this project the term 'environmental consciousness' is used often. Researchers Sánchez and Lafuente (2010) in their review of the theories addressing environmental concern generated a proposal to operationalize the concept of environmental consciousness to include four dimensions: cognitive, affective, dispositional, and action. A diagram of their understanding is depicted in Figure 1.

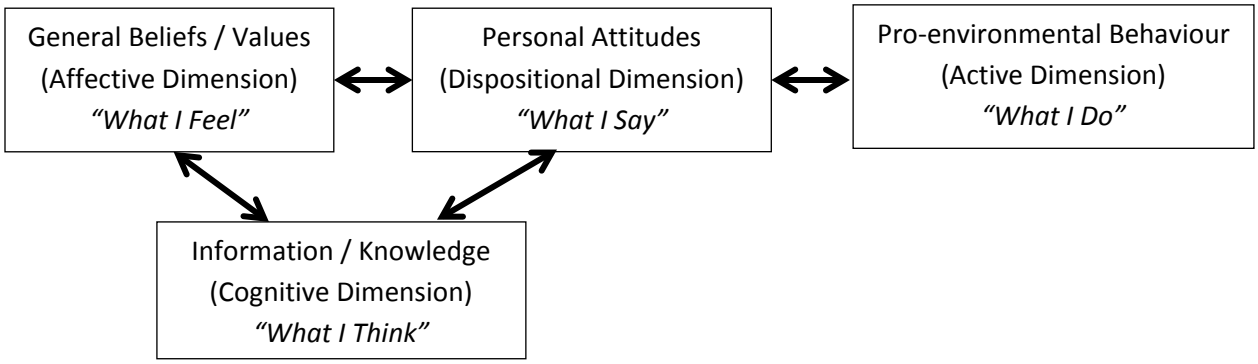


Figure 1 –Dimensions of Environmental Consciousness.
The figure illustrates the bidirectional nature of influences between the dimensions that constitute environmental consciousness.
From: (Sánchez & Lafuente, 2010); text in italics added by Chris Kopar.

The term 'environmental consciousness' in this paper is defined as: the phenomenon of thinking about, feeling for, speaking about, and acting upon the natural world outside oneself, as defined by Sánchez & Lafuente (2010). I utilize this definition for the concept of 'environmental consciousness' because it addresses the holistic nature of education that strives to help the pupils expand their worldview through their emotions, internal thoughts, external speech, and actions (Eisner, 2002). The importance of this construction is that it involves a bidirectional effect to and from each of the dimensions. A person may learn the scientific name for a tree (cognitive dimension). They may utilize that knowledge to speak (dispositional dimension) about trees, but depending on their values (affective dimension) relating to the tree, their behaviour (active dimension) could range from utilizing the tree to manufacture toothpicks to worshipping the tree as a limb of 'Gaia'. Likewise the process can be reversed in flow; a person can drop a piece of trash (active dimension), say that it is only a single piece of litter (dispositional dimension), believe (affective dimension) that they are not 'killing the Earth', and rationalize (cognitive dimension) their decision by stating (dispositional dimension) that they are providing employment for street cleaners. A different person drops a piece of trash, says it was an

accident, feels responsible for the trash, recognizes the cost to the community (human and environment) for not picking it up, and expends energy in gathering the trash.

Additional theories, such as the Value-Belief-Norm (VBM) theory aim to create a conceptual framework of environmentally significant behaviour (Stern, 2000). VBM theory attempts to discover the causal variables that direct a person toward pro-environmental behaviours. The theory describes four major casual factors; attitudinal, contextual, personal capabilities, and habit (Stern, 2000). The VBM theory and the dimensional theory devised by Sánchez & Lafuente (2010) are similar in that both address the role of personal attitudes, knowledge, and belief systems in the development of pro-environmental behaviours. The theories differ in that VBM theory attempts to hone down into a causal understanding of each factor that can contribute to pro-environmental behaviour whereas the dimensional theory attempts to construct a holistic understanding of the phenomenon of environmental consciousness. Stern (2000) states that: "Different kinds of environmentally significant behavior have different causes. Because the important causal factors may vary greatly across behaviors and individuals, each target behavior should be theorized separately" (p.421). This statement indicates that in the quest to invoke an environmentally significant behaviour from an environmental education program there is no real 'golden bullet' or one perfect program solution. The creation of a pro-environmental stance within an individual is highly contextual.

Sánchez & Lafuente 's (2010) dimensions are not binary in nature but rather a spectrum of possible levels. Researchers have attempted to create validated metrics to measure the strength of each dimension in an individual and in a society as a whole. Table 1 delineates some of the metrics used to measure each of the dimensions of environmental consciousness.

Table 1- Some Metrics Used to Measure Environmental Consciousness Dimensions

Dimension	Quantification Instrument	Reference
Affective	Emotional affinity toward nature (EAN)	(Kals, Schumacher, & Montada, 1999)
	Inclusion of nature in self (INS)	(Schultz, 2000)
	Connectedness to Nature Scale	(Mayer & Frantz, 2004)
	Nature Relatedness Scale	(Nisbet, Zelenski, & Murphy, 2009)
	Love and Care for Nature Scale	(Perkins, 2010)
	New Ecological Paradigm (NEP)	(Dunlap, 2008)
Cognitive	Evaluation using action verbs derived from Bloom's Cognitive Taxonomy	(Krathwohl, 2002)
Dispositional	Opinion Polls & Surveys	Commercialized (e.g. Gallup)
	Academic Literature Reviews	(*Samuelson & Biek 1991)*
Active	Statistical Analysis	Commercialized (e.g. Statistics Canada) Academic Research (e.g. Dolan, Kreutzwiser, & de Loë, 2000)

For the purposes of this study, an environmentally conscious person is defined as one which would score higher than average on several, if not all, of the affective and cognitive measurement instruments listed in Table 1. They would manifest these dimensions through their attitudes and daily actions toward the natural world.

Ultimately, the goal of environmental education is to provide the experiences that allow the pupil to score higher on both the cognitive and affective dimensions. These lessons also provide an appropriate outlet for the pupil's personal attitudes (dispositional dimension) through real-world opportunities to experiment with pro-environmental behaviour (active dimension).

1.5.2 Environmental Education

Since this project explores the circumstances of environmental education in Ontario, it is important to also state the explicit definition utilized by the province. The Ontario government defines environmental education as:

> …education about the environment, for the environment, and in the environment that promotes an understanding of, rich and active experience in, and an appreciation for the dynamic interactions of:
>
> • The Earth's physical and biological systems
> • The dependency of our social and economic systems on these natural systems
> • The scientific and human dimensions of environmental issues
> • The positive and negative consequences, both intended and unintended, of the interactions between human-created and natural systems.
>
> (Ontario Ministry of Education, 2009)

The province's definition is very broad and does not lead to a distinct pathway of best methods for educators. It speaks of pupils having a rich and active experience in the natural world but does not address the method or prevalence of these experiences in any useful manner. The lack of clear directives results in a multitude of interpretations whose outcome for Ontario's pupils is an inconsistent provision of environmental experiences (Working Group on Environmental Education, 2007). This project seeks to understand the reality of environmental education in Ontario.

1.6.0 Organization of Study

Chapter one details the statement of the project study, the research goals, and the research questions utilized as the project's driving force. The chapter includes a description of the research scope and the study's limitations. The chapter provides the reader with a definition of the term 'environmental consciousness' utilized throughout the study. The definition used in this study is also briefly contrasted with Values- Belief- Norm theory. The provincial definition for 'environmental education' is provided and comments are made about its utility in the implementation of education.

Chapter two outlines the policy and curricular contexts for this project. The chapter begins with an overview of the relevant municipal and provincial planning policies including the Planning Act 1990, the

Places to Grow Act 2005, and the Provincial Policy Statement of 2005. The significance of these provincial regulatory entities in relation to natural space provision and environmental education are examined briefly. The role of the Greenbelt Plan in natural space provision is also described. The chapter continues with an examination of the regulations concerning education in Ontario. The Education Act of 1990 is examined for its support of environmental programming. The response of the Ontario Ministry of Education to the need for environmental education is detailed with an emphasis on the varied amounts of support the Ministry has provided for environmental education. The chapter then continues with a more detailed look at the aspects of the affective and cognitive dimension of environmental education with a description of their inherent need to become the foundation for meaningful environmental consciousness building programming. The chapter concludes with a discussion concerning the role communication and curriculum plays in the educative process.

Chapter three discusses the design of the project. A description of the world view, the decision making process in utilizing a sequential exploratory mixed methods research design, and reasoning for each step in the investigation are given. The chapter briefly describes the research methods of quantitative and qualitative research. An extended description of mixed methods research concludes the chapter.

Chapter four details the first phase of the project; a qualitative exploration of environmental educators' perceptions of their professional educative practice. A discussion of the method of grounded theory and the steps in utilizing it as a research method are given. The categories revealed utilizing the grounded theory method are described culminating in the presentation of a theory that is utilized to construct the quantitative questions for the second phase of the project. A discussion of each of the themes is given.

Chapter five describes the second phase of the project; a quantitative online survey of environmental educators exploring their daily work practices. The construction of the survey instrument is discussed, and issues relating to its implementation are outlined. The results of the online survey are presented

and discussed with an emphasis on placing the information in relation to the narrative derived from the first phase.

Chapter six integrates the themes derived from the first phase with the insights obtained from the second phase. A re-examination of the results is undertaken with the research questions in mind. The importance of communication is stressed as a conclusion.

Chapter seven describes the implications of the study to the planning and education communities. The need for improvements in evaluation, communication, and outreach are outlined. The contention that despite well intentioned recommendations meaningful change only occurs in communities and educative institutions when the stakeholders explore, decide upon, and implement the necessary improvements together is made. Additionally, ideas for future research arising from this project's exploration of the topic are outlined in this chapter.

Chapter eight provides the conclusion to the study with a summary of the results and a description of the nine characteristics that illustrate the features of an advanced environmental education program based on the models created and supported by the study.

In this introductory chapter I have stated that the issue of environmental education effectiveness is complicated by the complex nature of environmental consciousness. I have provided the guiding definition of environmental consciousness that is used throughout the project report. The provincial definition of environmental education is presented, and I argued that its unfocused wording can lead to a diversity of outcomes for the education of the pupils. In the next chapter, background information relating to the relevant policies, the conceptual underpinnings of the term 'environmental consciousness', and the role of communication and curriculum in learning are provided.

Chapter 2 - Policy and Curriculum Context

In this chapter, I present the idea that one of the vital roles of environmental education is to build environmental consciousness to ensure resilience to the increasing severity of weather events. I also discuss the role of municipal planning policies on the future of Southern Ontario's communities. Additionally, I discuss the implications of policies pertinent to the realm of formal education in Ontario; specifically the role of environmental education in the daily lessons of its pupils. An examination of the concept of environmental education is then discussed with a focus on the affective and cognitive dimensions of the conceptualization. Lastly, the role of communication and the various forms of curricula are discussed.

2.1.0 Relevant Policies

2.1.1 Municipal Planning

In 2010, the United Nations Population Fund and the World Bank released findings that documented that for the first time in human history more people were living within cities than in rural areas. It is forecast that by 2050 the percentage of urban dwellers will be 67%. While currently most of the world's urbanized people live in cities of a million people or less, this trend is forecast to change and cities with a million or more persons will begin to emerge as the largest growth areas (United Nations, 2011). In the Canadian context, in 1950, 60% of the population lived in cities. In 2010, 81% of Canadians lived in urban areas. It is estimated that 86.4% of the population will live in urban centres by 2050 (United Nations, 2011).

These dynamics, driven by demographic changes in developing areas, suggest that the majority of humans will engage with environments where human-scale processes and structures will predominate their daily perception (Turner et al., 2004). Unlike previous generations, the future peoples of the world will no longer be driven by rural cycles and agricultural traditions but rather by the human patterns of

urban living. For many, the impact of the natural world's processes will be manifested merely in irritation or satisfaction with the weather. However, with many growing cities being built in areas that are vulnerable to natural hazard events such as flooding, drought, or cyclones, some new urban dwellers will face natural hazards with so little preparation that tragic consequences are bound to occur (United Nations, 2011). A population versed in the cycles of the natural world might be more resilient in the face of adverse natural events, because they have their past histories and knowledge to fall back upon to help them cope with the disruption of their urban lives (Shava, Krasny, Tidball, & Zazu, 2010; Tidball, Krasny, Svendsen, Campbell, & Helphand, 2010). Maintaining the socio-cultural-environmental memory of the interconnection between person, culture, and environment is one of the roles of environmental education (Krasny & Tidball, 2009).

The province of Ontario is not immune to the global climatic changes that are occurring. The Ontario Ministry of the Environment reports in *Ontario's Adaptation and Strategy Plan* that:

> Ontario has experienced an increased number of significant urban flood events over the past several years, including floods in Peterborough (2002 and 2004), Ottawa (2004 and 2009), Sudbury (2009) and Hamilton (2005 and 2009). Flooding damages account for the highest number of property insurance claims in Canada, primarily related to payouts for the clean up of sewage backups. Water damage from flooding is now the number one source of household insurance claims in Ontario, overtaking losses due to fire and theft.
> (Ontario Ministry of Environment, 2011)

Two of the action items delineated in the Strategy Plan are: "Action 21: Increase Awareness of Land use Planning Tools" and "Action 30: Incorporate Climate Change into Curriculum" (Ontario Ministry of Environment, 2011). Thus it is acknowledged that the actions of both the planning and education community are vital in preparing the people of Ontario for the outcome of global climate change.

In this section, a review of some of the relevant policies driving municipal planning in Ontario will be conducted to seek an understanding of the provincial planning position on the topic of environmental education. These policies are important because they become the guiding principles that all municipalities aspire to conform to.

The first statute examined is the Planning Act of Ontario. Last amended in 2011, the Planning Act's purpose is:

> (a) to promote sustainable economic development in a healthy natural environment within the policy and by the means provided under this Act;
> (b) to provide for a land use planning system led by provincial policy;
> (c) to integrate matters of provincial interest in provincial and municipal planning decisions;
> (d) to provide for planning processes that are fair by making them open, accessible, timely and efficient;
> (e) to encourage co-operation and co-ordination among various interests;
> (f) to recognize the decision-making authority and accountability of municipal councils in planning. (Planning Act, 1990, § 1.1)

In general, the Planning Act is designed to be the overarching legislative and regulatory mechanism for land use planning in Ontario. The Provincial Policy Statement (PPS) and provincial plans such as the Greenbelt Plan and regional Growth Plans are positioned in relation to comply with the Planning Act's sections. As the overarching planning legislation in Ontario, the Planning Act is important in providing direction to urban growth and development. For this study, the Planning Act's provision for natural spaces is of greatest concern.

The Planning Act does mention natural spaces. It clearly establishes that:

> The Minister, the council of a municipality, a local board, a planning board and the Municipal Board shall have regard to, among other matters, matters of provincial interest such as,
> (a) the protection of ecological systems, including natural areas, features and functions;
> (b) the protection of the agricultural resources of the Province;
> (c) the conservation and management of natural resources and the mineral resource base;

(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;
(e) the supply, efficient use and conservation of energy and water;
(f) the adequate provision and efficient use of communication, transportation, sewage and water services and waste management systems;
(g) the minimization of waste
(Planning Act, 1990, § 2)

The phrase "shall have regard to" is the vital part of the Act's articles in actual practice. "Shall have regard to" does not clearly dictate action, merely thought. The Minister, a municipality, or the Municipal Board can act in directly opposing directions from the Act's spirit of environmental protection if an economic, social, or political influence forces a decision (Planning Act, 1990).

The provision of park or other recreational purposed lands is also mentioned in the Planning Act. A portion of section 42 of the Plan describes a municipality's ability to require that land that is under consideration for development or redevelopment be conveyed to the municipality for the purposes of park or other recreational uses (Planning Act, 1990). The section continues by describing that a maximum of 5% of the area of land under development or redevelopment can be conveyed. An alternate method of conveyance is also described whereupon a municipality, as long as it has such an alternate method described in its Official Plan, can dictate a maximum conveyance of one hectare for every 300 dwelling units proposed. A developer, or redeveloper, that does not wish to, or is unable to, provide land for municipal parkland conveyance can pay the equivalent price of the value of the land required. Additionally, the municipality can reduce the payment of money in lieu of land conveyance if it determines that the development is in an area designated in their Official Plan as having reduced 'in lieu of' payment provisions. All funds that are acquired by the municipality from this monetary exchange for land must be utilized for parkland acquisition or parkland building facility maintenance (Planning Act, 1990, § 42).

The significance of this section of the Planning Act is that it provides developers and redevelopers the opportunity to envision development on lands without any provision of parkland or recreational space. The ability to download parkland provision responsibility on a municipality's planning division by paying a 'in lieu of land' fee may set up a situation where the existence of parklands for community members is solely the responsibility of the municipal planning employees. Depending on their own understanding of the importance of natural spaces to the health of the community, the number and complexity of proposed developments, and the land use politics of the municipality there is reason to be worried that some departments may use short term thinking to direct their decisions to create communities that have a few, small, well-funded public parks in the municipality. These parks would likely be beautifully maintained but the question of accessibility for all segments of the community's population can be quickly raised.

The second legislation examined is the Ontario Places to Grow Act. Enacted in 2006, this act of provincial parliament begins the process of analysing and addressing growth in the various regions of Ontario such as the Greater Golden Horseshoe and Northern Ontario. Once a region has an approved growth plan, all municipalities within that area must have official plans that conform with the growth plan. The first region to have a designated growth plan in place is the Greater Golden Horseshoe (GGH) area (Ontario Ministry of Infrastructure,2006). In subsequent years, after the GGH and Northern Ontario Growth Plans are firmly established, the other regions within Ontario will have growth plans assigned to them. The GGH Growth Plan's purpose is to envision and plan for the expected human population growth in the area over the next 25 years. An important part of the GGH growth plan is its focus on directing the expected growth into the pre-existing inhabited areas. The province wants the municipalities within the Greater Golden Horseshoe to direct their population growth inward in order to limit the amount of agricultural and forested land area utilized for human residences and businesses. The growth plan dictates certain requirements to municipalities that will result in the intensification of

urban lands. The growth plan recommends to municipalities that to achieve their mandated growth goals they could designate urban growth boundaries, re-utilize brownfield sites and greyfields, re-energize public transit, and invest in urban infrastructure (Ontario Ministry of Infrastructure, 2006). This redirection of growth toward the urban centres of the area should lead to a decrease in the amount of agricultural and forested land being rezoned for industrial, commercial, and residential development, and an increase in the density of the population in urban cores. The province in its direction document also states that municipalities should focus on creating 'compact urban forms' (Ontario Ministry of Infrastructure, 2006).

Relevant to this project and its focus on environmental education is that the Growth Plan dictates that the communities within the Greater Golden Horseshoe area of Ontario will, in the next 25 years, focus their community planning on getting more people to live, work, and play on the same area of land that they utilize already. This intensification of activity is driven by specific employment and housing targets for each municipality (Ontario Ministry of Infrastructure Renewal, 2006). Unfortunately, there are no provincially mandated targets for the accessibility of natural spaces for residents in the GGH Growth Plan. The existence of targets within the Growth Plan for human habitation and employment without containing targets for natural space exposure could lead municipal urban planning departments to focus on conforming with those targets at the expense of the provision of natural spaces as an integral part of the 'built environment'.

The GGH Growth Plan contains some provision for natural spaces. Section 4.2.1 of the Growth Plan states that:

> 1. Through sub-area assessment, the Minister of Infrastructure and other Ministers of the Crown, in consultation with municipalities and other stakeholders will identify natural systems for the GGH, and where appropriate develop additional policies for their protection.

2. For lands within the Greenbelt Area, all policies regarding natural systems set out in provincial plans, applicable to lands within the Greenbelt Area, continue to apply.

3. Planning authorities are encouraged to identify natural heritage features and areas that complement, link, or enhance natural systems.

4. Municipalities, conservation authorities, non-governmental organizations, and other interested parties are encouraged to develop a system of publicly accessible parkland, open space and trails, including shoreline areas, within the GGH that –

- clearly demarcates where public access is and is not permitted
- is based on a co-ordinated approach to trail planning and development
- is based on good land stewardship practices for public and private lands.

5. Municipalities are encouraged to establish an urban open space system within built-up areas, which may include rooftop gardens, communal courtyards, and public parks. (Ontario Ministry of Infrastructure, 2006)

The terms 'natural heritage system' and 'natural heritage features' are defined in the Provincial Policy Statement (PPS) of 2005. The definition of each term is vital; for one group's interpretation, e.g. municipal planners, may be different than another group's, e.g. housing developers, interpretation. Development is therefore molded, in part, by the interpretation of the applicable policies and regulations. The semantic interpretations of even single words can have implications that allow an area of land to be developed versus being protected by provincial policy. The PPS defines a 'natural heritage system' as follows:

> … a system made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems. (Provincial Policy Statement, 2005)

'Natural heritage features' are:

> features and areas, including significant wetlands, significant coastal wetlands, fish habitat, significant woodlands south and east of the Canadian Shield, significant valleylands south and east of the Canadian Shield, significant habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area. (Provincial Policy Statement, 2005, p. 15)

The word 'significant' is vital in this last definition because it is the *significance* of a piece of land that determines its future as a site of development or protection. The word 'significant' is defined by the PPS as:

a. in regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time;
b. in regard to the habitat of endangered species and threatened species, means the habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or the recovery of naturally occurring or reintroduced populations of endangered species or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of its life cycle;
c. in regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history;
d. in regard to other features and areas in policy 2.1, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system;

(Provincial Policy Statement, 2005)

The importance of these definitions is that legally a municipality is best protected from an expensive and time-consuming Ontario Municipal Board (OMB) hearing by asking the Ministry of Natural Resources to declare a piece of land 'significant' if it wishes to protect that land from future development pressures. A municipality can protect the area using this method by utilizing sections (a) and (b) in the definition of 'significant'. A municipality could also utilize Sections (c) and (d) of the 'significant' definition, however the terminology is much more nebulous and is therefore more prone to the interpretation of the two parties; with the result that an OMB hearing may be the only manner in which the issue can be resolved.

Since the reason for the GGH Growth Plan is to induce the region to intensify its development and population density, a delineation of how communities are to attain these goals is necessary. For the

calculation of urban density under the GGH Growth Plan, the province has stated in a technical background document that the "urban growth centre density is measured using the gross land area of the urban growth centre" (Ontario Ministry of Public Infrastructure Renewal, 2012).

The usage of the term 'gross land area' over 'net land area' in the density targets is problematic. Early in the development of the GGH Growth Plan, the Ontario Growth Secretariat established a definition of 'gross land area' as the:

> Gross land area estimates have been utilized to derive land supply figures in each category. For example, this analysis does not "net out" the following from the various land categories:
> • Natural features such wetlands or woodlots and municipal parks;
> • Major institutions such as schools and hospitals;
> • Native Lands;
> • Major infrastructure sites such as:
> Hydro corridors;
> Landfills;
> Highways (existing / planned);
> Transit systems; and
> Rail corridors.
> (Ontario Growth Secretariat, 2005)

The wording of the GGH Growth Plan does not provide the municipalities included in the plan with any additional regulatory authority to exclude natural lands from their urban density determinations. The wording, as it exists currently, may induce planning departments to overlook their residents' need for natural space. Focused on attaining the urban growth centre density targets, it is foreseeable that some overworked planning departments may yield to land utilization scenarios that only account for housing and employment provision and relegate urban natural spaces to lands that are inappropriate for other human centred activities.

The City of Hamilton has considered this outcome and has stated that:

> Intensification generally reduces the amount of private outdoor space available per person, and people living in denser areas therefore may look to the public realm to provide quality outdoor amenity space. The Natural Heritage System can be an important part of the success of intensification by helping to provide more naturalized space within existing built areas.
>
> To achieve this, policies could be considered which encourage re-naturalization of existing underused private and public lands within existing built areas. These could include parts of sites difficult to use for parking or building because of existing grades or property boundaries. They could be combined with storm water management ponds, bio swales and green roofs that are becoming more common as properties redevelop. The location of these features could be coordinated with parks, trails, and existing natural features to significantly improve the character of open spaces in city neighbourhoods. (City of Hamilton, 2008)

Although it is not a part of the GGH region, the City of Ottawa has communicated that:

> As Ottawa pushes past the million-population mark and approaches 2020, both suburban growth areas and the inner city will experience change and pressures on the greenspace supply. New communities will be challenged to provide a full range of natural lands and open space and leisure lands, while as the inner city intensifies and the population increases, the ratio of parkland to population will fall from current levels. (City of Ottawa, 2006)

It appears from the statements by the Cities of Hamilton and Ottawa that the provision of natural spaces in the face of urban intensification sets up a conflict in land-use. The Provincial Policy Statement (PPS) states that:

> Healthy, active communities should be promoted by:
>
> a. planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement, including but not limited to, walking and cycling;
>
> b. providing for a full range and equitable distribution of publicly-accessible built and natural settings for *recreation*, including facilities, parklands, open space areas, trails and, where practical, water-based resources;

c. providing opportunities for public access to shorelines; and considering the impacts of planning decisions on provincial parks, conservation reserves and conservation areas.

(Provincial Policy Statement, 2005, p. 10)

However, this is the entirety of direction the PPS provides for municipalities concerning open spaces and parks. The province wants communities to intensify while providing natural spaces for their residents within the urban growth centres. At this crucial stage of policy acclimatization, it is imperative that the official plans of municipalities explicitly plan for natural spaces in a dense urban setting. Municipalities that do not include green space provision within the ethos of their planning departments will create communities that have little room for accessible natural spaces. Once the natural entities (trees, wetland, and grassland) of a lot are removed and a building or paving is constructed upon the land, it is hard for planning departments to reverse their previous zoning designation.

The province of Ontario has not been derelict in its duty to protect natural spaces in Southern Ontario. The strong legislation in place in form of the Greenbelt Plan (Ontario Ministry of Municipal Affairs and Housing [OMAH] , 2005) "identifies where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape" (p. 3). The Greenbelt Plan works in conjunction with the GGH Growth Plan, the Oak Ridges Moraine Conservation Act, and the Niagara Escarpment Planning and Development Act to ensure that the future of the Greater Golden Horseshoe region has protected agricultural or natural lands surrounding the increasingly urbanized human communities already established. The lands protected by the Greenbelt Plan are however not easily accessible, at present, to the public. The Plan states that: "It should be recognized that parkland, open space and trails exist within surroundings of predominantly privately held lands. While private land owners may, and do, adopt a collaborative approach with groups such as hiking and snowmobile associations to allow public access across portions of their property, this is only with the consent of the landowner." (OMAH, p. 22)

It is unlikely that municipalities or the province will invest in public transportation systems to connect the sparsely populated Greenbelt lands to the intensified human communities. Urban dwellers are being urged to transfer from personal vehicles to efficient urban mass transit systems, thereby reducing the number of personal vehicles. The question of how a resident of the inner city is supposed to access and experience the protected natural spaces of the Greenbelt is raised.

2.1.2 Education

Within the Ontario Ministry of Environment report, *Ontario's Adaptation Strategy and Action Plan* (Ontario Ministry of Environment, 2011), the Government of Ontario states 37 actions to undertake to better adapt to the changing climate. Five of those actions (1) Increase Awareness of Land use Planning Tools, 2) Raise Awareness about Health Hazards of Climate Change, 3) Raise Public Awareness of Lyme Disease, 4) Provide Community Outreach and Training, and 5) Incorporate Climate Change into Curriculum speak directly to educating the general public about their role in adaptation to climate change events (Ontario Ministry of Environment, 2011). It is important to note that the incorporation of climate change into the curriculum is an explicit action item, supposedly as important to Ontario's continued health and citizen happiness in the face of climate change as other action items such as "Undertaking Infrastructure Vulnerability Assessments".

Education Act

Another piece of legislation relevant to this project is the Education Act of Ontario. The Act dictates to the schools of Ontario the requirements and regulations for their compliance. Section 191 of the Act refers to out-of-classroom programs. An out-of-classroom program is "a natural science program or other out-of-classroom program" (Education Act, 1990). The Act does not detail the interpretation of the terminology "natural science program or other out-of-classroom program". It does not speak of the

necessity, adoption, or requirement for out-of-classroom programs. The Act addresses the regulations concerning land use and the permissibility of agreements with conservation authorities.

The Act details how a school board may obtain sites for out-of-school programs in section 197, whereupon they need to "obtain the approval of the Minister of Education before it erects, adds to or alters buildings on or makes other improvements to the school site for such purpose "(Education Act, 1990). This is contrasted with section 195(4) whereupon school boards do not have to seek approval from the Minister when erecting, adding, or altering their 'regular' classroom school sites. The ministerial approval provisions for out-of-school program structures of section 197 (1) add additional legislative barriers that the school boards must successfully overcome before implementing their vision of an environmental education centre.

The Act also explains the permissibility of two or more school boards sharing a school site for out-of-classroom programs in section 197(5), again with the permission of the Minister. It is interesting that school boards are allowed to cooperate. However, the addition of ministerial approval to the tumultuous relationship of school board cooperation complicates the bureaucratic pathways to such a degree that it is no surprise that despite searching for an instance of a co-owned and operated environmental education centre in Ontario, none could be found.

In subsections 197(7), 197(8) and 197(9), the Act details the permissibility for a board to enter into agreements with conservation authorities or other appropriate authorities to build and maintain facilities and use conservation authority facilities and personnel for the purpose of conducting a natural science program. The ease and permissibility of school boards in working with conservation authorities is probably the primary reason so many school boards depend on the facilities and personnel of the authorities in developing and delivering their out-of-classroom experiences. The conservation authorities have the land designated for their use by the community, the school boards have pupils; all

that is needed are the facilities and a steady stream of financial resources from both parties to make the partnership work easily. Conservation authorities received the land through the legislative mechanisms of the Conservation Authorities Act (1990), whereupon they are allowed to: “to acquire by purchase, lease or otherwise and to expropriate any land that it may require” (Conservation Authorities Act, 1990, § 21.1 (c)) for its programs of watershed research, protection, restoration, and management.

The Education Act limits the duration of the study of conservation and the natural sciences. In subsection 197(10) of the Act a maximum duration of two weeks for an out-of-classroom residential program financed by any publicly funded school board is legislated. This last section is a barrier to interdisciplinary study conducted at the out-of-classroom facility. A student wanting to study all their mandated subjects (art, science, math, languages, etc.) in an out-of-classroom, immersive natural setting would not be funded by the school board for more than two weeks, even if the school board was the provider of the curriculum and resources. A school board that wished to provide such an extended learning experience for their pupils would either need to ask the pupils to fund themselves or justify the conversion of an out-of-classroom facility into a ‘regular’ school facility. This last option is highly unlikely since the the out-of-classroom facility would need to be within the public school board’s jurisdiction area or an adjacent one to comply with the Education Act (Education Act, 1990). An urban child, with a keen curiosity of the natural world, would not be able to undertake an immersive study within nature unless their financial resources were sufficient to fund private education.

Bondar Report – 2007 – A change

In 2000, The Ministry of Education under the Conservative government of Premier Mike Harris removed environmental science as a dedicated course from the secondary school curriculum (Puk & Behm, 2003). The Ministry justified the change by stating that the content would be folded into all other subjects within the curriculum (Working Group on Environmental Education, 2007). However, Puk and Behm (2003) demonstrated, using surveys administered to high school teachers, that the infusion model

actually reduced the number of hours ecological content was examined in Ontario's schools (Puk & Behm, 2003). In June 2007, under the Liberal government of Premier Dalton McGuinty, a special working group examined the status of Environmental Education in Ontario schools. The working group, chaired by Dr. Roberta Bondar, reported to the Curriculum Council of the Ontario Ministry of Education with their report *Shaping Our Schools, Shaping Our Future*. It is an influential report because it drew attention to the state of Ontario's environmental education.

The overview of their report stated that:

> In the absence of a system-wide framework or strategy, environmental education in Ontario is being implemented unevenly across the province. While a variety of excellent environmental education programs and initiatives have been implemented by school boards and schools, there is no comprehensive policy that would signal the importance of environmental education, guide the investments necessary for further development, and provide concrete accountability measures.
>
> While environmental education is reflected in elements of Ontario's elementary and secondary school curriculum, there are few topics directly focused on environmental education, and content tends to be fragmented and inconsistent in the absence of systems thinking. The curriculum does not currently articulate a sequence of environmental expectations, nor does it adequately address the need for environmental education to be reflected across the curriculum.
>
> Many teachers currently lack the knowledge, skills, and background in perspectives taking required to teach environmental education effectively. Partly due to the fact that environmental education has relatively low visibility within the curriculum, there is little incentive, or opportunity, for developing the required skills, and there are few resources available to support teachers. (Working Group on Environmental Education, 2007, p. 7)

The report made 32 recommendations for the improvement of environmental education in Ontario schools. Within each of the recommendations, the Working Group also identified three core components that must be improved for environmental education to succeed in Ontario: 1) Leadership

and Accountability, 2) Curriculum, and 3) Teaching and Resources (Working Group on Environmental Education, 2007).

The Bondar report is important for the status of environmental education in Ontario because it clearly delineates the fact that there are many places where work must be undertaken if the province's educators want to inculcate "education about the environment, for the environment, and in the environment" (Ontario Ministry of Education, 2009, p. 4) into Ontario's pupils.

Since the report's submission, the Ministry of Education has released several documents attempting to integrate environmental education into the pre-established curriculum.

