

NO TRAGEDIES BEFORE GRADE FOUR? EXPERT OPINION ON
TEACHING CLIMATE CHANGE TO CHILDREN

By

CARLY LOUISE ARMSTRONG

B.A., University of Toronto, 2006

A thesis submitted in partial fulfillment of
the requirements for the degree of

MASTER OF ARTS
in
ENVIRONMENTAL EDUCATION AND COMMUNICATION

We accept this thesis as conforming
to the required standard

.....
Dr. Elin Kelsey, Thesis Supervisor
School of Environment and Sustainability

.....
Dr. Richard Kool
Graduate Committee Member
School of Environment and Sustainability

.....
Dr. Anthony Boydell, Director
School of Environment and Sustainability

ROYAL ROADS UNIVERSITY

April 2010

© Carly Louise Armstrong, 2010

Abstract

One response to solving global climate change is the education of the next generation. The goal is to ensure they mature as responsible environmental citizens. This research explores expert opinion across disciplines to determine when children should learn about climate change. David Sobel (1996) asserts that there should be no tragedies taught before grade four and many have followed his guideline. Semi-structured interviews were conducted with five participants to garner their views regarding Sobel's conjecture; a thought-piece was circulated to the participants to further elicit their opinions. This study indicates that Sobel's benchmark is not applicable across all contexts and that a critical appraisal by educators is necessary to determine what children need to know about climate change given their circumstances. A set of guidelines and guiding principles emerged from the data to help provide insight to educators about teaching climate change.

To life

Table of Contents

CHAPTER 1: INTRODUCTION	1
BACKGROUND	1
STATEMENT OF RESEARCH PROBLEM	2
STUDY LIMITATIONS AND DELIMITATIONS	3
NEED/SIGNIFICANCE OF THE STUDY	4
RESEARCHERS PERSPECTIVE	6
CHAPTER 2: LITERATURE REVIEW	8
CHAPTER 3: RESEARCH METHODOLOGY	15
RESEARCH DESIGN AND RATIONALE	
TRUSTWORTHINESS AND CREDIBILITY OF THE STUDY	18
DATA COLLECTION	19
PARTICIPANTS AND SITE	21
DATA ANALYSIS	24
CHAPTER 4: RESULTS	26
THEME 1: OFFSET INFORMATION WITH POSITIVE ACTION	27
THEME 2: FIND AND INSPIRE HOPE THROUGH ENVIRONMENTAL EDUCATION	28
THEME 3: CREATE OPPORTUNITIES FOR CHILDREN TO EXPERIENCE A SENSE OF COMMUNITY	30

THEME 4: ENCOURAGE CHILDREN TO THINK CREATIVELY ABOUT THE PRESENT AND FUTURE	32
THEME 5: CREATE OPPORTUNITIES FOR CHILDREN TO SPEND TIME IN NATURE AND TO FALL IN LOVE WITH THEIR LOCAL, NATURAL ENVIRONMENTS	34
THEME 6: MOTIVATE STUDENTS TO ACT FROM A PLACE OF LOVE RATHER THAN FEAR	38
THEME 7: QUESTION THE APPROPRIATENESS OF A “DEVELOPMENTAL MODEL”	39
THEME 8: BUILD COMPETENCE IN TALKING WITH CHILDREN ABOUT TROUBLING ISSUES	43
THEME 9: INCLUDE EMOTIONS AND FEELINGS IN THE TEACHING AND LEARNING OF ENVIRONMENTAL EDUCATION	47
THEME 10: MAINTAIN AWARENESS OF MEDIA EXPOSURE AND HELP STUDENTS MAKE SENSE OF COMPLEX MESSAGES	51
SUMMARY	52
<u>CHAPTER 5: DISCUSSION AND CONCLUSIONS</u>	<u>55</u>
SUMMARY OF THE STUDY	55
NO TRAGEDIES BEFORE GRADE FOUR?	55
GUIDING PRINCIPLE 1: REJECT SCARE TACTICS AND TEACH ENVIRONMENTAL EDUCATION AS LOVE FOR NATURE AND LIFE	57
GUIDING PRINCIPLE 2: MOVE BEYOND THE NARRATIVE OF CLIMATE CHANGE AS A TRAGEDY TO A COMMUNITY CONTEXT	62

GUIDING PRINCIPLE 3: CREATE A SUPPORTIVE ATMOSPHERE FOR CHILDREN TO EXPRESS THEIR EMOTIONAL RESPONSES TO CLIMATE CHANGE	65
GUIDING PRINCIPLE 4: CREATE COMMUNITIES THAT ENGAGE STUDENTS AS ACTIVE PARTICIPANTS AND RECOGNIZE THE INTERCONNECTIVITY BETWEEN HUMANS AND NATURE	67
GUIDING PRINCIPLE 5: BE MINDFUL OF ONE’S CONCEPTIONS OF REALITY SHAPE AND ARE SHAPED BY CONTEXT	70
GUIDING PRINCIPLE 6: USE ACTIVE FORMS OF ENGAGING STUDENTS WITH ENVIRONMENTAL ISSUES,	74
GUIDING PRINCIPLE 7: BROADEN THE CONCEPT OF “DEVELOPMENTAL STAGES”	77
CONCLUSIONS	78
REFERENCES	82
<u>APPENDIX A</u>	<u>89</u>
ORIGINAL INTERVIEW SCHEDULE	89
<u>APPENDIX B</u>	<u>91</u>
THOUGHT-PIECE	91

Acknowledgements

The completion of this thesis would not have been possible without the unwavering support of the many wonderful people in my life. My heartfelt thanks go out to Dr. Elin Kelsey, whose encouragement, positivity, insight and intellect have contributed immensely to this work. I am fortunate to have an incredibly supportive family who has continuously championed my efforts both within academia and elsewhere by listening to my ideas and concerns and through other in-kind donations without which I'm certain I wouldn't have come this far. To all the amazing people I have worked with in this program at Royal Roads, each of you are a source of inspiration and hope. Finally, my endless gratitude to Andy Beaton- your support and belief in my dreams has meant the world to me.

Chapter 1: Introduction

Background

Climate change is one of the most important global issues of our time. With its prominence, much emphasis has been placed on the role of educators to provide relevant information to youth. The hope is that, through education, the next generation will be climate-literate, capable of addressing climate change, and motivated to act on behalf of our shared environment to ensure the wellbeing of future generations (Johnson, Johnson, Sweeney & Williams, 2009; McCaffrey & Buhr, 2008; Pooley & O’Conner, 2000). The United Nations Educational Scientific and Cultural Organization (UNESCO) is a strong proponent of sustainability education, of which Climate Change Education (CCE) has been identified as an integral aspect (UNESCO, 2009). In his address to convened delegates at the 2009 conference for CCE, the UNESCO Director General Mr. Koichiro Matsuura called upon the member states to provide educational experiences that enable learners to understand the challenges of climate change while encouraging the necessary changes in attitudes and behaviour that will be necessary to confront the issue. He states that educational systems must become more interdisciplinary in nature in order to facilitate appropriate CCE (UNESCO, 2009).

This is an important call to action for educators around the world. However, what constitutes appropriate CCE is not well understood or well developed within Environmental Education (EE) literature. Environmental educators have explored EE in general by generating theories about EE and its role in motivating pro-environmental behaviours and achieving ecological literacy. Yet, there is a lack of concrete guidance for

educators regarding complex issues like climate change in terms of the emotive responses learning about difficult issues can incite in young learners.

Scholar and educator David Sobel considers climate change a “tragedy”; one of the “big, complex problems beyond the geographical and conceptual scope of young children” (Sobel, 1996, p. 27). Sobel (1996) argues that no tragedies should be taught before grade four, a contention that has important implications regarding when and how climate change should be taught at the elementary level. Sobel’s conjecture is an essential starting point for a more detailed investigation of CCE, especially given that his claim has been widely embraced among educators; for example, Canadian National Parks, adopted it as a guiding principle (personal communication, Susan Wolff, 2009). This research aims to explore Sobel’s conjecture in greater depth by exploring opinion both within and outside of the field of EE through an extensive literature review and interviews with ‘experts’ in various related fields.

Statement of the Research Problem

Do experts agree with David Sobel’s conjecture that there should be no tragedies taught before grade four? I explored this question in relation to climate change and examined the reasons why each expert either agreed or disagreed with Sobel’s conjecture. The primary objective of this research was to gain an understanding of whether or not there is consensus both within the field of EE and across disciplines regarding Sobel’s benchmark in general, and in terms of how Sobel’s guideline might apply to CCE. Furthermore, this research aimed to gain insight into expert opinion regarding Sobel’s definition of tragedy and his move to separate ‘big, complex problems’ from the ‘nearby

sadnesses of children's lives'. The ultimate goal of the research was to provide guidance to educators regarding CCE.

The insight gained from this detailed analysis of existing literature and scholarly thought will help to illuminate the difficulties and benefits of teaching complex issues to young children and provide educators and scholars with a starting-point for exploration. Using Gee (1999) as a guide for an approach to discourse analysis, this research employed an in-depth analysis of the discourses involved in or relevant to this study, including the interview transcripts generated. A discourse analysis approach to data coding including categorization and constant comparison methods provided a framework for organizing and analyzing the data collected through the interviews. The ideas and evidence cited within the interviews were analyzed both separately and in conjunction with the information found within relevant scholarly literature.

Study Limitations and Delimitations

An important delimitation for this study was to create a working definition of 'expert' that would function as a main parameter for finding research participants. Experts were selected for participation in this study based on a combination of professional qualities, including: a) their published works, b) recommendations from their peers, c) the number of years of experience working in their field, d) their academic credentials, and e) their willingness to participate. For example, an individual with a Master's level education and 10-15 years experience working in a related field was considered an expert; an individual with a PhD and at least 5 years working in the related field was also be considered an expert. An individual that had worked for over 20 years

in their field but did not have formal education within the academy was taken as an expert as well.

Another delimitation within this study was travel restriction. In order to avoid undue carbon emissions, I conducted all interviews through Skype. This not only reduced the ecological footprint of the study, but also allowed me to seek out international participants that would have been unavailable had I attempted to conduct all interviews face-to-face.

The decision to restrict travel also presented some limitations to the study. By conducting the interviews through Skype, I was unable to observe the participants throughout the interviews; as a result, it is possible that I did not detect unspoken cues available through body language, eye contact, or other non-verbal communication. I felt the savings of carbon emissions and project funds justified the unfortunate removal of this other layer of communication from the study.

It is important to note that my thesis question sought to explore CCE in regards to elementary school-aged children (six to twelve year olds). Often, the conversation blended into a discussion of children younger than six or older than twelve and other important factors regarding CCE at other age levels. Within this thesis, the term “children” will be used to refer to elementary school aged children; any consideration that deviates from this age group will be detailed explicitly within the text.

Need/Significance of this study

Alongside UNESCO’s call for the central role of education in addressing climate change, numerous scholars have cited the need for education as a key aspect of addressing environmental issues, including climate change at both local and global levels

(Cohen, 1992; Johnson, Johnson, Sweeney & Williams, 2009; McCaffrey & Buhr, 2008; Pooley & O’Conner, 2000). As Pooley and O’Conner explain, “the main goal of environmental education is to assess environmental issues, find feasible solutions to any problems that are identified, and finally to create pro-environmental behaviour” (p. 711). However, as EE programs have become more prominent, some scholars have raised concerns about how and when environmental information is shared (Hicks, 1998; Sobel, 1996). Authors have discussed the potential for stress, anxiety, pessimism, denial and a loss of hope in young children due to the ‘problem-oriented’ focus of EE (Hicks, 1998; Kelsey, 2007; Kool & Kelsey, 2005). Some research has shown the unintended consequences of EE programs on young children, including withdrawal from peers, anxiety, stress and frustration, which has prompted educators to think more deeply about the implications of EE programming (Sobel, 1996).

Simultaneously, authors are beginning to challenge prevailing views on the most effective modes of changing an individual’s behaviour. Historically, behaviorists such as Volk & Hungerford (1990) argued that knowledge would lead to appropriate attitudes and subsequent action, however Chawla and Flanders (2007) argue that motivating an individual to act may be much more complicated, “antecedents of action are much more complex than knowledge alone” (p. 437). Research has shown that children need to develop a strong connection to the natural world in order to take responsibility and behave in pro-environmental ways, a finding that inherently increases the scope of EE to include opportunities to nurture child-nature relationships (Chawla, 2001; Tanner, 1998).

Given the increasing scope of EE and the growing uncertainty over the content and timing of CCE and the potential emotive responses to such content, it is important

and timely to explore these issues in greater depth. While one goal of EE and CCE is ultimately to alter individual behaviour so children grow to act on behalf of the environment, greater understanding is needed regarding appropriate CCE at various age levels and the potential impacts of either too much or not enough information to spur youth into action.

Within the field of environmental education there has been little dialog over Sobel's (1996) conjecture. It has been widely adopted with apparently little question. This lack of debate leads to the question of whether or not educators agree with Sobel's benchmark; it is possible that this relative silence indicates agreement, but at this point, whether or not there is universal consensus about Sobel's 'no tragedies before grade four' remains speculative. It is important to reach beyond the realm of EE into other disciplines to understand whether or not such a guideline holds water in EE as well as in related discourses. Such an exploration was facilitated through a qualitative approach, including discourse analysis. This research combined the analysis of various conversations (within literature and through the interviews conducted in this study) to determine the level of consensus regarding Sobel's conjecture and the implications for CCE. This study contributes to a greater dialog that is currently emerging within the EE field regarding the purpose and goals of EE in general and CCE in particular. The findings from this research will enable educators and others to gain a more solid understanding of the potential drawbacks and benefits of various approaches to CCE and will help to inform educators as they plan and implement CCE programs.

Researcher's Perspective

As a young environmentalist I can relate to the concerns held within Sobel's perspective having experienced the despair, anger and frustration upon learning about environmental destruction in my youth. I feel that the propensity for difficult emotions to become present in young learners is likely; however, I also believe that education is an essential tool to creating positive change in the world. I feel that there must be some balance to be struck between what is taught and how it is taught, to ensure that difficult subjects will be dealt with appropriately across grades and ages. I undertook this study to understand when and how we can begin to introduce complex subject matter to younger students, especially as it pertains to climate change. I believe that there must be a way for educators to share information about the world without overwhelming young learners. This research represents my attempt to form a set of guidelines that may help to inform what CCE looks like at different age/grade levels. I believe that as a global community we are faced with urgent environmental challenges that need to be addressed in order to achieve a more just and livable world. I have a strong commitment to helping address these issues so that undue burden does not fall upon future generations. Rather than ignoring our responsibilities to other living beings (both human and non-human) I think that we must begin in earnest to address contemporary challenges that have been ignored by mainstream society for too long.

Chapter 2: Literature Review

Sobel (1996), working from Piaget's theory of cognitive development, recommends three main developmental stages that any environmental program ought to consider. For the first stage, comprising the age group three to seven years, the educational focus should be on inciting empathy and cultivating relationships as the child is building a familiarity with their immediate surroundings. The second phase, ages eight to eleven years, encompasses exploration when youth begin to venture further from their familiar neighbourhoods and schoolyards. Sobel argues that this stage holds the child's strongest years for bonding with the Earth. He contends that the final phase, which begins around age eleven and continues into adulthood is the suitable time for encouraging youth to engage in social action. This is the phase where they begin to reach out beyond their communities and become prepared to deal with tragedies (Sobel, 1996).