The first document that attempts to put the recommendations of the Bondar report into education policy was released in 2009. It is entitled *Acting Today, Shaping Tomorrow – A Policy Framework for Environmental Education in Ontario Schools.* It is a first step by the Ontario Ministry of Education to delineate what environmental education in schools should aim to be. It describes three goals to be attained:

1. By the end of Grade 12, students will acquire knowledge, skills, and perspectives that foster understanding of their fundamental connections to each other, to the world around them, and to all living things.
2. Increase student engagement by fostering active participation in environmental projects and building links between schools and communities.
3. Increase the capacity of system leaders to implement evidence-based environmental education programming, practices, and operations. (Ontario Ministry of Education, 2009, p. 11-18)

This Ministry of Education document is important in that it attempts to clearly delineate which stakeholder has to do what task in order for the goals to be achieved. Additionally, the indicators listed are a start to develop system-wide (ministry, school board, school) measures to determine the magnitude of progress toward providing a comprehensive environmental education for all of Ontario's pupils.

The Ministry of Education also has developed curriculum resource guides for all the grades and subjects titled *Environmental Science – Scope and Sequence of Expectations* (Ontario Ministry of Education, 2011). These resource guides detail where exactly in each subject and level environmental education can be integrated.

While it appears that environmental education now has more visibility in the curriculum, there still remains the issue raised by the *Shaping Our Schools, Shaping Our Future* report concerning the lack of knowledge and skills required to teach environmental education in Ontario's classroom teachers.

The skills statement contained in the *Shaping Our Schools, Shaping Our Future* report was confirmed by Tan and Pedretti's (2010) study of 300 Ontario classroom teachers' perceptions concerning the challenges of providing environmental education in schools. They stated that an "overcrowded curriculum, lack of resources, lack of alignment between curriculum and existing ministry expectations, low priority of environmental education in schools, access to the outdoors, apathy, and the nature of sociopolitical action" (p. 61) were all barriers identified by their study respondents.

It is important to note that the implementation of environmental education within each school is not backed with any legislative necessity. A teacher is obligated by the Education Act to teach the classes or subjects prescribed to them by their principal (Education Act, 1990).The teacher usually follows the Ontario Ministry of Education curriculum for that subject, but since the Curriculum Resource Guides are merely guiding documents a teacher is not obligated to include the changes with any promptness. It is likely that it will take several school year cycles for the curriculum additions suggested by the Ministry of Education to be universally applied in classes, if ever.

The Ministry of Education also has had a varied history in its financial support of environmental education in Ontario. On March 19, 2007 the Ontario government released news that it was creating a new Program Enhancement Grant. The grant of $35 million was earmarked to:

> support programs and activities such as arts, music, physical education and outdoor education. Boards may use this grant to fund or enrich existing programs or to offer new ones. The grant will be allocated to school boards through a per-school amount of $7,500. Each board will have the flexibility to decide how to use this funding to best suit its students' needs. (Ontario Ministry of Education 2007)

While this grant does directly mention outdoor education, it does not stipulate how much of the $7,500 per school amount is to be spent on arts, music, physical education, or outdoor education. It is possible that environmental education centres and supporters of environmental education looked to the grant as a means of improving the programs they offered the pupils. It is also interesting to note that this grant was announced a few months prior to the *Shaping Our Schools, Shaping Our Future* report. It is explicitly mentioned in the report as a source of hope that the government is willing to financially support the expansion of environmental education in the school system.

Hope for environmental education support was strengthened in July 2012 when the Ministry announced that it:

> would be restructuring the Program Enhancement Grant (PEG) in 2012-13 by transferring $20M to the Education Programs–Other (EPO) transfer payment line. This funding would be used to support outdoor learning activities for students provided by school boards or by third party organizations, such as not-for-profit or community groups. School boards are encouraged to collaborate with community agencies where possible to develop connected programming within their local communities. (Ontario Ministry of Education, 2012)

The explicitness of sequestering funds for ‘outdoor learning activities’ may indicate a commitment by the Ministry of Education to provide ongoing support. In April 2013, the Ministry sent a memorandum to

the identified Outdoor Education contacts of each jurisdiction to complete a worksheet requesting information on:

> how outdoor education funding was used, how the activities linked to the curriculum, whether community partners were involved, and the role those partners played in the implementation or delivery of the activities. (Ontario Ministry of Education, 2013a)

It appears that the Ontario government is undertaking an audit for the monetary outlay in outdoor and environmental education programs in schools. The Ministry of Education began the accountability measure by moving funds to a transfer payment line location whereupon schools need to explicitly account for their grant expenditure. The Ministry of Education may want to induce a less discretionary attitude when it comes to outdoor education by asking that expenditures be justified with curricular linkages. This is an important development in environmental education provision in Ontario for three reasons: 1) It indicates that centres that are inefficient or school boards that do not utilize the grant monies could see the funding reduced in subsequent years. 2) It forces environmental education providers to have very strong curricular linkages in their programs. 3) It identifies community partners that each school utilizes, thereby preparing for Ministerial or third-party accountability of these partners' programs.

2.2.0 A Look at Environmental Consciousness – Affective and Cognitive Dimensions

In this section the affective and cognitive dimensions of the definition of the term 'environmental consciousness' are discussed in more detail. This is not to say that the dispositional or action dimensions are of less importance, but rather that a person's verbal statements and actions are usually easily understood while their thoughts and feelings remain hidden to most others. It is a change in behaviour that is most desired in an environmental education program. Each program wishes to alter a person's

actions toward more sustainable choices, whether it is concerning animal welfare, energy conservation, or waste reduction. In providing a little explanation about the affective and cognitive dimensions of environmental consciousness, it is hoped that the reader will appreciate the necessity of feelings and thoughts in constructing psychological conditions that promote pro-environmental behaviour.

2.2.1 Affective Dimension

The affective dimension is characterized by the emotions a person has toward themselves and the entities surrounding them: their environment. The affective dimension becomes difficult to explain to another person because a person may have several emotional feelings relating to their environment. A person can feel worried or burdened by the status of the environment, and/or they could feel a level of connectedness to the environment (Kals & Müller, 2012).

The fear of environmental disaster or degradation can occur if the population receives numerous media reports of ecological destruction. Interestingly, it appears that by facing their (environmental) mortality, many people actually move away from protecting nature, unless it has a personal consequence (Fritsche & Häfner, 2012).

Fritsche's and Häfner's studies of adults also support David Sobel's contention that informing children too early about the ecological ills of the world may induce ecophobia, the fear of nature, where children are afraid of having a relationship with the other-than-human world (Sobel, 1996).

The reverse of ecophobia, biophilia is another part of the affective dimension. Biophilia is the love of life. The term was first used by Erich Fromm (Fromm, 1964), to speak of loving the vibrancy of living in general. E.O. Wilson (Wilson, 1984) utilized the term to describe the innate affinity people have with the natural world. People are drawn to the plants and animals that interact with them. They watch squirrels in a park and enjoy flower beds. It appears that the biophilic affinity many people have induces us to be more protective of our environment. Kals et al. explored this innate emotional affinity and reported that

"Emotional affinity toward nature proved to be as important for the prediction of nature-protective willingness and behavioral decisions as interest in nature and indignation about insufficient nature protection" (Kals et al., 1999 p. 194).

But biophilia is more than just an affinity; it is 'the love of life'. According to Fromm, in an earlier work, all the forms of love have four interconnected elements: care, responsibility, respect, and knowledge (Fromm, 1956).

He states that caring is "not different even with the love of animals or flowers…. Love is the active concern for the life and the growth of that which we love" (p.25). Responsibility is "to be able and ready to respond" in an entirely voluntary act (p.26). Respect, true to its etymological rooting, 'to look back at', is "to be aware of his unique individuality" (p.26). He explains that "knowledge which is an aspect of love … does not stay in the periphery… one can transcend the concern for myself and see the other in their own terms" (p.27). Interestingly, he also describes another version of knowledge, one based on power over the other.

> The power which makes him do what we want, feel what we want, think what we want; which transforms him into a thing, our thing, our possession…. To torture him, to force him to betray his secret in his suffering…. In children we often see this path to knowledge quite overtly. The child cruelly tears off the wings of a butterfly in order to know it, to force its secret. The cruelty itself is motivated by something deeper: the wish to know the secret of things and of life. (Fromm, 1956 p. 28)

Unless this form of knowledge attainment is directed to a more loving format, the child will continue learning through power. Philosopher Neil Evernden (1993) describes the education of an ecologist:

> The first stage of this process involves the placing of the natural world into an academic context, and the labelling of all the organisms… once the categories have been established and learned by rote, then a similar taxonomy is applied to all the parts of the beast-machine. To accomplish this the student must spend a couple of years cutting up bodies. By this time he or she will have begun to acquire the mental skills requisite to a scientific appraisal of organisms, and to realize that the object of science is theories, not animals. …

> The goal is not observing animals but obtaining living material on which to test your theory. (Evernden, 1993 p. 15)

Returning to Fromm, he states that in the act of loving fusion, by "giving myself, I find myself, I discover myself, I discover us both"(Fromm, 1956 p. 29). This is the essence of true connectedness to nature. One loves it so deeply that it becomes a part of oneself. To injure it by actions or words would be injurious to oneself.

2.2.2 Cognitive Dimension

The cognitive dimension is characterized by a person's usage of reasoning, language, problem solving, and memory. A person can gain understanding of causal relationships between phenomena through observation and/or experimentation, they can communicate their ideas about their perceptions to others, they can create new theories to explain unknown phenomena, and they can remember what they have experienced through their senses. The curricula of modern schooling are constructed in order to increase a pupil's cognitive abilities (Eisner, 2002). One measure of a pupil's level of skill in the cognitive dimension is by utilizing evaluation tools such as formal examination, portfolio examination, or demonstration. The level of a student's achievement can be classified using Bloom's Cognitive Taxonomy, found in Table 2.

Table 2 - Bloom's Cognitive Taxonomy

Skill Identity	Verbs Associated with Assessment Task
Evaluation	judge, criticize, critique
Synthesis	create, compose, invent
Analysis	compare, select, infer, point out
Application	organize, choose, prepare
Comprehension	summarize, explain, interpret
Knowledge	list, name, describe, recite

Source material from: (Krathwohl, 2002)

Bloom's Taxonomy can be used to assess the magnitude of cognitive effort a task and its objectives require. In terms of assessing a person's cognitive abilities, the taxonomy can be used to construct questions that query the maximum order of achievement they can successfully attain. The taxonomy is arranged with the skill 'knowledge' being the lowest ranked and 'evaluation' being the highest ranked.

All six of the taxonomy skills can be utilized depending on the complexity of the task. For example, a pupil may be asked to list species of maple trees, explain the root of the Latin nomenclature, prepare a flowchart displaying the tree's characteristics, compare the characteristics of maples and sycamores, create an identification key for maples and sycamores, and critique another student's identification key instrument; thereby utilizing all six of the cognitive tasks. Like all learning, repetition is essential in further exercising the cognitive processes, since mastery of the lower level skills must be obtained before expertise is achieved in the highest levels (Bromage & Mayer, 1986; Krathwohl, 2002).

2.3.0 Role of Curriculum and Communication

2.3.1 Communication

The effect of communication on the success of environmental education programs is paramount. It is my contention that more than the environmental education facilities, the biodiversity of the surrounding natural spaces, or the distance travelled to reach the centre, the manner and content of the communications between visiting teacher, environmental educator, and the pupils determines the sequence of events that is an environmental education experience. Figure 2, found below, outlines some of the communicative linkages between these three groups. It also includes the location of curricula; discussed after the communication section.

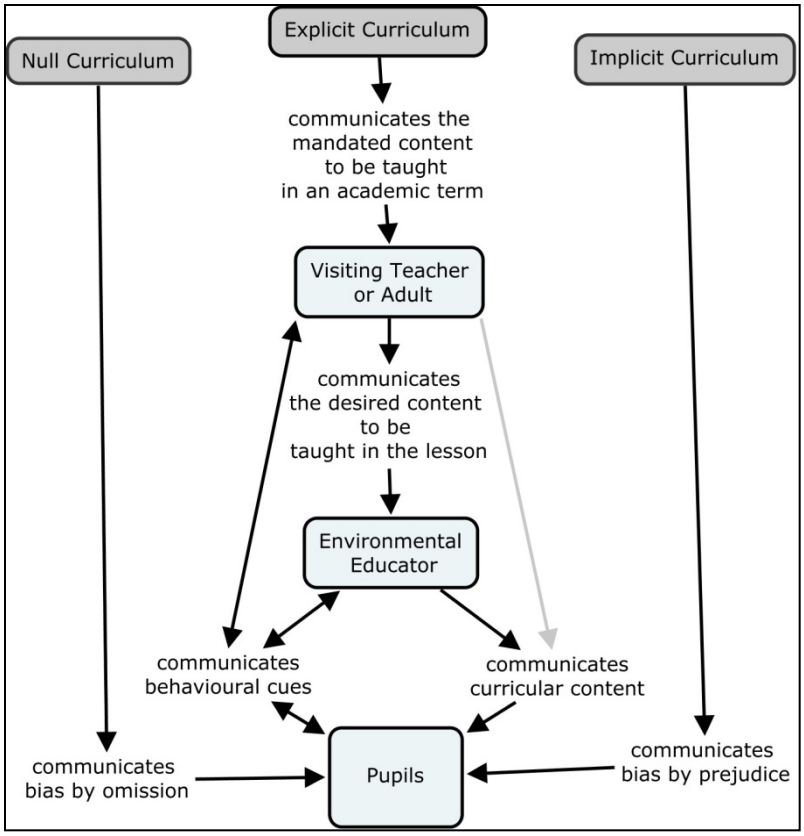


Figure 2 - Communication and Curriculum Pathways
Dark grey boxes denote Eisner's (2002) three curricula. Light grey boxes denote individuals involved in the educative process. While curricular content has a unidirectional hierarchical flow, behavioural communication is bidirectional. Depending on the expertise of the visiting teacher or adult, environmental content can be communicated from them to the pupils directly.

Communications theorists Paul Watzlawick and Janet Bevin wrote:

> Indeed, it can be summarily stated that *all* behaviour, not only the use of words, is communication (which is not the same as saying that behaviour is *only* communication), and since there is no such thing as non-behaviour, it is impossible *not* to communicate. (Beavin & Watzlawick, 1967 p.5)

The importance of the flow of communication from provincial ministry to visiting teacher or adult to environmental educator to pupil is that it is essentially a unidirectional flow. It is only within the pupil's behaviour that communication occurs in a reverse direction. This means that a pupil is subject to the assumptions of both the visiting adult and the environmental educator unless they communicate via behaviour or through explicit means that the provision of the environmental lesson is adequate or inadequate for their needs. Likewise, the environmental educator rarely has the chance to inform the

visiting teacher about their opinion of which lesson would best benefit the class. In fact, the environmental educator cannot be informed about what is best for the class at all unless there is knowledge about the pupils and their abilities. They must rely upon the cues they acquire from the visiting teacher or from personal observation of the class at the initiation of the lesson. Overall, if communication between visiting teacher and environmental educator is neither clear nor purposeful, and the pupils do not speak up explicitly, then the lesson will progress as planned by the curriculum without concern to the abilities or interests of the pupils.

2.3.2 Curriculum

The progressive education reformer John Dewey is quoted as writing that: "Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at a time" (Eisner, 2002 p. 87)

Elliot Eisner stated that teachers teach through three types of curricula; explicit, implicit, and null. A comparison of the three different types is detailed in Table 3 below:

Table 3 - Comparison of Eisner's three curricula with examples

	Curricula		
	Explicit	Implicit	Null
Learning Domain (content, location, time)	Learning domain approved by authority	Learning domain with bias	Alternative learning domain omitted
Lesson learnt by student	Content knowledge regarding three different types of rocks	Science is more important than art	Valuable learning happens only indoors
Examples	Unit on rocks in grade 3 science period using school board approved textbook	Science period is 3 hours per week, art period is 2 hours per week	Science period is conducted indoors because the teacher does not know how to conduct a class outdoors

Source: (Eisner, 2002)

In relation to the subject of this study, Eisner's statements about the three curricula can be applied to understand how the visiting teacher motivations toward the environment can affect the success of the environmental education experience.

Explicit Curriculum

The explicit curriculum guides the students, via the teachers' expertise in instruction, through a series of topics considered by the pupil's society or culture to be worthy of learning (Eisner, 2002). It is usually, in public school systems, constructed by curricular experts whose goal is for the student to attain a certain level of competency in a particular skill or through knowledge acquisition (Eisner, 2002). In Ontario, the curriculum is designed and disseminated by the Ministry of Education (Ontario Ministry of Education, 2013b). A child may be educated outside the public schooling system in Ontario. The financial cost of a private education coupled with the societal pressure for formalized education certification induces the majority of parents to decide on a publicly funded school to mediate the learning of their child (Ontario Ministry of Education, 2013c).

While environmental education is addressed in the Ontario curriculum explicitly with several documents including *Environmental Science - Scope and Sequence of Expectations* (Ontario Ministry of Education, 2011) and *Acting Today, Shaping Tomorrow – A Policy Framework for Environmental Education in Ontario Schools* (Ontario Ministry of Education, 2009), there are currently no incentives such as standardized testing to guide a school in educative resource allocation in that area of study. The subjects of mathematics and language arts (reading, writing) both have explicit provincial tests. Throughout a student's academic career there is testing to "measure student achievement in reading, writing and mathematics in relation to Ontario Curriculum expectations "(EQAO, 2013). The Education Quality and Accountability Office (EQAO) provides an "individual report to each student who writes a test, and posts

school, school board and provincial results" (EQAO, 2013) on their website. Schools utilize the test scores as "a basis for targeted improvement planning at the individual, school, school board and provincial levels" (EQAO, 2013). Eisner (2002) argues that: "The procedures and criteria used to evaluate students, teachers, and school administrators have profound effects on the content and form of schooling" (p. 365). The tests the EQAO administers were not developed to influence the content of the curriculum taught, but to determine if the pupils are learning and achieving to a certain standard level. "Because test performance is used as an index of educational quality, being able to do well on tests becomes a critical concern for students and teachers alike. As this concern grows, educational programs become increasingly focused on those content areas and forms of teaching that are related to test performance" (Eisner, 2002 p. 365).

Environmental education in Ontario is currently being integrated, slowly, into the explicit curriculum. Since it has been only two years since the Ministry of Education released the *Scope and Sequence of Expectations Guide* (Ontario Ministry of Education, 2011), it is to be seen if classroom teachers will have the time and motivation to integrate environmental education concepts into their teaching routine. Since there is no explicit external testing evaluating the implementation of environmental education daily in the classroom, there may be little motivation for change.

Implicit Curriculum

The implicit curriculum guides the pupil to understand the world through the lens of bias. This type of curriculum is usually unintentionally created by the pupil's society, school, or teacher via various mechanisms. In the example presented in Table 3, the school's designation of more instruction time in one subject area (science) versus another (art) may lead a pupil to understand that science is worth more time in their academic careers than art. In reality, the two subjects are equally difficult to master;

but the subject of science may be considered more "worthy" of study because of its utility in future career options. Eisner writes that:

> The implicit curriculum of the school is what it teaches because of the kind of place it is. And the school is that kind of place through ancillary consequences of various approaches to teaching, by the kinds of reward system that it uses, by the organizational structure it employs to sustain its existence, by the physical characterization of the school plant, and by the furniture it uses and the surroundings it creates… they are salient and pervasive features of schooling, what they teach may be among the most important lessons a child learns. (Eisner, 2002 p.97)

In terms of environmental education, there is an implicit curriculum, or message communicated within the pupil's learning environment; their school. If the school emphasizes an environmental education focus or contains elements that support environmental education, then the implicit curriculum will enhance and support the explicit curriculum. If the school setting and ethos do not contain elements that engender environmental consciousness, then the implicit curriculum informs the pupil counter to the explicit curriculum. For Ontario's schools it is crucial that both the explicit and implicit curricula be aligned toward pro-environmental attitudes and content if it intends its pupils to become increasingly environmentally conscious.

Null Curriculum

The third curriculum that all schools teach, according to Eisner (2002), is the null curriculum. The null curriculum guides the pupil to understand the world through the absence of an alternate viewpoint (Eisner, 2002). It is constructed of:

> The options students are not afforded, the perspectives they may never know about, much be able to use, the concepts and skills that are not a part of their intellectual repertoire. Surely in the deliberations that constitute the course of living, their absence will have important consequences on the kind of life that students can choose to lead (Eisner, 2002, p.107).

Most simply put, if a person does not know the stars exist above their heads, how can they become an astronomer? A teacher will teach the curriculum they have learnt. A teacher that has not experienced and learnt about the natural world will not be competent in teaching about the natural world. They may be courageous enough to embark on a learning journey with their pupils, becoming the learner-teacher, and informing themselves for the next teaching opportunity. For Ontario's teachers, the low priority for environmental education, lack of access to the outdoors, and apathy all contribute to a reluctance to venture out and learn about the natural world (Tan & Pedretti, 2010). The removal of some of those barriers should be a prime concern of Ontario's environmental educators; for they are the professional educators that can teach the teachers.

This chapter provided some brief background information to the reader concerning the relevant municipal and provincial land-use planning policies, policies regulating Ontario's schools and environmental education centres, and the vital role of curricula and communications in the exchange and dissemination of knowledge to pupils. In the next chapter, I discuss the overall choice of research design for this project with a particular focus on describing mixed methods research.

Chapter 3 – Project Design

In this chapter, I discuss the design of the project. A description of my world view, the decisions driving my choice in utilizing a sequential exploratory mixed methods research design, and reasoning for each step in the investigation are given. The chapter briefly describes the research methods of quantitative and qualitative research. An extended description of mixed methods research concludes the chapter.

3.1.0 Research Design

The decision to conduct a mixed methods sequential exploratory design for this study was made by utilizing Creswell's (Creswell, 2009) three component framework for design. The framework describes the interconnection between the researcher's worldview, strategies of inquiry, and research method to result in an appropriate research design.

3.1.1 My worldview

Creswell (Creswell, 2009) discusses four world views: postpositivism, constructivism, participatory and advocacy, and pragmatism in his book. The major elements of each position are presented in Table 4

Table 4 - Creswell's (2009) Four Worldviews

Worldview	Elements or Characteristics
Postpositivism	• Determination • Reductionism • Empirical observation and measurement • Theory verification
Constructivism	• Understanding • Multiple participant meanings • Social and historical construction • Theory generation
Advocacy/Participatory	• Political • Empowerment Issue-oriented • Collaborative • Change-oriented
Pragmatism	• Consequences of actions • Problem-centred • Pluralistic • Real-world practice oriented

Source: Creswell (2009) p. 6

Utilizing the descriptions provided by Creswell (2009) and further research into each of the four world views I felt that pragmatism best described my nature as a researcher. Pragmatists view facts and values as interconnected rather than separate and truth as relativistic and provisional (Bryant & Charmaz, 2007). I am interested in what works and the solutions to problems more than understanding the causes of the effect. As Creswell (2009) states: “Pragmatism is not committed to any one system of philosophy and reality” (p. 10) and “instead of focusing on methods, researchers emphasize the research problem and use all approaches available to understand the problem” (p. 10).

3.1.2 Summary of Selected Research Methods

My pragmatic world view led me to utilize multiple methods, different worldviews depending on the stage of the study, and different forms of data collection. To understand the realities of being an environmental educator in Ontario I needed to utilize a qualitative strategy in order to expose the

richness of the life experiences of each of the participants. Research into the various qualitative research methods resulted in the decision to use grounded theory as the strategy of inquiry in the initial phase. I wished to develop a theoretical model that could uncover the characteristics of an effective environmental education centre. Taking that developed model I then wanted to investigate environmental educators, and the centres they are employed within, to understand if the educators are operating in a manner that they believed to be the most efficacious for environmental consciousness development. The outcome of this exploration could illuminate to the educators themselves the areas requiring the most improvement and induce a re-examination of the methods utilized in their centres. The choice to utilize a quantitative online survey as the second phase of the study was made in response to the desire to reach as many environmental educators as possible utilizing the meager amount of resources available.

I utilized a more constructivist world view in the interview portion of the study to understand the multiple meanings each participant may communicate. In the survey portion of the study I utilized a more post-positivist worldview as I analysed the quantitative data to insure validity and reliability standards. My data collection was also quite varied and included quantitative survey data, semi-structured interview data, anecdotal unstructured discussions, literature readings, and personal experience data. The initial qualitative interview phase was slightly dominant in study significance and level of work expended compared to the secondary online survey phase.

3.1.3 Background information concerning research design choices

Having identified my research questions, the first step I needed to make was to choose between purely quantitative, purely qualitative, or a mixed methods research method. In this section a brief description of each of the choices is given.

3.1.3.1 Quantitative Strategies

Quantitative research is the usage of surveys and experiments to test or verify a theory, identify variables for study, or observe and analyze a phenomenon using numerical data forms (Creswell, 2009). Survey research "provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of the population" (Creswell, 2009 p. 12). Survey research is analysed using statistical or explanatory methods. Experimental research "starts with a theoretical position and accumulates data in order to test its validity" (Davies, 2007 p. 135). It is a form of research primarily concerned with determining "whether a treatment works better than a control condition" (Creswell & Plano Clark, 2011 p. 8).

3.1.3.2 Qualitative Strategies

Qualitative research is characterised by the comprehension of the study participants' narratives, the synthesis of categories that compose the similarities between different persons' narratives, theory construction in order to simplify the diverse linking of similarities, and recontextualizing of the theory so that it may be applicable to other settings or populations (Goulding, 2002). There are many approaches to conducting qualitative research but in general "qualitative researchers are more interested in specific cases (people, situations, etc.) and not in the random selection of material… to extend the knowledge potential of research settings rather than reducing biases and influences" (Flick, 2007 p. 28). Creswell

(2009) describes five major strategies to conduct qualitative studies. Table 5 summarizes Creswell's (2009) thoughts concerning each strategy.

Table 5 - Summary of Qualitative Study Strategies

Strategy	Researcher's Role	Outcome of Study
Ethnography	Study of intact cultural group in a natural setting over a prolonged period of time	Description of the lived realities encountered in the field setting
Grounded Theory	Derivation of a general, abstract theory of a process, action, or interaction grounded in the views of the participants	Creation of a theory that explains a particular phenomenon
Case Studies	In-depth exploration of a program, event, activity, process, or individuals bounded by time and activity	Detailed description of a specific phenomenon or individual
Phenomenological Research	Identification of the essence of human experiences about a phenomenon as described by participants through extensive and prolonged engagement to develop patterns	Description of the participants' experiences with minimal influence of the researcher
Narrative Research	Studies and listens to the story of lives of individuals, retold by researcher	Collaborative narrative between researcher and participant concerning the participant's life story

Summarized from: Creswell, 2009 p. 13

3.1.3.3 Mixed Methods Research

The intertwining of qualitative and quantitative research methods in the hopes of understanding a phenomenon is termed mixed methods. The diverse nature of combining two previously distinct methodologies into one mixed methodology has created some long and contentious definitions for the term 'mixed methods research' (Cameron, 2011). Creswell and Plano Clark (2011) define 'mixed methods research' not in a single term or sentence but rather as a listing of the characteristics of mixed methods research. In mixed methods, the researcher:

- Collects and analyzes persuasively and rigorously both qualitative and quantitative data (based on research questions);
- Mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them), sequentially by having one build on the other, or embedding one in the other;
- Gives priority to one or to both forms of data (in terms of what the research emphasizes);
- Uses the procedures in a single study or in multiple phases of a program of study;
- Frames the procedures within philosophical worldviews and theoretical lenses; and
- Combines the procedures into specific research designs that direct the plans for conducting the study. (Creswell & Plano Clark, 2011 p. 5)

For this study, the choice of a mixed method research design was made in response to the need to generalize the findings of the exploratory qualitative interviews. I needed to understand if the themes derived from the interviews could be applied to a larger segment of the population of Ontario's environmental educators. As Creswell and Plano Clark write "A mixed methods project is ideal in these situations. The researcher begins with a qualitative phase to explore and then follows up with a quantitative phase to test whether the qualitative results generalize" (Creswell & Plano Clark, 2011 p. 9). I sought completeness in understanding both the quantitative survey results and the qualitative personal narratives and how the information could be of utility to the discipline of environmental education. Additionally, the decision was made with the rationale that the study should result in an instrument useful to Ontario's environmental educators in their reflective

practices. Bryman (2006, quoted in Creswell and Plano Clark, 2011 p. 62-63) describes that completeness, instrument development, and utility are all common reasons researchers decide on implementing mixed methods research designs.

The choice of an exploratory sequential mixed methods design was made because of the following considerations:

1. Initially, I was not aware of what dimensions or constructs were considered the most important by Ontario's environmental educators in their perception of effective programs,
2. I was also not aware of any research directly addressing the perceptions of Ontario's environmental educators,
3. I was also not aware of any standardized evaluation tool in existence that directly measured the effectiveness of environmental education in an Ontario context,
4. I felt I had sufficient time and resources to explore both qualitative and quantitative phases of this exploration, and
5. I wanted to create an instrument that could be utilized by Ontario's environmental educators as a seed for further exploration, research, and self-reflection.

Creswell and Plano Clark (2011), state that a mixed methods "exploratory design is most useful when the researcher wants to generalize, assess, or test qualitative exploratory results to see if they generalized to a sample and a population" (Creswell & Plano Clark, 2011 p. 87).

Creswell and Plano Clark (2011) also write, in their text concerning mixed methods research, that there are five other types of mixed methods designs. These alternate mixed method designs where not chosen due to their inability to conform to my study goals and research questions. A convergent parallel design is defined by its characteristic of obtaining qualitative and quantitative data concurrently and separately (Creswell, 2009; Creswell & Plano Clark, 2011; Greene, 2007). Explanatory sequential design also relies on the existence of an established theory or measure in

the initial phase of the study design, with the qualitative phase providing an explanation of the quantitative results (Creswell & Plano Clark, 2011; Greene, 2007). Since there was no known quantitative instrument to measure Ontario's environmental educators' perceptions and activities, these designs were judged inappropriate to answer the research questions. Another mixed methods design, embedded design, is typified by the researcher utilizing either qualitative or quantitative data collection methods within a primary, predominant research design in order to complete a more thorough understanding of the phenomenon (Creswell & Plano Clark, 2011; Greene, 2007). The predominance of one data collection method (quantitative or qualitative) over the other was the reason an embedded design was not chosen for this study. I felt that the significance of the qualitative interviews should not overwhelm the generalizations generated from the online survey phase nor should the quantitative data be the primary concern of the study with the narratives providing a little 'human touch'.

My choice in utilizing an exploratory sequential mixed methods design for the study also introduced deficits and challenges. A researcher embarking on a mixed methods design for research needs to account for the increased timescale and workload in successfully implementing and consolidating two complex and different methodologies into one understanding of the subject of study (Creswell & Plano Clark, 2011; Davies, 2007). Creswell and Plano Clark (2011) describe a number of challenges specifically for exploratory mixed methods designs. They state that the difficulty in specifying the procedures of the quantitative phase (phase two) may make research ethics review boards weary of project approval (Creswell & Plano Clark, 2011). They also state that researchers should "consider using a small purposeful sample in the first phase and a large sample of different participants in the second phase to avoid questions of bias in the quantitative strand" (Creswell & Plano Clark, 2011 p.89). Lastly, they suggest that if an instrument is developed between the two phases that the

researcher needs to clearly understand from which qualitative data the quantitative instrument will be constructed (Creswell & Plano Clark, 2011).

All four of these challenges were met in this study. The requirements for time, expertise, and workload were met by having, early in the planning of the study, timelines that delineated the extent of time each portion could likely require. The challenge of ethics approval was met with compromise and understanding that research that is ethical in nature is more important than comprehensive data coverage with its potential hazards to the well being of the participants. Although Creswell and Plano (2011) suggest a small focused sample in the first phase, the number of interview participants was determined not via an established list or fixed number of respondents but by the theoretical sampling of the grounded theory method.

In this chapter, the design of the project was described. My choice of a sequential exploratory mixed methods research design was made based on my worldview, the research questions I wanted to answer, and the type of information I wanted to obtain from the research. Although it is more time and resource intensive, my choice of mixed methods design allowed me the opportunity to understand both the depth of the environmental educators' experiences as well as the universality of my results in the field of environmental education in Ontario. In the next chapter I outline the design of the first phase of the project, the interesting themes revealed from the interviews, and the formation of a theory describing the characteristics of environmental education programs.

Chapter 4 – Phase One - Grounded Theory Method

This chapter details the first phase of the project; a qualitative exploration of environmental educators' perceptions as to the most effective method to foster environmental consciousness. I discuss the method of grounded theory and the steps in utilizing it as a research method. The categories revealed utilizing the grounded theory method are described culminating in the presentation of a theory that is utilized to construct the quantitative questions for the second phase of the project. A discussion of each of the themes is given.

4.1.0 Grounded Theory Method

Grounded Theory Method (GTM) originated from the personal experiences of Anselm Strauss and Barney Glaser each undergoing the emotional phenomenon of family bereavement (Bryant & Charmaz, 2007). Strauss was strongly influenced by pragmatist and interactionist writings (Strauss & Corbin, 1998). Glaser arrived to the partnership with a strong interest in theory development and training in quantitative research methods (Oktay, 2012). The partnership resulted in the generation of a methodology that emphasized "middle range" theories, theories that develop from and are directly applicable to "real world" situations (Dey, 1999). Strauss and Glaser sought to create a method that bridged the divide between the, then considered unscientific, qualitative research methods and the abstract conceptual theories of sociology of the 1950's and 1960's (Gouling, 2002). GTM was first presented in 1967 by Glaser and Strauss in their book *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Bryant & Charmaz, 2007). The book detailed the rationale for using continual systematic gathering and analysis of data. It also encouraged new and creative research in topics that were viewed, at the time, as researchable only via quantitative means (Gouling, 2002). GTM evolved from that point as new researchers began to develop and refine the concepts that underlie the method. Today, GTM is the dominant qualitative methodology (Bryant & Charmaz, 2007).