Given that one of the main goals of CCE is to promote a generation of individuals that is motivated and informed to make environmentally responsible decisions, some EE research has been devoted to understanding what factors motivate individuals to act on behalf of the environment (Volk & Hungerford, 1990; Chawla, 1999). Many authors argue that experiences in the natural world are important precursors for future pro-environmental behaviour (Chawla, 1999; Finger, 1994; Kahn, 2003; Palmer, Suggate, Robottom, & Hart, 1999; Puk & Behm, 2003; Sobel, 1996); other researchers make the argument that motivation to act on behalf of the environment is more complicated. For instance, Clayton and Opatow (2003) argue that pro-environmental action will occur when a) individuals see nature as an entity with moral standing, b) social environments

are designed to nurture a feeling of connectedness to nature and an awareness of local impact on global issues and c) social contexts support pro-environmental identities and encourage a recognition of shared concern for the environment (Clayton & Opatow, 2003 p. 20). Cole (2007) shares a similar perspective and argues that a person's 'positionality' (their social identity- class, gender, sexuality, etc.) shapes the way they see and interact with the environment. Meanwhile Chawla and Flanders (2007) emphasize that whether or not people take action that aligns with their personal values regarding the environment depends to a large degree on barriers to action (for example time or money) or structural obstacles (perhaps their city does not provide recycling pick-up). If one thing is certain, it is that the reasons why an individual does or does not take action to protect the environment are complicated.

As mentioned above, there have been shifts in how scholars and researchers have conceptualized how people learn and change according to what they have learned. This is evident in the work by Volk and Hungerford and Chawla and Flanders summarized above (please see the Need/Significance section in Chapter 1). Finger (1994) argues that youth require training in small, incremental ways and that there is a need to counter-balance fear with productive activity within environmental programming. Chawla and Flanders (2007) point out that effective programming has an extended duration of time, offers both opportunities to learn and to practice skills and provides opportunities for success in achieving valued goals.

Moreover, Chawla & Flanders, (2007) argue that a sense of competence is key to healthy development as it contributes to an individual's sense of self-worth; they explain: "people are more likely to contribute to a group when they have confidence in themselves

and their capabilities, while at the same time, individuals are more likely to feel self-confident when they are surrounded by a strong, supportive group” (p. 445). These findings indicate that CCE should be empowering, confidence building, and foster strong group dynamics between learners in order to be more effective. Yet curriculum often privileges content, and allocates development of personal values and identity to a back seat position (Cole, 2007; Reis & Roth, 2010). Rethinking what comprises CCE brings a fresh perspective to how we look at the ‘tragedy’ component of CCE and where tragedy might appropriately fit at any level.

Given that educational systems have been charged with the responsibility for educating youth on climate change and that modern educational models have come under strong criticism by scholars (Hicks, 1998; Orr, 1990; Puk & Behm, 2003; Reis & Roth, 2010), it is essential that we understand the implications of how students are taught. Perhaps the very structure of our educational systems inhibits the kind of holistic understanding for which many environmental educators (Cole, 2007; Keepin, 1991; Orr 1990; Puk & Behm, 2003) advocate, as students are required to learn about the various dimensions of related topics in a fragmented manner through divided disciplines. Furthermore, it is possible that students are left with an incomplete understanding of complex issues like climate change when subjects are taught in isolation by a number of different educators. The implications of this fragmented learning are not completely understood. Chawla and Flanders’ work highlights an emergent question related to the structure of modern educational systems that honours a behaviouristic educational model and promote competition among learners; their insights suggest that environmentally-speaking, we may be further ahead if schools were to place more emphasis on the

development of self-confidence, community, and collaboration between learners instead. These are important areas to explore when planning effective CCE.

Researchers draw attention to the inherent difficulty of teaching youth about interdisciplinary subject matter within a discipline-driven institution (Orr, 1990; Puk & Behm, 2003). Climate change crosses disciplines; it comprises social, political, economic, scientific, philosophical, ethical and moral issues that must be considered in order to truly address climate change in an equitable and appropriate manner. Kazdin (2009) illuminates the unfortunate reality that climate literacy is low among the public, pointing to the need for a critical examination of our educational institutions and the other venues through which we disseminate environmental issues. Other scholars speculate how educators can provide the moral and ethical education that will enable students to deal with contemporary environmental and social issues in the future (Efron, 2008).

Taking a cue from ecopsychologists like Keepin and others, the focus upon an evaluation of modern values and morals has become salient to CCE programming and discussions. Researchers have argued the importance of bringing a discourse of values and ethics into EE in general, which has clear connections to CCE in particular (Clayton and Opatow, 2003; Keepin, 1991; Littledyke, 2004). Clayton and Opatow (2003) explain: “attempts to change behaviour in a pro-environmental direction that ignore people’s underlying environmental and social identities may have only a short-term effect” (p. 19). Creating a learning environment where the moral and ethical considerations of climate change features prominently will require a great effort on the part of educators and policy makers. Efron (2008) explains this onerous task in most eloquent terms in her work “Moral Education between Hope and Hopelessness”,

summarizing that as educators it is our moral obligation to be honest with ourselves and our students in facing reality while maintaining our moral imagination and hopefulness for the future.

Other authors highlight the impacts of natural disasters (for instance hurricanes, tornados, floods, and fires) and other traumas that are experienced by many students in North America (Berson & Baggerly, 2009). The authors explain,

researchers have reported that 71% of children have been exposed to at least one potentially traumatic event in the past year, and almost 70% of children have experienced multiple exposures--with an average of three different kinds of victimization reported (Berson & Baggerly, 2009, para. 2).

Researchers in CCE should examine the impacts (i.e. the physical, emotional, developmental, and social) of existing environmental stressors and how these might impact what should be taught about climate change. Baggerly and Exum (2008) explain that natural disasters cause fear and disruption to children and that young children are the most vulnerable to natural disasters because their neuro-physiological systems are subject to permanent changes and their coping skills are not yet developed to manage catastrophe. These findings ought to be considered when planning for CCE with young children, especially for children that are living in areas already impacted by climate change, for example, those areas that are experiencing greater stress due to drought or higher likelihood of severe weather.

Hicks (1998) explains that the emotional impact of global issues on students is an understudied area of research. He explores the need for hope as a 'realistic' avenue for determining future possibilities and has participated in the development of an area of

study referred to as Futures Studies that incorporates the work of diverse practitioners in studying ideas about the future (Hicks, 1998; Hicks & Holden, 2007). Hicks advocates for the futures perspective in education, which has a strong bearing on CCE given that a large portion of our knowledge about climate change comprises evidence from models of future scenarios and predictions by scientists.

In the book *Teaching about Climate Change* (2001), contributors McClaren and Hammond argue that students need a foundation of conceptual knowledge before they can critically reason about climate change, and that the subject requires developing student's understanding, reasoning, critical thinking, and conceptual finesse. The authors point out some essential aspects of any CCE program and explain that without conceptual schemata for learning, students and teachers alike are overwhelmed by the mass of information on the topic. These authors also explain the importance of assessing students' prior knowledge before implementing a CCE plan; prior knowledge may include past experiences such as exposure to climate impacts. The guidelines given by McClaren and Hammond provide a solid support for a coordinated curriculum approach to CCE.

The above comprises but a short summary of the myriad issues inherent in teaching climate change. One further aspect to consider involves teacher knowledge itself. Puk and Behm (2003) discuss the importance of a sequential approach to developing environmental understanding, and highlight the need for increased teacher training, calling for "some degree of ecological literacy" (p. 230) to be compulsory for all new teachers. Cutter-MacKenzie and Smith (2003), drawing from the work of Grosman (1995), bring an important perspective to this discourse by explaining that what teachers know themselves influences not only what they teach but also how they teach it. Cutter-

MacKenzie and Smith state: “teachers are likely to emphasize those areas in which they are more knowledgeable or de-emphasize those areas in which they have relatively less content knowledge” (p. 499). Finally, the authors call for a significant change to the current status of EE on the part of governments, education departments, pre-service teacher education providers, schools and teachers themselves otherwise, they argue, the goal of ecological literacy will not be realized (Cutter-MacKenzie & Smith, 2003).

It appears there is some degree of consensus that the importance of ecological literacy and an understanding of environmental issues like climate change needs to be increased at a societal level in order to provide quality educational experiences for students and teachers and appropriate societal level responses to these issues. This thesis explores the implications of this foundation of work in the field of EE and CCE to understand what constitutes age-appropriate CCE at the elementary level.

Chapter 3: Research Methodology

Research Design and Rationale

The main research question guiding this work involves expert opinion, which in order to be explored in depth, requires a qualitative approach that allows for a deep investigation of the reasoning behind each individual's opinion. Cohen, Manion, and Morrison (2007) write that, "Interviews enable participants- be they interviewers or interviewees- to discuss their interpretations of the world in which they live, and to express how they regard situations from their own point of view" (p. 349). I was searching for participants from various fields of work, to gain an understanding of the differences and similarities in the opinions of experts in different fields regarding Sobel's (1996) conjecture. Such an exploration was facilitated through two means; first, semi-structured interviews were conducted with each participant. Each interview contained a series of the same or similar questions with the aim of understanding whether or not the participant agreed with Sobel and why and how they related their opinion to climate change.

The second means of understanding expert opinion on Sobel's conjecture was a written thought-piece that was conducted as both a mode of member-checking and to provide participants with the opportunity to confront the views of other participants, while further eliciting their views on the major themes that emerged from the interviews. Each participant was asked to comment upon the thought-piece to verify that his or her views were represented accurately and to respond to any other information in the thought-piece as they saw appropriate.

To make sense of the data that arose from this process (interview transcripts and written responses to the thought-piece) I coded and analyzed the data according to discourse analysis approaches to categorizing information and making sense of the ideas to emerge. Gee's (1999) guidance regarding discourse analysis imparted a useful approach to understanding the discourses that arose in this work.

Gee (1999) provides some important definitions and ideas that can be used as a starting point for thinking about discourse analysis. He makes a distinction between Conversation, with a capital 'C' and conversation with a small 'c'; Conversation signifies historic interchanges between and among Discourses involving much more than just words, whereas conversation implies a discussion between individuals. Gee makes a similar distinction between Discourses and discourses; Discourses represent larger interactions: societal level actions, feelings, languages, values and other aspects of life, whereas discourses operate on a smaller scale and can be described as "language-in-use" (Gee, 1999, p.7). In this way, I conceptualized the interview transcripts as a discourse and the wider field of study of each expert as a Discourse.

The methodological approaches employed in this study enabled me to organize the data and to understand how the discourses generated in the interviews could be both combined with and taken separately from larger Conversations occurring in and between each expert's field. A key question in each of the interviews asked for salient concepts and articles from the participant's field; this question led me to a broad collection of literature, which helped to inform my understanding of expert opinion and to situate each of the interviews within a greater Conversation that formed their field of study. The information garnered from the literature review was categorized in the same way as the

information from the interview transcripts and written responses to the thought-piece. The literature I read as a result of recommendations from the interviews has formed the backbone of chapter five; many of the scholars and specific readings that were suggested have been brought into this discussion in that chapter.

One of the most useful principles to this study was the constant comparison method, which begins from the moment data collection begins and is on-going throughout the entire data collection and writing process (Cohen, Manion, & Morrison, 2007). Applying this constant comparison approach allowed me to find connections and differences between each interview as they were conducted, which provided an excellent starting point for writing the thought-piece and allowed new information to flow from one interview to the next. In this way, themes and ideas were constructed and expanded upon throughout the interview process, which culminated in the thought-piece, by offering the participants an opportunity to witness the evolution of the emergent themes.

Another important consideration that Gee (1999) brings to light involves the observation that “Discourses have no discrete boundaries because people are always, in history, creating new Discourses, changing old ones, and contesting and pushing the boundaries of Discourses” (p. 21). These ideas, applied to my study, enabled me to gain a clearer picture of how each expert’s opinions may have been formed and how Conversations within and between fields may have influenced each participant’s opinion. In keeping with Gee’s approach, I utilized his terms in the same manner within this work.

Gee’s insights on discourse analysis offered a flexible approach that could be applied to thinking about the interview transcripts, written responses, and the literature I collected. This diversity of application allowed me to explore each discourse (i.e.

interview transcript, scholarly article, written response) individually and together within a larger Discourse, a process that was strengthened by the application of the constant comparison method. Moreover, Gee's ideas regarding how to approach any discourse (i.e. a piece of text or words) proved invaluable within the coding process; I was able to see connections between coding themes and understand the process on a larger scale by applying his carefully formulated questions and prompts to each of the data sets in the study, thus gaining a strong understanding of how each piece of data applied within a greater Discourse. Also, the discourse analysis approach encouraged a deeper view of the language used by each participant by providing insight on how to understand situated meanings of various words in different and similar contexts. An in-depth view of not only what was being said, but *how* it was being said provided another layer to data analysis in this study.

Trustworthiness and Credibility of the Study

I attempted to maintain the validity of this study by reducing the influence of my personal bias throughout the interview and thought-piece processes. By asking open-ended questions I enabled the participants to explore and provide their own views. As Cohen, Manion, and Morrison (2007) point out, "open-ended questions enable important but unanticipated issues to be raised" (p. 151). Eliciting those unanticipated issues was a key goal of this research effort.

In order to ensure I was reducing my personal bias in the construction of interview questions, I pre-tested the questions prior to conducting the interviews. The pre-testing process allowed me to look critically at the questions and to have an outside perspective on the questions and their specified order. Through the pre-testing I was able

to ensure I was avoiding leading questions that carried with them assumptions about interviewees or subject matter (Cohen, Manion & Morrison, 2007). During the interviews I made an effort to provide unbiased prompts during the conversation and to avoid providing my personal views. Also, at the beginning of the interview I provided a short pre-amble about Sobel's work and why I thought it was interesting, to assist the participant in their understanding of this work. The semi-structured nature of the interview schedule allowed me to follow salient concepts as they emerged from the dialog within each interview this led the conversation to unanticipated areas that provided a rich understanding of each person's opinion of Sobel's conjecture.

Cohen, Manion, and Morrison (2007) illuminate the work of some researchers who argue that interviews that are not face-to-face, as in the case of this study, may be more reliable as the interviewee may feel more comfortable disclosing information that they may not feel as comfortable sharing in a face-to-face interview.

The thought-piece was another measure to help ensure that the data was trustworthy, as I was able to confirm the views of the participants and ensure that my bias had not influenced my analysis of the interview transcripts.

Data Collection

In early January 2010 I finalized the semi-structured interview schedule and pre-tested the questions to confirm the original sequence and to ensure that the questions were formulated appropriately to avoid leading (Cohen, Manion, & Morrison, 2007). This approach allowed me to tailor each interview to the participant to some degree as the interview evolved, but also ensured that I asked a series of essential questions of each participant at some point throughout the interview. A series open-ended descriptive,

experience, knowledge, contrasting, and background questions were arranged to illicit expert opinion regarding Sobel's main conjecture, other aspects that form his argument of 'no tragedies before grade four' and to gain an understanding of the key considerations as they relate to climate change. Also, a number of probes pertaining to each interview question were generated that enabled me to keep the interview on track and delve deeper into important areas with each participant (please see appendix A for a copy of the original interview schedule).

The open-ended, semi-structured approach allowed me to observe themes and categories as they emerged from the data (Cohen, Manion, & Morrison, 2007). A drawback of this approach is the increased amount of time required for data analysis, in contrast with a more quantitative style of interviewing, which requires greater inputs initially to generate categories of analysis prior to formulating and administering multiple-choice style questions (Cohen, Manion, & Morrison, 2007).