Grounded Theory is a methodology that emphasizes the constant cyclical flow of data collection and data analysis by the researcher to construct a theory or model of the phenomenon under study (Bryant & Charmaz, 2007; Gouling, 2002; Oktay, 2012; Strauss & Corbin, 1998).

The use of GTM for this study is appropriate for my desire to form a model of the characteristics of effective environmental education within Ontario's centres. GTM has an emphasis upon theory development (Bryant & Charmaz, 2007; Dey, 1999; Gibbs, 2010). In contrast, other qualitative methods aim for detailed descriptions of the participant's experience; phenomenology focuses on the meaning an individual ascribes to a phenomenon, ethnography focuses on the cultural or social linkages between individuals, case studies focus on a single program, event, or process, and narrative studies focus on the participant's life story (Creswell, 2009; Oktay, 2012).

GTM follows the familiar steps in research processes; initiating the research, selecting, collecting, and analysing the data, and concluding the research (Dey, 1999). GTM as a methodology has unique characteristics for each of the steps.

The first step in GTM is the confirmation that GTM is indeed the correct methodology to follow (Oktay, 2012). The researcher needs to perform an examination of not only their research goals but of their own abilities and interests (Oktay, 2012). The researcher needs to consider if their goals is to develop theory, if they are comfortable with proceeding into data collection without theoretical preconceptions, and whether they have the time and resources to undertake the multi-stage process of data collection and analysis virtually simultaneously (Dey, 1999; Oktay, 2012). Strauss and Corbin (1998) wrote that the researcher has to:

> maintain a balance between the qualities of objectivity and sensitivity when doing analysis. Objectivity enables the researcher to have confidence that his or her findings are a reasonable, impartial representation of the problem under investigation, whereas sensitivity enables creativity and the discovery of new theory from data. (Strauss & Corbin, 1998 p. 53)

The GTM researcher also needs to understand the iterative nature of GTM that requires continual personal reflection to examine how their personal experiences and preconceived 'pet theories' can affect the outcome of their research (Bryant & Charmaz, 2007). Research using GTM involves the researcher in the study, requiring a researcher personality that is capable of dealing with the issues and thoughts that are revealed in their data collection and analysis (Bryant & Charmaz, 2007; Oktay, 2012). The second step in the research process is the selection of the data. In GTM data is obtained using theoretical sampling. Theoretical sampling is:

> Data gathering driven by concepts derived from the evolving theory and based on the concept of 'making comparisons,' whose purpose is to go to places, people, or events that will maximize opportunities to discover variations among concepts and to densify categories in terms of their properties and dimensions. (Strauss & Corbin, 1998 p. 201)

Strauss and Corbin (1998) expand on their definition by stating that theoretical sampling is cumulative and it becomes more specific as the study progresses. This type of sampling is in contrast with conventional sampling techniques, principally in quantitative research, where the sampling protocol is explicitly established before data collection occurs (Dey, 1999). In GTM the emerging theory drives the next sampling process in an effort to explore important dimensions and themes in the study's progression (Oktay, 2012). Attempting to pre-arrange a thorough sampling framework in GTM research removes the study from the in-situ reality from which a theory is derived; thereby nullifying its 'grounded' credibility (Dey, 1999). The GTM researcher therefore begins their data collection with initial decisions concerning the group or site of study, the type of data that will be elicited from participants, and the amount of time devoted to each site; all decided using the practical realities of time and resources available (Strauss & Corbin, 1998). During the initial data collection, the GTM researcher begins their data analysis in order to begin assembling their next target(s) of the theoretical sample (Bryant & Charmaz, 2007; Dey, 1999; Gouling, 2002; Strauss & Corbin, 1998). The researcher selects the

next sites not for cases of representation but rather for comparison and for conceptual variation (Dey, 1999).

The collection and analysis of the data occur concurrently in GTM (Gouling, 2002). The cyclical nature of data collection, data analysis, memoing, theoretical memo creation, and category refinement is fundamentally what gives GTM the ability to create theories that are grounded in the reality of the study subjects (Oktay, 2012; Strauss & Corbin, 1998). A diagram illustrating the processes involved in GTM is found below in Figure 3.

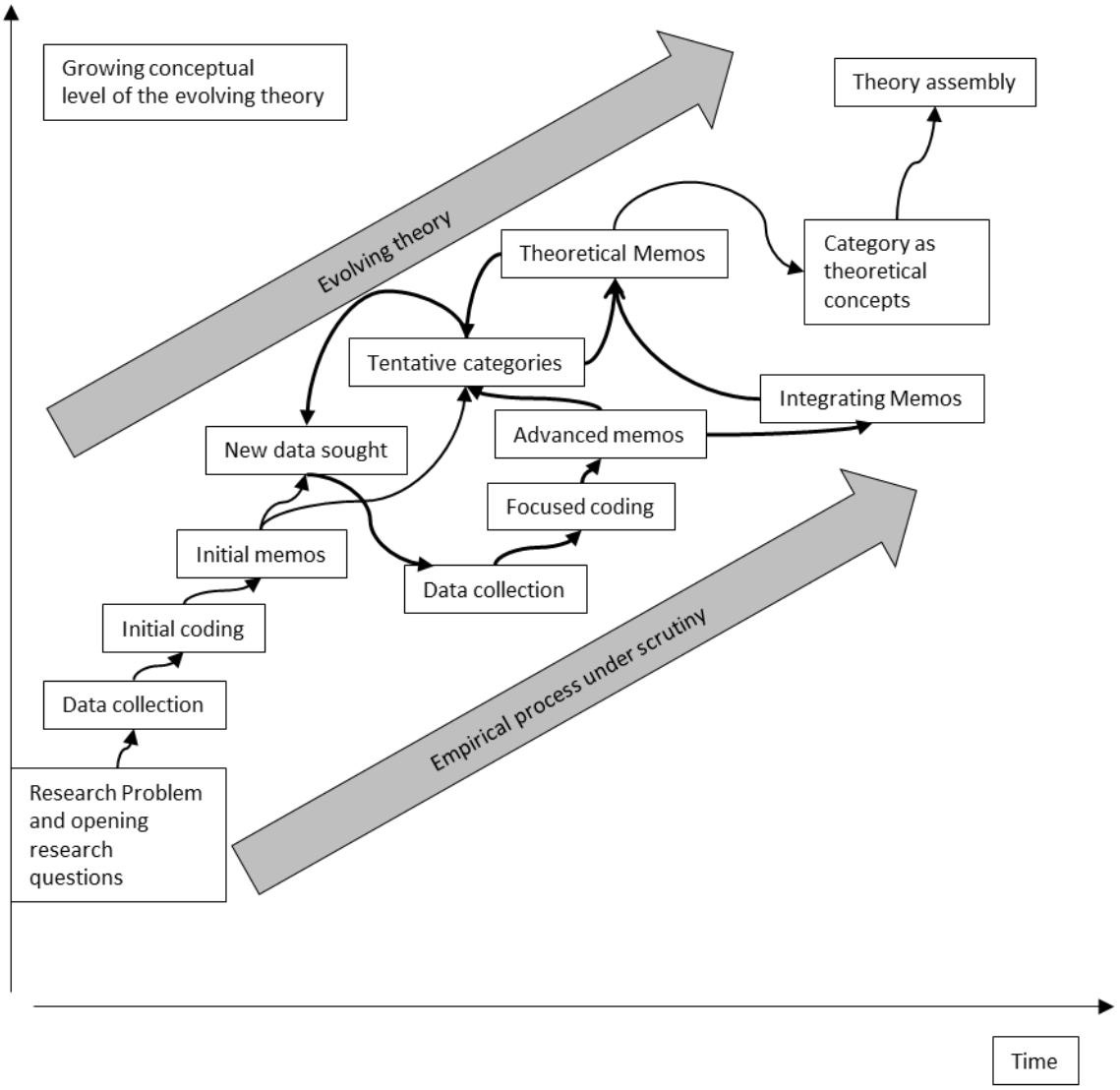


Figure 3 - Process of Grounded Theory Methodology
Bold lines represent components that re-occur in multiple cycles
Adapted from: (Charmaz, 2006 in Oktay, 2012 p. 89) and (Strübing in Bryant, 2007 p. 595)

The adherence to the cyclical nature of the process results in data that draws from many different relevant sources. The theoretical concepts have a basis in real phenomena as the researcher contemplates and explores the alternatives that can support or discount their tentative theory construction (Strauss & Corbin, 1998).

The usage of memos, both theoretical and observational, is another characteristic of GTM (Gouling, 2002). A memo is "the researcher's record of analysis, thoughts, interpretations, questions, and directions for further data collection" (Strauss & Corbin, 1998 p. 110). They are used to organize the researcher's ideas surrounding the study so that they may later review and sort them to uncover concepts. The researcher can then begin to group these memos into certain concept groups that share a linkage to each other; based on similarities or differences, or based on substantive connections (Dey, 1999). The researcher examines these concept groups to reveal explanations about the phenomenon under study, and then challenges their construction of understanding by attempting to discover instances where agreement or disagreement could occur. The cycle of data collection, analysis, and theory construction repeats until the researcher reaches 'theoretical saturation'. Theoretical saturation is "the point in category development at which no new properties, dimensions, or relationships emerge during analysis" (Strauss & Corbin, 1998 p. 143). At this point the researcher needs to re-examine their work once again, to ensure that as much novel data has been collected as possible. "Once the researcher is convinced that they understand what they see, can identify it in many forms, and it appears culturally consistent, then the category may be considered saturated and sampling may cease" (Bryant & Charmaz, 2007 p. 243). The linkages and relationships between these saturated categories are then examined by the researcher to present a theory that explains a phenomenon (Oktay, 2012).

The last step in GTM is theory quality assurance. "The real merit of a substantive theory lies in its ability to speak specifically for the populations from which it was derived and to apply back to them" (Strauss & Corbin, 1998 p. 267). To Oktay (2012), a valid theory is one "when practitioners who work with the

population I studied find my findings consistent with their experience and can see how they can use the theory in practice" (p.120).

4.1.1 Semi-structured Interviews for Phase 1

The interview format chosen as the best suited for this study was semi-structured. This format was chosen because it provided the following beneficial characteristics:

1. Ensured data received was focused on study topic.
2. Gave participants the ability to think, respond, and delve into ideas that they may not think about often.
3. Some brevity was ensured.
4. Gave participants and interviewer the ability to develop ideas that each brought to the encounter.
5. The interviewer had the ability to explore emerging concepts with the participant's narrative and with the collected data as a whole, constantly.

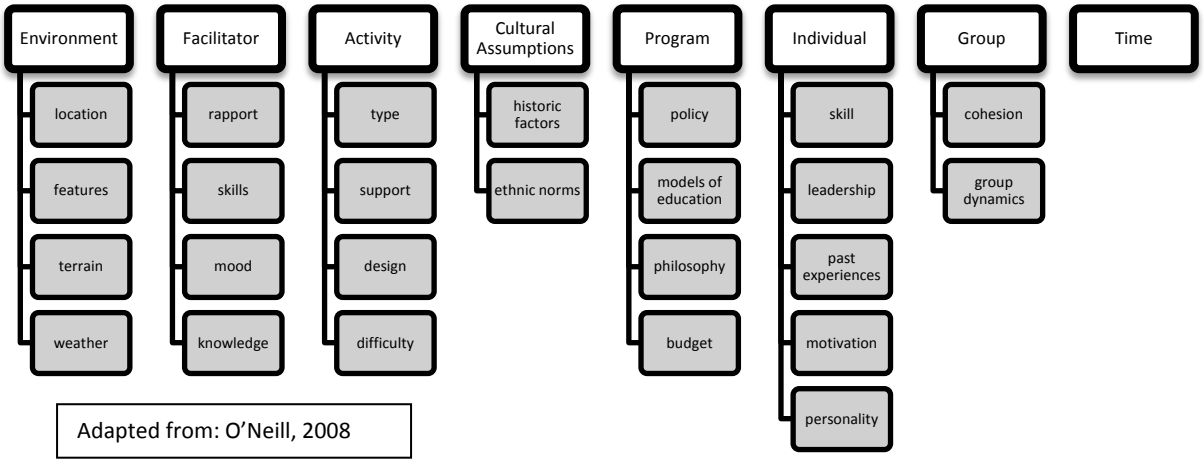
The interviews were conducted at the participant's workplace or at a public location where audio recording and privacy could be successfully maintained. The interview lengths ranged from 40 minutes to 90 minutes with an average of about an hour per interview. The interviews audio files were transcribed as soon as possible to maintain a written record. The interview participants read and signed an information letter and consent to participate form; both cleared as acceptable by the Office of Research Ethics. A copy of the information letter and consent to participate form can be found in Appendix 1

A general sequence of questions was asked, found in Appendix 2. The interviews commenced with general discussions about being an environmental educator, how they arrived to this point in their career, and the barriers they perceived to environmental education. Additionally, the participants were

asked some questions relating to the programs offered, the types of students attending the programs, and what assessment they performed on their programs. The interview participants were encouraged to elaborate on themes that they felt communicated their perceptions of being an environmental educator, the issues surrounding environmental education, and the solutions they could offer to some of the barriers they identified.

As well as semi-structured discussions with the participants, I utilized an image interpretation exercise asking the participants to examine and comment on a concept map derived from the work of O'Neill (2008) on outdoor education. A copy of the image is shown in Figure 4.

Figure 4 - Concept Group Interpretation Page



The image interpretation diagram was used to elicit the responses they may have concerning the many factors an environmental educator may face in their daily practice. Like the interview script, the image interpretation page was utilized more often in the initial part of the research phase, when concepts and themes were yet to emerge from the meagre data. As the data analysis progressed, theoretical sampling changed the focus of the discussions in order to support or discount the emerging categories. Questions relating to the image interpretation page consisted of asking the participant to examine, and think about

how the concepts on the page were organized. They were then asked if they thought any of the 'boxes' or concepts should be larger, indicating an increase in its significance to their professional practice. Additionally, the participants were asked if they felt the concepts listed were sufficient, whether any concepts were extraneous or missing. Lastly, the participants were asked if they had any thoughts initiated by the concepts listed. The image interpretation page proved to be very good in eliciting thoughts from some of the participants that did not arise in the earlier conversations. The page also provided the participants the ability to write upon it in order to further illustrate their perceptions and thoughts. Several participants took the opportunity to re-draw lines and add new boxes e.g. visiting adult.

4.1.2 Unstructured discussions

Additionally, a number of unstructured conversations with fellow students, classroom teachers, environmental education volunteers, and my thesis supervisor provided different view points and information to help mould the data into a more comprehensively representative theory. Written information, in the form of manuals, workbooks, and textbooks, obtained from organizations dedicated to increasing environmental consciousness in society, were also consulted.
The sum of insights from these interviews and other sources, both in person and written, helped to shape the theory into its present form.

4.1.3 Participants

The research investigated the perceptions and actions of professional environmental educators in Ontario. It was therefore prudent that the participants be involved in environmental education in a full-time paid capacity. The participants were chosen by a purposeful sampling method consistent with grounded theory practices (Oktay, 2012).

Participants were recruited using online advertisements in the newsletters of the Council of Outdoor Educators of Ontario (COEO) and the Ontario Society of Environmental Educators (OSEE). Initial failure to secure participants in this passive recruitment activity resulted in adopting more active recruitment methods such as direct contact with environmental organizations (e.g. conservation areas, non-profit organizations) via telephone and email. The nature of grounded theory, with its repetitive and simultaneous cycles of data collection and analysis, resulted in no predetermined sample size for the interview portion of the study.

A total of 14 people were interviewed for the qualitative portion of the study. The interview participants were all employed in some fashion as environmental educators teaching students in primary or secondary grades in Southern Ontario. None of the interviewees were currently classroom teachers. All the participants had interactions with hundreds of different students within one school year; the number depended on the class sizes and the number of trips conducted by the school groups. Some participants also educated groups not associated with schools, but these interactions are a minor part of the environmental educator's weekly work. Of the 14 interviewees, five were employed at conservation authority centres, six in environmental education centres managed by a school board, two in a non-profit organization with environmental education mandates, and one was employed in an in-school visiting program whereupon they travel to the schools to present environmental education programs. The participants' experience as environmental educators ranged from 1 year to over 25 years. Many participants expressed that their choice of career was due to unstructured childhood experiences in the natural world during family or school outings. All expressed a visible passion for education, the natural world, and the goal of environmental education.

4.2.0 Qualitative data analysis

The analysis of the qualitative data was conducted simultaneously as the data was collected. Grounded theory is built upon the idea that analysis and self-reflection over the data, while the data is being collected, is a vital element in constructing a quality study and theory (Bryant & Charmaz, 2007; Oktay, 2012). Memos were used to remind me of important thoughts and to document the progression of the study (Davies, 2007; Oktay, 2012). The use of memos allowed me a location to examine, expand, and integrate ideas generated throughout the project thereby enabling me to better understand not only the theory but the viewpoints presented to me (Bryant & Charmaz, 2007). Interviews were audio recorded and transcribed with periodic pauses to memo as needed (Bryant & Charmaz, 2007). Field notes and personal reflections were indexed by interviewee and date (Davies, 2007). The evolution of the theory progressed as the interviewer's preconceptions were challenged and new understanding was established with the topic (Davies, 2007; Oktay, 2012). This personal idea evolution continued throughout the study.

The interview transcripts were analysed line by line to develop a range of possible codes. This first stage of grounded theory analysis is called Open Coding (Oktay, 2012). Open coding involved reading and listening to the interviews with the intent to identify specific words or phrases that evoked an emotional or conceptual response from the participant. Additionally, larger pauses within the interview, when the participant was thinking about a concept or question, also indicated that potentially important messages were going to follow. The use of analogy or personal recollections also became a primer for discovering relevant messages (Gouling, 2002; Oktay, 2012; Strauss & Corbin, 1998). A line-by-line coding of the field notes and interview transcripts allowed me to focus on the content in detail without trying to understand the entire transcript or interview experience 'in one bite' (Bryant & Charmaz, 2007).

Concept construction was performed by looking at the selected codes for each interview and comparing them to the codes derived from previous and subsequent interviews. Each interview was read or listened to multiple times throughout the qualitative analysis in order to further support or oppose the inclusion of a certain code within the concept level of construction (Bryant & Charmaz, 2007). Categories were constructed with this recognition of similarities between the content of the narratives and between the interviews as a group (Gouling, 2002; Oktay, 2012; Strauss & Corbin, 1998). The created categories were then refined using axial coding.

Axial coding provided an alternate manner in which to view the information. It involves the examination of the context, the conditions, and the consequences for each identified category in relationship with other categories (Gouling, 2002; Oktay, 2012; Strauss & Corbin, 1998). The researcher, for each category, asks questions such as 'what causes this category to exist?', 'What intervening conditions exist?', 'What are the consequences of this category's existence?' and 'What is going on here?' (Oktay, 2012). The explicit focus of examining each category in this manner helped me understand the dynamics and drivers between categories.

The interviewing process continued until the novelty of information was exhausted, such as when interview participants were stating narratives that were repetitive with previous interviewees' statements. The lack of new theoretical information is termed theoretical saturation and it refers to the "stage at which categories seem to cope adequately with new data without requiring continual extensions and modifications" (Day, 1999 p. 117).

I utilized different question foci at this point to direct the narrative toward areas that could have opened up new concepts. An example is that in the later part of my interviews I came to regard the image interpretation section to be of minor significance. I therefore allotted more time to the questions

dealing with the relationship the educator had with their co-workers, their centre managers, and the governing body of their employment. While this change did evoke some new aspects within the story of environmental education in Ontario, it also drove into areas that this study was not designed to analyse.

In an effort to ensure validated qualitative research, once the interviews were completed and I felt that theoretical saturation was complete, I emailed the participants a copy of the most congruent points I had discovered. I asked them to examine the list and contact me with any discrepancies they felt did not clearly describe the situation. No participant disagreed with my congruency points. Several agreed with the points and communicated support for the legitimacy of my research. This method of peer debriefing reduces researcher bias in a study by giving the study participants a further voice in the data interpretation (Oktay, 2012).

Additionally, I attempted to triangulate my data with non-formal interviews and interactions as much as possible. I attempted to partially immerse myself into the environmental educator sphere by presenting preliminary findings at the Council of Outdoor Educators of Ontario (COEO) Annual Conference in both poster and oral presentations in Bracebridge, Ontario on September 21-23, 2012. During the COEO conference I talked to many outdoor and environmental educators. The conference was an excellent venue for triangulation activities because there was a vast spectrum of people with varying experiences in environmental education. I also authored a paper for the trade journal of COEO, *Pathways*, summarizing my presentation and asking members to engage with me about the topic. I also wrote another article for the Ontario Society of Environmental Educators' (OSEE) *Interactions* journal; again attempting for meaningful interactions from its members. Finally, I conducted a workshop at one conference educating attendees about environmental education evaluation techniques. These

immersion techniques provided triangulation, prolonged engagement, peer debriefing, and member checking strategies that minimize threats to trustworthiness (Oktay, 2012).

4.3.0 Categories Revealed from Phase 1

The semi-structured interviews and the concurrent analysis resulted in the following four major categories or themes.

- Performing assessment
- Programming
- Increasing consciousness
- Visiting teacher influence

A description of the concepts that construct each of the categories with representative quotes from the interviews is found in the sections below. The reference 'EE' denotes environmental educator.

4.3.1 Performing Assessment

The category of Performing Assessment was derived from several concepts that revealed that the educators performed assessment by utilizing only a limited number of strategies. It was evident early in the data collection process that the topic of assessment would be a source of some variation between centres. The sub-themes of justification for evaluation, subjective evaluation methods, and objective evaluation methods were exposed.

4.3.1.1 Justification for Evaluation

A diversity of justifications for performing assessments was heard. Some of the participants explicitly stated that formal assessments were undertaken primarily to ensure further funding and rebooking of groups.

> "Well, it's [survey] not asking very deep questions. It's 'did we meet your expectations? Was this program a good program?' Those type of questions. I would say they are more marketing questions than it does with environmental consciousness." (EE-3)

> "…we send surveys out to the teachers, 'cause teachers are… teachers really drive our business. Like if the teachers decided not to come, like we'd be in the red, you know. … They [adults and leaders] are the ones that you want to make happy, right? So I guess doing as much as possible to make them happy and comfortable." (EE- 7)

The representative quotes above illustrate that there is a strong linkage between the visiting teachers' satisfaction in the program and the necessity or desire to perform an assessment.

Some also spoke of the need to assess the programs for the reasons of lesson improvement or to fulfill community needs.

> "At the end of each visit, when they [class] are leaving, I sit and chat with the visiting teachers… I basically say 'What went well? What can we do better?' … because that is the only way we are going to improve. So they will fill us in on the programs they liked … or if they thought not enough time was given… or those kind of things." (EE-9)

> "We really say to them that we want to develop our programs so that they are meeting their needs." (EE-10)

Again, it is clear in the quotes above that the visiting teacher or adult are the primary reasons to execute an explicit assessment task.

4.3.1.2 Subjective Evaluation Methods

The needs of the pupils, assessing their experience, were determined utilizing observational subjective assessments, colloquially termed the 'gut-check'. The "gut-check" is the one universal assessment tool

most educators rely on to determine the quality of their instruction. There were no interview subjects that stated that they did not depend on their own judgement and expertise as the primary method of understanding the effectiveness of their programs or lessons.

> "Generally, it's the typical old good feeling at the end of the program." (EE- 5)
>
> "And with experience [teaching], you really do have a good feel … whether or not it's working. " (EE – 4)

If a group leaves the facility with smiles on their faces and comments like 'Today was the best day ever!', then most educators feel that it has been a good lesson.

> "The smiles, the hugs, or when a kid goes 'Oh, that makes sense!'." (EE-13)
>
> "I hear on a regular basis, 'This is the best field trip I've ever been on in my life'... and then the kids got this big grin on his face and they're doing whatever." (EE-8)
>
> "When they leave, after doing the activity, they are happy, excited about it… I guess [it is] the unrealistic feeling that everyone is happy about it." (EE -1)

They stated that their determination of what happened in a lesson was extremely important in molding their future actions and lesson delivery. This reliance on observational and informal assessment methods led to an understanding that in reality the quality of environmental education in Ontario is determined by the collective cognitive and affective judgements of the educators toward their pupils and their own practice. While the 'gut-check' may be an assessment tool used by the majority of educators, I knew that some centres did undertake an effort in utilizing some sort of objective measurement tool in their practice.

4.3.1.3 Objective Evaluation Methods

The most common objective assessment tool used by educators is the survey. These surveys are usually administered during the departure phase of a group or emailed to the group leader. Completion rates for surveys were reported as low for the majority of interview participants.

> "Actually, we used to do that, [send out surveys] … and hope that they [visiting adults] send it back, but we got a very little return rate…" (EE- 9)
>
> "The problem … people do not fill out surveys." (EE- 5)
>
> "It might be best to give it to the teacher and collect it before they go… but if you send it back with them, you might never get it." (EE-2)

Only one participant reported a positive return rate of almost 100%; this respondent was unaware of how they obtained such a high proportion of responses, and was amazed by my statement to them that many other centres receive a very low return rate on their surveys.

The forthright nature of some of the environmental educators interviewed indicated that they are aware that assessment and evaluation should be performed more frequently and with better measures. Many said that they just did not have the time, resources, or understanding of assessment tools to perform assessments other than surveys to teachers and 'gut-checks' for the children.

4.3.2 Programming

The theme of programming contained the sub-themes of programming considerations, explicit curriculum connections, implicit curriculum usage, and educative outreach.

4.3.2.1 Programming Considerations

Participants stated that successful programs simultaneously juggle curriculum linkages, teacher characteristics, student characteristics, time constraints, cultural norms, risk aversion, assessment and location (climate and weather) all at the same time. The discussion about program design was stimulated by examining and speaking about the image interpretation page offered to the educators by the investigator.

> "There are so many parameters that you have to be thinking about. And you are constantly juggling." (EE- 1)
>
> "These are all really, really important. And umm… there are so many things that can affect how delivery takes place. I can't think of anything to alter." (EE -2)

The level of multi-tasking necessary by an environmental educator during a program often induced a triage mode of experience for the educators. They felt that they were constantly responding to changes instead of having control over the program.

4.3.2.2 Explicit Curriculum Connections

Most educators undertake programming with formal curriculum linkages.

> "I would say that the biggest focus I have seen ummm… the focus toward making programs and making sure that the programs are totally in line with the curriculum. So I guess in terms of planning programs, I find myself going to the curriculum first and then seeing what in the curriculum I can address by students coming out to the environmental centres." (EE-1)
>
> "We will target based on the grades that it appears in, in the curriculum. So because if you offered something that was not in the curriculum based for another grade level… not in there in the curriculum, the teachers will not come. It is what I have seen. They cannot justify that particular field trip. It has to be linked to a curriculum." (EE-2)
>
> "So we figure out which pieces within the curriculum really connect well with what we are trying to umm… the experience that we are trying to create here. … So teachers feel that they are able to knock off all these curriculum pieces by coming down and experiencing our programs." (EE-6)

The effect of the mandated curriculum on program delivery is fundamentally important to environmental educators. The explicit curriculum dictates the content of the lesson; the surrounding environment dictates the manner of the lesson. The participants stated that the visiting teacher's curricular preferences were the major determinant of which program would be offered to the students.

> "So my key curriculum links, this is how we get the teachers to bring the kids out and the parents to agree that it's important for the kids to come out." (EE-5)
>
> "We have certain programs that the teacher has signed up for… and yes, we have to cater to the program, and yes, we have to hit those curriculum expectations." (EE-14)
>
> "Increasingly we have field trips that say 'what strand is this going to do for me in the curriculum?'" (EE- 8)

4.3.2.3 Implicit Curriculum Usage

Many educators interviewed stated that they deviate from the curriculum and program as advertised, if a 'learning moment' or unique experience presents itself during the lesson. It was felt by many that the deviation was a fundamental part of being educated about the environment as it enables the pupil to understand that the natural world communicates to them in ways that are different than human communication. Many educators spoke of the need to 'slow down and listen to the natural world' as an increasing part of their program delivery. They also spoke of the need for the pupils to begin to build relationships with the natural world and a few spoke of their efforts to create activities that blended the curriculum content with the delivery of place making.

4.3.2.4 Educative Outreach

One of the most prevalent comments communicated by the interview participants was that they felt that sometimes they do not have enough time to build a relationship with the pupils before they depart from the centre. This minimal socialization was felt to be a problem because students would not feel

comfortable in communicating to the environmental educator prompts that would enable them to better customize or energize their programming.

Ironically, educators and their centres do not regularly perform pre-visit and post-visit activities in the schools with the participating groups. Both pre- and post-visit activities could increase the social time between pupil and educator to build a shared understanding. Interestingly, the educators felt that having schoolyard or local programs within each community would be an important part of the education of a pupil.

> "I would say that school greening would be the first step." (EE-2)
>
> "Or into schoolyards to do lessons." (EE-14)

Their determination that schoolyard programs would help increase the pupils' environmental consciousness was sadly not often followed by action to provide those programs. The lack of resources and time were stated in being the largest barriers to providing these programs to local communities and the schools they service.

Many interview participants also stated that it is only when the class steps off the bus that they begin to reassess the suitability of the program for that group. Table 6 below outlines some of the different types of information that could be vitally important for an environmental program's suitability for a group:

Table 6 – Desired pre-visit formative information

Information	Examples	Reasoning
Available clothing issues	1. lack of appropriate clothing for weather 2. religious or ethnic norms e.g. (jilbab clothing)	1. Impossible to learn if primary comfort needs are not fulfilled 2. Cultural sensitivity
Previous experiences of students	3. overnight camps, camping or hikes with family previous 4. visits to centres 5. environmental consciousness level	3 – 5. A group with high comfort in natural environments can be trusted with more advanced concepts or activities
Previous experiences of visiting teachers / adults	6. previous visits to centres 7. comfort with activities outdoors 8. enthusiasm with bringing class 9. fears with bringing class 10. environmental consciousness level	5 – 10. A teacher with experience in the outdoors and/or leading students in the outdoors is more capable of engendering positive reinforcement toward the experience of being within a natural environment.
Curricular Positioning	11. current unit of study 12. previous units of study 13. future units of study	11. Direct integration with classroom instruction 12. Reinforcement and integration of previous knowledge 13. Priming of future classroom instruction
Medical	14. Medical considerations (allergies, phobias, disabilities)	14. Risk management determination and inclusion measures

As Table 6 indicates there are many considerations and compromises an environmental educator has to make during the first few minutes of a program.

4.3.3 Increasing Consciousness

The theme of Increasing Consciousness encompassed the sub-themes of immersion, etiquette, repetition, and emotional response.

4.3.3.1 Immersion

All the interviewed participants felt that it is the unstructured immersion in the natural world that truly increases a person's environmental consciousness.

> "So the best thing we can do is just get them outside and have them breathe and smell, and play… and get dirty… and at the same time connect the water to what they drink everyday." (EE-13)

> "Umm… having them figure out… different things… explore the trees themselves, even if they do not know [what] the name is… just feel the tree, smell the tree… see if it reminds them of anything… that sort of stuff." (EE- 3)

The lack of structure was thought to enable the pupil to interact with the non-human entities surrounding them in a manner that spoke of reciprocity and not power over the entity. Of course, the pupil has the ability to utilize the lack of structured activity, and supervision, to destroy or harm the entity, but then the pupil would have to deal with the consequences of their action. Not every plant or animal reacts equally to the same interaction (touching or ripping); some will react with noxious results for the pupil. In order to mediate the interactions between the pupil and the natural world, an experienced person can be useful.

4.3.3.2 Etiquette

The participants all felt that by giving a person the chance to engage in the natural world, with the etiquette modelled by a person in love with that environment, environmental consciousness is increased.

> "So I hope I can model a love of nature. How you act and being very respectful with the animals… modelling how to act…. They'll remember you carefully holding or if they are out digging in the river… making sure that crayfish, every few seconds, you know, put it back into the river… then they begin to realize." (EE-4)

> "They need to have the experience facilitated to them because [if] you let people loose in an area without understanding what they are doing… they're either not going to do any exploring or they're … going to be overwhelmed with what they are doing… particularly with people who do not come from backgrounds from where they've had opportunities to explore large environments on their own." (EE-5)

The presence of an experienced person, modelling a personal etiquette and demonstrating the skills necessary to maintain respect for their environment was deemed to be very effective by the participants in increasing a person's environmental consciousness.

4.3.3.3 Repetition

While immersion was deemed to be vital, another important factor revealed in the interviews was the incidence of experiences. The participants felt that consciousness building was best accomplished with the repetition of experiences that vary in depth and cognitive focus.

> "I think immersion is important…. Just as important as the actual lesson plan. Once they connect multiple times to a similar area… then I think it gets more engrained. " (EE-7)
>
> "It's constant repeated exposure that they need in order to increase the environmental consciousness not just … most wonderful program in the world, you do it once… they are going to remember it, but they are not going to make the connection." (EE- 5)

4.3.3.4 Emotional Response

The necessity for education to be repetitive and immersive was coupled by the interviewed educators with a belief that experiences which evoke an emotional response in the participant are superior in effectiveness.

> "So for me, the first thing we have to do is to get kids to feel that they are a part of it… then eventually they will grow a sense that they have a responsibility for it, and understand the power that we, we humans have… to alter change, affect, the world out there." (EE-12)
>
> "… so they develop that love with nature. Because without that love, without that connection, I don't think there's [awareness]." (EE-2)

The educators identified depth of immersion, repetition of experiences, and emotional response to be the characteristics that stimulate an increase in a person's environmental consciousness.

4.3.4 Visiting Adult Influence

The theme of Visiting Adult Influence is composed of the sub-themes of direct influence, attitude of visiting adult, and visiting adult environmental knowledge.

4.3.4.1 Direct Influence

The interviewed participants expressed the view that the visiting teacher and visiting adults (parents, chaperones) were instrumental in whether or not a student has the chance of experiencing a successful experience of environmental education.

> "They [teachers] are the deciding factor as to whether or not a trip is a success or whether or not it comes at all." (EE-10)

> "Most kids have been vetted … if they are having a tough time at school then they do not get to come. Some at risk kids never get to come." (EE-12)

The influence of the visiting teacher or adult in determining even the participation of the pupil in an environmental education experience is alarming. If an adult prevented a child from reading or learning mathematics there would be incredulous comments; a pupil restricted from learning about the natural world is considered commonplace. This 'vetting' that occurs is in response to the classroom teachers' and administrators' inability to understand the dynamic nature of environmental education and the response children have when 'set free'. They feel that a pupil that is hard to manage in a classroom will be especially hard to control out of the classroom. It is a reality that pupils, young and old, do react to the lack of walls during an environmental experience with more exuberance than seen in the classroom; however, once the organization and routine has been established, there are fewer behavioural problems than prophesied. As one educator said, "Usually the classroom 'monsters' become the leaders and best assets to the program."

4.3.4.2 Attitude of Visiting Adult

The attitudes of the visiting adults while in program are also extremely important. Environmental educators spoke of the attitude of visiting adults:

> "I have had teachers come down that are really engaged. And I think the students feed off their level of excitement." (EE- 6)

> "Some teachers are very passive in their experience… not to say they are not observing in their own way… and there are teachers who are very engaged with the program… and then there are teachers who are just completely hands-off and completely cut-off and… I do not know what they are thinking." (EE-14)

The level of educational engagement of the classroom teachers varies, from high levels of interest to very low levels. The level of interest often manifests itself in the behaviour of the visiting adult; from disruptive to supportive.

> "…sometimes those teachers that are holding back … or just aren't paying attention to the program, the students take that as a sign that it is not important, we're not going to get tested on this… it's not important for us to learn. … They [students] really do notice what the teachers are doing." (EE- 3)

> "And if the teacher doesn't think it's a successful activity, it's going to trickle down to the students. The teacher's engagement reflects on it. They have great influence on their students."(EE- 7)

Disruptive behaviours included texting and chatting with others while the environmental educator was attempting to explain a concept or rule. Environmental educators expressed dissatisfaction with this behaviour and felt that it was disrespectful of their efforts in education.

> "…they are chatting in the back while you're trying to lead the lesson. They really are not adding anything to the day." (EE- 10)

> "So that goes for our in-class programs… teacher's having a conversation with another teacher in the back of the room… the students think, 'oh, well... doesn't really matter…

> this information.' And I have had other teachers take notes as I am talking, and they will review this material later on and [the] students are much more often engaged." (EE-3)

The attitude of the visiting classroom teacher and adult chaperones was often deciphered by the environmental educators depending on their physical position within the class group. Adults positioned at the back of the group were more often considered disruptive than those that positioned themselves in the middle or beside the environmental educator.

Additionally, some environmental educators spoke of visiting teachers whose attitude toward the outdoor educative trip was as a 'holiday'.

> "[some teachers think] 'So great, we are going on a field trip and there is a teacher that is going to take the class… I'll just stay in the back of the line and chill out… text for the day.'" (EE-10)

Conversely, the environmental educators narrated situations where the visiting adult was so engaged in the topic under discussion that they, through the gift of additional age, answered questions the environmental educator posed to the visiting group. This was also seen as a troublesome behaviour because the environmental educators wanted the younger participants to uncover the answer using inquiry and self-discovery. Once an answer is revealed, many educators felt that the students would no longer seek the answer. These overzealous adults were considered the minority of the adults that engaged in disruptive behaviours.

The highest-regarded classroom teachers were individuals who displayed a genuine enthusiasm toward the experience. They maintained a positive attitude despite environmental setbacks (rain, cold, heat). These individuals placed themselves beside the environmental educator and utilized their experience with the dynamics of the class to ensure proper learning skills were being used in the group.

> "So much of it [teacher involvement] is where they are coming from and what they value and… whether or not they are outdoorsy people." (EE- 10)

> "The teachers that are getting right into there [a marsh], the students… because the students are much more comfortable than they are with me… they'll get in there and follow the teacher much quicker." (EE-3)

4.3.4.3 Visiting Adult Environmental Knowledge

The educators also frequently noted that visiting teachers were sometimes ill equipped for the programs they enrolled in.

> "There is a very wide range of teachers. There are some that say "do I have to change into boots?" so they will stay in their shoes and stay on the dry patch, just watching to make sure we don't have any behavioural issues… to the other extreme of teachers that come in their own rubber boots and are right down there, in the mud." (EE-3)

> "The number that come off the bus with high heeled shoes…" (EE-10)

The lack of preparation for the outdoor experience directly stated to the educators an unconscious form of communicating that the visiting teacher was not overly interested or experienced in this form of pedagogy. The environmental educators' attempt to provide the visiting teacher with the equipment they may require, but often they do not have the resources to provide for all shoe and clothing sizes.

Overall, the environmental educators interviewed expressed the view that many classroom teachers are uncomfortable with the idea of being outdoors with their class.

> "They [classroom teachers] are asking for support because they do not know how to do it… in their own schoolyards." (EE-13)

> "All our teachers say that they are not comfortable going into nature or the environment, without an expert." (EE- 8)

> "To me it would be ideal if the teacher came down and conducted a class without using a facilitator. That means that they feel confident about going outside on their own and not need another educator there." (EE- 6)

The discomfort of visiting adults with being outdoors with their pupils increases the work load on the environmental educator. Since the comfort and continued good will of the visiting adult will likely result in attendance the following year, some environmental educators and centres have made it a priority to cater to the needs of visiting adults. One centre even advertises to visiting adults that 'we will do everything for you; you just bring the class'. The centre provides the option for overnight supervision of the pupils so that the visiting adults can enjoy their stay in solitude. The problem with this 'hands-off' approach is that the pupil never associates the experience with the most familiar adult present, the visiting adult. The pupil has an isolated experience, with adults that are strangers, in a strange environment.

4.5.0 Theory Presentation derived from Qualitative Study

The results of the interviews showed that effective environmental education programs are composed of the following elements:

- Strong communication between the visiting teacher and the environmental educator prior, during, and after the trip to a centre.
- Programs are constructed with links to the provincial curriculum with ample time allocated to unstructured discovery-based activities.
- Programs and centres are assessed internally against the explicit short and long term objectives established by the centre's workers.

Two diagrams are presented below to describe the interconnected nature of the theory. The first is a diagram detailing a basic environmental education system in Ontario. The second diagram details a more advanced system. Every centre in Ontario can be placed somewhere between the basic and advanced systems. An explanation of the complex nature follows the diagrams.

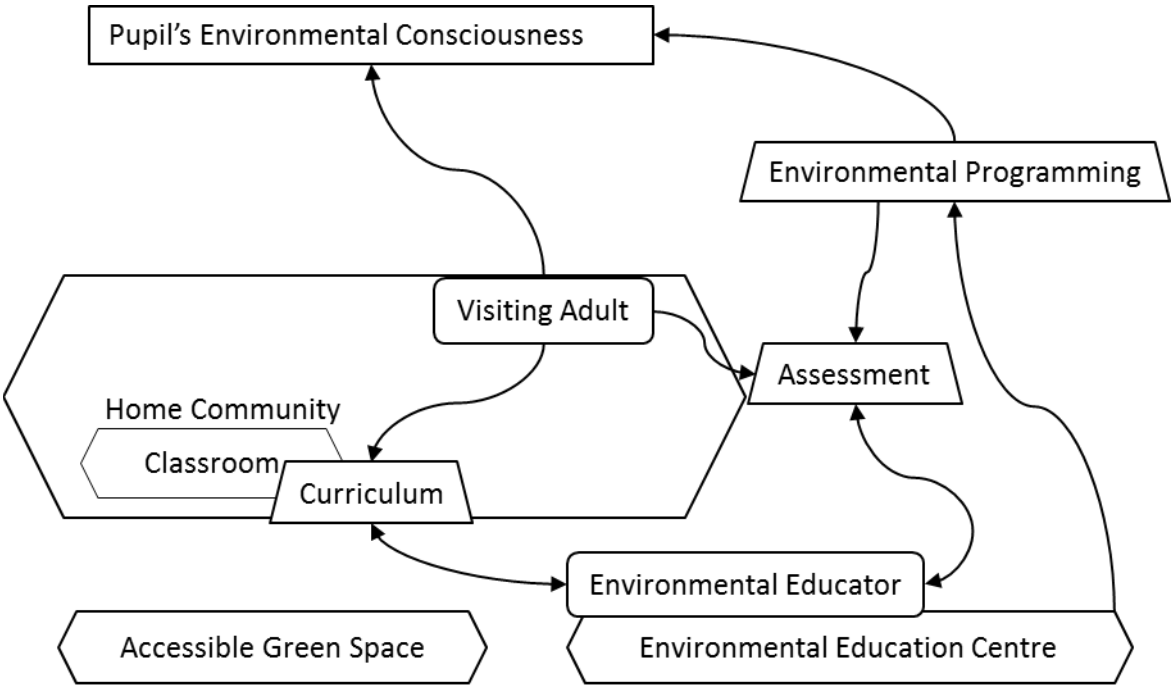


Figure 5 – Graphic Representation of a Basic Environmental Education System in Ontario

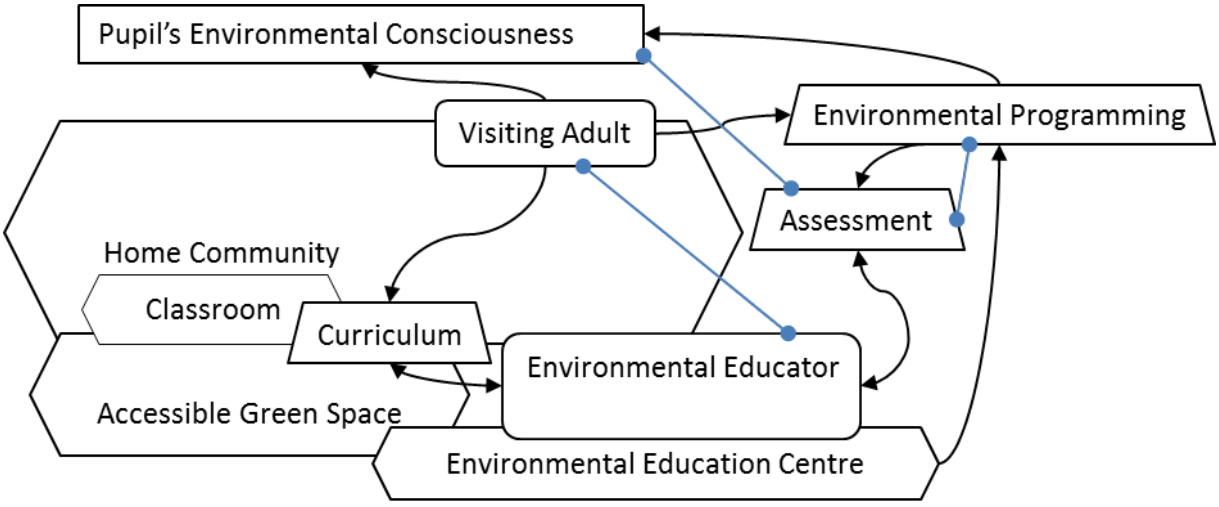


Figure 6 – Graphic Representation of an Advanced Environmental Education System in Ontario

A basic environmental education system is described by the disconnection between the classroom, the accessible green space, the environmental education centre, and the outcomes of the programming.

Firstly, the classroom is physically located away from the environmental education centre, resulting in the pupils being bussed to the centre for programming. The classroom is also dislocated from green spaces. The visiting adult, the home community, and the pupils cannot easily access natural spaces on a regular basis. The built form and historical impediments concerning the location of the classroom could be the basis of this dislocation. The visiting adult is firmly rooted in the home community with little exposure to experiences of the outdoors. The adult establishes the curricular links to be covered in the environmental lesson. Their attitude has a positive or negative effect on the program experience of the pupil and therefore affects the level of environmental consciousness of the pupil. The environmental educator constructs programming primarily driven by the curricular linkages and the results of visiting adult satisfaction assessments. The environmental educator has little interaction with the visiting adult or the pupils before or after the program. The educator utilizes a subjective informal assessment of the program to evaluate its success with loosely termed institutional goals.

An advanced environmental education system (Figure 6) is described by a connection between the classroom, the accessible green space, the environmental education centre, and the outcomes of the programming. The classroom, green space, and environmental education centre are physically integrated together to provide an immersive environment for pupils, adults, and environmental educators. The visiting adult has some experience with the natural world outside the home community. The environmental educator has links with the home community and communicates with the visiting adult regularly. Together, the visiting adult and the environmental educator plan out the environmental programming with the pupils' needs and curriculum linkages in mind. There is objective external and internal assessment of the program and the level of environmental consciousness of the pupils. There is also informal subjective assessment by the environmental educator evaluating their own practice and the goals of the centre. The attitude of the visiting adult positively or negatively affects the environmental consciousness of the pupil.

The advanced environmental education system is more effective than the basic system due to the interconnection of physical, pedagogical, and human elements. Communication is increased between the visiting adult and environmental educator. There is also better data obtained from formal objective assessments that are driven by the goals of the centre. The pupil's environmental consciousness is more likely to increase in an advanced system than a basic system because there is an increased incidence of experiences with the natural world, the pupil's needs are addressed by both visiting adult and educator, and the programming offered to them has been constructed with metrics that are validated objectively. Additionally, the environmental education centre is a part of the community and may be utilized by others in the community resulting in its continued maintenance and possible program expansion to sectors unreached by the centres in the basic system.

4.6.0 Discussion of Phase 1

4.6.1 Performing Assessment

The statements of the interview participants strengthened the researchers' views that despite environmental education centres, and their programs, being established for over 30 years, there is still minimal meaningful objective program evaluation occurring (Carleton-Hug & Hug, 2010). The type of evaluation that is occurring in Ontario's environmental education centres appears to be based on common sense individual practices akin to checking if one's tea water is boiled. Effective and meaningful organizational evaluations have crucial differences from these individual evaluation tasks. Posavac and Carey (1997) describe some of the differences. Firstly, organizations are constructed of not only individuals, but other employees or team members. The responsibility for evaluation rests on all the members of the organization, not just one member. Second, the time span between observation and

judgement is usually very large in organizations. Individuals judging the temperature of water observe and judge almost immediately, organizations need to evaluate a program or service hours, days, or weeks after the observation. The length of time expended between observation and judgement can lead to a blurring of the important characteristics or contributing factors. Thirdly, the nature of working in an organization is the division of work types. An organizational evaluation needs to account for the fact that there are multiple interpretations of the significance of each observation. An accountant may see only the costs in a spreadsheet detailing the activities of a women's shelter; a councillor may see the emotional support received in helping a certain number of women. Lastly, Posavac and Carey (1997) state that usually programs are funded by people other than the clients or recipients of the program. For environmental education, the costs incurred by a centre are usually paid off by funding from the tax paying public or from a caregiver. Posavac and Carey (1997) even address teachers explicitly with an illuminating statement: "although all nurses and teachers want to do effective work, in a sense their vocational well-being is more closely dependent on keeping the program funders happy than on keeping the clients satisfied" (p. 3). In the case of environmental education in Ontario, the "funders" could be considered the visiting classroom teachers and their administration, and the "clients" are the pupils participating in the activities.

In Ontario's environmental education centres the interviewees displayed a reliance on individual subjective 'gut-check' program evaluations, akin to the water temperature analogy, or on customer satisfaction surveys distributed to the visiting adults. Environmental centres could undertake objective organizational evaluation, but there are constraints. Researchers Carleton-Hug and Hug (2010) suggested seven different challenges to effective objective program evaluation, specifically for environmental education as a field:

1. Diversity of the field – “the interdisciplinary nature of environmental education effectively dilutes the accumulation of knowledge, making it hard for environmental educators to learn from the literature base” (p.160).
2. Lack of clear program objectives – A lack of clarity in the minds of environmental educators about the long-term and short-term goals of their centre and programs.
3. Need for formative evaluations – Many evaluations are summative in nature, ‘What is the immediate effect of the lesson?’ rather than a formative, ‘What is the long-term effect of the system of programs? ‘
4. Compressed time frame – Many evaluations occur in short term, day of completion surveys, rather than being longitudinal in nature.
5. Institutional resistance to evaluation – Environmental education does not have a long tradition of formal evaluation so there are personal, social, institutional, and political climates that need to be addressed before evaluation is accepted by all stakeholders.
6. Contextual factors – Environmental education operates in varying contexts of participant and community socio-economic factors. Evaluations need to be relevant and address these factors as opposed to utilizing measures district or region wide.
7. Confounding information sources – Environmental education centres present programs to a variety of audiences that have varying amounts of information at their disposal. Evaluation of the effectiveness of a centre-wide program is made more difficult if some of the participants have been taught incorrect information prior to arrival.

The barriers listed above were all evident in the interactions I had with the interviewed environmental educators. To undertake meaningful evaluation, each of the barriers must be reduced or addressed. In reality, the environmental educators must begin the process themselves, for only they can properly understand all seven of the barriers as a unified reality of their workplace.

4.6.2 Programming

Environmental education originated in many countries as a "response to growing fears about the degradation of the environment" (Kyburz-Graber, 2013 p. 23). By the late 1970's the ultimate goal of environmental education was behavioural change to solve environmental problems (Kyburz-Graber, 2013). The development of the concept and content for environmental education was in response to a societal request concerning environmental problems (Kyburz-Graber, 2013). As the concerns of society have changed, so have the demands placed upon the conceptualization of environmental education. Sauvé (2005) outlined 15 currents in environmental education's evolution to date. They are described below in Table 7 with a brief description of the aim each has toward environmental education.

Table 7- Currents in Environmental Education

Current	Aims of Environmental Education
Naturalist	Reconstruct a link with nature.
Conservationist/ Resourcist	Adopt behaviours compatible with conservation. Develop skills related to environmental management.
Problem-solving	Develop problem-solving skills: from diagnosis to action.
Systemic	Develop systemic thinking: analysis and synthesis toward a global vision. Understand environmental realities in view of enlightened decision-making.
Scientific	Acquire knowledge in environmental sciences. Develop skills related to the scientific method.
Humanistic	Know and appreciate one's milieu of life; better know oneself in relation to this living milieu. Develop a sense of belonging
Value-centred	Adopt eco-civic behaviours. Develop a system of ethics.
Holistic	Develop the many dimensions of one's being in interaction with all aspects of the environment. Develop an "organic" understanding of the world and participatory action in and with the environment.
Bio-regionalist	Develop competencies in/for local or regional community eco-development.
Praxic	Learn in, by, and for environmental action. Develop reflexive skills.
Socially Critical	Deconstruct socio-environmental realities in view of transforming them and transforming people in this process.
Feminist	Integrate feminist values into the human-environment relationship.
Ethnographic	Recognize the close link between nature and culture. Clarify one's own cosmology. Valorize the cultural dimension of one's relationship with the environment.
Eco-Education	Experience the environment to experience oneself and to develop in and through it.

Current	Aims of Environmental Education
	Construct one's relationship with the "other -than- human world".
Sustainable Development/ Sustainability	Promote economic development that takes care of social equity and ecological sustainability; Contribute to such development.

Shaded sections denote currents more recently emerged in environmental education
Unshaded sections denote currents with longer tradition in environmental education
Source: (Sauvé, 2005 p. 33-34)

The complexity of the concept of environmental education, 'what should be taught', has led to no one established method of education. "Environmental education is valuable in that it draws attention to overlooked educational priorities" (Jickling & Wals, 2013 p. 69), and by its own nature of constant change and debate there should be, and is, a recreation of the idea of learning about the environment (Jickling & Wals, 2013). This recreation of the role of education can lead to difficult questions for a society to face. If education, and its curriculum, is recreated to help the student face the problems of the world, with its interconnection between environment, socio-economics, and ethics, how will society change? Le Grange (2013) states that:

> Coming into presence in the world involves the risk a student takes of being challenged or disturbed by what (s)he encounters through the educational process – the risk of the unintended outcomes of education. But coming into the presence in the world (in a broad sense) also involves encountering environmental risks and engaging with these to improve risk positions. (Le Grange, 2013 p. 112-113)

This potential conflict between educating, and perpetuating, the societal norms and taking on an activist stance to education was seen in Tan and Pedretti's (2010) study of Ontario classroom teachers concerning environmental education. The researchers stated that:

> Most prominent in this study was the desire to move toward an environmental education that, in the words of these teachers, "change[s] students' practices, habits and values." However, the inclusion of values and sociopolitical action in the context of environmental education caused many educators to pause, as they tried to negotiate the inherent

> complexities. Whose values should they advocate? As teachers, how do they position themselves amidst controversy? How do they respond to positions that they might find disagreeable or simply dangerous? What is clear is that educators need frameworks and training in these matters in order to begin to unravel complex questions. (Tan & Pedretti, 2010 p. 76)

This study has uncovered the same questions in the minds of Ontario's environmental educators. The programming of environmental education in Ontario's centres has been molded by the explicit curriculum of the province. The interviewed educators all spoke of the importance of the curricular linkages in the planning and execution of their programs. Only in 2011, with the introduction of the *Environmental Science - Scope and Sequence of Expectations* ministry document, was the curriculum explicitly modified to include environmental education aspects into all subject areas. Environmental centres advertised to visiting adults a focus on providing a scientific understanding or experience to the program participants. Bound by the curricular and sociopolitical constraints placed upon them by the visiting adults, the environmental educators in the qualitative phase communicated that they are limited to explicitly communicating mostly a scientific current of environmental education. Implicitly however, the naturalist, conservationist, and systemic currents of environmental education are being introduced by educators modifying activities to fall in line with their belief of 'what should be taught'. The implication for academics is that environmental education research has yet to permeate the reality of explicit environmental education programming in Ontario; work is needed to bring the alternative currents into the field.

4.6.3 Increasing Consciousness

The interviewed environmental educators identified depth of immersion, repetition of experiences, and emotional response as the most important characteristics that increase a pupil's environmental consciousness. Immersion, in which a student is allowed the freedom to experience their environment, is important because children 'see the world' in different ways than adults (Matthews & Limb, 1999).

Matthews and Limb (1999) provide seven propositions of ways that children differ from adults in their perception of their environment. There are important differences between a child's and an adult's:

1. manner of seeing their world,
2. use of place and space,
3. physical boundaries set by convention,
4. sense of danger and environmental fears,
5. feeling toward a place,
6. relationship with environmental decision making, and
7. democratic responsibility (Matthews & Limb, 1999).

Since the pupils conceptualize a space and place in ways mostly foreign to adults, it makes sense that if we wish them to understand, or even enter into a relationship with the place, there needs to be a freedom afforded to them to utilize the space in a manner which suits their perceptions best. Given the opportunity to select for interactions with the natural world, children gravitate toward uneven ground, unkempt areas with a diversity of movable elements, and spaces that are rich in geologic and biologic diversity (Fjørtoft & Sageie, 2000; Waters & Maynard, 2010). In providing the pupils an opportunity for unstructured activities in the environmental program, the educators are enabling a process of equalization between the youth, their peers, and the natural space's inhabitants.

The role of repetition and amount of exposure for environmental consciousness enhancement has also been found to be significant. Bogner (1998) investigated the long term effects of participating in one or five day programs. Utilizing pre and post treatment testing with control groups he demonstrated that the participants that experienced the environmental program increased cognitive measures versus the control group when measured a month after the program (Bogner, 1998). Kossack and Bogner (2012) in a subsequent study found that students undertaking a one day outdoor program displayed beneficial

connection to nature effects versus the control group both directly after the program and after a seven week period after the program treatment. However, they also found that "individual initial connectedness and a variety of short- and long-term connectedness shifts indicate the necessity of a [educative] needs-oriented environmental education" (Kossack & Bogner, 2012 p. 180). In other words, for a pupil to feel connected to an environment, their individual educative needs should be taken into account, by enabling unstructured engagement in that environment. Eagles and Demare (1999) in their study of grade 6 students in one Ontario school concluded that a week-long camp program did not increase the environmental attitude profile of the participants because the attitude profiles of the students pre- and post-program were virtually identical. In this case, it is evident that the educative needs of the pupils were not taken into account as Kossack and Bogner (2012) suggest is so vital in environmental education.

4.6.4 Visiting Adult Influence

The interviewed participants communicated that the visiting classroom teacher has an influence on the effectiveness of the environmental programs. The amount of research conducted in understanding this influence appears to be sparse. However, research placed adjacent to environmental education reinforces the interviewees' perceptions. Anderson et al. (2006), speaking about museum field trips state that "Teachers play a pivotal role in the learning experience during a field trip. This can have both positive and negative consequences… the educational worth of a museum field trip may be heavily dependent on the agenda of the teacher leading it, primarily in finding the balance between enjoyment and focused learning" (Anderson, Kisiel, & Storksdieck, 2006 p. 367). In a post-secondary education context, Teisl et al. (2011) used the New Ecological Paradigm (NEP) to test whether courses designed to teach environmental literacy changed student environmental attitudes, and whether these changes resulted from instructor and/or course-content effects. They found that:

> student environmental attitudes changed significantly after attending these courses but these attitudinal changes differed substantially depending upon who taught the course. Notably, student attitudes became either: 'greener,' 'browner' [less concern for environment] or 'more unsure' depending on the instructor. Conversely, we find few differences in attitudinal changes when the instructor is the same, even when the course content differed. (Teisl et al., 2010 p. 79)

Stan and Humberstone (2011) in understanding how teachers manage risk in an outdoor classroom state that "in some cases, teachers' approaches to risk can have a negative impact on the pupils' outdoor experience, by depriving them of the opportunities to learn how to communicate, how to lead and how to work together as a team towards solving a task" (Stan & Humberstone, 2011). Stevenson (2007) addresses the contradictions in purpose and practice between schools and environmental education by stating that: "A problem-centred or interdisciplinary curriculum, as entailed in environmental education, creates problems for teachers in curriculum organisation, pedagogical control, and the assessment of student learning" (Stevenson, 2007 p. 150). The visiting teacher or adult is removed from their typical role as 'classroom supervisor' and therefore assume roles related to their own understanding of the natural world. Visiting adults that are comfortable in the outdoors will provide one type of communication, adults that feel uncomfortable will provide another. Perhaps environmental philosopher, Christopher Schlottmann's (2012) statements best describe the influence of visiting adults on their pupils during an environmental lesson:

> the messages embodied in the behaviour and physical qualities of a person or place teach something to students. If this lesson contradicts what students are told explicitly, then the teacher or institution is holding a double standard. (Schlottmann, 2012 p. 67-68)

Tan and Pedretti (2010), in their study of Ontario classroom teachers cite apathy and this double standard behaviour of teachers as a perceived challenge to the enhancement of environmental education programs (Tan & Pedretti, 2010). The interviewed educators echoed Schlottmann's, Tan's and Pedretti's insights. They spoke of the need for visiting adults to model behaviours for their pupils that supported the aims of the program. The interview participants communicated the frustration of knowing

that the limited time for programming they have with the students was sometimes negated by the implicit lesson the visiting adult communicated through their influence on the group.

This chapter presented the first phase of the project. The usage of a grounded theory method in conducting the interviews resulted in the creation of a theory describing the spectrum of characteristics of environmental education programs in Ontario. The interview participants' narratives provided an essential understanding of what environmental education in Ontario appears to be and how ideally it should exist. In the next chapter, I outline the second phase of the project whereupon the environmental educators are surveyed whether their daily work practices are in agreement with their perceived best methods in increasing environmental consciousness.

Chapter 5 - Phase Two – Online Survey

In this chapter, I describe the second phase of the project; the construction and application of a quantitative online survey. The construction of the survey instrument is discussed, and issues relating to its implementation are outlined. The results of the online survey are presented and discussed with an emphasis on placing the information in relation to the narrative derived from the first phase.

5.1.0 Survey Construction, Implementation, and Analysis

Using the results of the interview analysis, I began constructing survey questions to better understand the linkages that emerged from the model or theory created in the first phase of the project. The questions were constructed to determine from each survey participant the prevalence and incidence of characteristics detailed in the model. For example, the level of communication between visiting adult and environmental educator is a large factor in placing a centre more towards a basic or advanced model of environmental education. By asking the participants several questions relating to communication, pre- and post-visit activities, and their perception of the importance of such communication, I was able to obtain a generalized sense of the levels of communication. The survey was also constructed to become a reflection tool for the participants concerning their professional practice. I wanted to ask them professionally challenging questions. My usage of ranking questions, where the participants had to rank several options from a list of choices, forced the participants to reflect about what was personally significant or important in their perception. These hard choice questions may also have induced them to reflect afterwards about their own professional practice and the practices of their centre. A detailed listing of each question, the theme it addressed, and the type of information elicited from its answer can be found in Appendix 3. Each question had a specific aim and purpose to achieve

(Peterson, 2000). As an example, the theme of the influence exerted by the visiting adults' behaviour on the effectiveness of the program was tested by asking the participants to rank a selection of varying visiting adult behaviours. The data from this question allowed the types of supported behaviour to be seen. Each question was developed so that, ideally, every potential participant would interpret the question in the same way, and be willing and able to answer it (Dillman, 2007). Figure 7 describes a flowchart of steps undertaken in the construction of the survey. It must explicitly be noted that the creation of the survey instrument does not rely on past literature or a theoretical structure.

The survey contains 42 questions, with variable amounts of complexity. The survey can be found in Appendix 4.

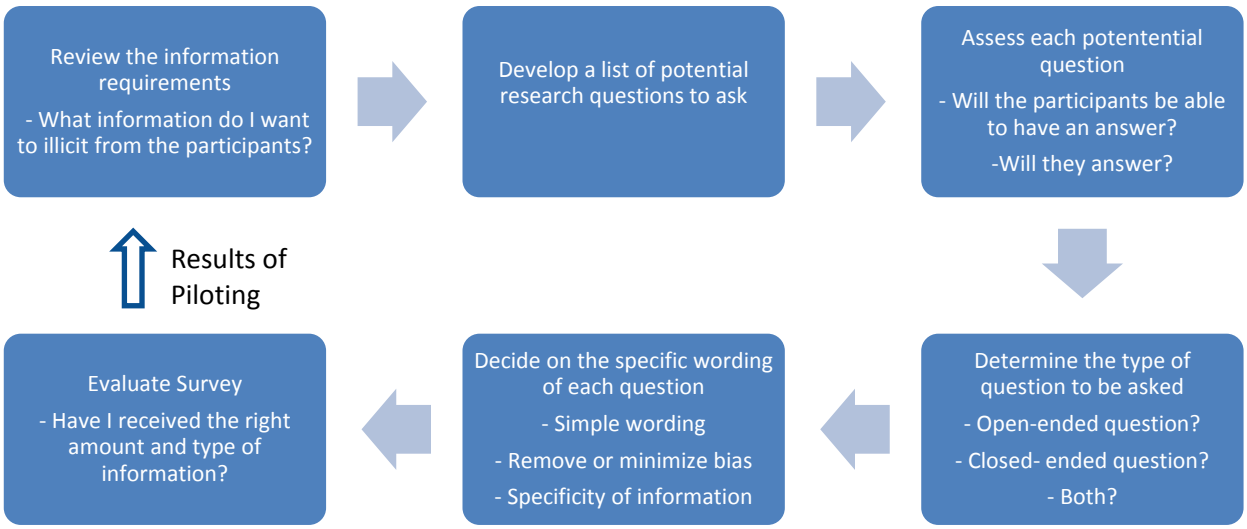


Figure 7 - Flow Diagram of Survey Question Construction

Adapted from: (Dillman, 2007; Peterson, 2000)

5.1.1 Survey Participant Recruitment

A list of environmental educators in Ontario does not exist. Several organisations of which educators may be members are present in this province, but there is no one organization that encompasses the entire population of Ontario's environmental educators. The definition of "environmental educator" is

also nebulous, but for my study I define an environmental educator as someone whose goal in teaching people is to increase their environmental consciousness. Such a broad definition was necessary to cover the myriad of different workplaces and employment possibilities. I wished to obtain an inclusive look at all of Ontario's environmental educators. I felt that by placing label definition constraints, I would disenfranchise a portion of Ontario's environmental educators as well as reduce the number of possible valid survey participants.

Using this definition, I set out to engage with the environmental education community through various means. I attended and presented at several conferences in 2012 and 2013, engaging educators and describing my study to them freely. I also engaged the three largest organizations that environmental educators were most likely to be members of; the Council of Outdoor Educators of Ontario (COEO), the Ontario Society for Environmental Education (OSEE), and Conservation Ontario. The three organizations have, as is to be expected, different foci for their collective member efforts. I cite the description of each below briefly.