Following the completion of the interview schedule and the pre-testing of the questions, I contacted the first interview participant and we organized a time to have the interview. Between January 15th and February 19th 2010 I sent out another ten participation letters to individuals that met my criteria for participation. Participants were selected by researching individuals online through university websites and through my personal contacts. I was able to utilize a snowball technique to find interview participants; several of the people I contacted did not wish to participate due to personal reasons or time restrictions but did send me information about people or persons who they thought might be a good fit for the research. Over a period of about one month I reached my goal of finding five participants. The interviews were conducted over the course of

the same month as respondents confirmed their informed consent and their availability for participation in the study. A question asked in each of the interviews involved important concepts or themes in each expert's field. The responses to this informed a broad literature review that also formed the backbone of my data collection. Ideas from the literature I read were at times incorporated into the interviews and also played a central role in data analysis.

The thought-piece was circulated to all participants on March 11, 2010 after edits from my thesis supervisor, Dr. Kelsey. Participants were asked to provide their comments on the ideas put forth in the document. Each person was instructed to verify that his/her views were appropriately represented and to offer whatever feedback he/she thought was necessary in regards to the themes presented therein. Over the course of about a month and a half I heard back from all participants with their comments and verifications on the document.

Participants and Site

I opted to conduct all interviews over Skype, rather than in person, in an effort to save carbon emissions given my study's focus on climate change. I also wanted to utilize modern communication mediums to explore their viability in qualitative research; this involved experimentation with the online application Skype and other programs available on my Macintosh laptop computer. Each interview was conducted through Skype to either the participant's telephone landline or their online Skype account.

By using my computer to conduct the interviews I was able to both record and transcribe the interviews on my laptop offering time efficiencies in terms of converting files and ease of playback. I recorded the interviews using both Microsoft Word's

Notebook option and Macintosh's Garage Band application; recording the interview in two places ensured that I had multiple recordings of each interview. Once the interviews were completed, I saved the recordings to an external hard-drive to further safeguard the data. The interviews were converted to music files and imported into iTunes, another Macintosh program. This conversion allowed for ease in pause, rewind, and play while transcribing. The interviews were transcribed in the Microsoft Word Notebook program and were subsequently printed and saved to an external hard-drive. Being able to complete the entire interview process including transcription on my computer saved a considerable amount of money, time and natural resources. However, since the interviews were conducted without a video option, with only voice options, subtle cues through body language were unseen, which may have influenced my perception of the participant's views. Also at times Skype created somewhat of a delay, which may have interfered with communication.

For this study an expert was defined as either having over twenty years of experience in their field, a PhD with over five years working in their field, or an individual with a Master's level education and ten to fifteen years working in their field. Each participant was an expert in a different field and offered a unique perspective on Sobel's ideas given their diverse backgrounds. Furthermore, each of the participants' fields intersected in some way with Sobel's conjecture (i.e. they worked with young children or in sustainability education, etc.). The five experts to respond to my solicitation and to consent to participating in my study included, in order of interview sequence:

Dr. Enid Elliot, is an expert in Early Childhood Education and an Adjunct Assistant Professor at the University of Victoria's school of Child and Youth Care. Elliot's research interests intersected with this topic. Her work explores natural spaces in early learning environments and the benefits of natural areas in early learning. Our interview took place on January 8th, 2010. The interview was forty-five minutes in length and was conducted via Skype.

The second participant to respond to my participation letter was Dr. David Hicks of Bath Spa University in the United Kingdom. Hicks' work concerns Futures Studies and teacher training. His research interests involve envisioning probable and preferable futures with youth to help them think creatively and critically about the future. The interview took place on January 27th, 2010 from Skype to telephone and was exactly one hour in duration.

The third participant to confirm was Robert Bateman, educator, artist and lifelong environmental activist. On February 19th, 2010 we spoke from Skype to telephone for an hour and fifteen minutes.

The fourth participant in my study was Dr. Andy Fisher, Ecopsychologist and psychotherapist with a focus on human-nature relationships. Our fifty-minute interview was conducted on February 12, 2010 from Skype to telephone.

The fifth participant, Donald Mearns, works with the Nunavut Government as a Manager for Evaluation and Assessment in the Department of Education after having worked as an educator in schools and as a principal. Mearns has resided in Nunavut for the past thirty years. Our interview was conducted on February 25th, 2010, from Skype to telephone and lasted fifty minutes.

Data Analysis

Data analysis was on-going from the completion of the first interview, as I read the recommended information from the interviews and throughout the data coding/categorizing period. This on-going analysis was essential in order to draft the thought-piece in a timely manner, which was to detail the emerging themes from the interviews and in keeping with a constant comparison approach. In order to discern the main emerging themes from the interviews without doing an in-depth data analysis involving coding I took extensive notes on the main ideas revealed within each transcript; concepts that had been brought up repeatedly (in two or more interviews) and also ideas that emerged only in one interview (but were part of a strong argument or an important idea for that participant) formed an eight page paper divided into four sections. The sections included: On Sobel; the Challenge of Our Times; Inspiring Hope, Giving Kids the Tools They Need; On Teaching (please see Appendix B for a copy of the original thought-piece that was sent to study participants).

While waiting for responses on the thought-piece, my attention was focused upon coding and categorizing the interview data for a deeper analysis that would be incorporated into this thesis (as opposed to the initial analysis conducted for the drafting of the thought-piece). This involved re-reading all the transcripts and the thought-piece to discern the major themes or categories that were emerging from the dialog.

I determined major themes by the discussions that emerged from the interviews. Ideas that were apparent in each interview often formed the basis of each theme; specifically, many of the participants had strong views about what children should or should not need to know in elementary school, all content related to ideas about what

children should know were slotted into that category. Also, concepts that were of particular importance in only a few of the interviews were often given their own category.

Once these major categories were developed I analyzed each transcript in turn, taking the relevant quotations and sections from each interview and slotting them into the appropriate category. What emerged was a large collection of all the relevant information from each of the interviews under each category, including responses on the thought-piece, emails with participants, and relevant literature that had been suggested in the interviews. This work was done by hand, on large Bristol board papers; each interview participant was given a specific colour; the information was both colour-coded and categorized.

Chapter Four: Results

In this chapter, I will present the general findings to emerge within each of the six categories that were developed through the data analysis process. The categories from the coding process are: (1) What children should learn/what to teach; (2) Conceptions of reality; (3) Adult responsibility; (4) Feelings and emotions; (5) Outdoor experiences, and (6) Developmental stages.

It is important to bear in mind with this type of qualitative analysis, Gee's guidance regarding discourse work. Gee (1999) explains, that "discourses are embedded in a medley of social institutions" (p. 18) and that the boundaries of discourses are unclear and consistently being renegotiated. These insights encouraged a categorization process that accepted that each piece of data would not fit discretely into one category or another, but rather that in some cases overlap was likely. The initial categories to develop from the coding process, as detailed above, provided a rich drawing-ground from which a set of guidelines regarding CCE began to emerge. The ideas drawn from this process will be detailed below according to the following twelve themes:

1. Offset Information with Positive Action
2. Find and Inspire Hope Through Environmental Education
3. Create Opportunities for Children to Experience a Sense of Community
4. Encourage Children to Think Critically and Creatively about the Present and Future
5. Create Opportunities for Children to Spend Time in Nature and to Fall in Love with their Local Natural Environments
6. Motivate Students to Act from a Place of Love Rather than Fear

7. Question the Appropriateness of a “Development” Model
8. Build Competence in Talking with Children about Troubling Issues
9. Include Emotions and Feelings in the Teaching and learning of Environmental Education
10. Maintain Awareness of Media Exposure and Help Students Make Sense of Complex Messages

Theme 1: Offset information with positive action

Early Childhood Educator and chair of the Greater Victoria Regional Child Care Council, Enid Elliot provided much insight on the need to be mindful of over-loading children with negative information. Elliot had strong concerns about simply supplying information about environmental issues, especially climate change. Elliot explained, “I think it’s kind of hard to just lay something on kids and not have some way of working it through or to do something that’s kind of positive, even if it’s planting a tree or growing a garden.” For Elliot, it was extremely important to offset information with positive activities and with information about other people that are engaged in proactive solutions to climate change.

David Hicks, professor at Bath Spa University who focuses on Futures Studies and Teacher Education, agreed with the idea that providing information on its own is not enough for young students. Specifically Hicks argued,

...it’s no good just giving children the facts about an issue, there needs to be discussion, there needs to be sharing of ideas, so that children can take part, if they wish, in some sort of appropriate action in relation to an issue.

Hicks cautioned, “we can frighten kids and we can disempower them” with difficult subject areas when educators are too heavily focused on describing the problem and are not providing enough insight on solutions. To this end, Hicks explained the importance of focusing on success stories when discussing complex world issues in the classroom.

For the participants in this study, focusing on hands-on activities was equally, if not more important, than providing specific CCE content. Donald Mearns is a former educator and principal in Nunavut. He now works in the Education Department for the Government of Nunavut. Mearns provided a wealth of information about the *GLOBE Program*, a program designed to monitor climatic changes in the far north of Canada and other circumpolar regions. The *GLOBE Program* was an international project that involved students around the world participating on school-wide efforts in weather data collection and other activities relating to climate. Mearns felt the science-based approach allowed for wide applicability across grade levels; he explained, “even a kindergarten class can go out and take the temperature”. He felt a strong merit of the program was that it involved “extensive training” but also that it was “a lot of fun, the kids were into it.” The project allowed for adaptable levels of participation so that “a grade ten science class... looking at wind chill factors and wind speeds and all the other pieces that go along with it” also meant “kids were looking at problem solving, rather than the tragedy side of things”. Mearns’ experience provides a concrete example of how activities can be used to teach about climate change without providing undue focus on the tragedy of climate change.

Theme 2: Find and Inspire Hope through Environmental Education

Inspiring children to have hope for the future was a common focus throughout the interviews. Specifically, Ecopsychologist and psychotherapist Andy Fisher had strong views on the role for hope within EE. Fisher's work focuses on therapy for people of various ages, which pays special attention to the human-nature relationship; he has written a number of publications on these subjects. On the subject of hope and EE, Fisher asserted,

I think hope comes through being involved in activities that feel hopeful... as long as they're involved in something that's concrete and has life flowing through it, it's easier to sustain a sense of hope when you're having these kinds of experiences.

Similarly, Mearns stressed that, "You also have to teach that there is some sort of hope at the end of the road." More specifically, Mearns interpreted this as a need to explain to students that,

... climate change isn't a disaster, it's just we're going to have to deal with the fact that it might get snowier or it might be rainier... those are things you can cope with... but when you talk about mass flooding, typhoons, and disasters that are going to strike, you've got to be careful how you bring that in.

Elliot spoke of the role that narratives can play in inspiring hope for children especially through age-appropriate means, such as picture books involving stories about people who are making positive changes in the communities in which they live.

Similarly, Hicks discussed the importance of visioning as a tool for empowerment and inspiring hope in children. His work with futures studies encourages children to look at

the world around them and imagine how they would like it to look or what they would change about it to create a more preferable future for their communities.

For Mearns, giving children a feeling of hope also involved having children participate in small activities, such as those involved in the *GLOBE Program*, that would enable students to compare information from year to year but which ensured that the subject matter comprised issues with which the students could cope. He provided the following examples: “we saw more cloud last year than there was this year, or does the ground seem wetter?” Mearns described such activities as “small things that you can deal with” that also enable an outdoor component to CCE. Moreover, in response to the thought-piece, Mearns reflected deeply upon the stress modern children are exposed to;

... there seems to be some strange need for a child’s life to be so much more serious [than when he was young], the fact that the next generation must take the reins of saving the world because we ‘the past generation’ didn’t do a very good job is all a little daunting.

For Mearns, more time to reflect following the interview encouraged him to believe that Sobel’s benchmark should be taken further and that more effort should be made in helping children enjoy nature and avoid worries.

Theme 3: Create Opportunities for Children to Experience a Sense of Community

Another strong theme to emerge in this study was the need to give children experiences in being part of a community, and of having their voices heard and respected. Elliot emphasized, “children need to have experiences with finding joy and celebration in life and also realizing that there are things that are difficult, but... together as communities, we can work them through.” Elliot argued that in general what is needed is

a community response to climate change “so that children can see themselves as more of a part of a community rather than somehow this rests on them all alone.” Along this vein Elliot also pressed upon the “need to practice... being part of a community.” Elliot summarized her thoughts on community:

I think it goes back to seeing children as capable and it means that if we value community and we value local democracy, it probably means that we ... want to make sure that children’s voices are listened to because if you want to experience your own agency, you need to experience your voice being listened to and that means being part of a democracy too and that your voice counts. Certainly it has always seemed to me in a classroom that there’s really so many lessons being learned that aren’t necessarily in the curriculum ... do I have a right to ask questions? Do I have a right to express my ideas? Do we have a right to listen to each other. Listening to each other is important and I think that I would really like to see that promoted much more among teachers, that if nothing else, children are all going to grow up and do a whole lot of different things but they’re all hopefully going to grow up and be members of a community. Sometimes I think we need to start early and part of that is by acknowledging that they [children] are an important presence and their opinion matters.

Mearns also reflected on the importance of fostering a sense of community among students. He shared an example from *GLOBE Program* that involved students venturing into the community to learn about community changes by talking to elders: “We had the kids talking to elders... what did the elders notice? What did they remember from when they were kids, what did they see? What were hunters seeing with the animals?” In this

way, students were encouraged to ask questions about their community and visualize how it may have been in the past and how it might be in the future. The students also inquired about the lifestyle and environment that once was, with a focus on comparing their findings to the world the students experienced in their present lives. Mearns believed these tasks connected the students to other members of the community and enabled them to visualize their community on a trajectory of past, present and future.

Hicks also explained the importance of bringing a community and family perspective into discussions of climate change issues with children and youth in the classroom. He suggested it could be as simple as having kids ask: "... what did my parents and grandparents used to do and how did they live in this community, in this region when they were young?"

Theme 4: Encourage Children to Think Critically and Creatively about the Present and Future

Hicks believed it is important to encourage kids to think about their communities in a critical and creative manner. He provided an example of future studies-type questions, such as "what would your preferable future be for your community?" that could be a part of a geography or citizenship program. Hicks explained that

It [futures studies] allows children and older students to stand back and look at their community and say... actually there is something here we would like to change... it might be a class of children looking at how they want to change the school playground or school grounds... it empowers children... they are gradually learning that you can visualize where you want to get to... and one can participate in creating change

Hicks clarified that futures work is also about “trying to get teachers interested in the notion that children need to be able to think critically and creatively about the future.”

Both Elliot and Mearns discussed the importance of giving students critical thinking tools to deal with complex issues. Elliot maintained that, we want to “give them as many resources as we can for dealing with issues in life.” Thus, students would feel more prepared when they began to learn about some of the more troubling issues their communities might face, because they would have skills and ideas to draw upon in the face of new challenges. Elliot explained that a key role of the educator is “giving children ways of discussing things so that they can have the tools themselves to think creatively.”

Mearns related the need to teach students how to develop their own viewpoints:

I think that’s a really important thing for children to learn, is that not all the information you read is [pauses] a hundred percent correct... sometimes is mashed by somebody’s point of view or somebody’s political agenda... you have to teach kids to be able to pick their way through the information that’s there.

For Mearns, this ability to think critically also included the need to talk about rights and the moral and ethical aspects of issues. Hicks also stressed the need to teach as many ‘sides’ of an issue as possible. He described climate change as a complex issue with inter-related issues contained within it, such as food, transportation, and energy issues. Providing the means for students to understand and visualize the interconnectivity of several aspects of one complex issue was seen as an essential task for elementary and high school.

Along the lines of encouraging students to think critically and creatively, Hicks included the perception that early learning should provide a base for later critical thought and action. In this way Hicks saw elementary school curriculum as foundational learning to be expanded upon in high school and argued that there were things that students ought to know before reaching high school, such as

...children could for example... come to high school knowing that the world is changing in many ways and part of it is to do with climate and that's affecting people, habitats and so on, but we don't have to do it in this sort of tragic context.

Furthermore, regarding elementary school curriculum, Hicks suggests, "one of the things that I think one could very happily do with elementary school children would be looking at the new wind farm... or on your bit of coast line there are experiments to do with wave energy." Hicks argued that these are exciting topics and explained that:

I think even with under ten year olds... what are some of the differences between getting your energy from renewable sources... wind and water on the one hand and burning coal, for example... one might also just talk about pollution, rather than... heading into climate change... if kids have learned about renewable energy sources and so on and are interested and excited... they're on route to... having the sort of consciousness that they need to develop as they get older to be able to look at climate change.

In Hicks' view such activities would begin to encourage younger students to think critically about the world.

Theme 5: Create Opportunities for Children to Spend Time in Nature and to Fall in Love with their Local, Natural Environments

Every interview participant discussed the need for children to be provided with outdoor experiences that would help them to bond with nature, feel more hopeful, and become familiar with the natural environment where they live. Robert Bateman, Canadian wildlife artist, educator and environmental activist, believed that imparting an awareness of the local environment was paramount; he explained that local environmental awareness could be provided by simply “taking kids for a walk to the woodlot down at the end of the street and just checking on the trilliums to see if they have come up yet.” Such an approach may be possible in rural settings, however in many of Canada’s cities, finding nature at the end of the road might be more difficult.

Elliot shared, “I must admit, I agree with him [Sobel] young children probably just need to fall in love with where they are.” While Elliot did feel that there were likely many things about climate change that children *could* learn she seemed to feel that the ideal situation would be for children to play carefree outdoors as much as possible.

Bateman, however, had strong views on subject matter in classrooms. In regards to teaching about climate change or “giving kids the impression of the enormity of the world’s problems”, Bateman stated “I can see it providing no useful purpose before grade four and I even have questions about whether it has a useful purpose before high school.” Rather, Bateman argued for a focus on local actions that could include efforts or involvement in protecting a local woodlot.

I can’t really see the virtue of talking to little kids about the problems of the tropical rainforest or global warming, or what’s happening to the oceans... I think we should be dealing with the local level and with reality... I’d maybe go further [with Sobel’s idea] than grade three in elementary school, it doesn’t need to be a

part of the curriculum, in fact, I really really wish they would get nature study and nature appreciation as part of the curriculum instead.

Similarly, Elliot suggested that “providing children with rich opportunities to be outside and experience the natural world so that they know what we’re talking about when we talk about trees and the forest and the air...” is an important aspect of a child’s life, that again sets a backdrop for understanding information that will be presented later in life.

Elliot also highlighted the work of Louise Chawla that explores significant life experiences; Elliot could especially relate to Chawla’s idea of experiences that are like ‘radioactive jewels’, which Elliot summarized as experiences

... that give us energy throughout our lives... that they [children] had a chance to just experience being outside and it wasn’t that they were necessarily learning about being outside, they were just being outside and exploring and finding out something that they loved that was part of their landscape, their natural landscape.

Elliot was an advocate for role that outdoor experiences have in providing hope to young learners: “it would really be about being outside and appreciating what’s outside.” For Elliot, these experiences also need to be guided in a loose way; she explained the need to talk with children about what is outside (i.e. trees, soil, rivers) and explain how we have to take care of what is outside because it takes care of us too. Elliot concluded that outdoor experiences “inspire wonder and awe in children and hopefully just strengthen any kind of connection they might find with being outside.”

Mearns agreed that “the classic thing is, you teach them the love of what the environment is and what those animals are and give them meaning to it.” Mearns felt

strongly that early experiences would give children, “the warm and fuzzy feeling for all those experiences, which then they wish to save... you then excite that kind of attitude in them.”

Mearns discussed the deep changes running through the community where he lives. He explained that youth do not have the same level of experience with the natural world that youth in previous generations did, including the role that local food once played in the diet of the people. For Mearns, this significant lifestyle shift was a source of concern regarding today’s children’s relationship with the natural world.

Bateman mirrored the perception that young people do not spend as much time outdoors as they once did: “kids aren’t out in nature anymore as they have been since mankind began or even before that when we were just primates and other animals, earlier in our evolution. We’ve always been out of doors.” Bateman discussed his concerns about an indoor, sedentary life:

This evolution has taken place where instead of being outside kids are sitting inside staring at screens... if I was king of the world, I would totally scrap high school... a totally different format, 50% of which would not be in a building at all... it would be out in the community, or out in nature.

Bateman also lamented the lack of transformative experiences (i.e. canoe trips) in modern school curriculums. Bateman acknowledged the liability issues that prohibit teachers and schools from taking students on extended outdoor trips, but argued “that’s what we should be having budgets for and that’s what schools could do.” Bateman also put a strong focus on the role of the family in providing outdoor experiences for their children.

Theme 6; Motivating Students to Act from a Place of Love Rather than Fear

Fisher touched upon the idea of inspiring love when he stated that we want to encourage youth to “act from a sense of love, rather than a sense of fear.” This insight flows from the work of Roszak (2001), who has admonished the environmental movement for attempting to inspire action in people of all ages through the use of fear appeals or guilt. Instead, Roszak and Fisher both call for a deeper inspiration for the motivation to act to protect the natural world, one that is more sustainable and involves loving action.

Fisher felt that there must also be an acknowledgement by adults and educators that this love will also end up providing the fodder for grief. Fisher quoted the work of Gene Myers when he provided the following insight:

The statement he made that really stuck out for me was that if we really took seriously, the need for children to really bond with animals and to really bond with the natural world and identify with specific places and with the earth, and if we tried to actually fill that need for kids then we’re setting the kids up for an enormous amount of grief because they’re going to look at a world where animals are treated horribly and the earth is being bulldozed.

Fisher further expressed his concern in the following statement,

[there is a] dilemma in teaching kids to bond with and love the natural world, when at some point they are going to come to the realization that this world they now love is systematically being destroyed. The loss of innocence today, especially for kids who have bonded with nature, is of an unprecedented nature.

This is why I think it is so important to make a space for conversations at those moments of realization.

This insight is not meant to dissuade educators and others from fostering a strong relationship between children and the natural environment, yet there is a sense that adults must be aware of the potential issues ahead for the child that grows up to love the natural world, which is currently imperiled by human activities.

Theme 7: Question the Appropriateness of a “Development” Model

Most interviews involved some discussion of childhood development. The discussion ranged from the belief in a strong need to re-conceptualize the developmental stages, or completely letting go of conceptions of childhood development to strong support for the need to follow the developmental stages and ensure that educational content and approaches honour a child’s stage of development and respond accordingly.

Fisher advocates a reconceptualization of childhood development based on psychological development that includes a strong recognition of the role that nature plays in childhood.

...it sounds like he’s [Sobel] drawing on a lot of people we draw on in the field of ecopsychology, which is really re-writing to some extent models of psychological development where the task of childhood includes bonding to the earth, lots of free play in nature, and imitating animals... a crucial phase of life where your primary task is to have submersive experiences in nature.

Fisher indicated his agreement with the need to revise modern developmental models and drew upon Bill Plotkin’s work *Nature and the Human Soul* to bolster his argument. Plotkin, Fisher explained, generated a model of psychological development

that includes eight stages, with each one containing a different ‘centre of gravity’, which are natural areas of focus for that stage. For Plotkin, Fisher continued, the centre of gravity in early childhood is about building a relationship with the earth, “not peak oil, not climate change” referencing potential CCE content that may come up in the classroom.

In contrast, Mearns explained that, “developmentally with kids... it’s about steps, it’s about kids being emotionally and mentally able and ready to deal and understand certain issues.” In many interviews, the participants acknowledged how adults are overwhelmed by complex environmental issues, like climate change, and given adult reactions it is even more likely for children to become overwhelmed given their stage of development. In terms of Sobel’s benchmark of starting to discuss complex issues in grade four Mearns reflected that,

you could start with it in grade four but there’s going to be kids in grade four that are probably not developmentally even in that place to deal with that issue... it’s about having that sense, I think, you’ve got to look more at the developmental stages, than grades... ages and stages... rather than going with grades.

Mearns stated, “I definitely agree that they [kids] need to be older before you start addressing the difficult issues, cause you’ve got to get... them through the developmental stages... it’s about those kids and their developmental stages...” When pressed about what to look for in a student that had reached the stage where they would be ready to hear about climate change, Mearns explained that the educator would want to see a development of maturity and a strong ability to reason prior to breaching difficult topics with children.

While Fisher argued for a re-conceptualization of childhood development, he maintained that “it’s a matter of doing what’s developmentally appropriate, that’s a general principle in psychology... try to find a way to communicate... or involve the child in a way that’s appropriate to their stage in development.” Later, in response to the thought piece, Fisher expanded on his thoughts,

There is a real conflict between what we are developmentally capable of handling at any age and the current ecological reality of this planet. Even as adults the level of denial about the state of the world is enormous, and the collective handling of the global eco-crisis is weak at best. This is the real world that children are entering today.

On the other hand, for Elliot, Sobel’s focus on the developmental stages seemed to be over-emphasized, “I think his approach is a bit developmental and I’ve been moving away a bit from a developmental approach to looking at children and defining children that way.” In follow-up emails Elliot further explained her perspective on developmental stages:

Child development is an artificial construct that is not always helpful. There is feeling that child development is true but in reality child development is based on middle class, white North American children. Barbara Rogoff has written about different ways to view child development if we look worldwide and move away from some idea of a norm. The idea that everyone fits some type of norm is detrimental to some children. For instance, imagine the pressure on a mother whose child does not walk until eighteen months. Children cannot be made to walk- they will walk when ready, but a notion that there is a correct time for

walking or a correct time for reading or a correct time to hear about climate change... maybe be misleading. Children, like adults, are different and react differently.

Elliot summarized this emerging perspective on developmental stages:

In New Zealand they have changed their focus and no longer talk in terms of children's physical, social, emotional, intellectual development, but in terms of their contribution, well-being, communication, etc. A different way to view children and allows for a strengths-based appreciation. In North America we focus on the deficit... what children can't do, what they are not capable of doing, instead of what they can do and how capable they are. Development also suggests that growth is linear and we progress. In a Western society we see progress as good and that we should progress. It means that we see children in terms of who they will become and not in terms of what they offer us at the moment. Perhaps we don't progress, but are wise in the way we are at that moment with the experience we have. Shouldn't we provide rich opportunities for children because they are members of our community and have a right to good and nurturing experiences.

In a developmental view we see children as insufficient and we must educate them... and we do need to share information with children and provide protection when they are little but we can engage with them in discussion and dialogue in which we are both co-learners. If we listen to children we will hear their

understandings of the world and we will think about how to build on those understandings. We can gain from their perspective on the world and their ideas.

Theme 8: Build Competence in Talking with Children about Troubling Issues

In response to a question about how educators might discuss troubling issues with children, Elliot remarked that she was “sure there’re probably ways of discussing some of these other issues that help children connect” and draws a parallel of discussing divorce with young children. “I think we’ve developed some ways of discussing parents divorcing or grandparents dying” but that we simply haven’t developed a set of guidelines with some of these emerging issues. In this view, the issue of whether or not we should discuss climate change with children becomes more a question of whether or not as a society we are comfortable with discussing something we think may be troubling for children and whether or not we have tools available to do so in a way that is not going to overwhelm them. The question becomes whether or not within our cultural model it is *appropriate* to discuss a potentially troubling issue, like climate change, with children, and not necessarily whether or not we *should* discuss the issue. Perhaps climate change is still too new of an issue and we are simply not prepared to communicate it to children because we have not had the opportunity to try different approaches and develop the guidelines that Elliot made reference to. Therefore, a major consideration emerges that relates to *how* it should be discussed; along these lines, in response to the thought piece, Mearns wrote, “Maybe more the issue is not when we start to teach all this information but more that we do a better job of teaching it.”

A strong theme in the majority of the interviews surrounded the role of the educator in providing the support, information, and resources that children and youth

require in becoming emotionally stable, environmentally responsible, and active participants in their community. To this end Elliot explained that an essential aspect of the discussion was to have an awareness of what children are exposed to in their daily lives. She explained,

Children all the time are exposed to radio, to television, to the newspaper, to their parents talking, to hearing all kinds of things, so I have a feeling that kids are probably picking up bits and pieces [of climate change]. I think they're exposed probably from the time, probably a young age...

Fisher also discussed the importance of not only acknowledging, but also helping children to work through what they may perceive in the world. Fisher drew upon the work of Anita Barrows (1998) and the findings she presented in her article "Crying with the Manatees" and explained, "what she was finding in her work... with children and youth was that they were actually very aware of what was going on in the world, but the adults were denying it." Fisher went on to emphasize the importance of "validating what kids are seeing and experiencing."

I went back to Barrows' article to cross-reference Fisher's ideas and found that Barrows (1998) writes, "The young people I know are poignantly and acutely aware of the ways in which they and their world is threatened." (Barrows, 1998, para. 8). She goes on to explain that there are myriad issues affecting children and youth today, including environmental problems, and "that the roots of their hopelessness go even deeper and are because of the absence of a wider cultural dialogue about these issues- more difficult for them to articulate." (Barrows, 1998, para. 10). In both Barrows' and Fisher's view the problem is compounded by the responsible adults in their lives- and the dominant

culture's- unwillingness or inability to acknowledge and discuss these troubling issues. Fisher expands on his view and explains that mainstream psychologists "were symbolizing the experience or interpreting [it] as something other than just a straightforward sense of sadness for the state of the world and so she [Barrows] was finding, was parents were denying what the kids were actually perceiving." The concern then is the impact of this denial of childhood perception on the child's psyche, confidence and sense of agency and their perception of how the community is addressing her concerns.

As a means of respecting and acknowledging childhood experience, for Mearns this involved a strong need to avoid focusing on the tragedy of certain issues. He explained the complexity of the lives of the students he works with in Nunavut:

You don't want to drive all your kids into depression [laughing] because it can be overwhelming and especially with northern students, where their lives are actually quite complex... probably no more or less than anybody in the south, but... the situation is that we have a huge incidence of suicide... within the last twenty years there's been an increase, spike, in youth suicides.

Mearns summarized, "lives for young people within the small communities can be incredibly complex and pretty tough, so it's about trying to be [pauses] kind of careful of how you put across those environmental issues." Mearns discussed the need to help students deal with stress but also said, "I think there's an obligation to talk about it [climate change] but I mean, not to the point of preaching on it... it's about making students aware of information."

Fisher asked an important question in the interview: “At what point do you stop trying to shield a kid and at what point do you invite them to share what they’re feeling and help them make sense of it, rather than try to shield them from it?” In light of Barrows’ work, this question becomes an essential query; perhaps our efforts to protect children from the worry or burden of information about climate change or other issues are in vain and children are already aware of the problems and experience their own emotional response to their awareness. Fisher elaborated on these ideas in his response to the thought piece when he wrote:

... his [Sobel’s] argument is mostly about *timing* rather than other considerations, it leaves the impression that as long as we get the timing right then that should put things right. Just like getting the timing right on teaching math. I think what needs to be named is that we are born expecting a world that is secure and reliable. That the world is not so makes the timing argument (as I will call it) not quite adequate...

Elliot touched on this theme as well when she reflected, “I’m not sure about the whole philosophical idea of protecting children, but I do think there’s away of protecting them, which makes sure they are being heard.” For Elliot, the idea that we can protect children from information is an “illusion”; instead, we must acknowledge their experiences and provide the tools necessary to discussing and addressing any issues that may result from their experience in the world. Elliot also felt that the idea that adults can ‘protect’ children denies that children are “wondering, curious creatures” who are “all the time ...making sense of things and making meaning of things.” She summarized:

For me, it's more about how would you present it and how would you make it available to children in a way that...you can continue to have a dialog with them about it...unless we keep in dialog and understand what it is that children have understood from what we've said, then we don't really know how to teach them.