COEO is dedicated toward a broader audience encompassing outdoor recreation as well as environmental education. As of 2013 there were 360 members of COEO. About 100 to 120 work in outdoor education centres (Clarke, 2013). Their goals include "the establishment and maintenance of professional practices in the field of outdoor education, the promotion of qualified leadership in outdoor education, and the promotion of an active environmental ethic as a core value of education." (COEO, 2013)

OSEE is a:

> professional organization whose members are elementary, secondary, and post-secondary teachers, people who teach in outdoor education centres or parks, and other people who are involved directly or indirectly with environmental education. Until 1990 OSEE was known as the Environmental Science Teachers' Association of Ontario (ESTAO). At that time the name

> was changed and its mandate was broadened to serve the interests of all educators interested in environmental education. (OSEE, 2013)

Conservation Ontario is:

> the network of 36 Conservation Authorities, local watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations. Conservation Authorities promote an integrated watershed approach balancing human, environmental and economic needs. (Conservation Ontario, 2013)

Survey participants were recruited using several strategies in order to insure a large response from a diversity of participants. The initial method was via electronic media sources. Emails with Blind Carbon Copied (BCC) addressee fields were sent to the potential interview participants on February 14th 2013 inviting them to participate in the online survey. Included in this initial email delivery were the contacts made during the various interactions at conferences and meetings that I attended throughout my research period. The usage of the BCC feature on the email system resulted in addressees being unable to see who else the invitation was written to, thereby ensuring anonymity. I also asked the email recipients to forward the online survey link to their colleagues. A second level of recruitment was undertaken at the same time with requests that advertisements seeking participation be placed on the OSEE Facebook and Twitter accounts. A short advertisement was also placed in the March 2013 COEO e-newsletter.

Ten days following the email and OSEE social media announcements, I sent 23 postcards to the postal addresses of environmental educators. The identity and addressing information was obtained by accessing the websites of conservation authorities, school board run field centres, and by using the search terms “environmental education centre”, “field centre”, and “environmental education”. The post card acted as a reminder to complete the survey and further reinforced my appreciation of their help in my research. A copy of the information contained on the postcard can be found in Appendix 5.

Several barriers prevented the construction of a probability based recruitment strategy. First, the confidentiality of the membership lists of COEO, OSEE, and Conservation Ontario needed to be maintained. I was therefore unable to utilize a standardized listing of potential survey participants. Second, it was established that for ethical reasons the survey should be anonymous in nature to ensure that the answers given by the survey participants could not harm them in any way. This need for anonymity resulted in the usage of non-probability convenience sampling with uncontrolled instrument distribution (Schonlau, Fricker, & Elliot, 2002). Although a rigorous probability sampled survey would have been ideal, the use of uncontrolled instrument distribution has been conducted in research and can "be extremely valuable for hard to reach (although electronically connected) populations" (Schonlau et al., 2002 p. 34). This being said, it should always be kept in mind that the "one result of self-selection is that no unbiased estimates can be computed; another is that the accuracy of the estimates cannot be determined" (Scherpenzeel & Bethlehem, 2011 p. 110). This outcome of utilizing a self-selection based survey is that the results will not truly represent the population it samples. The amount of bias and error in a self-selected survey was examined by Scherpenzeel and Bethlehem (2011); comparing Dutch election results, a probability selected study, and three self-selected online surveys. Their results show that while the self-selected surveys displayed very low accuracy in agreement with the actual number of seats each party was elected to; they did display the same trend in the party order as the actual election result. With more than 10 political parties represented, the fact that the general trend of the election could be measured using non-probability sampling suggests that self-selected online surveys may be at best considered a very coarse research tool; one whose results must be explicitly detailed as non-representative of the entire population.

5.1.2 Survey implementation

I chose an internet based survey tool as my means of gathering the information I wanted from the environmental educators. An internet based survey was chosen for its ease of use and low cost (Dillman, 2007; Schonlau et al., 2002). There are several external internet hosted web surveys available. I chose LimeSurvey as the survey hosting system because of its cost, the ease and flexibility in programming the survey, and its secure server location. I wrote several versions of the survey and piloted one version at a COEO conference where it was examined and tested by four environmental educators on my laptop computer, each individually. I audio recorded, with their permission, their comments concerning the survey. I was interested in knowing if the survey was valid to the respondents' experience as environmental educators, understandable (vocabulary and language), user-friendly, and not overly time consuming. The piloting participants provided points for improvement that were included in the final updated version. The changes implemented in the subsequent final version of the survey included wording changes, clarification statements over question meaning, and 'pausing' statements. The 'pausing' statements allowed time for the participant to refocus their attention when moving from one aspect of environmental programs to another; for example, from programming choices to visiting adult influences. All the piloting educators felt that the survey was interesting and valid. They all expressed a desire to learn more about the results of the completed study. This suggests that the survey could be considered both interesting and valid for environmental educators in Ontario. When asked at the conclusion of the piloting process, none of the piloting participants felt that the survey was too long or that it missed important aspects of being an environmental educator in Ontario. It is possible that the individuals piloting the survey did complete the final version of the online survey. I explicitly asked them not to participate, but I cannot remove the possibility of their participation.

After ethics approval from the university, the link for the survey was sent to the contacts I had made in my interview phase and in the three environmental education conferences I had attended since project inception.

A short advertisement was also placed in the OSEE and COEO online newsletters inviting members to visit the survey site and complete the survey. One version is presented in Appendix 6. The initial poor response to the survey invitations led me to develop a more creative and personable method in which to invite potential survey participants to the study. I utilized an internet search using the search terms "environmental education centre", "outdoor education centre", and "field centre" to develop a database of potential participants from publicly discoverable information like organization websites. I then constructed an invitation letter and mounted it onto a postcard addressed to specific individuals whose names and workplace mailing addresses were available. The postcard also featured a one-of-a-kind drawing or painting. It was felt that by gifting a piece of art to a potential survey participant, they would be more compelled to engage in the process of investigating the online survey instrument. Within three days of the initial mailing, four additional participants had completed the survey.

The survey results were available to me via the LimeSurvey application. I converted the data into a Microsoft Excel spreadsheet document and coded some fields from text to numerical formats to allow mathematical operations to occur. The data was summarized in the spreadsheet and analysed.

5.1.3 Online Survey Analysis

The results were analysed using descriptive statistics. Questions that asked participants to rank several options as to their importance were ordered using a decreasing ordinal sort.

5.1.4 Potential Issues with Survey Results

One of the conditions for the ethics approval of the online survey was the provision that no question, besides the informed consent acknowledgement, be mandatory for completion. The consequence of making the questions non-mandatory was that there were different numbers of responses for the different questions. While the data clearly shows the number of people who answered each question, it is important to state that this reality may somewhat affect the proportionality of the findings. Questions with more respondents represent the respondent population better than questions with fewer respondents; but since this study does not intend to apply population statistics nor present the findings as representative of all environmental educators in Ontario, the effects should be minimal. An additional issue is that the survey was anonymous, thereby allowing respondents to repeat the survey multiple times, skewing the results. This is not considered a likely scenario.

5.3.0 Survey results

Participant recruitment for the online survey was, as expected, low. At first only 7 people completed the survey. The release of the advertisement on the OSEE Facebook and Twitter accounts generated 47 visits to the survey site, but no survey completions. In fact, none of the 47 visitors even completed the initial “I agree to be a participant” informed consent query. The length and complexity of the informed consent form is suspected to have prevented many people from feeling that the survey was accessible and worthy of their participation.

It is important to reiterate that since the survey was conducted with a non-probability sampling technique the results of the survey cannot be extrapolated for the entire population of environmental educators in Ontario. The survey participants were most likely the most motivated portion of the

population; willing to set aside time within their day to complete the survey. However, even though the results are limited to the individuals that participated in the survey, it is a valid glimpse into the possible reality of the overall population. Further research utilizing a probability method could provide the statistical legitimacy of this thesis' findings.

The online survey was accessed 155 times. Of those 155 occurrences, 24 completed the survey in totality, with an additional 9 answering at least one question but not completing the entire survey. The survey therefore has a completion rate of 15.5%. Since the survey was constructed using a non-probability sampling method, no response rate can be calculated.

When asked to comment about the survey itself, 87% (n = 20) of the participants indicated that it was 'relevant', 39% (n = 9) indicated that it was 'interesting', and only 13% (n = 3) found it 'confusing'.

The demographic question querying the employment status of the survey respondents resulted in 41% (n = 13) indicating they are a conservation authority educator, 31% (n = 10) are employed by a school board, 16% (n = 5) are employed in a not-for-profit organization, and one person identified as a volunteer. No respondents self-identified as being employed in a for-profit company.

The question also provided the option for the participant to enter an alternate description of their role. 3 people (9% of question respondents) opted to enter data. They described their role as 1) an owner of a for-profit outdoor education centre, 2) a part time worker at an environmental education centre, or 3) as a volunteer.

5.3.1 Assessment

It was necessary to understand the extent and type of assessment activities and interactions environmental educators regularly performed.

When asked to identify the types of pre-visit interactions their centre undertook on a regular basis, of the 29 question respondents, 86 % (n = 25) reported that they utilize email communications, 76 % (n = 22) reported that they utilize telephone conversations, 38 % (n = 11) rely on mailed in forms, 31 % (n = 9) regularly have in-person interactions, 10 % (n = 3) conduct parent meetings, and none utilize Skype videoconferencing. When subsequently asked to describe the reasons why any pre-trip interaction is not performed the single respondent stated that they "do not have enough staff".

To elucidate why pre-trip in-person visits were not regularly performed, the respondents were asked to write, in an open field, the reasons why. The 20 answers provided can be categorized into several themes:

- Time barriers – Nine survey participants expressed that there was insufficient time in their staff's schedule to undertake in-person visits. Four participants felt that the existing budgets allocated to their programs would not support in-person visits.
- Need – Four survey participants felt that in-person visits were unnecessary for their programs or for day-long programs.
- Distance – Two participants stated that the physical distance from the centre to the schools prevented them from undertaking in-person pre-trip visits.

To determine the incidence of post-trip activity, the survey respondents were asked to select from a list of potential post trip interactions. Of the 29 question respondents, 52% (n = 15) stated that they did not perform any of the answer selections available regularly, 38 % (n = 11) reported that they regularly offer 'curriculum lesson plans for in-class', 24% (n = 7) provide 'take home assignments for participants', 7% (n = 2) reported attending in-class visits, and 3% (n = 1) utilized community meetings. Three of the respondents (10%) reported that they offered in-class curriculum plans and take home assignments.

Two of the respondents (7%) stated that they provided in-class curriculum plans, take home assignments, and in-class visits.

The respondents that selected that they did not regularly perform any of the post-visit choices were then asked why they did not utilize these methods. The survey participants' written narrative can be categorized into several themes:

- Visiting Classroom Teacher Influence – Many participants stated that there is little demand for post-trip activities by classroom teachers. They communicated that often the visiting teacher utilizes the trip to the environmental education centre as a "stand-alone" or unique experience with little connection to the curriculum being taught adjacent to the day(s) at the centre.
- Communication – Some participants answered that the scheduling barriers between environmental educator and visiting adult/teacher prevent functional communication in terms of ensuring that pre- and post-visit activities or lessons are implemented effectively.

The participants were also asked about what types of program assessment tasks they performed. The question was answered by 29 participants and resulted in 86% (n = 25) reporting that they utilized a 'survey given to visiting teacher / adult', 83% (n = 24) performed 'after program reflection with other staff', 76% (n = 22) utilized a 'personal feeling or "gut-check"', only 7% (n = 2) reported using a 'pre-visit / post-visit evaluation of the participant's attitude using a measurement tool', none reported utilizing 'formal assessment by an external body'.

In order to understand the survey participants' perceptions and reasons for undertaking their selected program assessment methods they were asked to fill in a text box describing the most beneficial reasons for each of their selected methods.

The complete answers to this question can be found in Appendix 7. The answers can be categorized into several themes. The responses to the option “Survey given to visiting teacher / adult” were that the survey provides data to substantiate quality for stakeholders and supervisors and provides suggestions for improvement from adults/teachers in an easy format. The comments for the option “gut-check – personal feeling” were that ‘gut-checks’ drive environmental educators to self-reflect on the teaching experience and they provide a very fast and convenient method of assessing program success. The responses for “After program reflection with other staff” thought it to be useful because it provides an opportunity for environmental educators to discuss issues with groups and/or program content and to share experiences in order to learn from others’ mistakes and successes. The comments for the survey tool resulted in the theme that surveys were useful in obtaining more in-depth input into programming.

Survey participants were asked to choose from a list of possible time spans as to how often they reviewed their programs. Of the 29 question respondents, 31% (n = 9) indicated programs were reviewed ‘once a season (fall, winter, spring, summer)’, 28% (n = 8) indicated ‘once a year’, 17% (n = 5) selected the ‘once every couple of years’ option, 10% (n = 4) selected the ‘once a month’ category, and 14% (n = 3) indicated that they ‘don’t know’.

When asked to select which tasks are typically performed in a program review, the respondents almost unanimously (96%, n = 24) replied that an examination of the program’s relevancy to the Ontario curriculum was performed. Additionally, the relevancy to the centre’s goals (80% of responses, n = 20) and the incidence of the program being requested (72%, n = 18) were frequently examined. The responses can be seen in Table 8 below.

Table 8 - Survey Results – Focus of Program Review

Answer Option	n	% of Responses
Program relevancy to current Ontario school curriculum	24	96%
Program relevancy to the goals shared by the centre	20	80%
Incidence of participant leaders requesting the program	18	72%
Availability of materials for the program	12	48%
The attitude the environmental educators have about the program	11	44%
Budget calculations to determine program costs	10	40%
Other things about our program	8	32%

An important highlight of this result is the 80% response that the program is reviewed in light of the centre's shared goals. This is supported by the results of the next question that queried whether the respondent felt their workplace has a shared vision of the overall environmental education goals of the centre. A majority (66%, n = 19) reported that they felt there was a shared vision while the remainder (n = 10) felt there was not. When asked how their workplace goals are presented, only 19 of the survey respondents answered the question, with 42% (n = 8) reporting that the goals were written down in a binder or folder but not explicitly visible, 37% (n = 7) reporting their goals as being displayed in explicit locations, 5% (n = 1) stating that they are unsure about where their goals can be found, and 16% (n = 3) checking the 'Other' category – without adding any additional information in an open text box.

Since environmental education programs should be assessed using valid methods, the respondents were asked if their workplaces utilized manuals or guideline publications to evaluate their programs. Of the 28 question respondents, 79% (n = 22) reported that they do not use manuals or guideline publications, 11% (n = 3) reported using them frequently in program evaluation, 7% (n = 2) indicated that they do have guidelines available but do not utilize them at all, and 4% (n = 1) reported using the guidelines only to conduct a thorough review of the programs. The very high proportion of non-usage of evaluation

manuals or guidelines is an important finding in that it demonstrates the isolation in which many centres operate in not utilizing external structured assessment and evaluation tools.

One of the most important goals of the survey was to quantify the difference, if any, between the ideal perceptions of the environmental educators and their actual daily practice. For the evaluation portion, the survey respondents were asked to rank several parameters in terms of how they think their centre should be evaluated. A variation of the question then asked the survey respondents to rank an identical list of parameters with the instruction to rank according to how their centre is evaluated currently. Table 9 below depicts how the ranking order changed between the two posed scenarios.

Table 9 - Ideal and Actual Evaluation Parameters of Centre

Ideal Ranking	Actual Ranking
1. Collected feedback from supervising adults	1. Number of people that get to experience a program
2. Collected feedback from program participants	2. Amount of money expended for each participant experience
3. Results of pre-visit and post-visit assessment	3. Collected feedback from program participants
4. Number of people that get to experience a program	4. Collected feedback from supervising adults
5. Number of letters written by participants thanking the centre post-visit	5. Number of working connections the centre has with community groups, schools, and other environmental education centres
6. Average time each participant gets to experience within a program	6. Average time each participant gets to experience within a program
7. Number of working connections the centre has with community groups, schools, and other environmental education centres	7. Number of letters written by participants thanking the centre post-visit
8. Amount of money expended for each participant experience	8. Results of pre-visit and post-visit assessment

N.B. not all participants ranked all parameters.

The results of the first and second highest ranking characteristics of these ranking questions can be seen in Figure 8.

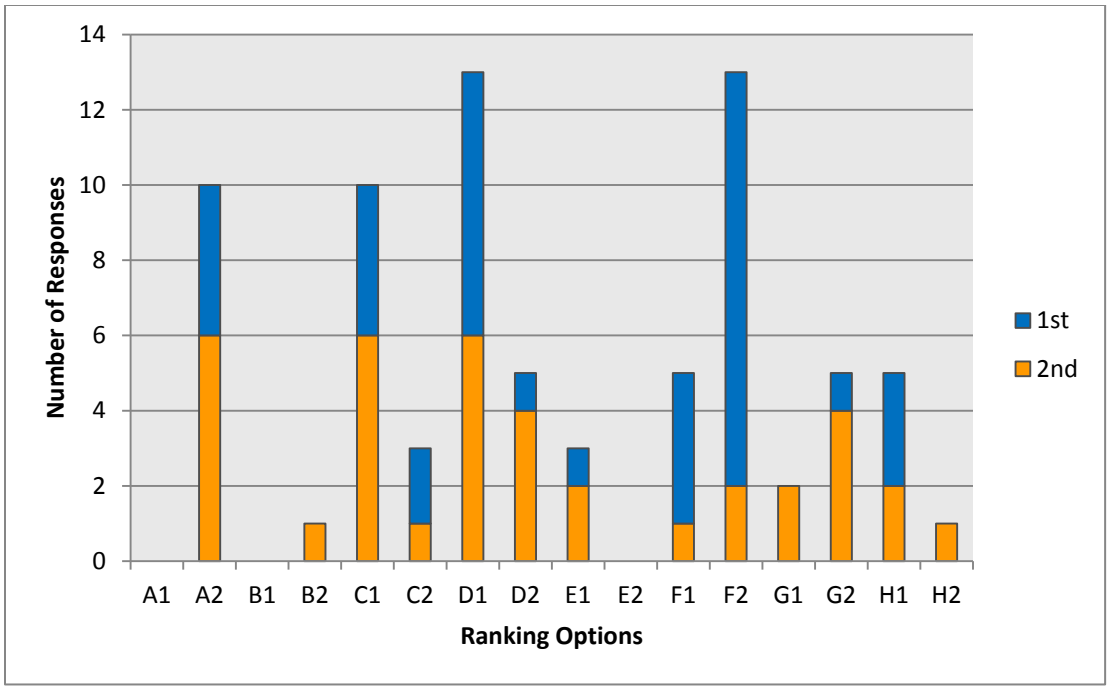


Figure 8 - Evaluation of Centre - Ideal and Actual Evaluation Criteria – 1st and 2nd highest ranking

A	Amount of money expended for each participant experience
B	Average time each participant gets to experience within a program
C	Collected feedback from participants collected during program debrief
D	Collected feedback from supervising adults
E	Number of thank you letters written by participants
F	Number of participants who get to experience a program
G	Number of working connections centre has
H	Results from pre and post visit assessment

1 - Denotes participants' ideal evaluation method, 2 - denotes perceived actual present-day evaluation
N = 19 – incomplete question responses excluded from figure

The large differences between the ideal and the actual scenarios indicate that the environmental educators perceive that their centres are being evaluated using characteristics other than what they would ideally use. The large discrepancy between the ideal and actual in the categories "Amount of money expended for each participant experience (A)" and "Number of participants who get to experience a program (F)" indicates that the respondents felt that evaluation based on these criteria was not appropriate for their practice. The categories "Collected feedback from participants collected

during program debrief (C)", "Collected feedback from supervising adults (D)", and "Results from pre- and post-assessment (H)" all have large positive responses in the ideal scenario. This indicates that the educators would prefer their centre and programs to be evaluated using these metrics.

To understand the communication dynamics of the educators and their centres, the survey participants were asked if they communicated with other environmental educators or conservation authority employees. Of the 27 question respondents, 96% (n = 26) stated that they do communicate with other environmental educators. However, the question's wording does not allow a determination whether the participants included educators located in the same centre in their responses. A subsequent question asked the survey respondents to describe the typical topics they discuss with other environmental educators and conservation authority employees. A summary of this open-ended question is that educators discuss among themselves topics such as:

- Program delivery ideas (n = 15)
- Budgetary and monetary concerns (n = 6)
- Professional development (n = 6)
- Teacher labour action (n = 5)
- Risk management and safety (n = 4)
- Staff retention and training (n = 2)

A further examination of the professional relationship an environmental educator has with their colleagues prompted a question that queried whether or not the survey respondent was a member of a professional environmental or outdoor education organization. Twenty six participants responded to the question and 69% (n = 18) confirmed their membership in at least one organization. 12 respondents indicated that they are members of more than one organization. When asked to list the organization(s) they were members of, the participants most often indicated membership in COEO. The results for the question are compiled in Table 10 below.

Table 10 - Survey Results - Membership numbers of professional organizations (N = 18)

Organization	Number of Responses
Council for Outdoor Educators of Ontario (COEO)	14
Watershed Interpreters Network (WIN)	4
Ontario Recreational Canoe and Kayak Association (ORCKA)	3
Ontario Society of Environmental Educators (OSEE)	3
Local Field Naturalists	2
Interpretation Canada	1
National Association for Interpretation (NAI)	1
Ontario Curriculum Centre (OCC) now Curriculum Services Canada (CSC)	1
North American Association of Environmental Educators (NAAEE)	1
Science Teachers Association of Ontario (STAO)	1
Ontario Camps Association (OCA)	1

Note: Participants utilized acronyms in their responses. Researcher presumed full-length identities of organization

5.3.2 Programming

To confirm the interview participants' narratives about the actual day-to-day programming in centres, a question querying the types of activities the survey participants' centre offers was asked in an open text format. The question respondents (N = 29) reported that the *most requested* activities are:

- Curriculum based activities (n = 7)
- Body of water studies (river or pond) (n = 6)
- Guided hikes (n = 6)
- Canoeing / Snowshoeing (n = 5)
- Predator – Prey survival game (n = 5)
- Ecology (n = 4)
- Climbing, low-rope initiatives, team building activities (n = 3)
- Forest studies (n = 3)
- Recreational based activities (n = 1)
- Energy conservation based activities (n = 1)

When asked to include other activities available at their centre, responses included: Orienteering, GPS, Mapping, Hiking, Sustainable Energy activities, Leadership, and Outdoor recreation activities.

The survey participants were then asked “What is the typical length of time a participant spends at your centre?” The results shown in Figure 9 display the responses. The survey participants were permitted to select more than one category, thereby establishing that some centres provide programs with varying lengths of participant exposure.

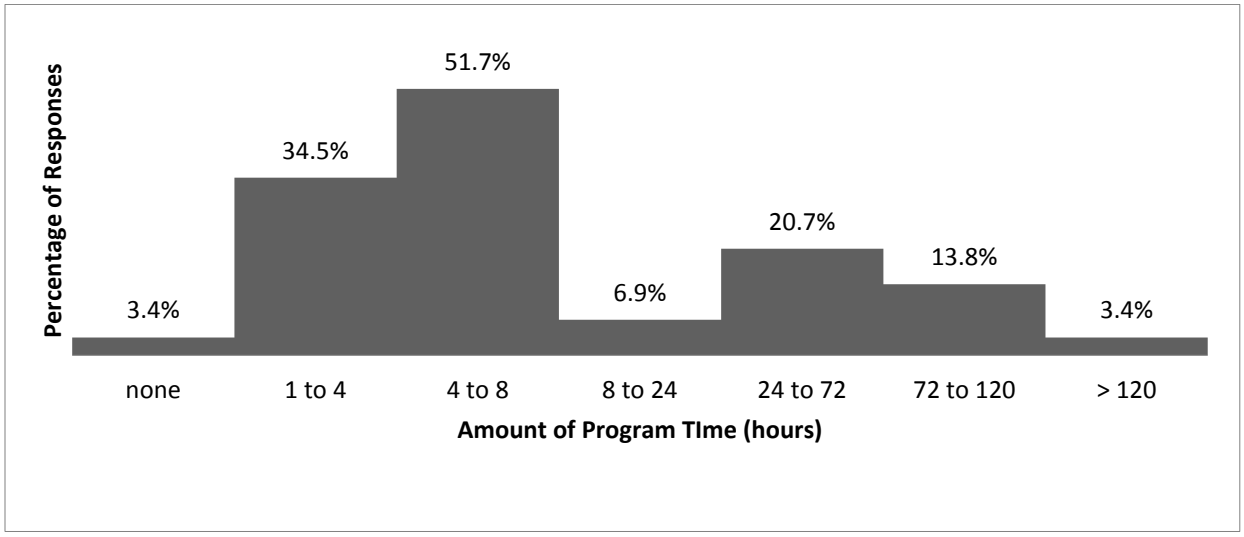


Figure 9 - Typical Program Length (N = 29)

There appear to be to distinct peaks at ‘4 to 8 hours’ and ’24 to 72 hours’. These responses are indicative of the two most popular formats for an environmental education program; the day trip and the overnight stay. The day trip consists of a few hours, one school day minus transportation time, while the overnight stay is often constructed for 2 ½ days so that two groups can be ‘run’ through the centre during one work week. These results are supported by the interview participants’ narratives about their workplaces.

In the interview phase of this project, a number of participants stated that local environmental projects within the schoolyard of their participants would be very beneficial in the acquisition of a higher state of environmental consciousness. To test the perception of environmental educators with their actions, two

questions were asked. Of the 25 survey participants that answered the questions, all indicated a belief in the value of schoolyard programs with only 36% (n = 9) reporting that their centre had involvement in such programs with schools in the nearby area. This large discrepancy between perception of value and action was queried in a subsequent question that asked the survey participants to list the barriers they perceived to undertaking the schoolyard programs. Three themes were exposed in this query as barriers. The 16 participants that entered an explanation stated that a lack of personnel (n = 6), time (n = 5), and cost (n = 5) were the major barriers.

In an effort to understand whether environmental education centres are communicating and relying on other environmental organizations to interact with their program participants before their visit, the survey participants were queried and the majority (72%, n = 25) reported that their centre did communicate with other centres or non-profit organizations to coordinate programming.

I also wanted to determine what the environmental educators perceived were the barriers to providing environmental education to a population. The participants were asked to rank a number of options. The results of the ranking can be seen in Figure 10.

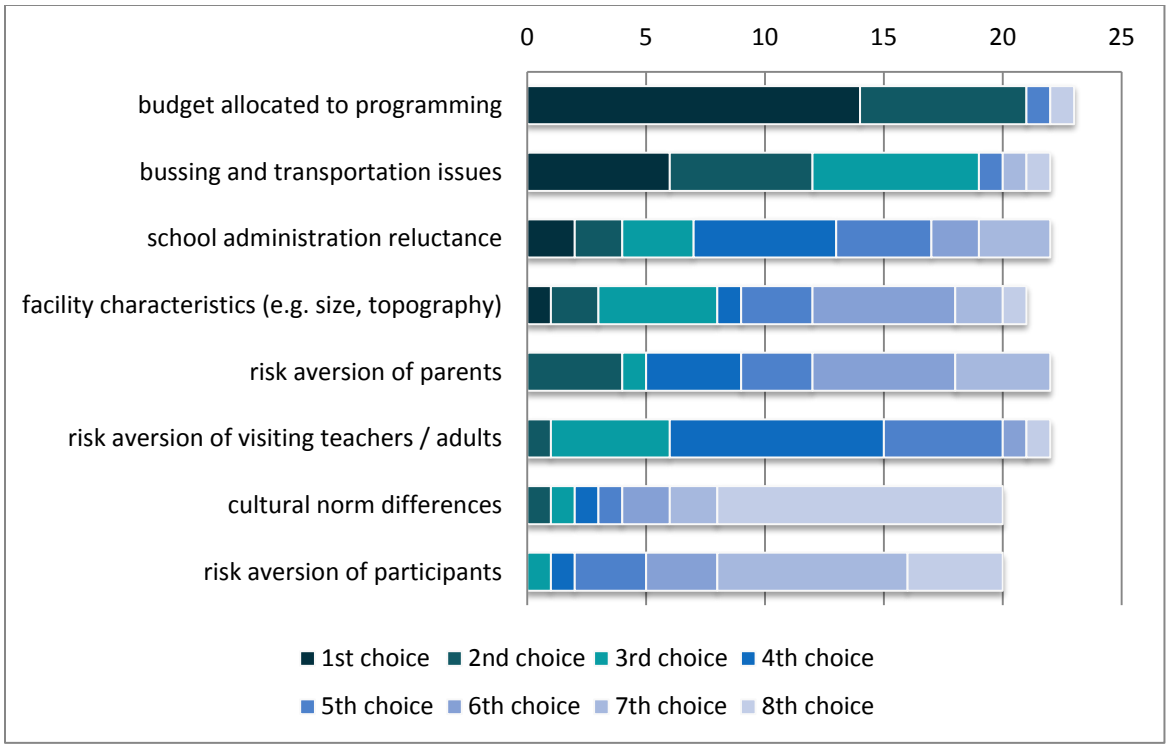


Figure 10 - Barriers to Environmental Education

The data conveys the survey participants' perceptions that budget constraints allocated toward programming were the largest barrier to providing environmental education. The 2nd highest rated item, 'bussing and transportation issues' is also a very strong barrier. This item however has two contributors; the cost of transportation and the time it requires to transport program participants. Further research could elucidate this item's constituent parts to determine the basis of its high ranking. Also interesting is the perception by the question respondents that their program participants' apprehension with risk is not a major barrier to environmental education, whereas the participants' parents' risk aversion has a higher ranking.

With these concerns over barriers in mind, I next wanted to understand how the barriers could modify the manner in which environmental educators approach changing one of their programs. I asked the survey participants to rank the importance of several options that the interview participants mentioned as important characteristics when running a program. I then asked the respondents to rank the same

options in terms of what they believed were the most important aspects an environmental educator should consider when changing their programs. The contrast in answers between their actual practice and their ideal perceptions is detailed in Figure 11.

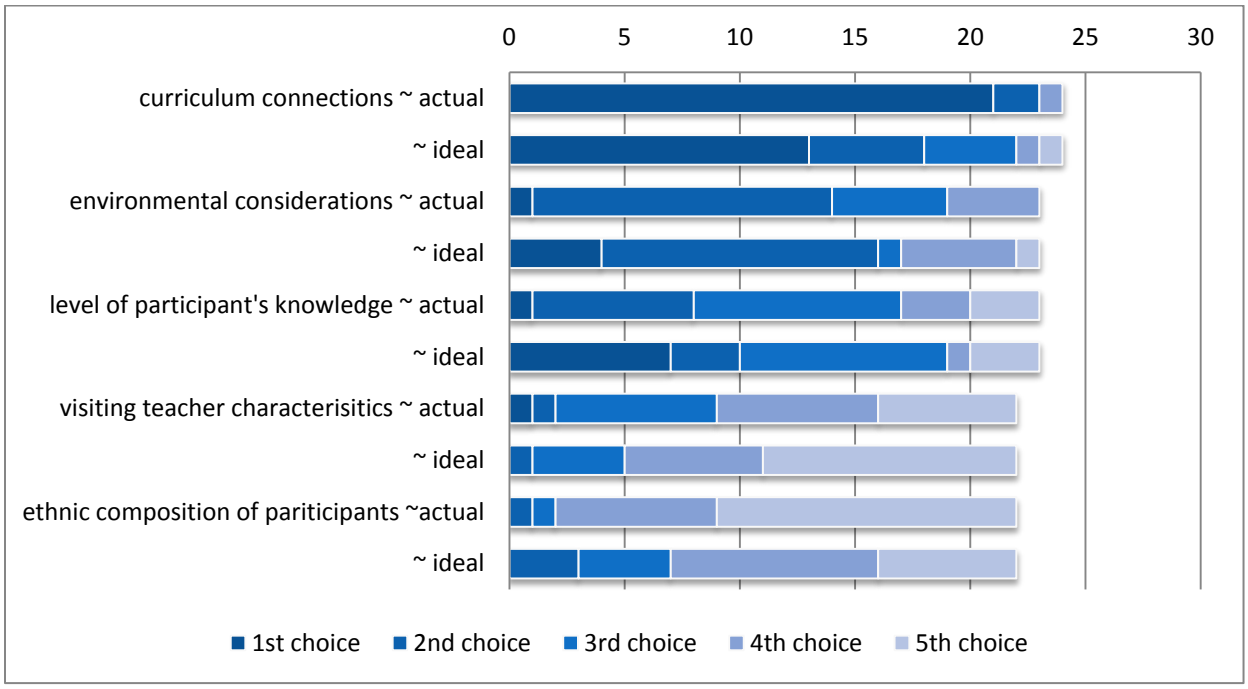


Figure 11 - Ranking of Importance when Altering a Program

The results indicate that, for the survey respondents, curriculum connections were the primary driver to their programming choices in both reality and in an ideal situation. In the real-world situation, 'environmental considerations' and the 'level of the participants' knowledge' complete the top three rankings. In the ideal situation, the environmental educators emphasized the importance of the 'environmental considerations' and 'level of participants' knowledge' in their decision making by assigning each of those categories more 1st rankings when compared with the real-world question. This indicates that respondents felt that having information about the participants' level of environmental knowledge and the environmental conditions at the programming location should take precedence over curricular considerations.