Hicks also felt that the idea that adults can protect children from information was a fallacy. He argued that "I don't think the task is to protect children from information; we can't do that because there is so many ways information comes to them." Hicks contrasted the view that most adults (in his case, teachers) are unlikely to discuss troubling issues with kids when he remarked that,

there's a tendency to say well, we need to make children aware of the problem.

What I've always said to my students is, that you should never raise any problem or issue area in a classroom whether it's local, global, or whatever, unless you're also helping children understand what some of the possible solutions are and also some of the things that people are doing.

Theme 9: Include Emotions and Feelings in the Teaching and Learning of Environmental Education

A major theme to emerge from the interviews was the idea that emotions and feelings are often not recognized in the teaching and learning of environmental education. As mentioned above, many interviewees acknowledged their belief that adults are overwhelmed and anxious about environmental issues and that for children, such feelings are likely to be more acute. I believe that a similar concern is at the root of Sobel's benchmark; that environmental issues are too overwhelming and stressful for children to worry about, so we ought not burden them with such information. As Fisher explained,

“Any experience that you have, if it’s not to be overwhelming or traumatic you have to have the inner resources to be able to contain that experience.”

A salient concept in most interviews was the concept of ‘making a space’ for the child’s emotions. A major concern for Hicks was his belief that the affective realm is left out of the discussion, either because it is not on the educators radar or because the educator is simply not comfortable discussing emotions with students. Hicks emphasized the importance of maintaining open discussions about how individuals in the classroom feel about what they are learning.

Mearns also highlighted the importance of learning about how to talk about feelings and the tougher aspects of life. Along these lines Fisher concluded,

So, if kids are aware of things going on, then I would say, definitely, they need to be given a space to talk about it and a way to understand it and again in a way that’s still appropriate to their age and psychological development.

Fisher also suspected that “kids can be quite resilient in those situations as long as they’re allowed to have their feelings and as long as there are ways for them to understand what’s going on.” In this light, Fisher put forth the idea that young children can deal with the emotions that come along with potentially troubling information, but they need to be given the tools and the support to work through the feelings they are experiencing.

Hicks recognized the reluctance of adults to address not only children’s but also their own feelings. He felt “the bit that’s often missing... is feelings... the affective dimension” and underscored the importance of “letting feelings be present” in the classroom numerous times throughout our interview.

For Mearns, the idea of dealing with troubling issues was more complicated than simply a matter of maintaining open communication about emotions in the classroom. Mearns provided the insight that some parents feel that it is their role to talk to their children about major issues and their emotions and that it is not the teacher's duty to discuss such concerns. Mearns offered:

The key is communication, you have to make parents aware that these things are coming up in the classroom and allow them some aspect of connection to it so if their kids at home are looking a bit sad at the dinner table...

Mearns' advice illuminates a potential conflict between parents and teachers and encourages educators to be proactive about their curriculum, the emotional impacts it might have and ensuring that parents are aware of these factors before any issues arise.

For Bateman, participating in activities in the natural world was the ideal antidote to discouraging or hopeless information. He reflected:

How does one handle these problems psychologically? [pause] I don't worry about stuff like this. I try to do something about it and then I go on and enjoy life and try to get as much as I can out of the wonderful world that we live in... I don't think there's any point... in going around worrying, unless you can take some kind of action.

While Bateman sees outdoor activities as part of the solution to dealing with the negative emotions that can come from learning about troubling issues, he also acknowledged that big obstacles or complex issues "kind of increases the feeling of hopelessness, if all you can do is mitigate or take remedial action" rather than tackling a problem head on and

solving it. Bateman felt strongly that “being in love with life on earth also... solves this problem of depression.”

Each interviewee touched on the topic of how to frame climate change in both particular and general ways that would help to avoid negative emotions in children. Elliot said, “I think I would refine a bit what he [Sobel] says, because I think it’s more about the way adults present things to children.” Elliot felt this may be as simple as focusing on the positive rather than the negative when teaching children. As an example, Elliot explained:

maybe it’s more about making children see that we need to honour water and that water is important and that when we have important things... we don’t waste them and that we pay attention to them and it’s not about a tragedy.

Hicks agreed with the need to frame issues in an appropriate way to avoid undue stress on young learners; he emphasized findings from several studies that showed that “kids don’t worry if they know that grown-ups are doing something.” Hicks added,

It’s about how we teach what is appropriate at different age levels or how we teach about an issue and I think there’s a big difference between helping children develop a sense of responsibility, care for others... in our school community, for others elsewhere, others as in the environment and other creatures. There’s a big difference between doing that... and heading for the tragic bit.

Hicks supported Sobel’s thinking by stating; “I certainly agree that one should not hit children over the head with global problems and global issues when they are in elementary school.” Hicks also explained a main responsibility of educators is to avoid blaming and to steer clear of implying that these problems are “all our fault because

human beings have been doing...terrible things to the planet.” Hicks also emphasized the need to be able to talk about changes with young people “without necessarily getting into what for short hand we call the tragedy bit.”

Similarly Mearns felt it was essential to focus on the positive; “it’s about the bend you take on it, I think... I’ve always taught it from that sort of solution side, so I haven’t seen... that sort of... blank panic in kids eyes or anything like that. [chuckling]”

Theme 10: Maintain Awareness of Media Exposure and Help Students Make Sense of Complex Messages

As part of the recognition that children may have an awareness of climate change and other issues, many interviews involved discussion of the role of the media (including television) in adding to a child’s awareness of the world’s problems. The ubiquity of television and other media in the modern world was acknowledged as a contributing factor to children’s perceptions of the world. However, given most children’s inability to grasp the news or other media messages in their entirety, and the media’s propensity towards sound bites that often do not provide a full picture, the issue of fragmented learning developed as a main theme across the interviews. Interviewees speculated about the potential impacts of unconnected messages, images, and stories that for a child may add up to a frightening picture. Hicks cautioned, “climate change... in one sense, it’s just one of many global issues that are around in the news that children can’t help being vaguely aware of in the background.” Along these lines Elliot conjectured that “fragments can sometimes be worse than the real thing, than some concrete knowledge.”

Mearns discussed the relevance of climate change to the people of the north and explained how people see the changes and that climate change is in the newspaper everyday, suggesting that community awareness of the issue is high and that students

pick up on the information circulating the media and the community. He emphasized the volume of negative news and suggested that “it all becomes a little over-powering... even with adults, there’s certainly a rise in anxiety in adults.”

Given the prevalence of media in Canadian society, it is imperative for CCE to involve recognition of the likelihood that many children will come to school with impressions that have been derived from various forms of media. Maintaining an awareness of what media students are exposed to and what type of information they would garner from those sources should form an important basis for climate change discussions. Each participant discussed the pervasiveness of the media and expressed a concern for the messages students may be getting from newspapers, television, and movies; helping students to work through the complex information they receive through various forms of media, including the classroom will be an essential task for providing relevant CCE.

Summary:

There was little consensus between participants regarding what children needed to know or should know about climate change at any given age. On the one hand, Bateman argued for a focus on learning about and building an appreciation for the local environment, with little need to provide information about climate change until high school. On the other hand, Hicks suggested,

I think there are quite a number of things children may learn about climate change in elementary school that can be done age appropriately without being about “tragedy”, but... children need to understand in a wider context of learning about what sustainability means... and about the stuff Sobel writes about, concerns for

one's local environment and so on... I think children need to learn the difference between weather and climate... that the climate is changing and I would have thought that one could do that without making it into a tragedy or something frightening.

Hicks discussed the need to contextualize information learned in school by providing personal relevance for students:

I think not to set that context that the climate is changing and one of the things that is changing is we will get more sudden rains... so they understand that a.) climate changes and b.) this is part of their world.

Each interview participant varied in the degree to which they agreed with Sobel and in terms of whether or not they thought that climate change education had a place in elementary school classrooms. By far, Hicks advocated for the most CCE content in classrooms and on the other end of the spectrum, Bateman argued for none at all until perhaps as late as high school. For me, one of the most significant factors to emerge from the interviews was the participants' belief that ensuring students have the tools to think creatively and critically about these issues later in life will involve a concerted effort on the part of educators to guarantee that students are engaged in learning and building a relationship to the natural world in the early years. In this way, CCE broadens to encompass many other lessons and aspects (i.e. an appreciation for the natural world or building an understanding of what it means to be a part of a community) that may not conventionally be thought of as CCE, conversely, CCE can be seen as a subset of a greater EE initiative that seeks to build human-nature connections and strong communities while addressing environmental issues. Through this, foundational learning

for CCE could be seen to comprise building a familiarity and relationship with the natural world and becoming familiar with one's community, how it has changed through time, and then encouraging participation in community efforts to address environmental issues like climate change.

Understanding the potential emotional impact of CCE is of great importance; however, the need to honour each student's experience is also seen as critical by the participants in this study. Thus, if one student comes to school with an understanding of climate change, however fragmented, and appears to be emotionally distraught because of what they know, it is essential that educators address these feelings and discuss them with parents as well. Given that each student's experience of the world will vary, the participants in this study illustrate the importance for educators to maintain a keen sense of awareness of what their students know, where they are garnering their perspective and how their knowledge is making them feel. From there, educators may begin to plan appropriate CCE content for their students, but as the evidence from these interviews suggests, such content should be a balance of issues and solutions and involve concrete actions in the natural world to help build the human-nature relationship and to provide a feeling of hope for students.

The interviews provided a strong basis from which the above guidelines emerged. These guidelines will be summarized into guiding principles for educators and final thoughts will be discussed in the next chapter.

Chapter Five: Discussion and Conclusions

Summary of the Study

This study explored expert opinion regarding David Sobel's (1996) conjecture that there should be no environmental tragedies taught before grade four. It specifically explored the conjecture with respect to climate change. Through semi-structured interviews with experts from various fields I was able to garner their opinions about what children in elementary school should learn about climate change and how they should learn it. The discussion encouraged through the interview process consisted of diverse viewpoints regarding many common subjects. Ideas about childhood development, hope and despair, and climate change content in classrooms, among others, formed a vibrant conversation. In this chapter, I will use those insights to construct a set of guiding principles for educators who wish to address climate change in their classrooms or other learning environments.

No Tragedies Before Grade Four?

Do the experts in this study agree with Sobel's conjecture that children should not be taught about an environmental tragedy like climate change before grade four? While each expert interviewed did say that they agreed with Sobel's benchmark, at some point during every interview each expert also gave reasons for why they did not *entirely* agree with Sobel. Either Sobel's guideline did not go far enough, as in Mearns' and Bateman's case who both believed that grade four was too early to begin discussing a troubling issue like climate change or Sobel did not acknowledge the widespread tragedy of our times, as Fisher argued. For Elliot, much of Sobel's argument was pertinent but the guiding

principle of minding developmental stages was a point of contention. Both Elliot and Hicks believed that climate change is not inherently a tragedy and the subject could be framed appropriately for younger audiences. It was interesting for me to discover that while each person claimed to agree with Sobel, when it came down to contextualizing the guideline it often did not hold much water- either the guideline needed to be stricter or it needed to be more flexible- causing me to reflect on the reasons why Sobel might have established the guideline in the first place.

While consensus was difficult to garner in regards to ‘no tragedies before grade four’ the participants in this study provided a host of responses that supported Sobel’s developmental stages (as presented in chapter two). This suggests that the experts interviewed agree with the thinking that underlies Sobel’s conjecture, while not necessarily finding the guideline universally applicable.

Nevertheless, a valuable consideration can be drawn from this dialog: perhaps the issue is not *what* the children should learn about climate change but rather, *how* they are being given this complex and potentially troubling information. I had the impression that in a ‘perfect’ world, the experts would advocate that children not be exposed to climate change or any other complex issue until later in life and that they spend their childhood bonding with the Earth. However, given the unfortunate likelihood that many children are already exposed to climate change impacts (i.e. flooding, fires, extreme weather) and/or influences (i.e. protests in their communities, hearing about it on the news), addressing climate change becomes more pertinent, especially with the growing recognition of the emotional distress that exposure to the physical impacts of climate change and the knowledge of the issue may cause in young children. I am inclined to

agree with Elliot who conjectured that practical information presented in an age-appropriate manner would be more appropriate than trying to sugar-coat a complex global issue for a child that is perceptive of the problem or worse, simply ignoring the child's concerns. Drawing on the insight from Barrows and Fisher, down-playing their concerns may result in greater damage to the child's psyche while helping them work through their worries by participating in activities in the community or some other means has the potential to increase their locus of control regarding the issue.

Guiding Principle 1: Reject Scare Tactics and Teach Environmental Education as Love for Nature and Life

Bateman, among others, discussed the vital role that positive emotions, such as gratitude and love, can play in motivating a person to act on behalf of the environment. While reference was often made to the importance of acting from a place love, few participants explored in depth why it might be problematic to act from a feeling guilt, fear, or shame. As Roszak (2001) writes,

What I say here, I say as one who believes the warnings of the most worried ecologists and endorses the indictment of the angriest among them. I share their outrage and their urgency; I understand why they resort to hyperbole. But we may have reached the point at which the environmental movement must take the time to draw up a psychological-impact statement. Are dread and desperation the only motivations we have to play upon? What are we connecting with in people that is generous, joyous, freely given, and perhaps heroic? (pp. 38)

Rozzak goes on to question the psychological issues that lay at the root of our ecological problems:

The zealous tinkerers and technicians who gave us the light bulb, the automobile, the computer were not simply searching for ways to waste the wealth of the Earth; the scientists who invented the first atomic bomb were not deliberately doing evil; the highway engineers who tear up rainforests are not sheerly perverse. Even the leaders of the global corporations who seem to operate from simple avarice probably cling to a mystique of progress or an obsession with competitive self-testing that reaches into deep and secret aspirations. All these have seen something defensibly worthy in what they did, in the things they wanted: matters of dignity, excitement, ultimate well-being (pp. 38-39).

Roszak summarizes his view that coincides with the theme of love for nature, found throughout the interviews in this study, asking:

Is there an alternative to scare tactics and guilt trips that will lend ecological necessity both intelligence and passion? There is. It is the concern that arises from shared identity: two lives become one. Where that identity is experienced deeply, we call it love. More coolly and distantly felt, it is called compassion. This is the link we must find between ourselves and the planet that gives us life. At some point, environmentalists must decide if they believe that link truly exists. They must ask where it can be found inside themselves as well as in the public whose habits and desires we wish to change as only love can change us (pp. 40).

Roszak illuminates the difficulties inherent in understanding the motivations behind why a person behaves as they do. He also explores the ecological crisis from a psychological perspective that asks why humans have developed a relationship that is so disconnected from the natural world on which they depend and from which they evolved

over millennia. These questions are at the root of environmental issues like climate change and support a precautionary approach to the temptation to use EE as a weapon against the perceived foes of the environmental movement. Coercion is unlikely to have lasting results in the face of the complex global challenges our communities face; it may produce a short-term shift in one's actions, but a reversion to old habits would be probable (O'Neill & Nicolson-Cole, 2009).