5.3.3 Environmental Consciousness

Utilizing a question composed of various scenarios, the survey respondents were asked to rank the situations in terms of their perception for each to positively affect a person's environmental consciousness. The results, shown in Figure 12, demonstrate the survey respondents' perception that unstructured, free discovery opportunities generally best afford experiences that may positively affect a persons' environmental consciousness.

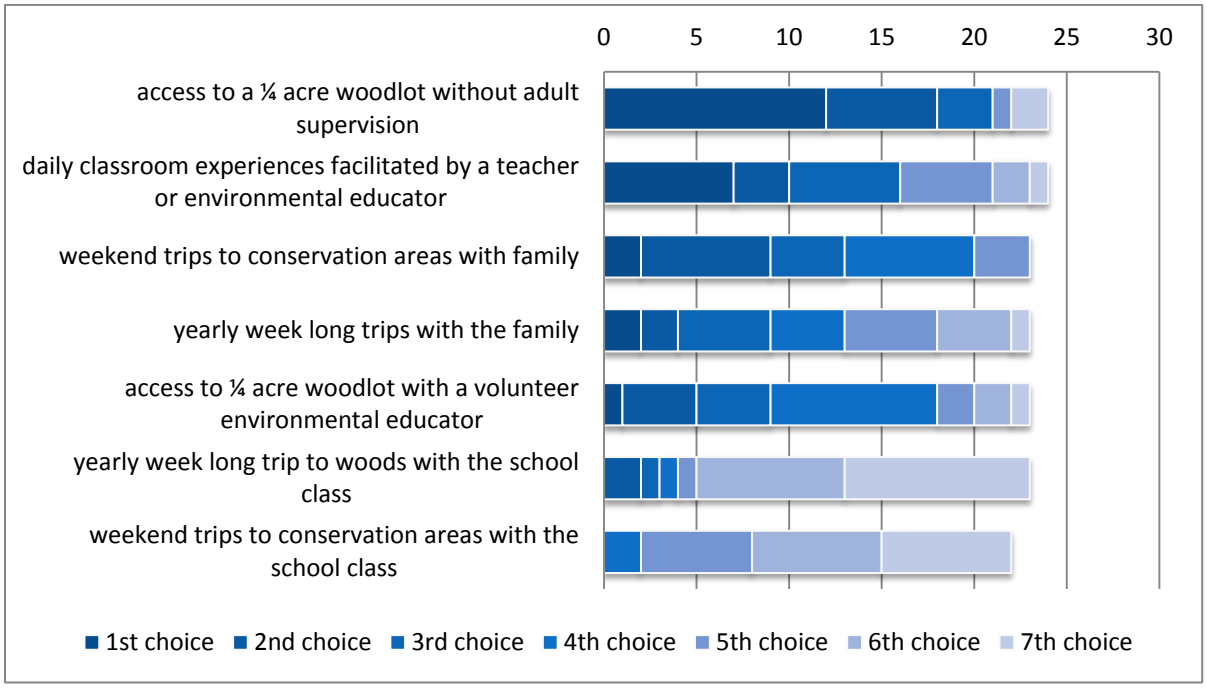


Figure 12- Ranking of Items that positively affect environmental consciousness

The first choice for half the respondents (n = 12) was the option for 'access to a ¼ acre woodlot without adult supervision'. This near majority of opinion indicates that the repetitive unstructured nature of an unsupervised nature interaction is considered of highest value in increasing environmental consciousness. This question's results are also interesting in that the survey respondents chose 'daily experiences in the classroom' over other class group options such as 'weekend trips with class' or 'yearly

trip with class'. This indicates that the respondents felt that the length of immersion time and the repetitive nature of the experiences produce more positive effects than having intermittent high intensity experiences in the natural world. Additionally, the choice of family mediated interactions over school mediated interactions should also be noted as it indicates that the survey respondents felt that having a family experience versus a school class experience provided more positive consciousness building experiences.

In order to judge whether the question respondents had a particular image or age group in mind when answering the ranking question above, a subsequent question asked them if their answers would be altered depending on the age of the child. Only 38% (n = 24) of the respondents stated that their answers would depend on the age of the child, with clarifying comments as to their reasoning being that younger children, up to age 6, require adult supervision for safety and that younger children benefit from having an elder (an adult or older child) model proper behaviour and mirror their enthusiasm.

The model constructed in phase 1 included a fragment relating to the availability of accessible green spaces. I wanted to understand what environmental educators felt all communities should have within their built-in areas to ensure that their inhabitants live in environmentally conscious ways. When asked to rank elements in terms of their importance in maintaining or increasing environmental consciousness levels in their population, the survey participants responded by ranking 'wooded areas' as the highest ranked option (seen in Figure 13).

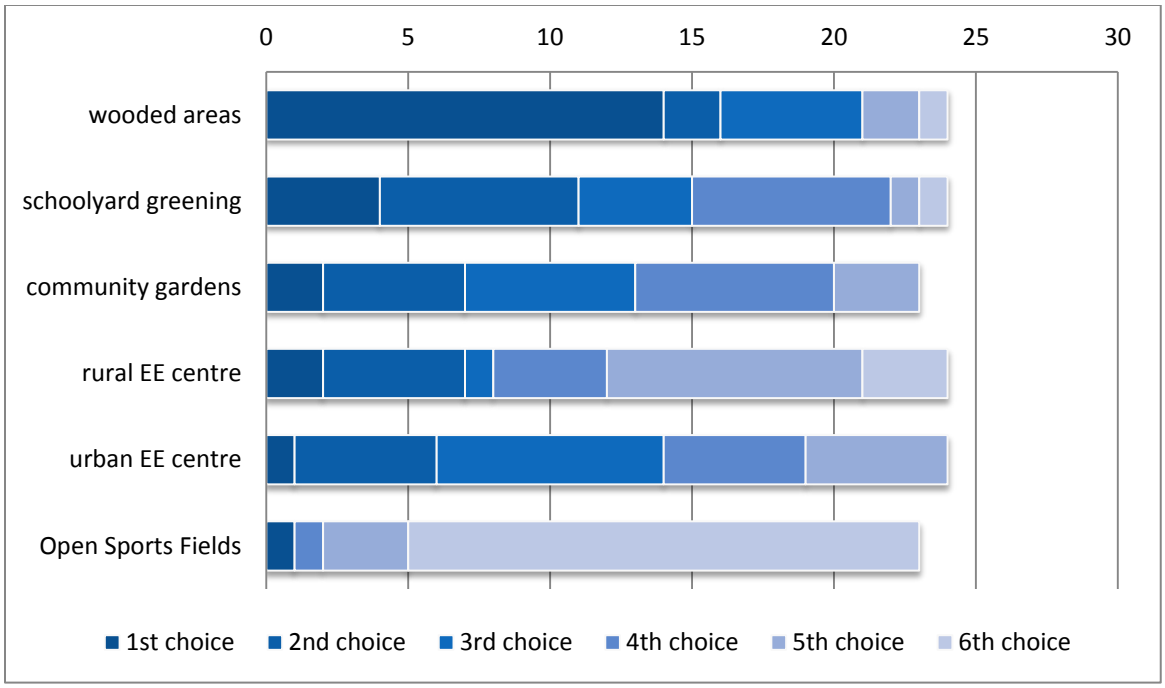


Figure 13 - Elements that maintain or increase environmental consciousness

Note: EE – Environmental Education, urban – located within the built boundaries, rural – located outside of the built boundaries

The results of this question demonstrate that the environmental educators clearly feel that forested areas are important in increasing environmental consciousness. The low ranking of sports fields, places in which unstructured play could occur as well, supports this interpretation. As well, the high ranking for 'community gardens' and 'schoolyard greening' indicate that the respondents felt the provision of repetitive activities and experiences with vegetation also increases a person's environmental consciousness.

When asked to comment about their choices in the preceding question, the respondents stated that:

- "Kids need constant repeated exposure to outdoor spaces"
- "chances for children to have free time in wild places"
- "most importantly students need to experience the wonders of nature on a large scale outside of the city and have it reinforced by regular contact with small natural areas within the city so that the comfort level with being outside in natural areas is well established"
- "adults who are role models-in, about and for the environment, green living as a community value"
- "communities need examples of how to live in a sustainable way - schools and government buildings need to model."

- “have you considered the government and the limitations it puts on environmental education?”
- “Local Conservation areas offering community programs at a reasonable price for such things as owl prowls, environmental birthday parties, etc.”

The comments communicate that the respondents’ perception of repetitive experiences with ‘wilder’ natural areas is the paramount characteristic in engendering environmental consciousness. They suggest that accessibility be increased through adult-mediated opportunity building; either through municipal or grass-roots initiatives. In order to provide a reflexive opportunity for the the survey participants, I asked them to rank their perceptions of six statements describing different behaviours a superior environmental educator may exhibit.

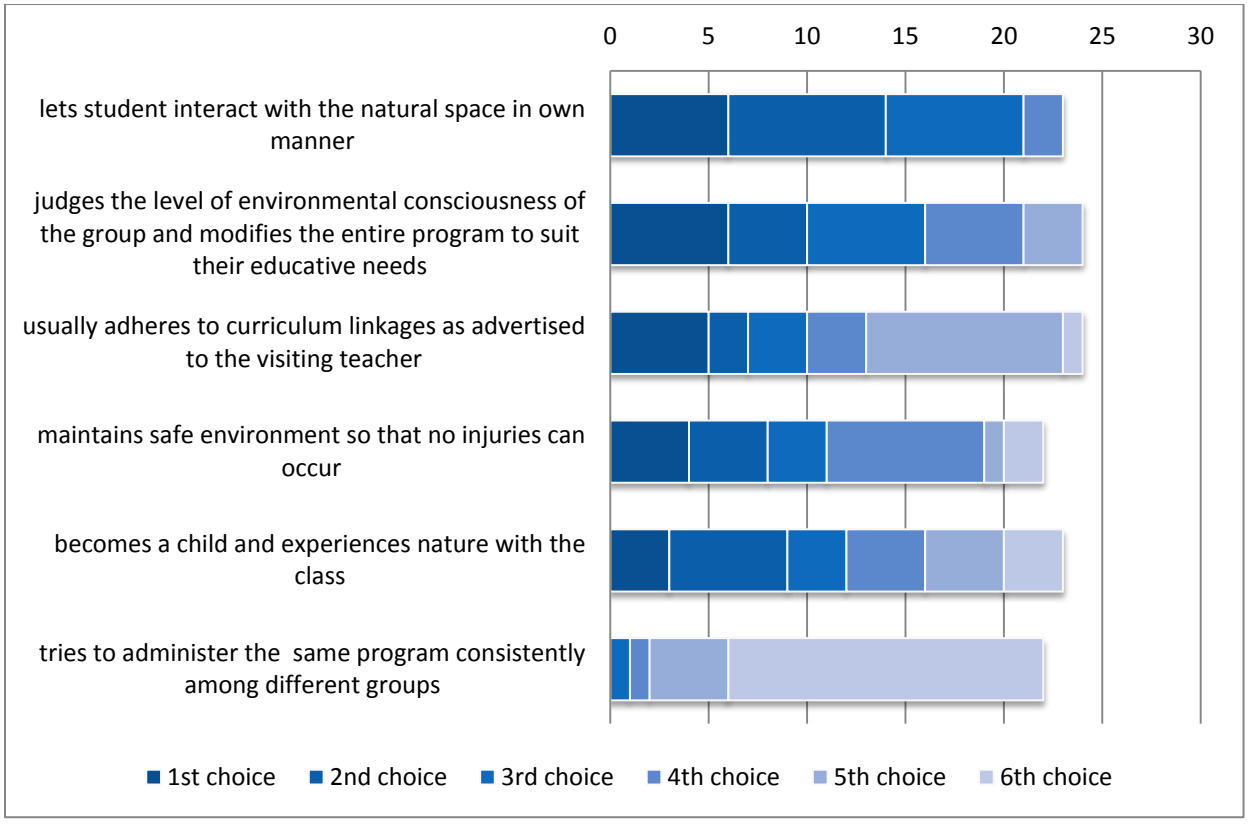


Figure 14 - Ranking of superior environmental educator characteristics (N = 24)

The choice of allowing the participant to interact in their own manner appears to be a strongly supported and consistent perception. The contrast between the 2nd highest ranked behaviour ‘judges

the level…and modifies the entire program', and the lastly ranked 'tries to administer the same program…' illustrates the perception by the survey respondents that accommodating the program participants' actual educative needs is more important than maintaining strict standardization through lesson consistency.

5.3.4 Visiting Adult Interactions

The importance of the relationship between the visiting adult, their pupils, and the environmental educator became apparent during the interview portion of this study. To understand how environmental educators interact with the visiting teachers several questions were posed to the survey respondents.

The interviewed environmental educators spoke of several types of behaviours, exhibited by visiting teachers, which modulated the success of their program.

A question was posed to the survey participants to better understand their perceptions of the types of attitudes or behaviours of visiting teachers that were the most beneficial to their program delivery. The participants' ranking can be seen in Figure 15.

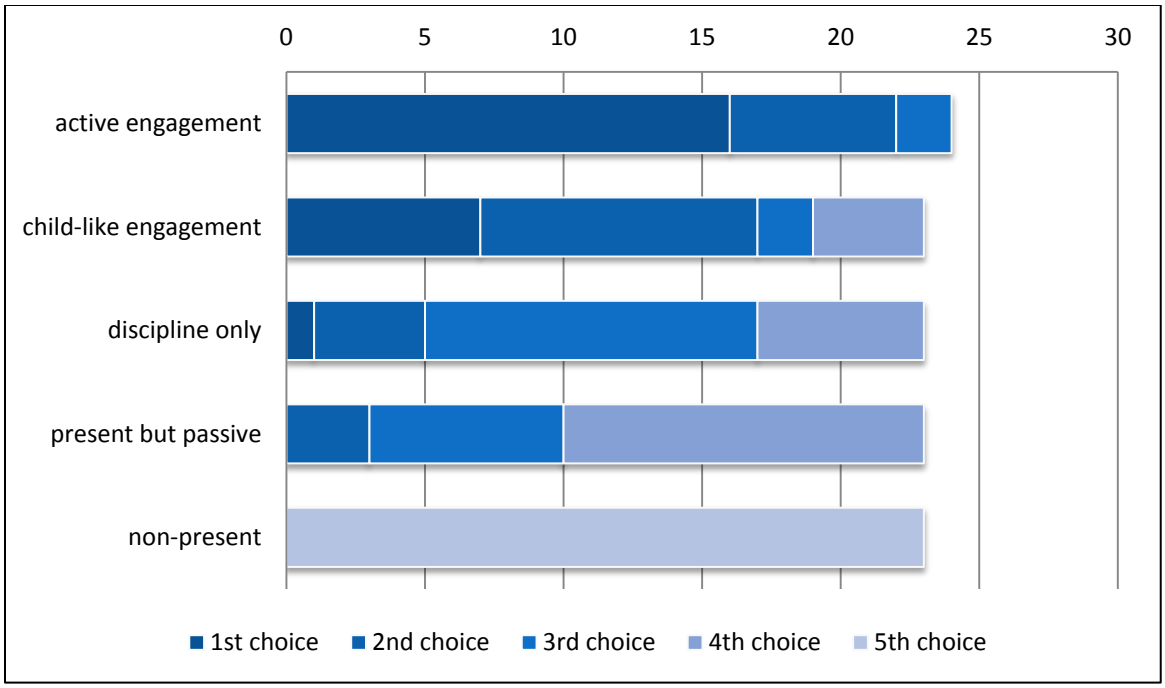


Figure 15 - Ranking of Visiting Adult Behaviours

The results indicate a very strong positive ranking for adults that express active engagement in the activities presented by the environmental educator. There is also a very low ranking for 'non-present' adults who express behaviours that communicate that they do not consider the activity worth their time. Interestingly, the category 'child-like engagement' is ranked higher than both the categories 'discipline only' and 'present but passive'. This indicates that the survey respondents would rather deal with another 'child' then have a visiting adult express behaviours that are passive or produce only negative reinforcement (discipline) towards the program. This supports the interview participants' views that visiting adults that are passive or non-present become more of a liability than an asset to the program delivery.

Understanding that visiting adults who exhibit active, enthusiastic behaviour are perceived as the most beneficial to an environmental education program, the survey respondents were then asked to rank

their perception of what sort of activities or resources would best engender a positive attitude in the visiting adult. The results of this question can be seen in Figure 16.

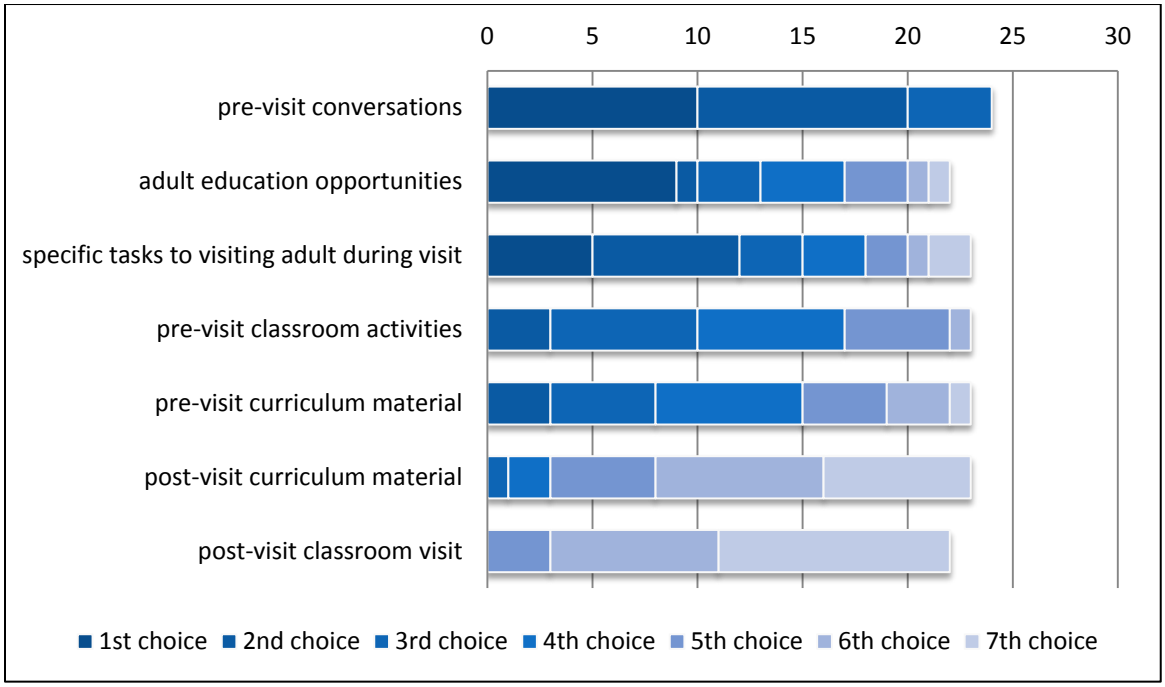


Figure 16 - Ranking of perceived best measures to ensure positive visiting teacher attitude

The results of this question illustrate that the question respondents perceived that the use of pre-visit conversations was the best way to create positive behaviour in the visiting adult. The high ranking of 'teacher education opportunities' is interesting because it indicates that by taking the time and utilizing the resources to educate the visiting adult, a further benefit can be gained when that adult comes with their pupils for an environmental education program visit. The low ranking for the 'post-visit classroom visit' and 'post-visit curriculum material' categories is likely due to the question respondents perceptions that the positive attitude created by such activities would probably wear off before the visiting classroom teacher had the chance to re-visit the environmental education centre. It clearly displays the attitude of the infrequent 'one off trip' that was a recurring statement in the interview narratives.

A subsequent question to the above query asked the survey respondents to provide a comment if they had any additional ideas on how to help visiting teachers / adults be a positive aspect of the

environmental education experience. Their responses included professional development training, classroom and school resources, explicit communication with the adults concerning their responsibilities, ample pre-visit communications including pre-visit pamphlets or packages, and explicit tasks given to the visiting adult during the trip.

The survey participants were next asked to provide the prevalence and type of some of the visiting teacher interaction tasks they undertake. The responses can be seen in Figure 17.

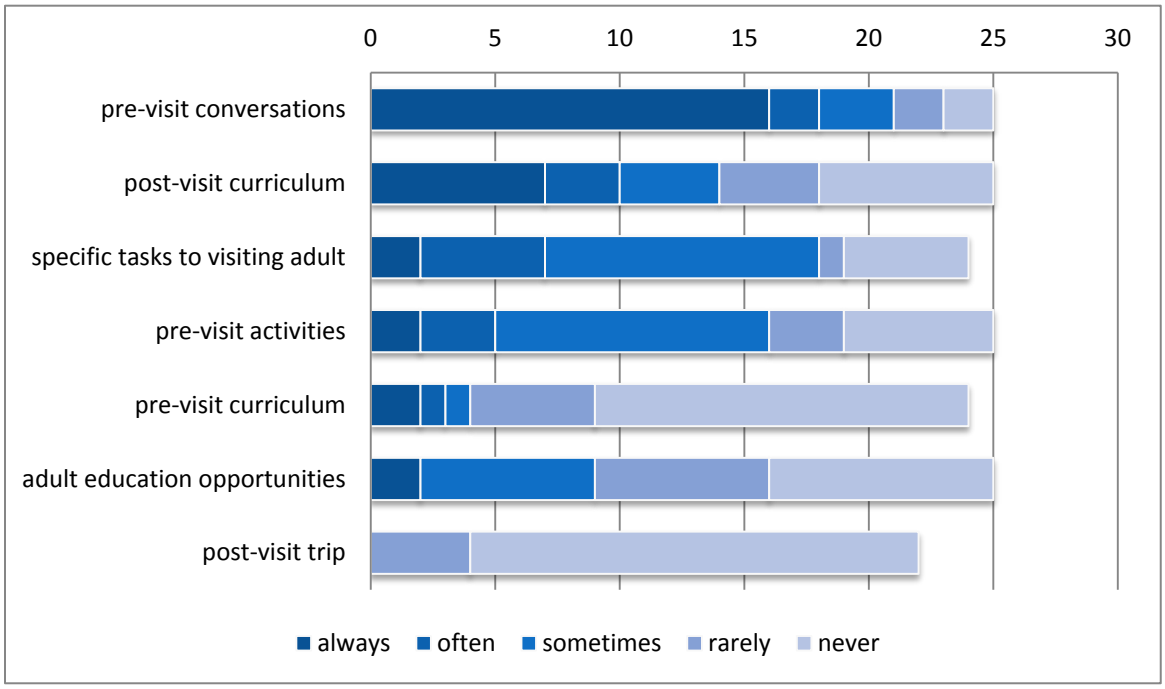


Figure 17 - Prevalence of Visiting Teacher - Environmental Educator Interactions

The results demonstrate that the pre-visit conversation is the primary interaction the environmental educator has with the visiting adult. In contrasting with the previous question that queried their perception of interactions that produce positive visiting adult attitudes, it is seen that although 'adult education opportunities' is ranked high in the attitude question, it is only accomplished by a few educators always in this actual behaviour question.

The prevalence of pre-visit conversations between the environmental educator and the visiting teacher as the primary source of interaction between the two adults led to a question querying what pre-formulated topics are discussed in these conversations (seen in Table 11).

Table 11 - Topics of Discussion between Visiting Adult and Environmental Educator

Activity	n	Percentage of affirmative response
Individual health and safety	23	100%
scheduling within the curricular plan	21	91%
concerns about group management	17	74%
coordinate between in-class and in-field learning environments	16	70%
adult responsibilities during the program	15	65%
previous background and comfort level of adult in the natural environment	7	30%

The question respondents reported that their conversations revolve around the aspects driven by risk aversion ('individual health and safety 'and 'concerns about group management') and conformity with the mandated curriculum. The low occurrence of conversations concerning the background of the visiting teacher indicates that there are likely many misunderstandings about the role the visiting teacher will play in the environmental education program and their own enthusiasm toward being in an environment that could be alien to their previous life experiences.

5.4.0 Discussion of Phase 2 results

5.4.1 Assessment

> The passionate environmental educator, wrapped up in the moment of teaching, is probably not in the position to make defensible claims about the long-term impact of their lesson on participants. Likewise, one cannot generalize from a series of anecdotes, however informative and satisfying. Evaluation provides perspective. It provides evidence of outcomes and impacts. It provides the types of information necessary for sound decision making. (Ernst, Monroe, & Simmons, 2009 p. 1)

The evaluation of each of Ontario's environmental education centres is important. Each centre is composed of a set of unique people, environmental conditions, and facility types. The survey portion of this study has shown that within the respondents' centres there is no external evaluation, no formative evaluation in the form of pre and post visit measurements, and very little summative evaluation conducted. The survey also shows that the majority of the informal evaluation conducted occurs once a season (31% of responses, n = 9) or once a year (28% of responses, n = 8). The survey respondents operate in a traditional informal evaluation model (Posavac & Carey, 1997). This model is characterized by a modernist attitude that educators "were free to work as they felt best, with little regard about formal evaluation of the results of their efforts. Evaluations of their work were confined to impressionistic evaluations made informally by supervisors or, in the case of physicians, only self-evaluations were made" (Posavac & Carey, 1997 p. 23). The North American Association for Environmental Education (NAAEE) had a realization that "all too often, how [environmental education] programs work (or don't work) is gleaned from a mixture of assumptions, instincts, anecdotes, and participating tallies" (Ernst et al., 2009 p. 1). Zint et al. reported in an assessment of the U.S. Forest Service's "More Kids in the Woods" initiative that 87% of the 19 programs tracked satisfaction and only 13% evaluated changes in participant outcomes (Zint, Covitt, & Dowd, 2011). The survey respondents in this study confirm this practice as endemic in some of Ontario's environmental education centres. 86% (n = 25) of the online survey respondents stated that they utilize a survey instrument completed by the visiting adult. The survey participants indicated that they liked using the visiting teacher survey format because it was a quick and easy method to acquire data about the quality of the program. None of the respondents reported using a survey with the pupils participating in the program. Further research is needed to discover if there is a standard or usual format for the visiting teacher survey and its effectiveness in gauging the success of the environmental program. The second and third most common assessment types used by environmental educators were group reflection and personal reflection. A

majority (83%, n = 24) of the online survey participants stated that the group debrief was a method of program assessment utilized in their centre. The group reflection assessment type is characterised by staff members involved with the program communicating with each other about the day's program. While it is a quick and social way to understand what happened during the program, unless it contains a structured portion where the educators are asked to reflect on whether, and how, the centre's goals have been achieved by the program, it can portray a very subjective view. None of the participants indicated that they utilized group debriefs as the sole method of their program assessment.

Personal reflection, or the "gut-check", was chosen by 76% (n = 22) of the survey participants. The professional environmental educator can quickly determine the success of a program by weighing the factors of student engagement, student excitement, student questioning, visiting teacher involvement, group mood, and curriculum linkages to conceive of a holistic evaluation of the program delivered. Future research could investigate the linkage between the perceived "gut-check" evaluation and the actual increase in participants' environmental awareness or consciousness.

The survey participants utilize almost exclusively the non-formal methods of program assessment. Only 7% (n = 2) of the participants indicated that they utilize a pre-visit and post-visit comparison measurement tool (survey) to assess their programs. None of the participants indicated utilizing an external body or organization to undertake a formal assessment of their programs. The reliance on subjective assessment methods is interesting because it suggests that many environmental educators are not accessing viewpoints outside of their own experience or judgement to ascertain whether or not they are being effective in fulfilling their centre's goals. They may perceive that they are fulfilling their goals, but without an external frame of reference or a milestone, the true progress toward the goal can never be ascertained.

Centres that do not undertake objective self-assessment or commission external evaluation, will be evaluated eventually by their stakeholders, but possibly using a model of evaluation that does not agree with their perception of what is most important in their program or centre. Patton (2008) outlines 78 different foci or types of evaluation that have been utilized in the past. A brief distillation of the list is provided in Table 12 below to highlight the diversity of questions that can be asked when examining an environmental education centre or program. The table demonstrates that each environmental education centre could ask multiple questions about itself and its programs depending on the type of information they wish to elicit.

Table 12 - Evaluation Types and their Utility in Environmental Education Centres

Theme	Focus or Type of Evaluation	Defining Question or Approach	Usage in an Environmental Education Centre
Regulatory	Accreditation, Compliance, Judicial, Monitoring, Norm Referenced	Does the program follow the rules and regulations of a licencing body? Does it comply with the law or some external measure?	Does the centre comply with all federal, provincial, and municipal regulations?
Situational	Appreciative inquiry, Context, Critical Issues, Descriptive, Ethnographic, Goal-free, Personalizing	What is the program's culture, ethos, or narrative of its participants? Are their needs being met?	What is the ethos of the centre? Does the 'atmosphere' of the centre contribute to the program's success?
Comparative	Comparative, Connoisseurship approach, Extensiveness, Mission, Reputation, Success case,	How do two or more programs rank on specific indicators? Utilization of peers or experts to make a determination.	How does one centre's programs compare to others' in the province, or world-wide?
Resource	Accountability, Cost-benefit analysis, Efficiency, Effort, Inputs,	Have resources been used appropriately? What resources are being used, at what rate?	What is the cost per participant? Where are their places to improve
Outcome	Attribution, Effectiveness, Equity, Goal-based, Impact, Longitudinal, Outcomes,	To what extent can program be linked to results? To what extent have goals been attained?	To what extent is the program meeting its goals?
Holistic	Real-world, Utilization	What information is needed and used by program participants in situ?	What is the best manner to judge the program?
Industrial	CIPP model, Implementation, Product, Quality Assurance, Systems	Evaluation of an entity's inputs, outputs, processes, and production design structure.	How does the centre operate?

Source: (Patton, 2008 p. 301-305), (Posavac & Carey, 1997)

In order to strengthen the position of Ontario's environmental education centres in a time of fiscal scarcity, effective assessment and evaluation should be conducted. Posavac and Carey (1997) outline 10 reasons why there may be reluctance or dysfunction over program evaluation, regardless of the field. These 10 reasons and the possible manifestation in environmental education centres are detailed in Table 13.

Table 13 - Dysfunctional Attitudes toward Evaluation

Dysfunction	Environmental Education context
Expectations of dramatic effect	The outcomes of an evaluation may result in findings that there is less than expected pro-environmental behaviour improvement effects of the program
Inappropriate pressure from stakeholders	A trustee may press an evaluation design that is likely to produce pre-ordained results
Judging quality is unprofessional	Evaluating a program can lead some employees to feel that their professional status is diminished, that they are not trusted
Evaluation will inhibit innovation	Results from an evaluation will drive programs to become standardized in nature
Termination of the program	Results of an evaluation lead stakeholders to remove funding or support of centre
Information will be misused	Fear that formative information about staff performance is used to determine rewards or promotions
Minimization of qualitative understanding	An evaluation cannot be sensitive to 'what is important' versus subjective observations and evaluations of programs
Evaluation drains program resources	Evaluation process withdraws money and personnel from daily program delivery
Losing control	Evaluation may remove decision making and autonomy of action within the program and the centre
Minimal impact of evaluation	Evaluation will neither be relevant nor useful in program improvement

Adapted from: (Posavac & Carey, 1997 p. 36-41)

To overcome or eliminate the dysfunctions to evaluation, the evaluation must address the needs of the people most affected by the evaluation (Patton, 2008; Posavac & Carey, 1997). An effective, and functional, evaluation begins with identifying the stakeholders of the program, fostering an intended use by the intended users, identifying the resources available to support an evaluation, and a clear understanding of the data collection tools (Ernst et al., 2009; Patton, 2008; Posavac & Carey, 1997). Once the evaluation process has begun to collect data, a functional evaluation process focuses on quality interactions with the primary intended users of the program (Patton, 2008). This focus ensures that the results will be useful to the program user (Posavac & Carey, 1997). The analysis, interpretation, and communication of the results should also be in the context of the user's intended use and perceptions (Ernst et al., 2009).

The online survey can be considered the first steps in a holistic evaluation of an environmental education centre. The questions were constructed to help environmental educators understand how they interact with their program participants before, during, and after the experience. The results of the survey can lead to discussion within centres concerning the barriers they perceive to evaluation.

The pre-visit interaction is important because it provides the educators and the program participants the opportunity to begin their experience together in the familiar context of the participants' home environment. Additionally, the transfer of information can reveal details that can drastically change the experience being offered. For example, if an environmental educator learned through a communication that many of the students do not have water resistant boots or shoes, the environmental educator can modify the program to minimize their exposure to wet ground or even provide access to waterproof boots for the group. Without this prior knowledge the environmental educator would have to 'scramble' to find boots or at the last moment change the program without having time to think about the consequences of the change on the experience of the participants. The survey results indicated that less

than a third (31%, n = 9) of the respondents conduct an in-person pre-visit interaction with their future program participants. This lack of 'on the ground reconnaissance' means that environmental educators are relying on the visiting adults' observations of the program participants' readiness. Since the environmental educator understands intimately the characteristics of their program, they are the best to judge the readiness of the program participants. Without previous participant observations, the educator relies on their ability to adapt to the characteristics and constraints of the participants. Coupled with constantly changing environmental conditions out of doors, the educator is in a state of constant adaptation to the many factors revealed to them once the participants 'step off the bus'. The effectiveness of an environmental education program can be validly questioned if the person undertaking the teaching, the environmental educator, is preoccupied with dealing with unforeseen circumstances and participant characteristics.

The post-trip interactions are as important as the pre-trip interaction, as effectiveness cannot be determined without understanding the short and long term effects of the 'treatment'. Several questions were asked of online survey participants about their post-visit interactions.