The experts in this study argued for an approach to CCE that is longer-lasting and addresses the root causes, as Roszak instructs, one that fosters self-efficacy, a sense of community, and a recognition of the deep emotional influence of the ecological crisis. Each expert drew upon various scholars, theories, and researchers to lend credence to their opinion, many of whose ideas have been presented elsewhere in this paper. Moreover, many of the perspectives presented in the interviews coincided with opinions and findings put forth in scholarly literature referenced in Chapter two of this document. This suggests that there are diverse disciplines exploring concepts that are deeply embedded in the environmental concerns of our time. From Roszak's Ecological Unconscienceness to Wilson's Biophilia Hypothesis, Deep Ecology's idea of an ecological self or Anita Barrows' assertion that there exists a 'core self' that is inherently linked to the natural circumstances in which one finds oneself, all these ideas share commonalities that derive from humanity's inextricable link to nature and the need to foster love and appreciation for this connection.

Many writers discuss the importance of the human-nature relationship and concerns about how recently, humans have begun to separate themselves from the natural world (Kellert, 1993; Metzner, 1995, Roszak, 2001). For some writers, the issues that

come along with this separation are extremely problematic especially because they are out of step with the history of human experience. Metzner (1995) argues that “the entire culture of Western industrial society is dissociated from its ecological spectrum” (p. 64). Kellert (1993) explains that the biophilia hypothesis suggests that human identity and personal fulfillment depend on the human-nature relationship; he emphasizes the stress-reduction benefits of spending time in nature and also discusses the “significance of natural symbols in myth, fairytale, story, and legend as an important means for confronting the developmental problems of selfhood, identity, expressive thought, and abstraction” (p. 52).

Kellert goes on to explain “a degraded relationship to nature increases the likelihood of a diminished material, social, and psychological existence” (p. 61). Kellert summarizes a range of ‘adaptational advantages’ that result from basic experiences in nature: “...enhanced physical skills and material benefits, greater awareness, increased protection and security, opportunities for emotional gratification, expanded kinship and affiliational ties, improved knowledge and cognitive capacities, greater communication and expressive skills, and others” (p. 65).

The work of social ecologists like Kellert blends well with scholars in the field of environmental education, such as Chawla and Sobel or contemporary thinkers like Richard Louv who have discussed the importance of time in nature in helping to deal with modern problems like attention deficit disorder (Louv, 2008). Their ideas represent essential links between human and nature that go beyond straightforward human bonding with the natural world and illuminate that human development may require natural influences because human culture has developed over millennia in close connection to the

natural world. These and other authors bring to the fore concepts that suggest that humans require time in nature to grow into whole beings, pointing to the role that immersion in nature can play in healing individuals and addressing ecological issues.

Bateman discussed E.O. Wilson's (1993) Biophilia Hypothesis in detail in our interview. Bateman felt Wilson's work provided strong support for his belief that elementary school must provide ample opportunities for students to bond with and build a love for nature. For Bateman, allowing students to build their own relationship with nature would ensure positive outcomes for the environment in the future, including addressing climate change. Bateman elucidated this idea further:

Fall in love with nature. We're not going to do anything unless we fall in love with it and then everything falls into place... I think that's what they should be doing in schools, teaching the nature of the neighbourhood and they should be doing it at every grade... so that kids become very literate about the other living things around them and therefore have a chance of falling in love with them and therefore would be voting in the right way to protect them.

The idea of encouraging love for nature is bolstered by literature recommended in some of the interviews. Gomes and Kanner (1995) argue for the need to let go of a 'shame and blame' approach to environmental messaging and like many of the participants in this study, call for an approach that honours relationships and a loving response to environmental challenges. To me, one of the essential tasks for educators who wish to inspire students to become environmental stewards is to nurture a sense of wonder and respect for the natural world. The most effective means of fostering wonder and respect seem to be spending time in nature and learning the intricate relationships

found in the natural world (including human systems) (Chawla, 1999; Orr, 1990). From the literature reviewed in this study and the opinions presented in the interviews, avoiding excessive engagement in complex content and focusing on time outdoors and participation in nature-based activities emerges as an important focus in the elementary years.

Guiding Principle 2: Move Beyond the Narrative of Climate Change as a Tragedy to a Community Context

While Sobel has postulated that climate change is an environmental tragedy of our times, the participants in this study did not seem keen on acknowledging it as such for young children. Instead, they stressed the need to ‘deconstruct’ this idea of tragedy and what is meant when one describes climate change. Many felt that there were several aspects of climate change that could be taught with younger students; the concern about teaching climate change was not related to the issue itself, but rather the way that climate change is presented to students. Moreover, one participant argued that there were important things about climate change that children *needed* to know in order to build a foundation of knowledge that would serve them in later years. The issue was not that children needed to be aware of an enormous, daunting problem but that by teaching children about certain aspects of climate change they will be better prepared to address the issue in the future. As Mearns pointed out, explaining that “climate change isn’t a disaster, it’s just that we’re going to have to deal with the fact that it might get snowier” is an essential task for educators and the adults in children’s lives. While I would not argue that climate change should be taught in a way trivializes the complexity of this global issue, the statement from Mearns, also brought up by other participants, points to a need to provide a community context to the changes in climate experienced there,

including a sense of community responsibility for addressing the issue through both adaptation and mitigation.

Similarly, Hicks felt that students needed to understand that the changing climate was resulting in more floods in the UK. Generally, it was felt that there were likely instances where a little bit of information, passed along in a sensitive manner may indeed assuage greater fears garnered from fragmented information that have the potential to be emphasized by a child's vivid imagination and ability to empathize with other beings. Moreover, from the interviews it became clear that it would be appropriate to address the issues related to climate experienced in the local area, but to bring in other aspects that add to the enormity of climate change might be too overwhelming for young students that developmentally may not have the cognitive ability to grasp these greater abstractions.

Both Mearns and Hicks felt that explaining the climatic changes that are already impacting students and their communities was an important task. Mearns argued that discussing changes to the local environment and explaining that, "we're going to cope with it before it becomes an issue" was an appropriate approach to take. This relates to Fisher's argument that many children are already aware of environmental issues, such as climate change, and that by ignoring their awareness and failing to discuss difficult issues adults may inflict greater anxiety, frustration, or other difficult emotions upon children. While Mearns argued that we should explain to students that society will cope with the problem before it becomes unmanageable, Hicks also expressed that children would not worry if they thought adults were addressing the issue and so providing such reassurance is an important part of CCE. In contrast, Fisher felt that students were likely to pick up on the fact that adults, to date, have not been overly proactive in dealing with the issue

and therefore may not have the faith in adults that Mearns and Hicks thought they might. In this view, it is important not to provide reassurance that essentially adds up to the telling of ‘white lies’ that children may see through.

Along this vein, Elliot also expressed concern about ‘fragments’ of knowledge and postulated that being given a holistic picture from a responsible adult might be a better alternative to incoherent information garnered from various sources left unaddressed. For me, this points to the need for educators to be extremely critical about not only the students in their charge and the needs of the children but also about themselves and their own motivations for teaching about climate change. Rather than imparting climate change content simply because students need to be aware of the problem so they are capable of addressing it later in life, as Hicks has suggested is often the case, educators must be critical about why they think it is important for their students to know about climate change. With younger children, if it is not on their radar, educators may be more likely to achieve the goal of creating pro-environmental behaviour by building that child’s bond with nature instead.

Further areas of research could explore the implications of a child hearing bits and pieces of climate change talk on the radio or from their parents. It would be helpful to gain a greater insight as to whether or not such fragments cause the stress and anxiety some predict. Also, research that seeks to understand the impacts of climate change content on student’s emotional and psychological well-being would be helpful. These are important questions to answer and I would advise educators and other adults to gently examine their students/children to gain an understanding of what they may know about

climate change and how it might be making them feel before introducing climate change content to the classroom.

Guiding Principle 3: Create a Supportive Atmosphere for Children to Express their Emotional Responses to Climate Change

Our modern environmental crisis—the widespread toxification of various food chains, the multifaceted degradation of the atmosphere, the far-ranging depletion of diverse natural resources, and above all, the massive loss of biological diversity and the scale of global species extinctions—is viewed as symptomatic of a fundamental rupture of human emotional and spiritual relationship with the natural world (Kellert, 1993, pp. 26).

Barrows (1998) argues that the real problem regarding children and difficult environmental content arises when children are forced to hold their feelings and ideas inside and do not have a supportive space to discuss what they experience in the world and how it makes them feel. This suggests that as adults and educators, we may be misguided if we think we can choose an appropriate time for children to gain awareness of a global issue like climate change. Instead, there is a need to recognize that children observe their communities and sense the challenges and changes therein. Creating a space to discuss children's experiences emerges as an important part of helping them to navigate the challenges faced by their communities in relation to climate change and other issues as well. A sensitive approach, that maintains awareness of children's feelings and the impact of subject matter was promoted in each of the interviews.

Increasingly, environmental thinkers are beginning to acknowledge environmental grief as a strong concern for environmentalists and also for youth confronted with EE. Windle (1995) cautions “premature reassurance and pressure to accept a loss just short

circuits the grieving and recovery process” (p. 141-142). This view is in contrast to Mearns who advocated for reassuring students that adults will address the issue before it spirals out of control and suggests the need for educators to think twice before providing reassurance about children’s fears or sense of loss. Windle goes on to explain that “environmental losses are intermittent, chronic, cumulative, and without obvious beginnings and endings” (p. 144) and are difficult to mourn because there is very little social support for expressing environmental grief. These are important considerations for the environmental educator; as educators, there is an important role for helping learners of all ages work through the feelings that go along with environmental learning and also with developing a close relationship to the natural world, as was illuminated in the interview with Fisher. Windle cautions that if individuals do not move through the processes of acknowledging and dealing with grief that mourning can become excessive or prolonged, which can lead to chronic or distorted grief.

Macy (1995) provides insight about short-circuiting grief when she writes, “until we find ways of acknowledging and integrating that level of anguished awareness, we repress it; and with that repression we are drained of the energy we need for action and clear thinking” (p. 243). From Macy (1995) and Windle (1995) and from the interview participants, the need to address emotions becomes imperative. In this view, educators must have a keen awareness of the individuals in their learning community and the ways each individual is dealing with what they are learning. Providing training to educators that enables them to better understand their own emotions and provides tools for talking about and dealing with intense emotions will be an important aspect of teacher training for environmental educators and others.

Guiding Principle 4: Create Communities that Engage Students as Active Participants and Recognize the Interconnectivity between Humans and Nature

A common thread running through the interviews was the importance of a strong, supportive community. For the participants in this study, a sense of community within the classroom and a connection to the wider community outside of school was an essential aspect of CCE. From the interviews, it is clear that students of all ages need to see that their communities are addressing important issues and achieving success in regards to climate change through direct participation in community activities; however, a sense of community also needs to be nurtured within the classroom. The experts described a classroom that nurtured a sense of community as one that allowed each student their turn to speak and be listened to and offered the opportunity for students to express their emotions.

For me, these ideas caused reflection on the ‘reality’ of today’s classrooms and communities. While it is difficult to make generalizations about the way things are, it is important to be realistic about the challenges faced by youth. For instance, Mearns described the complex challenges faced by his students in Nunavut and the ubiquity of youth suicide in his community. Youth suicide is currently at epidemic proportions among Aboriginal youth across Canada, reflecting deep cultural and ecological issues (Isaak, et al., 2010; MacNeil, 2008). Schools and other educational facilities (i.e. nature centres) can be a strong nucleus from which to build the community cohesiveness that the participants in this study advocate for. According to the experts in this study, students need to feel as though they are part of a community and that they have a strong role in determining how their community will evolve over time. Fostering this sense of self-efficacy should be an important focus for educators at the elementary level.

For Barrows (1995), healing ourselves and healing our communities involves a fundamental shift in how Western society conceptualizes self and child development. She explains that a central part of developing a new model of child development involves generating a new vision of self that is permeable and interconnected with other humans and beings/living processes (as opposed to the paradigm of a bounded, isolated self). Barrows (1995) writes, “such a theory must take into consideration that the infant is born into not only a social but an ecological context” (p. 103). She suggests a new paradigm of self that broadens to expand not only social contexts but also ecological contexts and describes the idea of a ‘core self’ as an important step toward a “developmental process not exclusively founded in the world of social relationships” (p.106). Barrows writes,

if we see the child as inextricably connected not only to her family, but to all living things and to the earth itself, then our conception of her as an individual, and of her family and social systems in which she finds herself, must also expand (pp.107).

In describing an ecologically based theory of development, Barrows explains that it is important to acknowledge “two fundamental movements of being- the tendency to cohere and the tendency to dissolve... as equally valent and equally essential” (p.108), which is in contrast to traditional developmental theories that have supported the “illusion” of bodily separateness. Barrows clarifies her thinking: “it is indeed the illusion of bodily separateness that is the genuine sorrow, that accounts for our loneliness, that isolates us, and leads us to exploit and violate one another, the world we live in and ultimately, ourselves” (p. 109). Barrows’ insights offer a glimpse into perhaps some of the causes of climate change and other ecological disasters and to potential remedies,

specifically how Western society conceptualizes selfhood and childhood, that may help to resolve industrial Western society's continued disharmony with the natural world. If the industrial world can begin to see the connections between ourselves and the larger community, including the natural world, we will have begun to move towards a more just and ecologically sustainable world. CCE approaches that nurture an awareness of the interconnectivity of life might foster an understanding of the complexities of the web of life and the role of humans within the web.

To this end, O'Conner (1995) also calls for an expansion in the conception of self in such a way to include human relationships with family and community as well as other life forms and the biosphere as a whole. He argues that such interconnectedness will lead to ecological responsibility and is a way to move beyond blaming and guilt for action. Thus, educators can encourage their students to see themselves as inextricably linked to the natural world and their communities by helping to illuminate aspects that define the human-nature relationship (i.e. the human need for water and the hydrological cycle). In this view, CCE can be expanded upon to include other foundational content that will help students see themselves as part of a bigger picture that nurtures an enlargement of their sense of self.

Orr (1993) reflects on the idea of community and emphasizes the connections between fostering love for the natural world and healthy communities. He discusses the reasons to believe that a love for nature flourishes in good communities and provides clarity on what comprises a strong community; Orr writes: "By community I mean, rather, places in which the bonds between people and those people and the natural world create a pattern of connectedness, responsibility, and mutual need. Real communities

foster dignity, competence, participation, and opportunities for good work” (p. 428).

This quotation from Orr mirrors a perspective that was evident across the interviews and articulately summarizes the points of consonance between the interviews regarding the need to teach young learners not only how to be a part of a community but also, what aspects make a community vibrant and strong, such as democracy, nature, and self-efficacy. It is important for educators and others to reflect upon the communities in which they live and teach and to understand whether or not they are ‘good’ communities as Orr describes. Taking a cue from Hicks, the applicability of building a futures perspective into our own educational practices becomes evident. Envisioning the future emerges as an important exercise to work through not only as an educator with one’s students, but also for each one of us alongside our colleagues, friends and families.

Guiding Principle 5: Be Mindful of How One’s Conceptions of Reality Shape and are Shaped by Context

In most interviews, the participants made broad references to ‘reality.’ How each person perceived reality clearly influenced his or her own perceptions about EE and environmental issues, including climate change. Participants’ conceptions of reality formed their deeply held beliefs about the state of the world, the urgency of environmental issues, and the human condition more generally. For example, Bateman asserted that,

All these things on television, like reality TV shows, are nothing to do with reality. They are the opposite of reality, they are not reality and we have kids running away from reality and spending huge amounts of time and huge amounts of money, especially boys, on games... the vital teenage years, they’re sitting there twiddling their thumbs on a little instrument gaming and escaping from

reality and I think that's... I guess more dangerous than telling kids about the problems of the world and having to face it... kids need to enjoy the beauties and wonders of reality too.

In Bateman's view, reality is kept outside of the virtual world and may be troublesome, but a connection to his reality – nature – is seen as far safer than engagement in the false-reality of modern entertainment. Yet, this statement contradicts another comment from Bateman, where he claims that telling children about the problems of the world would “serve no useful purpose”.

In this way, it can be seen how an individual's ideas about appropriate CCE may change as the context shifts. When Bateman considers Sobel's conjecture outside of other matters (i.e. outside of his view of reality presented above), he agrees wholeheartedly with Sobel's guideline and even suggests that Sobel's cut-off of grade four is not going far enough. When he thinks about the issue in a different context- his perception that children today are too tuned out from 'reality'- his opinion shifts and telling kids about the problems of the world seems more appropriate. To me, this signifies the need to recognize the importance of context and to tread carefully when trying to make prescriptive guidelines or to apply blanket benchmarks, as people have tended to do with Sobel's 'No tragedies before grade four'.

Gee discusses the role that cultural models play in constructing an individual's view of the world. He writes about each person's experience in the world, what class they belong to, what culture they are born into and how this influences their perceptions of 'reality':

Cultural models can be about “appropriate” attitudes, viewpoints, beliefs, and values; “appropriate” ways of acting, interacting, participating, and participant structures; “appropriate” social, cultural, and institutional organizational structures; “appropriate” ways of talking, listening, writing, reading, and communicating; “appropriate” ways to feel or display emotion; “appropriate” ways in which real and fictional events, stories, and histories are organized and end, and so on and so forth. (pp.68)

In Gee’s approach, each person’s conception of reality is mediated by how and where they were raised and educated, what language they speak, etc.. For example, going back to the quotation from Bateman at the top of this section, it is clear that in his reality, ‘gaming’ is not an appropriate mode of interacting and participating in the world and were a child to place too much focus on gaming, then it may be necessary to break Sobel’s rule and give that child a dose of ‘reality’ or information about the problems of the world. Looking at this another way, for that child who is engrossed in gaming, his or her behaviour may be culturally appropriate within his or her circle of friends at school and were he or her not to engage in gaming, his or her behaviour may be seen as inappropriate and lead to his or her being ostracized by his group of friends.

Fisher conceives of reality within historic terms. Indeed, Fisher’s major critique of Sobel’s work involves Sobel’s lack of recognition of the ‘historical moment’ of our times. Fisher explains, “I got the impression listening to him that there isn’t something extraordinary going on here, historically.” Fisher also felt that a ‘larger reality’ must be considered when thinking about Sobel’s guideline and teaching young learners about difficult issues:

I agree with Sobel as far as it goes and I think it's more complicated than what he's saying... taking some cues from this article by Barrows, there are these large realities and the kids are picking up on them and how do you make a space for what kids are feeling about the state of the world?

He further explained his perception of our historical moment as follows:

it's complicated because you can say, well here's a level of what normal psychological development looks like, even a revised version of that, including bonding with the earth, but if the global condition includes all these tragedies and if the whole planet is in enormous crisis then you can't... I'm just not sure how you keep that out of the child's consciousness entirely.

For Fisher, the global crisis is ubiquitous. He believes it is impossible to keep it out of the consciousness of contemporary children. Yet he later argues that children and teens have little sense of these global crises. Fisher argued, "in some ways, the world's more and more aware of these kinds of issues and it's going against the grain of very aggressive consumer culture, which is taking a lot of youth in the opposite direction."

The following statement further reveals Fisher's perspective on the society in which he lives:

we live in a society that's very very weak spiritually, free market consumer society feeds on spiritual poverty... that's how it operates, that's it's *modus operandi*, is to make sure we're all very very weak spiritually... there's this terrible situation here where we need to be spiritually strong but we're still spiritually weak.

Along these lines, authors in Fisher's field of expertise, Gomes and Kanner (1995) write, "To live with repeated violation of the natural world and the harsh environment that has resulted, we shut down much of our sensitivity" (p. 18).

Glendinning (1995) explains that,

the trauma endured by technological people like ourselves is the systemic and systematic removal of our lives from the natural world... removal of our lives from the kinds of social and cultural experiences our ancestors assumed when they lived in rhythm with the natural world (pp. 51-52).

This quotation also reveals a similar thread found within the interview with Fisher; that climate change has become such a prominent and important issue that it cannot be avoided and as a result needs to be discussed in a way that can be made available in a manner suitable for children of various ages.

Looking at the opinions presented in this work and how they shifted given the context, it becomes clear that educators must ensure that they are thinking critically about their environmental and climate change content. While it can be easy to simply say, 'no tragedies before grade four' and dismiss the idea of addressing climate change with children, the shifting contexts provided in this study show the importance for educators to evaluate the need for different types of climate change content given different situations and audiences.

Guiding Principle 6: Use Active Forms of Engaging Students with Environmental Issues

In the *Biophilia Hypothesis*, Nabhan and St. Antoine (1993) argue that television and, often, learning in school, are passive forms of absorbing information. They write, "both television and certain formal education approaches run counter to the ways of

indigenous education- for example, apprenticeships with elders- that have been most successful for previous generations” (p. 241). The authors call for different learning models to be incorporated into modern learning institutions, which may include some of the restoration work advocated by Shapiro (1995) or community exploration (i.e. students interviewing elders) described by Hicks and Mearns.

Nabhan and St. Antoine (1995) also describe storytelling as a key educational tool; they argue that for children, storytelling is a “stimulus for children’s imagination, requiring their mental contributions to the storytellers words, not just their passive absorption of information” (p.244). This is an important technique identified by Elliot, who felt that storybooks would be an effective way for engaging children on climate change. The importance of stories in education is highlighted throughout the *Biophilia Hypothesis* by several authors who advocate for inclusive storytelling that does not privilege one tradition or mode of knowing over another. Nabhan and St. Antoine touch on this in their chapter when they assert that Western education systems privilege certain stories over others, especially Western stories over Indigenous stories. Therefore, the authors argue for EE programs to incorporate traditional knowledge and lore into curriculums and for the inclusion of direct exposure to plants and animals with specific emphasis on wild species, which would provide local knowledge but also foster a sense of biophilia.

Shapiro (1995) adds credence to the idea put forth by all of the experts in this study: that participation in positive activities is an essential part of empowering people. Shapiro’s (1995) writes that “environmental restoration work can spontaneously engender deep and lasting changes in people, including a sense of dignity, belonging, a

tolerance for diversity, and a sustainable ecological sensibility” (p. 225). Shapiro furthers his argument by asserting, “In attempting to help an ecosystem, we learn to think like that system and to reclaim our own biological wisdom” (p. 226). He explains that the personal transformation that occurs through participation in restoration work is different from that associated with wilderness trip experiences and argues that restoration work has a longer lasting and continuous impact because through the process people begin to release “often repressed, but nonetheless crippling emotions- guilt and shame, grief and despair, loneliness and powerlessness- associated with going along with the relentless machinery of corporate consumer culture” (p. 227). This insight provides clear support for people of all ages to be involved in restoration work. The positive benefits to both students and teachers of participating in school-yard naturalization projects or other community greening project may have deep and long-lasting impacts on all involved, while teaching worthwhile lessons to students that can be linked to a school’s curriculum and addressing climate change.

All of the experts in this study advocated for extensive time outdoors, participating in community efforts to improve the local environment, excursions to meet with elders and learn from their accumulated wisdom among other approaches mentioned in chapter four. Unfortunately, as Bateman described in his interview, the ability for teachers to provide such quality outdoor experiences are consistently being hampered by fears of litigation and prohibitive policies by schools and school boards regarding classroom time outside and field-trips. An important step for educational policy to take will be to acknowledge the importance of and great need for students to participate in outdoor activities and community initiatives on a regular basis. Involving students in

greening school grounds, community restoration projects, regular hikes in local parks or woodlands, and other activities that bring students closer to nature need to become routine for students around the world. Such activities will enable children and youth to build a personal relationship with the natural world through exploration and contemplation. Contemporary learning outcomes can easily be applied to many of the activities listed above, signifying that there is no need for outdoor and community activities to ‘take away’ from regular learning. Many such projects are already underway throughout Canada and abroad; for example, the Center for Ecoliteracy in California and the community restoration and gardening work being done by the Evergreen Foundation in Ontario, initiatives like Ontario’s EcoSchools, among others. However, a conscientious effort needs to be made to ensure that such experiences are the norm, rather than the exception for today’s students.

Guiding Principle 7: Broaden the concept of “developmental stages”

Metzner (1995) takes a longer view of human development and explains that with the advent of agriculture approximately twelve thousand years ago humans began to “lose developmental practices that had functioned healthily for hundreds of thousands of years” (p. 56). Metzner (1995) argues that Western society has lost infant/caregiver relationships, adolescent transition rites, and that there has been an erosion of father-son ‘apprenticeship bonding’. Metzner further asserts that the erosion of these developmental practices has resulted in modern humans having “forgotten something our ancestors once knew and practiced- certain attitudes and kinds of perception, an ability to empathize and identify with non-human life, respect for the mysterious, and humility in relationship to the infinite complexities of the natural world” (p. 61). For Metzner, the loss of these

developmental practices has hindered the human-nature relationship to a serious degree, which is enabling the destructive behaviour characteristic of modern humans. This indicates a need for developmental practices that function at a cultural level as a way of healing human-nature relationships and bringing balance to human-nature interactions.

Similarly, Wilson (1993) writes about the significance of a lengthy human history. He explains that for 99% of human history, people lived as hunter-gatherers and that biophilia began with this evolution of humankind: “as language and culture expanded, humans also used living organisms of diverse kinds as a principle source of metaphor and myth” (p. 32). Wilson and Metzner highlight the essential role that nature has played in human development, lending support to others that call upon the need to re-conceptualize individual development as well as development of human culture to include a larger presence for the influence of the natural world. Such a recognition, of humanity’s development over time in conjunction with the natural world, also presents a foreboding of what may be to come as natural systems continue to be degraded and humans move farther from the natural and closer to the manufactured and domesticated.

Conclusions

The insights provided by the experts interviewed in this study enlarge the scope of Climate Change Education. The diverse perspectives presented here offer a critical look at modern EE, but more than that, the ideas put forth offer a framework for addressing the ecological crisis more broadly. The seven guiding principles that derive from the guidelines put forth in chapter four include:

- rejecting scare tactics and teaching environmental education as love for nature and life;

- moving beyond the narrative of climate change as a tragedy to community context;
- creating a supportive atmosphere for children to express their emotional responses to climate change;
- creating communities that engage students as active participants and recognize the interconnectivity between humans and nature;
- being mindful of how one's conceptions of reality shape and are shaped by context;
- using active forms of engaging students with environmental issues
- broadening the concept of "developmental stages"

These principles comprise the central ideas to emerge from this work and provide a sound basis from which to begin developing climate change content for classrooms and other learning environments.

Regarding Sobel's 'no tragedies before grade four' and the search within this thesis for consensus among experts about his conjecture, no easy answer was found. On the surface, each expert agreed superficially that indeed, 'no tragedies before grade four' would be a good rule of thumb to follow. However, beneath the surface and within the shifting context of modern learning environments, adherence to Sobel's principle becomes much more difficult. Upon initial analysis when I wrote the thought-piece, it appeared that there was consensus that each participant agreed with Sobel's conjecture, but upon deeper examination of the data, the caveats for each person's agreement become more pronounced. While it can be comforting to apply a statement like Sobel's across the board, in some instances (for example, those brought to light by Fisher and Barrows)

not talking about the issue may do more harm than good. Educators and other adults must maintain awareness of students' experiences and their emotions as they relate to the world around them and what they are learning either formally or informally.

There was consensus regarding the belief that students need to spend time outdoors in order to grow into the whole beings that are capable of and willing to address complex global issues. In regards to Sobel's underlying beliefs for forming his conjecture, the participants in this study agreed, students need to fall in love with the natural world in which they live and to spend as much time outdoors becoming familiar with that world as possible. However, when it came to learning about complex issues, it emerged as a context-specific consideration that should be approached in a delicate manner.

Important areas to explore in future research include gaining a greater understanding of impacts of climate change awareness at a young age, either through formal education or informal exposure through various media sources. Also, gaining insight into the issue of 'fragmented learning' would be a useful starting point for delving deeper into the psychological issues of exposure to climate change and other troubling information. In a more general sense, understanding the implications of ecological grief and the likelihood that children and youth today will experience a lifetime of ecological loss; understanding these areas will help educators and others to provide antidotes to this loss and to learn how to acknowledge our collective environmental grief.

This thesis can be seen as a starting point for further dialog regarding the complexities of addressing difficult environmental issues with students; issues that we all encounter as a result of our lived experience in today's modern world, acknowledged or

not. As climate change continues to reach further into our communities it will be increasingly important to find ways of addressing the changes experienced within our neighbourhoods, cities, and nations and to do so in a way that preserves positive childhood experiences in nature. Therefore, it is my hope that this conversation will continue to evolve and that as educators, environmentalists, parents, and others, we can ensure our children experience loving support as they learn and grow within this changing world.

References

- Baggerly, J., & Exum, H. A. (2008). Counseling children after natural disasters: Guidance for family therapists. *American Journal of Family Therapy*, 36(3), 79-93.
- Barrows, A. (1995). The ecopsychology of child development. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 101-110). San Francisco: Sierra Club Books.
- Barrows, A. (1998). Crying for the manatees. *ReVision*, 20(4), 9.
- Berson, I. R., & Baggerly, J. (2009). Building resilience to trauma. *Childhood Education*, 85(6), 375-382.
- Chawla, L., & Cushing Flanders, D. (2007). Education for strategic environmental behaviour. *Environmental Education Research*, 13(4), 437-452.
- Chawla, L. (1999). Life paths into effective environmental action. *Journal of Environmental Education*, 31(1), 15
- Chawla, L. (2001). Significant life experiences revisited once again: Response to vol. 5(4) 'Five critical commentaries on significant life experience research in environmental education'. *Environmental Education Research*, 7(4), 451-461.
doi:10.1080/13504620120081313
- Clayton, S., & Opatow, S. (2003). Introduction: Identity and the Natural World. In Clayton, S., & Opatow, S.(Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 1-24). Cambridge, Mass. Massachusetts Institute of Technology Press.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education*. New

- York: Routledge.
- Cohen, S. (1992). Promoting ecological awareness in children. *Childhood Education*, 68(5), 258-260.
- Cole, A. G. (2007). Expanding the field: Revisiting environmental education principles through multidisciplinary frameworks. *Journal of Environmental Education*, 38(2), 35-45.
- Cutter-MacKenzie, A., & Smith, R. (2003). Ecological literacy: The 'missing paradigm' in environmental education (part one). *Environmental Education Research*, 9(4), 497-524.
- Efron, S. E. (2008). Moral education between hope and hopelessness: The legacy of Janusz Korczak. *Curriculum Inquiry*, 38(1), 39-62. doi:10.1111/j.1467-873X.2007.00397.x
- Finger, M. (1994). From knowledge to action? Exploring the relationships between environmental experiences, learning, and behavior. *Journal of Social Issues*, 50(3), 141-160.
- Gee, J. P. (1999). *Introduction to discourse analysis: Theory and method*. London, GBR: Routledge.
- Glendinning, C. (1995). Technology, trauma, and the wild. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 41-54). San Francisco: Sierra Club Books.
- Gomes, M. E., & Kanner, A. D. (1995). The rape of the well-maidens: Feminist psychology and the environmental crisis. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 111-

121). San Francisco: Sierra Club Books.

Hicks, D. (1998). Stories of hope: A response to the 'psychology of despair'.

Environmental Education Research, 4(2), 165-176.

Hicks, D. & Holden, C. (2007). Remembering the future: What do children think?