The majority (52%, n = 15) reported that they do not regularly undertake post-visit interactions such as take home assignments, curriculum lesson plans for in-class, in-class visits, or community meetings. There may be other types of post-visit interactions the educators undertake; however, in a subsequent question there was no mention of alternate activities. When asked why the post-trip activities were not conducted, the participants reported that there was insufficient time to undertake meaningful communication with the visiting teacher preventing them from consistently implementing post-trip interactions. Another comment provided by the survey participants was that there was little demand for post-trip interactions. The environmental educators wrote that it was their perception that many visiting adults treat their visit to the environmental education centre as a single event with little integration

within the daily routine of the classroom or group. If these perceptions are factual, it indicates that environmental education centres need to engage with the visiting adult in more meaningful ways to ensure that the lessons taught at the environmental education centre are continued, and reinforced, back at the pupils' regular learning habitat.

Despite having low evaluation practices, there are successes in Ontario's centres. It would be beneficial for all if they could elucidate their procedures to other centres so that similar methods could be utilized. 69% (n = 18) of the participants indicated that they were members of at least one organization whose mandate is the intercommunication between environmental education practitioners. The journals, conferences, and ideas generated by these organizations could be a valued support for environmental educators in their goal of increasing the effectiveness of their practice and addressing the dysfunctions toward evaluation. Most participants stated that financial cost was the predominant reason they were not members of professional organizations. A few participants stated that their employer should pay for the membership fee to these organizations. This argument stands in contrast to the low cost of professional memberships in the most relevant organizations for environmental educators, which ranges from $40 to $50 per year (COEO, 2013; OSEE, 2013).

Another aspect of a holistic understanding of an environmental education centre is the ethos or mission as an educational entity. When asked, 66% (n = 19) of the online survey participants reported that they feel that there is a shared vision of what their workplace goals are. Of that 66%, only 37% (n = 7) reported that their workplace goals were displayed in a very visible location, 42% (n = 8) reported that the goals were written down and stored in a binder or folder, and 5% (n = 1) reported that while the goals may have been written down, they were unsure about where they could be found. These results suggest that one third of the environmental educators had no explicit written understanding of the shared goals of their place of employment. While it is possible that the educators are involved in an

implicit, strong common goal reinforced daily by actions and words, these unwritten goals expose the centre to criticism if an external stakeholder wishes to understand the programs and efficacy in meeting the organization's goals.

Environmental education centres do perform program review tasks; 69% (n = 20) of the survey respondents reported reviewing their programs at least once a year. The majority (96%, n = 24) of those that do perform program reviews stated that determining the program's relevancy to the current Ontario school curriculum was a major task of the review process. 80% (n = 20) reported that their review also entailed reviewing the program's relevancy to the shared goals of the centre. It appears that those who do review their programs also have a strong connection to their shared goals and ensure that their programs address the centre's mission.

As mentioned earlier, evaluation validity is strengthened by having an external anchor or milestone to compare or measure from. The majority (79%, n = 22) of survey participants indicated that they do not have manuals or guidelines to conduct a program assessment. A small number, 10% (n = 3) of participants, indicated that they use manuals or guidelines frequently for their program evaluations. A similar number (7%, n = 2) indicated that while they do have manuals and guidelines to utilize, their centre does not use them in program evaluation. This result indicates that program review or evaluation is primarily conducted using measures developed by the environmental educators themselves.

Despite relying almost exclusively on internal program review methods, the environmental education centres as a whole are accountable to entities outside their buildings. Two of the survey questions explored the differences, if any, between how environmental educators would like to be evaluated (ideal) with their perception of how they are evaluated currently (actual). The results of the the first and second choices of these two ranking questions can be seen in Figure 8 on page 101. The survey respondents demonstrated in these questions that they feel that, for the most part, they are being

evaluated with metrics or measures that do not conform to their belief of 'what is important'. Presently they feel that they are being evaluated using quantitative 'number of participants through the system' and 'number of dollars spent per child' measures. The evaluation parameter of 'number of participants through the system' could be in reaction to the reality that many students do not have the opportunity to experience an environmental education program. In the 1988-89 school year, researchers Eagles and Richardson (1992) found that only 21% of Ontario students participated in a field program. The inadequacy of universal field program attendance could have lead to administrators and educators constructing a 'number of participants equals level of program success' system of evaluation.

The respondents indicated that they would rather be evaluated using the collected feedback from both the visiting adult and the participants, and potentially pre and post visit evaluations. This discord in the findings suggests that the implementation of pre- and post-visit surveys would be welcomed by environmental educators if they were given the tools and time to understand their usage. In my interactions with environmental educators it appears that for many educators the willingness is there but the resources in terms of actual metrics such as the Inclusion of Nature in Self (INS) (Schultz, 2000), the Connectedness to Nature Scale (Mayer & Frantz, 2004), or the New Ecological Paradigm (NEP) (Dunlap, 2008) are missing from the lexicon of common usage.

It appears from the survey participant responses that there is little consistency in evaluation and assessment behaviours between centres. There also appears to be little communication between practitioners concerning evaluation best methods or a sharing of evaluative tools. The survey participants clearly demonstrate that much of their program assessment is internally designed with little guidance from external sources. The participants also communicated a desire that their centres not be evaluated primarily by program cost and participant numbers, but rather by participant satisfaction and experiential outcome. This does not mean that they want exclusively qualitative metrics used, but rather

they would like to utilize evaluative tools that quantitatively measure the gain each participant makes in certain characteristics. Environmental educators want to perform high quality assessment, but some are still struggling with accessing external resources that are appropriate to their unique working circumstances (Ernst et al., 2009).

5.4.2 Programming

The second theme revealed from the interview phase of this study was called 'Programming'. Programming is here defined as the logical construction of learning activities and experiences by an educator for an environmental program participant.

The survey participants indicated in an open text question that science is a primary subject area their programming focuses on. Specifically, 13 out of the 41 activities listed by the educators have scientific currents or aims of education (see Table 7 - p. 80). There are potentially additional currents of education implicit in the other outdoor activities mentioned as well, since canoeing, guided hikes, and snowshoeing could have elements of naturalist and humanistic currents besides the physical education aspect. Further analysis and evaluation of each centre's programs could uncover the presence of these implicit currents. The single largest concern the survey respondents addressed is the Ontario curriculum (7 mentions). The fact that 7 out of 29 respondents explicitly utilized the word 'curriculum' in their open text answers suggests that the Ontario curriculum is a major factor in their programming choices. There was no mention of artistic or language based activities in any of the participant's answers. There appears to be a curricular focus on science and physical education streams of the Ontario curriculum in the participants' programs. Eisner's (Eisner, 2002) model of curricula can help explain the effect of these choices on program participants. In this case, the null curriculum teaches all the participants, pupils and visiting adults, that to understand or experience the natural world one has to approach it only through a scientific lens or through consumptive activities. The lack of alternate cognitive or affective aspects

coupled with the explicit need to have curricular linkages, may lead environmental educators to design programs that emphasize the natural world as an alternate classroom, rather than a place a pupil may visit and experience in their own manner. The results of a ranking question (see Figure 11 - Ranking of Importance when Altering a Program, p. 107) that queried the educators' perceptions for program adjustment supports this contention with respondents indicating that they ideally would place more focus on the environmental conditions, the level of the participant's knowledge, and the ethnic composition of the participants than they do currently. This situation can be contrasted with school systems in other countries, e.g., Germany where field trips are considered a social outing and curricular linkages are normally minimized or absent (Anderson et al., 2006). In this scenario, the experience of the field trip itself, whether it be to a museum or an outdoor centre, is the justification for the expense of money and schooling time. Learning in this situation occurs in multiple ways, with the pupil learning, in their own manner.

Programming is also affected by the length of time allocated for the trip. The majority (52%, n = 15) of environmental education experiences are known as 'day trips', whereupon a class leaves their school in the morning (9 am) and travels to the environmental education centre. Their arrival time at the centre is dependent on the traffic conditions and the distance from the home school. Once on site, there is an environmental lesson until lunch (noon). After the lunch hour, another environmental education session is accomplished with the length determined by the departure time back to the home school. Frequently the students need to be back at the home school by the school day's end to ensure that they can take their usual school bus home. If the centre is located far from the home school, the amount of environmental education instruction time can be as little as 4 hours. Despite the short time of experience, research has demonstrated that attitudes toward utilization of nature and connectedness to nature improved after 'treatment' of even one day but were not preserved over the long-term (Drissner,

Haase, & Hille, 2010; Kossack & Bogner, 2012). Similar to the day trips, the overnight trips include programming in the evening. Students sleep at the centre's facilities. The costs involved in running an overnight program are substantially higher than for day programs, thereby possibly inducing student or school fundraising to enable attendance. This fiscal reality can become another barrier to universal environmental education participation. Despite the increased costs and barriers in offering an overnight experience, research by Bogner (1998) demonstrated that five day program participants had favourable shifts in individual pro-environmental behaviour, both actual and intended, when compared with the control and one day program participants.

The question of what prevents the majority of Ontario's students from experiencing explicit environmental education for more than 8 hours is raised. The survey participants were asked to rank several perceived barriers to environmental education (see Figure 10, p. 106). The highest ranked barrier was budget allocation toward environmental education. The factors of bussing costs, school administration reluctance, and risk aversion of the visiting adults are also important. Visiting adults are often fearful of liability issues related to the safety of the pupils (Blanchet-Cohen & Elliot, 2011). The lack of funding and transport was similarly found to be a major barrier for environment based education in the United States (Ernst, 2007). The role of administration support for environmental education was also found to be fundamentally important in an American context (Ernst, 2012). All these factors were ranked very high by the participants and all three are related to issues stemming from centre remoteness from the program participants' community. It appears that the survey respondents felt that the major barriers presently to environmental education deal with the cost, in terms of financial and potential injury risk, of travelling away from the home community or school.

Schoolyard programs may be the solution to these barriers. If environmental education programs could occur within the home community, then the costs of bussing would be minimized and the perceived risk would be considerably lower since all the activities would occur in the local community; places that the

adults who have a responsibility of care frequent regularly. To discover the validity of this solution two questions were asked of the survey participants; “Is there value in schoolyard programs?” and “do the educators’ centres offer schoolyard programs”? The majority (96%, n = 26) of survey respondents stated that they see a positive value in schoolyard programs but only 36% (n = 9) of them are involved in actually implementing such activities in communities. The explanation for the discrepancy was queried and the respondents stated that the barriers of cost, personnel availability, and time opposed their desire to perform more schoolyard programs. This is an interesting result because it illustrates the geographical and institutional sequestration of many of the survey participants’ environmental education centres from the communities they primarily service.

5.4.3 Environmental Consciousness

Ultimately, all environmental educators would like to increase the level of environmental consciousness in their program participants and for the general population as well (Kyburz-Graber, 2013). They attempt to increase consciousness with the programs offered within their centres. However, learning occurs in locations other than explicit education centres (Dierking & Falk, 2003). Environmental educators understand that:

> free-choice learning experiences may result in transformation/connection, significant changes in thinking, attitudes, beliefs, behaviours or habits of mind. … Of course, the impact of such “priming” experiences only are evident much later. Since most research and evaluation currently misses the contribution of individual EE [environmental education] experiences along a lifelong learning pathway they underestimate the value that even a brief educational encounter may have. (Dierking, Falk, & Storksdieck, 2013 p. 360)

There are a myriad of places a person can experience the natural world, in varying ‘wildness’. Environmental educators, experienced in helping others increase their environmental consciousness,

have a perception of the quality of each of these places. The online survey asked them to rank several potential experiences. The survey participants chose “access to a ¼ acre woodlot without adult supervision” as the highest ranked option, with 50% (n = 12) of respondents choosing it as their highest ranked option. Thompson et al. (2008), in a study of significance of childhood experience of woodlands and other green or natural places in relation to adult patterns of use and attitudes to such places found that “if a person has not had frequent childhood experiences of woodlands or green spaces, there is a higher likelihood he or she will not visit such green places as an adult” (Thompson, Aspinall, & Montarzino, 2008 p. 124). They go on to suggest that “independent mobility is an important factor in enabling the development of children’s relationships with the outdoor and natural environment; restriction of mobility will hinder the development of the relationship” (Thompson et al., 2008 p. 135).

The result of the survey is interesting because it leads one to conclude that environmental educators are not necessary if children have unsupervised access to woodlots. While such a conclusion could be made from these survey responses, the interview participants provide a context that indicated their belief that while free access to a natural space could increase the familiarity of a person with the natural world, without an elder teaching respectful interaction etiquette, a young child, unfamiliar with the space, may irrevocably damage the natural space and not feel concerned about its demise. Bai and Romanycia (2012), speaking of the predominant cultural norms (patriarchy, colonialism, capitalism, and rationalism) of our society write that “By the time students come to school, even at a primary level, they will have internalized the dominant values and views that are damaging to both the earth community and their own immediate human community” (Bai & Romanycia, 2013 p. 104) .The inculcation of a ‘healing’ etiquette is possibly the reasoning why the survey participants chose daily classroom experiences with a teacher or environmental educator as the second highest and weekend trips with family to conservation areas as the third highest rankings. In both these situations there is a familiar, trusted adult transferring their respect for the natural world to those that are younger. These factors of familiarity and trust can

be seen as important to the survey participants because they ranked access to a woodlot with a volunteer environmental educator as the fifth of eight choices in their ranking. A volunteer educator, probably a person who loves children and the natural world, is not a familiar enough person for the children to trust.

Perhaps the most interesting of the results from this question are the low ranks for experiences that embrace a formal education aspect. The participants indicated a strong ranking for daily classroom experiences; however, it appears that the survey respondents feel that there is a factor within the present formal school structure that lowers the opportunity for off school grounds environmental consciousness building. It is suspected that the absolute reliance on clear curricular links, the cost of bussing, teacher and administration participation, and external costs make these experiences considered either a rarity or impractical to the survey participants (Ernst, 2007; Heimlich, Braus, Olivolo, McKeown-Ice, & Barringer-Smith, 2004; Taylor, Power, & Rees, 2010).

The high ranking of the daily classroom activity is important because it suggests that the survey participants felt that repetitive activities facilitated by a familiar person in the local community are vital for the increase in environmental consciousness. The factors of repeatability and local community are also strong components of the two ¼ acre woodlot options; with a divergence between the two discussed above.

The idea of allowing children to freely play outdoors without adult supervision would for many parents be inconceivable (Bringolf-Isler et al., 2010; Kalish, Banco, Burke, & Lapidus, 2010; Valentine & McKendrick, 1997). The survey participants, comfortable in natural spaces because of their own personal experiences, had a different viewpoint. When asked about what every community needed to maintain or increase environmental consciousness, the majority (58%, n = 14) chose wooded areas as their first choice (see Figure 13, p. 110). The strength of their response coupled with their previous high

ranking of unsupervised play in a woodlot suggests that environmental educators feel that every child should have repeated opportunities to experience unstructured play within a wooded area. The high rankings of schoolyard greening and community gardens also suggests a desire that nature experiences be local, accessible, and repetitive. These ideas are supported by place-based education researchers such as David Sobel (1996), David Orr (2004), and Richard Louv (2005), whose statements like: "education that supports and nourishes a reverence for life would occur more often out-of-doors and in relation to the local community" (Orr, 2004 p. 148), "place an environmental educator in every school… [they] serve as a kind of librarian of the out-of-doors, connecting teachers to curriculum materials and local resources" (Sobel, 1996 p. 54), and "it takes time—loose, unstructured dreamtime—to experience nature in a meaningful way" (Louv, 2005 p. 117) all speak of a different type of environmental education context than the present paradigm of bussing pupils to centres for one day programs. One of the last questions of the survey asked environmental educators to undertake some self-reflection and rank what they perceived to be the characteristics of an ideal environmental educator. The results (see Figure 14, p. 111) support the trend that environmental educators want to provide Louv's (2005) viewpoint of learning about nature through the provision of unstructured 'dreamtime'. Environmental educators feel that modifying a program to suit the educative needs of the group is important and worthy, while attempting to administer the same program consistently between different groups is not supported. This attitude is supported by research on the learning experience in environmental education. Environmental learning appears to be a more personal process than in other fields as "the subject matter itself often hits a chord with learners' values, emotions, and sense of themselves and their surroundings (social, environmental) now and in the future"(Lundholm, Hopwood, & Rickinson, 2013 p. 250).

5.4.4 Visiting Adult Influences

The outcome of environmental education programs involving school groups is principally determined by the visiting adult, usually the classroom teacher. The visiting adult is the principal connection point the environmental educators have with their future program participants. It is the visiting adult that determines the type and time span for the program.

The online survey was designed to explore the perceptions of environmental educators toward the visiting adults' influence on the pupils participating in the program. When asked directly to rank the types of visiting adults they would like to have at their programs, the environmental educators stated a strong preference for visiting adults that display active engagement in the lesson. They also expressed a preference for visiting adults that displayed a 'child-like engagement' over visiting adults that displayed a disciplinary or passive role. It is interesting that the survey participants would rather deal with a child-like adult than a disciplinarian or passive visiting adult. The implications in terms of the program delivery are that the environmental educator probably will have to control the childlike adult while a passive adult would just quietly accompany the group. This extra work in supervising another 'child' is actually preferable for the respondents to the consequences of the behaviour of the passive visiting adult; namely, possible decreased student motivation. The lower ranking of disciplinarian visiting adults is consistent with the environmental educators' higher tolerance to noise, risk, movement, and disorderly conduct by pupils, behaviours that are inappropriate in a classroom (Humberstone & Stan, 2011; Stan & Humberstone, 2011). Quantitative measures of the effect the visiting adults have on the outcome of the programs are beyond the scope of this project. Further research is required to understand not only the amount of variance the behaviours of visiting adults have on program success, but also the intricate dynamics of the environmental educator – pupil – visiting adult relationship.

However, if the behaviour of the visiting adult is so fundamentally important to the success of the environmental educator's teaching, then what measures can they pursue to ensure that every visiting adult that chaperones a group is a positive influence?

When asked to rank items as to what they perceived to encourage positive visiting teacher influences (see Figure 16, p. 114), and whether they undertook such activities (Figure 17), there was only agreement in the ranking in one category: 'pre-visit conversations'. Although the respondents ranked 'teacher education opportunities (in-school or on-site)'and 'specific tasks given to the adult during the visit' very highly in their perception of positive behavioural activities, only 36% (n = 9) of the respondents reported that they always or often utilize these interactions with the visiting adults. Since the majority of visiting teacher – environmental educator communications occurs during the pre-trip conversation, I wanted to discover the typical topics of discussion. When asked, all the respondents reported that issues relating to health and safety of the participants were always discussed. Another topic almost universally discussed was the placement of the visit within the curricular plan of the visiting adult. The respondents reported that few of their conversations include discussions concerning the previous background and comfort level of the visiting adult in the natural environment.

The visiting teacher is ultimately responsible for the well- being of the pupil. The phrase well-being includes physical, emotional, and educational aspects of the child's life (Ontario College of Teachers, 2013). Outside of parents, the teacher is the adult who exerts the most moulding force in the lives of the children (Makhanya, 2002). Their attitude toward the natural world determines the scope of educating their class about the natural world (Barry, 2009; Stan & Humberstone, 2011; Tan & Pedretti, 2010; Waite, 2011).

The importance of the realization that all behaviour is communication (Beavin & Watzlawick, 1967) is central to the effect of the visiting teacher influences on the environmental programs. Visiting adults that displayed bored or disinterested behaviours communicated these messages to their pupils and the environmental educators. Pupils have been primed, indeed trained, to pay attention to the communication from their teacher (Eisner, 2002). The teacher's primary professional task is to guide students, through various communicative means, through the learning curriculum requirements (Education Act, 1990). A teacher who communicates boredom, disinterest, and reluctance is guiding students to think of the lesson either as too boring or too risky to venture forth upon (Humberstone & Stan, 2011; Maynard, Waters, & Clement, 2013; Stan & Humberstone, 2011).

It is important to note that visiting teachers can make their own personal behaviours an important part of their pupil's learning journey. A teacher may be reluctant to venture into a forest, may be fearful, but if they communicate their fear explicitly and then take steps to overcome their fears, they provide an important lesson concerning the mature manner in which to challenge personal fears and risk-taking. Likewise, a teacher that is bored or disinterested with the environmental education lesson can modulate their behaviour to include the aspects of their world that stimulate their desire to learn. For example, a technologically savvy teacher may be bored of discussing verbally the rock cycle, but by utilizing a form of technology, i.e. a smartphone application about rocks, they can re-engage themselves into the lesson, perhaps even contribute information to it. The teacher communicates to their pupils that learning in one's own way, in a way that is interesting, is a vital part of continuous education. As Eisner (2002) writes, "It is easy to neglect the fact that teachers have needs that must be met through teaching. Because teachers are *people* who teach, it is important that we do not eviscerate the classroom of those opportunities that teachers need to gain satisfaction from teaching" (Eisner, 2002 p. 169). Of course in the example scenario described, the environmental educator must acknowledge the effect of the

teacher's learning format and work the deviation from the expected flow into a new learning construction. This deviation can affect the entire environmental education lesson, and so the importance of the communication relationship between the visiting teacher and the environmental educator cannot be overstated. If the environmental educator is aware of the visiting teacher's proclivities and interests, they are more likely to construct a lesson that engages the teacher, and thereby the pupils as well. Likewise, if the environmental educator knows of the interests and prior experiences of the pupils, the lesson can be further customized to the learning interests and preferences of the visiting group.

However, the environmental educator is limited in the amount of customization they can achieve by the constraints of the curriculum. The curriculum is the driving force to any teacher's activities with their students. The teacher needs to undertake certain explicit curricular tasks to remain employed; it is one measure of their success as an educator (Maynard et al., 2013). Teaching outdoors is different than teaching indoors; children outdoors are allowed to move, be louder, and get dirtier than when indoors (Blanchet-Cohen & Elliot, 2011; Humberstone & Stan, 2011; Maynard et al., 2013; Waite, 2011; Waters & Maynard, 2010). The difference in learning setting has an impact on the type of teaching; it becomes less confrontational in nature and more co-operative (Maynard et al., 2013). Environmental educators are inherently different than classroom educators. There are different forms of teaching, and so there are different forms of excellence in teaching (Eisner, 2002).

The discrepancy between the perceived best method and actual practice is an issue which environmental educators, and their centres, need to reflect upon. It is important that they acknowledge the effect a visiting adult may have on the success of a program. There should be explicit communication as to the feelings and thoughts the adult has about the experience (Maynard, 2007).

In this chapter the construction, implementation, and results of the online survey were described. The survey results supported the results derived from the interview phase concerning the importance of proper evaluation, effective intra- and extra- institutional communications, and the influence of the visiting adult on the outcome of an environmental education experience. In the next chapter, I blend the results of the two phases to develop a summary understanding of the actual and ideal characteristics of Ontario's environmental education programs.

Chapter 6 – Integration of Phases 1 and 2

In this chapter, I blend the results of the two phases into a discussion concerning environmental education in Ontario. I return to each of the three research questions to address how the results of the interview and survey phases support my contentions. The importance of connections, between centres and communities, pupils and educators, and between educator types is discussed.

This study aimed at answering three questions:

1. What is the present practicing domain of Ontario's environmental educators?
2. What are their perceptions as to the most effective method to create environmental consciousness?
3. Are they acting in a manner which supports their perceptions as stated in question 2?

Based on information gathered through semi-structured interviews and an online survey, the present practicing domain of Ontario's environmental educators can be called conflicted in nature. Many of the participants of the interview phase of the study implicitly communicated that they felt that their employment status was constantly under revision, primarily due to budgetary concerns. The distant geographical location of many centres away from their administrative headquarters can lead to a sense of isolation for the centre employees. There is also no provincial or federal government legislation that dictates the explicit provision of environmental education in the lives of Ontario's pupils or citizens. These three factors coupled together engender a 'bunker' mentality in many environmental educators. The absence of strong professional organization membership, the repetitive nature of providing short duration "one-time" experiences where strong relationships do not exist between visiting adults and educators, and the ever increasingly stronger push for strongly structured curricular based lessons lead some environmental educators to feel like they are alone fighting to increase the population's environmental consciousness.

The second research question sought to discover what environmental educator perceptions were concerning the most effective method to increase environmental consciousness. Environmental

educators stated that spaces which encouraged numerous and varied nature-to- person interactions were ideal. Environmental educators also felt that repetitive, unstructured, and self-regulated interactions between a person and their environment best engendered an increase in environmental consciousness. They emphasized that at the beginning of an interaction, it is important that the pupil be mentored an etiquette that leads them to respect their environment.

Attempting to fuse repetitive, unstructured, and self-regulated interactions with the organizational hierarchy of schooling systems is where one conflict within an environmental educator's life occurs. The 'ideal' situation changes through pragmatic methods to become 'the best we can do with what we have.' Environmental educators that participated in this study communicated that their workplaces can improve; some have more work to do than others. This study revealed that four major themes are relevant in this pragmatic transformation of the ideal to the real. The first, assessment, illuminated the idea that programs and centres need to be accountable. They require regular assessment to ensure that the programs they offer are of high quality, relevant, ecologically and economically sustainable, and in accordance to their collective goals. The second theme, programming, spoke of the reality that programs are constructed with the Ontario curriculum as the primary driver of daily activities. The programs were designed to be delivered to participants whose total time for learning was generally either less than 6 hours or an overnight trip of less than 3 days. The third theme, increasing consciousness, illuminated the conflict between delivering a product (the curriculum based environmental lesson) with consistency between groups versus the need to provide ample unstructured time to the participants in order for them to build a relationship with the land.

Lastly, the theme of the visiting adults' influence discussed the ideas surrounding the power visiting adults have in moulding the program content, its delivery, and its outcome. Visiting adults with positive

attitudes toward learning about the environment engendered the best learning experiences for the pupils.

The last research question places a mirror in front of Ontario's environmental educators to assist in their self-reflection of their practices. The participants communicated that the 'bunker' attitude of isolation was detrimental to their practice. In the theme of assessment, many centres do not undertake meaningful assessment practices. Many of the study participants communicated that they are unable to assess their programs and centres because they have a lack of resources and time. The lack of professional organization participation leads to a deficit of communication between the educators about how to properly perform evaluation. This deficit is very dangerous to Ontario's environmental education programs. Without an organizational voice speaking for environmental educators, communicating the metrics of evaluation that are important for educators, the centres are vulnerable to being evaluated and judged by metrics they would not support (i.e. number of pupils taught per dollar spent). Within the theme of programming and visiting teacher influences, the 'bunker' attitude has led to programs being constructed that do not address the implementation of the relationship building opportunities educators felt were so vital in engendering improved environmental education. The study participants communicated that their pre- and post-visit interactions were not as extensive as they could be, with the barriers of time and resources again being a factor. The drive in many centres toward getting as many students to experience the natural world as possible is detrimental to the quality of the programs. Instead of building a relationship with each group visiting the centre through pre- and post-visit interactions, these centres create a single, high intensity pulse of experience. The effectiveness of these programs cannot even be assessed because the lack of a relationship with the visiting adult results in the assessment tool, predominantly a survey, not being completed. The few centres that provide these relationship building interactions benefit greatly from them in terms of program quality.

Ultimately, the success of an environmental education centre is determined by its connections. The connections the educators mediate between pupil and environment during each lesson, the connections the staff make with visiting adults and community members, and the internal reflections the centre makes when examining its own practices. Centres throughout Ontario need to reach out and make the connections they are lacking. First they need to acknowledge those lacking connections, take the time to analyze the best way to reconnect, and then begin the process. For every connection made the centre becomes stronger, less isolated, and better to fulfill its mandate of educating all people about the natural world. Without that strength, community, and proper evaluation of program effectiveness, the centres are at risk of administrative decisions ordering their closure.

Chapter 7- Study Implications and Areas for Future Research

In this chapter, the implications of this study to the planning and education communities are discussed. The need for improvements in evaluation, communication, and outreach are outlined. I make the contention that despite well intentioned recommendations meaningful change only occurs in communities and educative institutions when the stakeholders explore, decide upon, and implement the necessary improvements together. Additionally, ideas for future research arising from this project's exploration of the topic are outlined in this chapter.

7.1.0 Planning Community

The planning community can do much to assist environmental educators in their task of increasing the environmental consciousness of the people of Ontario. Firstly, they need to engage in a dialogue with some of the environmental education organizations such as COEO, that can best inform them about the types of green spaces suited for their community.

The current policies of intensification will create denser, more urbanised communities (Ontario Ministry of Infrastructure, 2012). Highly urbanized communities lack the biological and geomorphological diversity that makes certain spaces excellent for engendering environmental consciousness (Fjørtoft & Sageie, 2000; Matthews & Limb, 1999; Waters & Maynard, 2010). Accessibility for children is especially important (Woolley, Dunn, Spencer, Short, & Rowley, 1999). In tomorrow's dense urbanized city, it would be important that children be able to access these 'wild' parks without the attendance of any adults. The unstructured time utilized by older children in the natural world was highlighted by this study's participants as a major factor in engendering an increase in environmental consciousness. The variability of topography and ecological features are important factors because they ensure that the novelty of the experience can be renewed each time the person visits the site. This novelty of

experience is important because it ensures that the person will return to the site and develop a connection with some of the features.

Municipalities that wish to be considered 'green' communities need to take urban planning measures, such as strict, enforced urban design guidelines and natural space provisions to ensure that the spaces account for the emotional need of their population. Utilizing section four of the GGH Growth Plan as a regulatory tool, municipalities can design strong official plans that "develop a culture of conservation" (Ministry of Infrastructure, 2006, § 4.2.4), engage the province to declare urban areas as 'significant' areas thereby invoking the protection of Provincial Policy Statement 2005 section two, and work with the applicable conservation authorities to implement land protection through watershed protection policies. Ideally every neighbourhood should have a green space constructed so that a parent knows that their child is playing, learning within, and loving a space that helps them grow into an adult that engages in activities that minimize their impact on the ecological services provided by nature.

7.2.0 Education Community

Since the task of environmental education has been partially given to relatively inaccessible environmental education programs, it is important that they perform this vital task as effectively as possible. The education community can make important improvements to the environmental consciousness of their communities. They can become the bridge to reintroduce people to their natural environment, whether it is in an urban or rural setting.

Environmental education programs need to invest the time and resources for visits and activities within their communities. Ideally every group that visits the centre would have a pre-trip visit by the environmental educator to begin the relationship building between sites. These pre-trip visits should not be totally adult centred, like a parents' night, but rather a chance to get the environmental lesson started at the home community with the pupils and future visiting adult. By demonstrating how to

undertake local environmental education lessons, the environmental educator increases their pedagogical influence by educating the adult about the techniques and pedagogy of out-of-doors education. The experience also primes the students to the idea of learning out-of-doors. An adult that sees the benefit of conducting classes outdoors could utilize the techniques again in that year, thereby gifting the pupils with another out-of-class experience. The pupils that are primed for learning outdoors will experience less stress than pupils who simply get off a bus in the 'woods' and are told to learn. Environmental educators can also help with the implementation of the Ministry of Education's recent changes in the interdisciplinary *Scope and Sequence of Expectations* within all the schools in their jurisdiction by creating opportunities for adults to learn from adults about teaching about the environment.

Environmental education centres have to ensure that all their educators are active members of a professional organization. These organizations act as a common area where assessment tools, best practices, and important news can be shared among educator professionals. By having many members, these organizations may present a solidarity movement to counter trends that threaten sister centres, or to advise municipal governments about the best methods to create environmental educative spaces.

Environmental education programs need to perform more meaningful assessment. There is an emergence of environmental education specific evaluation manuals, such as the *Evaluating Your Environmental Education Programs* workbook (Ernst et al., 2009), that provide simple, accessible means to begin the evaluation process effectively. Environmental centres also need to obtain professional external assessment, to ensure that the centre's programs and operation are consistent with its mandate. If environmental educators perceive that their employment existence is being threatened by budgetary concerns, then they need to better justify their role in the community. The educators that participated in this study communicated that much of their present program assessment is based on a

satisfaction survey of the visiting adult. These surveys need to be altered so that the explicit program goals, if they exist, of the centres are assessed. Centres also need to begin to utilize more assessment tools that test the treatment efficacy of each of their programs. Centres could substantiate their funding needs with quantifiable scientific data that clearly demonstrates that a pupil that has attended an environmental education lesson at the centre is more connected to their environment.

7.3.0 Future Research

This study uncovered many questions that future research could help to answer.

Most importantly, a study using a probability sampling method could provide the statistical legitimacy of this thesis's findings. Such a study would uncover the aspects of this phenomenon that the non-probability and low-respondent number characteristics of this study did not encompass. A study aiming to achieve a representative probability sample would require the initiative and co-operation of several organizations such COEO, OSEE, Conservation Ontario, and the Ontario Camping Association to open their membership lists for research purposes. Secondly, of great importance to the practicing environmental education community, is a quantitative understanding of the effect a pre-trip in-class visit by the environmental educator has on the success of increasing environmental consciousness. For such a study, the use of the affective and cognitive dimension metrics (see section 1.5.0) would ensure that valid metrics are used. Thirdly, an investigation to understand the agreement between the "gut-check" assessment utilized by environmental educators and the actual increase of environmental consciousness should be undertaken to understand if environmental educator's perceptions are in line with the validated measurement instruments. Fourthly, to better understand the reality of how Ontario's pupils are spending their environmental education trip time, an effort should be exerted to accumulate data that compares the actual time away from school to the amount of time the pupil is immersed in the environmental education program. It is possible that time in transit, meal-times, and off-program times reduce the amount of program time to a fraction of what is supposed. Lastly, a study

that compares the effect of programs with an unstructured organization to programs with a predominance of curriculum based hands-on activities should be supported by researchers, educators, and funding agencies. Such a study could confirm the environmental educators' perception that unstructured activities best deepen environmental consciousness.

Environmental education in Ontario requires some context specific research. It is essential that the unique circumstances that compose Ontario's society be explored. Planners need to understand that accessible natural spaces must be positioned in the intensifying cities with as much priority as the provision of parking or transit. Educators need to appreciate the necessity for providing the opportunity for pupils to access the natural world within their school day. In the next chapter I provide some concluding remarks concerning environmental education in Ontario.

Chapter 8 - Concluding remarks

In this final chapter, I conclude the study report with some general comments about the future of environmental education and the necessity for the planning community to acknowledge the importance of natural spaces for the health of a human community. I outline nine characteristics that construct an effective environmental education centre. These characteristics are derived from the models created by the first phase of the study tempered by the results of the survey.

The results of this study demonstrated that the perceptions of environmental educators concerning the best practice to increase environmental consciousness are, for the most part, in conflict with the realities of their daily practice. The evaluation of programs and the effect on program participants is conducted using primarily subjective measures such as personal reflections and low response-rate surveys. There was no evidence of external evaluation methods being utilized in either phase of this project. The choice of programming was conducted with explicit curricular linkages as a primary concern versus the perceived best method of educative need-oriented programming. The influence of the visiting classroom teacher was acknowledged by the environmental educators but the actions to ensure that the classroom teacher's attitude is in congruity with the program goals are mostly absent. Environmental consciousness was felt to be increased best when the participant is immersed in an unstructured discovery-based natural environment.

The goal of this project was to explore environmental education in Ontario to understand if the people tasked to increase the population's environmental consciousness are operating effectively. This project, in its exploration through interviews and an online survey, has shown that advanced environmental education programs have nine characteristics for all centres to strive toward. Firstly, advanced centres have explicitly displayed goals that are the basis of all evaluation. Second, they evaluate using pre and

post visit measures to test the efficacy of each experience. Third, they conduct pre-trip and post-trip interactions with groups that include in-person local educative lessons. Fourth, they create programming that complies with the centre's goals and curricular linkages. Fifth, they explicitly inform visiting adults of their role in the upcoming environmental education lesson. Sixth, they engage in programming that allows ample time for unstructured interactions between the pupil and the natural spaces. Seventh, they employ educators that are driven to expand the culture of environmental education to beyond the centre's boundaries. Eighth, they are located in the same municipality as the population that supports and utilizes them. Ninth, they are the focus of the community's efforts to adopt an urban plan that espouses environmental concern as one of its primary drivers.

Environmental education is about developing a relationship with subjects, and objects, that lie outside of human construction. As the Ontario Ministry of Education stated in its policy framework document for environmental education in Ontario's schools:

> It is critical that we help students understand how our individual and collective behaviour affects the environment, and how environmentally responsible lifestyles can contribute to healthy, sustainable ecosystems. Environmental education is a vital tool that helps young people understand the nature and complexity of environmental challenges and builds their capacity to take appropriate action (Ontario Ministry of Education, 2009, p. 3).

If the cities of Ontario are due to become intensified as the next paradigm of municipal planning, then it is vital that planners, community members, and educators communicate and develop systems to ensure that every person, especially the youth of society, have the opportunity to daily experience the stars above their heads, the feeling of climbing a tree, and the emotion of seeing the ever changing natural environment evolve with them.

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Appendices

Appendix 1 – Information and Consent Letter for Interview

This letter is an invitation to consider participating in a study I am conducting as part of my Master's degree in the School of Planning at the University of Waterloo under the supervision of Professor Michael Drescher. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

The goal of environmental education centres is to provide a venue for the public to be educated about the natural world, with the hopes that the knowledge and experiences gained in that process lead to increased environmental consciousness. There are barriers to providing this opportunity for environmental enlightenment. Educators across Ontario address their local challenges in different ways but there should be a unified consensus about what the parameters are for making an environmental lesson succeed. The purpose of this study, therefore, is to understand the perceptions of Ontario's environmental educators concerning the characteristics they feel are most important in constructing and undertaking an effective environmental education lesson or session. The information from the interviews will be used to understand the characteristics that practicing environmental educators feel are the most crucial in providing lessons or experiences that increase the environmental consciousness of their students. A subsequent web survey will assess if environmental educators utilize those characteristics in their daily teaching activities.

This study will focus on discovering the challenges and opportunities in environmental education centres within Ontario. I will explore what environmental educators value in their programming, how they go about it, and whether and how they evaluate themselves during and after a lesson/session. (insert centre name)'s mandate is to educate the population about the environment. As a practicing environmental educator, you have perceptions and narratives that can help me understand the challenges and rewards of working as an environmental educator. Therefore, I would like to invite you as one of several professional educators to be involved in my study. I believe that because you are actively involved in the education and operation of your organization, you are best suited to speak to the various issues, such as the constraints to effective lesson delivery.

Participation in this study is voluntary. It will involve an interview of approximately 1 hour in length to take place in a mutually agreed upon location. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a summary of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. A few months after the interview you will be invited to participate in the anonymous web survey phase of the project. The web survey will assess if the environmental educators are fulfilling the best methods outlined in the

interviews. It will consist of an online survey in which participants are asked to answer less than 50 questions. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission, anonymous quotations may be used. Data collected during this study will be retained for 2 years in a locked cabinet. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me by email at ckopar@uwaterloo.ca. You can also contact my supervisor, Professor Michael Drescher at 519-888-4567 ext. 38795 or email: mdresche@uwaterloo.ca

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact the director of the Office of Research Ethics at 519-888-4567 Ext. 36005.

I hope that the results of my study will assist environmental educators assess their teaching practices into the future. I also hope that the research will provide evidence for the continued and increased support of environmental education programs across Ontario

I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Yours Sincerely,

Chris Kopar

CONSENT FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

_____

I have read the information presented in the information letter about a study being conducted by Chris Kopar of the School of Planning at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

☐YES ☐NO

I agree to have my interview audio recorded.

☐YES ☐NO

I agree to be contacted in 3 months about participation in the web-survey.

☐YES ☐NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

☐YES ☐NO

Participant Name: _____ (Please print)

Participant Signature: _____

Witness Name: _____ (Please print)

Witness Signature: _____

Date: _____

Appendix 2 - Semi – Structured Interview Questions

1. How long have you been an environmental educator?
2. How did you decide to educate people about the environment?
3. What do you think people need to know to be environmental conscious?
4. What do you feel is important when conducting a lesson?
5. Tell me a story about the "day in the life of… (participant's name)"
6. What are the greatest things you can do as an environmental educator to help another person be more environmental conscious?
7. How do you assess how you're doing as an educator?
8. What support do you get from your co-workers, supervisor, centre manager?
9. What are the challenges of being an environmental educator?
10. If you were given a chance to change those challenges, what would you change?

Image Interpretation

Take a look at this concept group. These are concepts or domains that some theorists say make up the parts of an effective environmental program.

1. Do you understand what each one represents?
2. Do you agree with the theorists?
3. Should one or more of these be larger, meaning it is more important, or has a greater effect on the success of the lesson? Why do you say that?
4. Should one or more of these be smaller? Why?
5. Is there anything missing? Is there something there that should not be?
6. In the centre where you work, are any of these assessed? How are they evaluated? How often? By whom?
7. Do you think environmental educators should evaluate themselves more often? What sort of evaluation should they do?

Is there anything else you want to tell me to help me understand the factors that make up an effective environmental education program?
Are there any questions I should ask future participants about this topic that you think might help in understanding the perceptions of environmental educators?

Thanks.

Appendix 3 – Online Survey Questions Organized by Themes

Theme	Question(s) Posed	Information Obtained
Performing assessment	• Which of the following pre-visit interactions does your centre perform for the majority of the groups that you educate? • Please write some of the reasons why a pre-trip interaction is not performed. • Please describe the major reasons why you do not preform a pre-trip, in-person visit? • Do you regularly (majority of groups) perform any of the following post-trip activities? • Please briefly describe the reasons why the post-trip activities outline in the previous question (***take home assignments, in-class curriculum lesson plans, in-class visits, and/or community meetings with participants***) are not regularly completed • Which of the following is/are methods your centre uses in assessing the programs offered? In the fill-in box, please write what, in your opinion; is the most beneficial part of using that assessment tool? • How often does your centre (program staff, managers, etc.) review the programs you run or offer? • What are the tasks typically performed in a program review at your centre? • Do you feel that your workplace has a shared vision of what the overall environmental education goals are? • Which of the following best describes the way the workplace goals are presented? • Does your workplace have manuals or guidelines concerning the evaluation of environmental education programs? • Please rank the following evaluation parameters in terms of how you think your centre should be evaluated. • Please rank the following evaluation parameters in terms of how your centre is evaluated currently. • Are you in contact with other environmental educators or conservation authority employees?	• Amount of pre-visit opportunities for formative assessment • Explanation of barriers to pre-trip communication • Explanation of barriers to pre-trip interactions with students • Types of post-visit assessment, communication, and/or interactions • Explanation of barriers to post-visit assessment, communication, and/or interactions • Types of assessment activities and participant narrative of activity value • Incidence of assessment • Assessment types utilized • Participant's perception of workplace educational mission • Explicitness of workplace educational mission • Availability of assessment tools • Ranking of participant's ideal assessment method • Ranking of participant's perception of current program assessment methods • Absence or presence of communication with fellow environmental educators

	• What are the typical topics you talk about with other environmental educators and conservation authority employees? • Do you utilize any of these in your interactions with visiting teachers?	• Topics of conversation with fellow educators • Incidence of pre and/or post visit interactions and assessment communication opportunities
Programming	• What types of activities does your centre offer program participants? • What is the typical length of time a participant spends at your centre? • Do you see a value in providing a schoolyard program to nearby schools? • Is your centre involved in schoolyard programs for schools in the nearby area • What barriers are there to prevent your centre from undertaking schoolyard programs? • Does your centre communicate with other environmental education centres or non-profit organizations to coordinate programming? • Please rank the importance of each of the following options when you are thinking about making changes to your environmental education programs. • Please rank the following options in terms of them being barriers to environmental education • Please rank what, in your opinion, are the ideal aspects an environmental educator should think about when modifying an environmental education program? • Does your previous response depend on the age of the child? If so, can you please explain how? • What are the characteristics of an ideal environmental educator? Please rank the items according to what you believe are the characteristics of a superior environmental educator.	• Program types • Program length (contact time with students) • Value judgement on the utility of schoolyard programs • Presence or absence of workplace programs in schoolyards • Perceived barriers to offering schoolyard programs • Presence or absence of interconnecting programming between environmental education centres • Judgement ranking of factor importance in current program decision making • Judgement ranking of barrier significance • Judgement ranking of factor importance in ideal program decision making • Absence or presence of thought around age appropriate programming. Reasons for variation in programming due to student's age. • Value ranking of educator actions or attitudes that contribute to increasing environmental consciousness

	• Do you utilize any of these in your interactions with visiting teachers? • In your pre-visit chats with visiting adults/teachers, does the topic of your conversations include:	• Incidence of pre and/or post trip programming • Presence or absence of programming communications with visiting teacher
Increasing consciousness	• Please rank the items below in terms of how strongly it may positively affect the development of a person's environmental consciousness. • Please rank the items below according to what, in your opinion, are the most important elements all communities need to maintain or increase environmental consciousness levels in their population. • What are the characteristics of an ideal environmental educator? Please rank the items according to what you believe are the characteristics of a superior environmental educator.	• Value ranking of activities inducing increases in environmental consciousness • Value ranking of infrastructure elements • Value ranking of educator actions or attitudes that contribute to increasing environmental consciousness
Visiting teacher influence	• Which of the following pre-visit interactions does your centre perform for the majority of the groups that you educate? • Please rank the items according to what would be the best types of visiting teachers or adults to one of your programs • Please rank the items according to what, in your opinion, would be the most effective way of encouraging positive visiting teacher / adult influences • Do you have additional ideas on how to help visiting teachers / adults be a positive aspect of the environmental education experience? • Do you utilize any of these in your interactions with visiting teachers? • In your pre-visit chats with visiting adults/teachers, does the topic of your conversations include: • Are you a member of a professional environmental or outdoor education organization? If yes, please write the organizations' name(s) in the text box. If no, please write the reason why you are not a member	• Visiting teacher and environmental educator communication communication routes • Value ranking of visiting teacher behaviour types • Value ranking of methods to modulate visiting teacher influences • Participant feedback on methods to module visiting teacher influences • Incidence of methods to modulate visiting teacher influences • Presence or absence of visiting teacher modulating methods • Participant membership in professional organizations. Reasons for no membership in professional organization
Demographics	• Please select which of the following best describes your role • In the construction of this survey there were some assumptions made about you, the participant. Here you can comment on the survey itself. Please put your comments in the text box.	• How participant identifies their workplace • Relevance of survey to participant's lived experience

Appendix 4 – Online Survey

Characteristics of Effective Centres_

There are 42 questions in this survey

Survey Questions

Dear Participant, Thank you for considering to participate in a research study conducted by Chris Kopar, under the supervision of Dr. Michael Drescher in the School of Planning of the University of Waterloo, Canada. The study is for a Master's thesis.

The objectives of the research study are to understand the characteristics of effective environmental education centres and assess whether Ontario's environmental educators are operating in ways they report to be the most effective.

If you decide to volunteer, you will be asked to complete an anonymous ***30*** minute online survey.

The survey questions focus on ***assessing the practices and behaviours of environmental educators.*** If you prefer not to complete the survey on the web, please contact me and I will make arrangements to provide you another method of participation. Participation in this study is completely voluntary. You can withdraw your participation at any time by not submitting your responses. There are no known or anticipated risks from participating in this study.

It is important for you to know that any information that you provide is completely anonymous and will be kept fully confidential. All of the data will be summarized and no individual can be identified from these summarized results. Furthermore, the web site is programmed to collect responses alone and will not collect any information that could potentially identify you (such as IP address or other machine identifiers).

This survey uses LimeService (TM) which is an open source survey whose data server is in Germany. Consequently, the data is under the protection of EU privacy regulations. For more information about the EU regulations please visit:

http://ec.europa.eu/justice/data-protection/individuals/rights/index_en.htm

If you prefer not to submit your data through LimeService (TM), please contact me at ckopar@uwaterloo.ca so you can participate using an alternative method (such as through an email or paper-based questionnaire). The alternate method may decrease anonymity but confidentiality will be maintained. A paper based questionnaire would need to be received by March 1, 2013 to be utilized in the study.

The data, with no personal identifiers, collected from this study will be maintained in an encrypted file on a password-protected computer in a restricted access area of the university. The data will be electronically archived after completion of the study and erased after two years.

Should you have any questions about the study, please contact either ***myself*** ckopar@uwaterloo.ca or ***Dr. Drescher,*** mdresche@uwaterloo.ca. Furthermore, if you would like to receive a copy of the results of this study, please contact either investigator.

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please feel free to contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca

Thank you for considering participation in this study.

[1] With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

*

Please choose **only one** of the following:

- I agree to participate
- I do not wish to participate

[3] Please select which of the following best describes your role:

Please choose **only one** of the following:

- I am a conservation authority environmental educator
- I am an environmental educator employed in a for-profit company
- I am an environmental educator employed in a not-for-profit organization
- I am an environmental educator employed by a school board
- I am an unpaid (volunteer) environmental educator
- Other (please describe)

Make a comment on your choice here:

[4] What types of activities does your centre offer program participants?

Please write your answer(s) here:

The most requested activities are:

Other activities available are:

[5] What is the typical length of time a participant spends at your centre?

Please choose **all** that apply:

- None, we go to the participants' school / facility
- 1 to 4 hours
- 4 to 8 hours
- 8 to 24 hours
- 1 day to 3 days
- 3 days to 5 days
- More than 5 days
- Other:

[*6] Some environmental centres interact with their participants before they come to the centre or have the program experience.*

The interaction can be an email, letter, phone call, fax, or in-person visit.

Which of the following pre-visit interactions does your centre perform for the majority of the groups that you educate?

Please choose **all** that apply:

- In-person interaction
- Mail in form
- Phone call with visiting teacher/adult
- Email exchange with visiting teacher/adult
- Parents meeting

- Skype conversation
- None of the above

[7] Please write some of the reasons why a pre-trip interaction is not performed.

Please write your answer here:

[8] Please describe the major reasons why you do not perform a pre-trip, in-person visit?

Please write your answer here:

(9] Many Environmental Education Programs offer post-trip or post-experience activities.

Do you regularly (majority of groups) perform any of the following post-trip activities?

Please choose **all** that apply:

- Take home assignment for participants
- Curriculum lesson plans for in-class
- In-class visits
- Community meetings with participants (e.g. whole school or youth group)
- none of the above are performed regularly

[10] Please briefly describe the reasons why the post-trip activities outline in the previous question (*take home assignments, in-class curriculum lesson plans, in-class visits, and/or community meetings with participants****) are not regularly completed***

Please write your answer here:

[11] Which of the following is/are methods your centre uses in assessing the programs offered?

In the fill-in box, please write what, in your opinion, is the most beneficial part of using that assessment tool?

Please choose all that apply and provide a comment:

- Survey given to visiting teacher / adult
- "Gut-check" - personal feeling
- After program reflection with other staff
- Pre-visit / post-visit evaluation of the participant's attitudes using a measurement tool (survey)
- Formal assessment by external body
- None of the above (please write how you evaluate your programs)

[12] How often does your centre (program staff, managers, etc.) review the programs you run or offer?

Please choose **only one** of the following:

- Once a month
- Once a season (Fall, Winter, Spring, Summer)
- Once a year
- Once every couple of years
- I don't know

[13] What are the tasks typically performed in a program review at your centre?

In the text boxes you can add details about how often each task is performed.

We review:

Please choose **all** that apply:

- Program relevancy to current Ontario school curriculum
- How often each program is requested by participant leaders
- Budget calculations to determine program costs

- Program relevancy to the shared goals of the centre
- Availability of materials for the program
- The attitude the environmental educators have about the program
- Other things about our program (Please Explain)

[*14] Do you feel that your workplace has a shared vision of what the overall environmental education goals are?*

Please choose **only one** of the following:

- Yes
- No

[15] Which of the following best describes the way the workplace goals are presented?

In the comment box please describe the shared goals of your workplace.

Please choose **only one** of the following:

- They are written down and posted in a very visible location.
- They are written down in a binder or folder.
- They are written down, but I'm not sure where.
- We may have something written, but it is not being used.
- Other

Make a comment on your choice here:

[16] Does your workplace have manuals or guidelines concerning the evaluation of environmental education programs?

Please choose the most accurate option for your workplace. Additionally, if you have titles or authors of these evaluation documents, please enter them in the text box. Thanks

Please choose **only one** of the following:

- Yes. We use them all the time when looking over our programs.
- Yes. We sometimes use them to conduct a more thorough review of our programs.
- Yes, but we do not look at them very much.
- Yes, but they are not used at all.
- No.

Make a comment on your choice here:

[17] The next two questions are written with similar wording. Please take extra care in reading the questions carefully.

[18] There are many ways to evaluate an environmental education program or centre.

Please rank the following evaluation parameters in terms of how you think your centre <u>should</u> be evaluated.

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Number of participants who get to experience a program
- Average time each participant gets to experience within a program
- Results from a pre-visit and post-visit assessment (e.g. each student draws a picture before the visit about rivers, then draws another picture a few weeks later)
- Number of working connections the centre has with community groups, schools, and other environmental education centres
- Amount of money expended for each participant experience
- Number of letters written by participants thanking your centre for a great experience
- Collected feedback from supervising adults (teachers, leaders) concerning their met expectations
- Collected feedback from participants collected during program debrief sessions

[19] There are many ways to evaluate an environmental education program or centre.

Please rank the following evaluation parameters in terms of <u>how your centre is evaluated currently</u>.

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Number of participants who get to experience a program
- Average time each participant gets to experience within a program
- Results from a pre-visit and post-visit assessment (e.g. each student draws a picture before the visit about rivers, then draws another picture a few weeks later)
- Number of working connections the centre has with community groups, schools, and other environmental education centres
- Amount of money expended for each participant experience
- Number of letters written by participants thanking your centre for a great experience
- Collected feedback from supervising adults (teachers, leaders) concerning their met expectations
- Feedback from participants collected during program debrief sessions

[20] Are you in contact with other environmental educators or conservation authority employees?

Please choose **only one** of the following:

- Yes
- No

[*21] What are the typical topics you talk about with other environmental educators and conservation authority employees?*

Make a comment on your choice here:

[22] Do you see a value in providing a schoolyard program to nearby schools?

Please choose **only one** of the following:

- Yes
- No

[23] Are you a member of a professional environmental or outdoor education organization?

If yes, please write the organizations' name(s) in the text box.

If no, please write the reason why you are not a member

Please choose all that apply and provide a comment:

- Yes
- No

[24] The next few questions relate to programming and interactions you may have with other entities.

[25] Is your centre involved in schoolyard programs for schools in the nearby area?

Please choose **only one** of the following:

- Yes
- No

[26] What barriers are there to prevent your centre from undertaking schoolyard programs?

Please write your answer here:

[27] Does your centre communicate with other environmental education centres or non-profit organizations to coordinate programming?

Please choose **only one** of the following:

- Yes
- No

[28] Please rank the importance of each of the following options when you are thinking about making changes to your environmental education programs.

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Curriculum connections
- Environmental considerations (climate, terrain)
- Level of participant's knowledge
- Visiting teacher / adult characteristics
- Ethnic composition of participants

[29] Please rank the following options in terms of them being barriers to environmental education

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Bussing and transportation issues
- Facility characteristics (e.g. size, topography, building sizes)
- Budget allocated to programming
- Risk aversion of parents
- Risk aversion of visiting teachers / adults
- Risk aversion of participants
- School administration reluctance
- Cultural norm differences

[30] Please rank what, in your opinion, are the ideal aspects an environmental educator should think about when modifying an environmental education program?

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Mandated curriculum
- Environmental considerations (climate, terrain)
- Level of participant's knowledge
- Visiting teacher /adult characteristics
- Ethnic composition of participants

[*31] There are many ways a person can become environmentally conscious.*

Please rank the items below in terms of how strongly it may positively affect the development of a person's environmental consciousness.

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Access to a 1/4 acre woodlot or wetland without adult supervision
- Access to a 1/4 acre woodlot or wetland with a volunteer environmental educator
- Daily classroom experiences facilitated by a teacher / environmental educator
- Weekend trips to conservation areas with family
- Weekend trips to conservation areas with the school class
- Yearly week-long trip to woods with the school class
- Yearly week-long trip to woods with the family

[32] Does your previous response depend on the age of the child?

If so, can you please explain how?

Please choose **only one** of the following:

- Yes
- No

Make a comment on your choice here:

[33] At the root of this master's project is the question: What do all communities need to ensure that their inhabitants live in environmentally conscious ways.

Please rank the items below according to what, in your opinion, are the most important elements all communities need to maintain or increase environmental consciousness levels in their population.

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Wooded areas
- School yard greening
- Community gardens
- Urban environmental education centres (located within the built boundaries)
- Rural environmental education centres (located outside of the built boundaries)
- Open sport fields (baseball, cricket, soccer)

The next question will give you the chance to tell me about alternate choices.

[34] If you have any additional ideas not covered in the options detailed in the last question, please write them here. Thank You.

Please write your answer here:

[35] What are the characteristics of an ideal environmental educator?

Please rank the items according to what you believe are the characteristics of a superior environmental educator.

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Lets the students interact with the natural space in their own manner
- Usually adheres to the curriculum linkages as advertised to the visiting teacher
- Becomes a child and experiences nature with the class
- Judges the level of environmental consciousness of the group and modifies the entire program to suit their educative needs
- Tries to administer the same program consistently among different groups
- Maintains a safe environment so that no injuries can occur

[*36] In the interview phase of my project one recurring idea expressed by the participants was that visiting teachers and adults have a large impact on how a program or lesson is conducted.*

Please rank the items according to what would be the best types of visiting teachers or adults to one of your programs

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- An adult that feels the activity time is their vacation time (non-present)
- A passive adult that allows you to do your own activity without any input (present but passive)
- An adult that only addresses discipline issues with their group (discipline only)
- An adult that expresses active engagement in the activities (active engagement)
- An adult that approaches the activities like a child (child-like engagement)

[37] What are good methods to ensure that visiting adults and teachers positively influence the environmental education program being presented?

Please rank the items according to what, in your opinion, would be the most effective way of encouraging positive visiting teacher / adult influences

Click on an item in the list on the left, starting with your highest ranking item, moving through to your lowest ranking item.

- Pre-visit conversations
- Pre-visit curriculum material
- Pre-visit classroom activities
- Teacher education opportunities (in-school or on-site)
- Post-visit curriculum material
- Post-visit (in-person) trip to classroom
- Specific tasks given to the adult during the visit (e.g. role of recorder)

[38] Do you have additional ideas on how to help visiting teachers / adults be a positive aspect of the environmental education experience?

Please write your answer here:

[39] Do you utilize any of these in your interactions with visiting teachers?

Please choose the appropriate response for each item:

	Always	Often	Sometimes	Rarely	Never	Not Applicable
Pre-visit conversations						
Pre-visit classroom activities (in-person)						
Pre-visit curriculum materials						
Teacher or adult education opportunities (in-school or on-site)						
Post-visit curriculum materials						
Post-visit (in person) trip to classroom						
Specific learning tasks given to the adult during the visit						

[40] In your pre-visit chats with visiting adults/teachers, does the topic of your conversations include:

Please choose the appropriate response for each item:

	Yes	No
Individual health and safety considerations (e.g. allergy, dietary, behavioural)		
Teacher responsibilities during the program		
Concerns about group management		
Scheduling within curricular plan		
Previous background and comfort level of the adult in the natural environment		
Coordinating activities to support the in-class and in-field learning environments		

[41] In the construction of this survey there were some assumptions made about you, the participant.

Here you can comment on the survey itself. Please put your comments in the text box.

The survey was:

Please choose **all** that apply:

- Relevant to your experience as an educator
- Interesting
- Too long
- Confusing in some area(s)
- Other:

[42] Thank you very much for completing the survey.

Appendix 5 – Postcard Recruitment Script

Hello, my name is Chris Kopar.

I am interested in your thoughts about environmental education. I am a Masters student at the University of Waterloo and my thesis concerns the effectiveness of environmental education in Ontario.

I would like to invite you to participate in my online survey. It should take you about 30 minutes of your time. It is a totally anonymous survey. It can be found at: http://tinyurl.com/kopar

Please complete it today.

If you have already completed the survey, thank you very much. Your input helped in better understanding the realities surrounding environmental education within Ontario.

Please feel free; I encourage you, to pass on the survey link to anyone who is involved in environmental education in Ontario.

If you have any questions or concerns, please feel free to contact me at: ckopar@uwaterloo.ca

Thank you for your time and for completing the survey. Enjoy my art.

Chris Kopar
MSc Candidate, University of Waterloo

Appendix 6 – Advertisement for Online Survey

Hello environmental educators,

I would like to invite all COEO members to participate in an anonymous online survey on the topic of my Masters thesis: "The Characteristics of Effective Environmental Education Programs".

Please click on the link to access the survey. It should take about 30 minutes and is anonymous.

http://kopar-survey.limequery.com/index.php/657397/lang-en

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo.

However, the final decision about participation is yours.

If you have any questions or concerns please do not hesitate to contact me by email at: ckopar@uwaterloo.ca

Thanks. Chris Kopar

Appendix 7 – Detailed answers to open ended survey questions (Unedited)

Please describe the major reasons why you do not perform a pre-trip, in-person visit?

Time, Financial Cost, Planning
no staff available to leave the centre, staff needed on site to run program
Our programs are day programs not overnight programs so the need for lots of pre-information to help the teacher is not necessary. We are beginning to send pre-lessons via email however to assist with making the most of the visit once students get to our centre.
Staff restraints. costs money.
n/a
not mandated by former board, staff timing. Only have parents night when students are from cultures where co-ed experience not common
cost and human resources
Same schools have been coming for years.
we did do so on request when we operated overnight programs. Now we only do day programs and pre-trip visits are no longer required or requested by groups.
We don't feel it is necessary for a day trip
Unnecessary.
not enough time in the day
Too much time.
Cost to the Conservation Authority; this would require many additional hours, plus transportation costs well beyond the budget limits. Distances travelled would be excessive, (not very environmentally friendly, either!)
we did sometimes when we ran overnight/multiday programs. With day-only programming, it is no longer necessary or demanded by groups.
Currently we do not have the staffing to support this.
not enough time in my schedule for the teachers or myself to arrange this meeting.
There is great distance to the schools from the centre.
We do not have the capacity for a pre-visit
Time and staffing - we have just one staff member doing programming, that person is usually busy presenting most of the time - no time for pre-trip, in-person visit. Also,funding for position is based on actual program time - not busy presenting program means no money coming in.

Please briefly describe the reasons why the post-trip activities outline in the previous question

We have never developed anything for this, and when we have we find teachers brush it aside and are uninterested. Some do amazing things on their own with their trip, others, unfortunately, just use their visit as a stand-alone experience.
We are working on this. Have not been organized yet to provide take home materials. Follow up visits are rarely suggested/offered
Depends on the length of the program and if the program is with a school, organization or open enrollment
The teacher participates in the program and is responsible for post trip analyses
We do not have followup visits with the students. We do provide follow-up lessons for the classroom teacher to use if they choose, however we have no control over whether they do or not, and we get almost no feed from those that may be using them.
generic assignments, may or may not match with teachers direction in unit of study
they are
In class Tecaher followup, Handouts, Journals
Some teachers find that they have so much curriculum material to get through that they are unable to extend a day trip beyond the single day's program as such the 2 hour program is not extended beyond that time frame

regardless of what we provide outside of that.
teacher loses interest in continuing activities for subject/are pressed to move to another
not mandated and not enough time (home school teachers comments)
cost $
not needed
a few activities require at-school completion of tasks. We removed this component from most because we found that teachers rarely acted upon them.
W\I do not know if the teacher uses the preplan or follow up activities they are provided with
We do not feel the need to provide beyond our day of activites on site/in school.
it is up to the class room teacher to carry out these duties. Many choose not to
Unfortunately, many of the classroom teachers come to the nature centre because they are scheduled to do so, and the timing is not their choice. Therefore, activities at the centre are sometimes not tied to what they are doing in the class at the time, so many teachers treat the day as an isolated outing. As well, post-trip activity ideas and resources are not currently offered by the centre, though full pre- and post-trip packages are in the works.
we used to offer follow-up activities and worksheets but now we find they aren't used by groups anyway so we stopped providing them.
Not developed by staff; not requested by clients
We offer post-trip follow-up activities and lessons to the teachers, but have no idea of how much these are used, as we do not have any post-trip contact with the teachers.
not enought schedule time to do this
Community meetings aren't regularly completed.
We are currently working on a take home package for students. It's not yet complete
lack of interest, lack of resources
to my knowledge the materials/activities are completed and used in the classroom as follow-up
never thought of it

b) In the fill-in box, please write what, in your opinion; is the most beneficial part of using that assessment tool?

Survey given visiting teacher / adult	Finding out about anything we can improve upon. We usually get very positive feedback, though, which is encouraging but also not very helpful in setting the stage for any improvements
	important to have a client feedback form after the program
	great suggestions from adults, include student feedback in survey
	no opinion
	we recieve good feedback from teachers and they ask students about their experiences, we oftern adapt our programs based on this feedback
	substantiates quality for stakeholders, funding providers.
	We frequently hand out surveys, generally get less than 10% returned
	Get feedback from the horses' mouths.
	gives data that can be measured for supervisor's review
	suggestions for improvement
	gives the teacher the ability to reflect and provide qualitative assessments
	quick and easy for teachers
	teacher comments are important - can access program's connection to student, classroom activities and curriculum directly
	they are the ones paying for the trip
"Gut-check" - personal	Driving us forward to do better.

feeling	by the participant in the moment- good to know where the students are at
	great to read personal reaction when there is no time to "couch" words
	diagnostic- how engaged are students, number of on-task behaviours observed- on
	take time to reflect individually on the day
	You know when activities succeed or bomb.
	engagement with the students is obvious; if we miss the boat with this, it's easy to figure out.
	staff have better understanding of variables affecting how the day went.
	it fits our busy schedule
	person self-assessment
	self-improvement
After program reflection with other staff	Getting a balanced picture, at least from our perspective, of what happened and how we can improve - great ideas come out of these discussions.
	very important to get feedback from instructors
	Chat with teacher going through each program activity
	good to hear that others are feeling the same or differently and why
	staff are excellent practitioners- know when program worked or didn't acheive outcomes, also know whether program is chosen, highly requested
	no opinion
	chat with co workers to determine improvements
	debrief allows us to porcess concerns if any.
	Rarely done; sometimes just griping about a bad group, but sometimes a short debrief helps to identify program shortcomings.
	Sharing of perspectives helps group analyze strengths and weeknesses of day.
	Every staff has a new perspective
	good to brainstorm how the program wents
	debriefing the "highs" and "lows" and how to improve
	in-depth view from staff's perspective
Pre-visit / post-visit evaluation of the participant's attitudes using a measurement tool (survey)	We periodically send out a survey to repeat visiting teachers, for more in depth input on general programming
Formal assessment by external body	NO COMMENTS
None of the above	NO COMMENTS