Environmental Education Research, 13(4), 501-512.

doi:10.1080/13504620701581596

Isaak, C. A., Campeau, M., Katz, L. Y., Enns, M. W., Elias, B., Sareen, J., & Swampy

Cree Suicide Prevention Team. (2010). Community-based suicide prevention

research in remote on-reserve first nations communities. *International Journal of*

Mental Health and Addiction, 8(2), 258-270. doi:10.1007/s11469-009-9250-0

Johnson, L. R., Johnson-Pynn, J. S., Sweeney, S. S., & Williams, C. T. (2009). Youth

civic action: Going green, going global. *Ecopsychology*, 1(2), 75-84.

Kahn, P. H. (1997). Developmental psychology and the biophilia hypothesis: Children's

affiliation with nature. *Developmental Review*, 17(1), 1-61. doi:DOI:

10.1006/drev.1996.0430

Kazdin, A. E. (2009). Psychological science's contributions to a sustainable environment:

Extending our reach to a grand challenge of society. *American Psychologist*,

64(5), 339-356. doi:10.1037/a0015685

Keepin, W. (1991). Toward an ecological psychology. *ReVision*, 14(2), 90.

Kellert, S. R. (1993). The biological basis for human values of nature. In S. R. Kellert, &

E. O. Wilson (Eds.), *The Biophilia Hypothesis* (pp. 42-72). Washington, DC:

Island Press.

Kelsey, E. (2007). Removing our kids from the front lines of climate change. Retrieved

- on June 5, 2010 from: <http://www.worldchanging.com/archives/007636.html>
- Kool, R. and Kelsey, E. 2005. Dealing with despair: The psychological implications of environmental issues. Presented at the Third World Environmental Education Congress, Turin Italy, October 2005.
- Littledyke, M. (2004). Primary children's views on science and environmental issues: Examples of environmental cognitive and moral development. *Environmental Education Research*, 10(2), 217-235.
- Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. New York: Algonquin Books of Chapel Hill.
- MacNeil, M. S. (2008). An epidemiologic study of aboriginal adolescent risk in Canada: The meaning of suicide. *Journal of Child and Adolescent Psychiatric Nursing*, 21(1), 3-12.
- Macy, J. (1995). Working through environmental despair. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 240-262). San Francisco: Sierra Club Books.
- McCaffrey, M. S., & Buhr, S. M. (2008). Toward a climate-literate society. *Environmental Law Reporter: News & Analysis*, 38(12), 10838-10841.
- McClaren, M., & Hammond, W. (2001). The educational challenges: A framework for teaching about climate change. In T. Grant, & G. Littlejohn (Eds.), *Teaching about climate change: Cool schools tackle global warming* (pp. 5). Toronto, ON: Green Teacher.
- Metzner, R. (1995). The psychopathology of the human-nature relationship. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the*

- earth, healing the mind* (pp. 55-67). San Francisco: Sierra Club Books.
- Nabhan, G. P., & St.Antoine, S. (1993). The loss of floral and faunal story: The extinction of experience. In S. R. Kellert, & E. O. Wilson (Eds.), *The Biophilia Hypothesis* (pp. 229-250). Washington, DC: Island Press.
- O'Connor, T. (1995). Therapy for a dying planet. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 149-155). San Francisco: Sierra Club Books.
- O'Neill, S., & Nicholson-Cole, S. (2009). "Fear won't do it" promoting positive engagement with climate change through visual and iconic representations. *Science Communication*, 30(3), 355-379.
- Orr, D. (1993). Love it or lose it: The coming biophilia revolution. In S. R. Kellert, & E. O. Wilson (Eds.), *The Biophilia Hypothesis* (pp. 415-440). Washington, DC: Island Press.
- Orr, D. W. (1990). Environmental education and ecological literacy. *Education Digest*, 55(9), 49-53.
- Palmer, J. A., Suggate, J., Robottom, I., & Hart, P. (1999). Significant life experiences and formative influences on the development of adults' environmental awareness in the UK, Australia and Canada. *Environmental Education Research*, 5(2), 181-201.
- Plotkin, B. (2008). *Nature and the Human Soul: Cultivating Wholeness and Community in a Fragmented World*. Novato, CA: New World Library.
- Pooley, J. A., & O'Connor, M. (2000). Environmental education and attitudes: Emotions and beliefs are what is needed. *Environment and Behavior*, 32(5), 711-723.
doi:10.1177/00139160021972757

- Puk, T., & Behm, D. (2003). The diluted curriculum: The role of government in developing ecological literacy as the first imperative in Ontario secondary schools. *Canadian Journal of Environmental Education, 8*, 217-232.
- Reis, G., & Roth, W. (2010). A feeling for the environment: Emotion talk in/for the pedagogy of public environmental education. *Journal of Environmental Education, 41*(2), 71-87. doi:10.1080/00958960903295217
- Roszak, T. (2001). *The voice of the earth: An exploration of ecopsychology*. Grand Rapids, MI: Phanes Press Inc.
- Shapiro, E. (1995). Restoring habitats, communities, and souls. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 224-239). San Francisco: Sierra Club Books.
- Sobel, D. (1996). *Beyond ecophobia: Reclaiming the heart in nature education*. Great Barrington, Mass: Orion Society.
- Sobel, D. (2007). Climate change meets ecophobia. *Connect Magazine, 21*(2), 14-21.
- Tanner, T. (1998). Choosing the right subjects in significant life experiences research. *Environmental Education Research, 4*(4), 399.
- United Nations Educational Scientific and Cultural Organization. (2009). Address by Mr Koïchiro Matsuura, director-general of UNESCO on the occasion of the international seminar on climate change education. Paper presented at the *International Seminar on Climate Change Education*, Paris, France. 1-11.
- Volk, T. L., & Hungerford, H. R. (1990). Changing learner behavior through environmental education. *Journal of Environmental Education, 21*(3), 8.
- White, R., & Stoecklin, V. L. (2008). Nurturing children's biophilia: Developmentally

appropriate environmental education for young children. *Collage*, Ulster Park, NY.

Wilson, E. O. (1993). Biophilia and the conservation ethic. *The biophilia hypothesis* (pp. 31-41). Washington, DC: Island Press.

Windle, P. (1995). The ecology of grief. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 136-148). San Francisco: Sierra Club Books.

Appendix A

Original Interview Schedule

This interview schedule is designed as a semi-structured interview, therefore, question sequence and wording may vary to some degree from interview to interview. The interview will commence with a preamble about climate change and Sobel's conjecture about no tragedies before grade four.

1. Do you agree with Sobel's assertion that children should be in at least grade four before being taught about climate change ? Why? Why not?
2. What evidence would you draw upon to support your view?
3. What age do you think climate change should be taught?
4. What age do you think is "too young"?
5. What would be the reasons to avoid teaching children before grade four about climate change/environmental tragedies?
6. What do you think the possible implications of teaching children about climate change too young might be?
7. How might educators prepare children for and help them address the emotional aspects of climate change education? i.e. the fear, anger, etc.
8. How can we teach about climate change with young children while inspiring hope for the future?
9. In your opinion, how much is too much information about climate change? At what age?
10. Would you expect to find a difference in a child's reaction to troubling information about something close to home and familiar vs. something unfamiliar and beyond the child's realm of experience? If so, what might those differences be? If not, why not?
11. Lying...protecting children from reality... is there ever a place for deception?
12. Why is grade four a suitable age to begin addressing tragedies with students?
13. How might the emotional disturbances resulting from depressing information

influence a child's development? What may be done to counter the influence of depressing information?

14. In your experience, how do children react when faced with tragedies that are beyond their capacity to comprehend/process?

Appendix B

Thought-Piece

On Sobel

Each participant agreed with Sobel's conjecture in at least a broad sense.

However, the degree to which each person subscribed to Sobel's conjecture varied. Dr. Elliot explained: "I think we need to refine a bit what he says because I think it's more about the way adults present things to children" suggesting that tragedy is implied by the way information is presented and not necessarily inherent in the subject matter. In this way, it becomes an issue of how educators and others frame the issue to their audiences.

Dr. Hicks agreed with Sobel's main conjecture but felt that "there are quite a number of things children may learn about climate change in elementary school that can be done age-appropriately without it being about the 'tragedy.'" Hicks argued that this background on climate change could be done without overwhelming children with global issues. Furthermore, Hicks explained "I think children need to learn, for example, the difference between weather and climate, that the climate is changing and I would afford that one could do that without making it into a tragedy or making it into something frightening." Hicks put his view into the context of the United Kingdom where he resides and the reality of increased flooding as the climate changes being important local factors that students should be aware of "so that they understand that a) climate changes and b) this is part of their world."

Dr. Fisher also agreed with Sobel, however Fisher felt a key element missing from Sobel's conjecture was the historical moment in which we live. While agreeing that

it is important to do “what’s developmentally appropriate” Fisher acknowledged, “I think the complication, which he doesn’t really address, is this whole impression that there isn’t something extraordinary going on here, historically.” Fisher’s concerns lie in the reality of global crises and the likelihood that children may be picking up on those factors (i.e. biodiversity loss, climate change). Fisher cites Anita Barrows’ work, which shows that children already have an awareness of environmental issues but that adults tend to deny their awareness. Alongside this denial of awareness, Barrows has found that adults also deny children’s emotions that result from their perception of the world’s problems (i.e. the sadness, anger, hopelessness, etc.). Barrows argues that the real problem arises because they are holding their feelings and ideas inside, not having been provided a supportive space to discuss what they experience in the world and how it makes them feel. This suggests that as adults and educators we may be misguided if we think we can choose an appropriate time for children to gain awareness of global issues like climate change. Instead, there is a need to recognize that children observe their communities and sense the challenges and changes therein; creating a space to discuss children’s experiences emerges as an important part of helping them to navigate the challenges faced by their communities in relation to climate change but other issues as well. This idea connects with a comment made by Hicks who felt that “kids don’t worry if they know grown-ups are doing something”, which suggests that if we address the reality of climate change with youngsters but explain that our communities and leaders are taking steps to address the issue it may be more comforting than simply not addressing it at all.

Robert Bateman agreed with Sobel and felt that giving kids an impression of the enormity of the world’s problems serves “no useful purpose before grade four” Bateman

also questioned whether or not such teachings serve a useful purpose before high-school, feeling strongly that one should not add to kids' burdens if there is nothing they can do about it. Bateman argued that environmental content doesn't need to be a part of the curriculum in elementary school at all, arguing instead for nature study and nature appreciation as part of the curriculum.

Donald Mearns also agreed with Sobel's conjecture explaining that "developmentally with kids, it's about steps, it's about kids being emotionally and mentally able and ready to deal with and understand certain issues." Mearns felt that an ages and stages approach, rather than going by grade levels, may be best.

The Challenge of Our Times

In several interviews a strong theme concerned our historical moment and the unprecedented environmental issues of our time alongside the social, political and spiritual challenges our societies face. Interviewees spoke of concerns about tuned-out teens engrossed in technology and the issues of widespread escapism and avoidance of 'reality' by many in Western society. Questions abounded regarding how to reach those individuals that are more engaged in virtual reality than in the concrete world around them.

Many participants also acknowledged that adults themselves are overwhelmed and anxious about climate change and questioned how (or whether or not it is possible) to impart information to youth without passing on our anxieties about the future. Such concerns all became factors that played an important part in how each person conceptualized Sobel's conjecture. Mearns explained the reality in Canada's northern communities. He described the complexity that comprises youths' lives. He discussed

the widespread incidence of and increases in teen suicide rates in the north. He spoke of the on-going changes from a traditional lifestyle to a more modern one. Mearns' perspective illuminated the idea that there are many other factors at play that influence how young students might feel about learning about climate change.

Fisher explained the need for our society to be spiritually strong to deal with global issues. But he also believes in the reality that our society is in general rather spiritually weak. He explained the task for our times as: "to try and build up our spiritual strength and to think about how to do that with kids." A wider discussion of other issues faced by our society enlarged the scope of what may comprise climate change education; thus, inclusion of moral, ethical, spiritual and community development emerged as integral aspects of an approach to teaching climate change.

Inspiring Hope, Giving Kids the Tools They Need

When asked how to inspire hope in students while teaching about troubling issues like climate change, everyone responded with the need to provide learners with experiences of positive action, whether it be by participating in a protest or planting a garden. Hicks explained as a general rule of thumb, "if it's done as tragedy at any level, it's wrong" and that an educator should never bring up an issue or problem unless they are also helping students to understand some of the solutions and what other people are doing to help address the issue. Providing young students with "as many resources as we can for dealing with issues in life," as Elliot explained, seemed to be a top priority. Teaching kids to think creatively and to learn to express themselves by promoting discussion and on-going dialog within the classroom and in the wider community was seen as an appropriate means for allowing students to explore climate change issues and

their feelings about what they are learning. Providing a lived experience that enables students to embody sustainability for example, through school programs that encourage student involvement in tackling related issues (i.e. their school's energy use, waste generation, etc.) was promoted as an important way for students to deal with climate change. Such experiences also would endow students with the language of sustainability, giving them the tools to address other issues related to sustainability in the future.

Another key aspect was community involvement. This included teaching children how to be a part of a community and that their voices and opinions are of importance within the classroom community and the wider society in which they live. Sharing ideas and feelings with one another in the classroom setting and allowing each person's voice to be heard was seen as an essential component of allowing a student to feel their perspective is important and valued. Envisioning preferable futures (for their community, school, or country, etc.) with teachers and other members of the community was promoted as a way of empowering students to feel that they can have a positive impact in their community. Talking with elders about how traditional lifestyles and the world has changed over their lifespan was seen as an important way to connect students with their personal and community histories and also as a potential avenue for measuring change. Several participants explained the importance of bringing the affective realm into education and discussions about climate change. Several interview participants expressed that feelings and emotions are often left out of the discussion and saw this as problematic. As Fisher explained, "if kids are aware of something going on and the adults aren't talking to them about it or giving them a space to express how they're feeling then typically children interpret the situation in a bad way."

Providing students with rich outdoor experiences from which they may draw emotional strength and learn to love the natural world emerged as a strong theme in all the interviews. To this end, Bateman suggested radically re-designing high school so that 50% of student time takes place out of the school in the community or nature.

Finally, the idea that teachers need to be aware of the students in their classes and in-tune with their individual responses to information about troubling issues emerged as an important consideration. Teachers need to watch for warning signs (anxiety, anger, nightmares, etc.) that students are feeling depressed or negatively impacted by what they are learning in schools, especially when taken in consideration with other issues the students might be facing (poverty, trouble in the home, natural disasters, etc.). An awareness of how negative information may be impacting each individual's behaviour, attitude, ability to concentrate or other factors need to be on the teacher's radar. Such teacher awareness can enable teachers to tailor future approaches in the classroom while providing individual support to students that appear to be strongly impacted by the subject matter. Knowledge of students' personal histories and the other challenges they may be facing will help teacher's to gain a greater understanding of how their students might react to troubling information. A holistic climate change education that nurtures children's curiosity and wonder while ensuring they are free to discuss their emotions seems to be most appropriate for younger children given these emerging themes.

On Teaching

Elliot illuminated some of the difficulties of a developmental approach to thinking about children. She explained about how educational systems in New Zealand are moving away from a developmental approach because of some of the shortcomings of

defining ‘normal’ development at the various stages. Instead of looking at children’s physical, social, emotional, and intellectual development they are viewed in terms of their contribution, well being, communication, etc. This approach honours a strengths-based appreciation, whereas a developmental approach can focus on what the child is not capable of doing instead. Shifting our approach to teaching accordingly may have profound implications for how climate change can and should be taught in the classroom.

The implications of discussing controversial issues in the classroom emerged in a couple of interviews. The idea that discussing either climate change, emotions, or other global issues is controversial led to the speculation that some teachers may avoid discussing such topics. Exploring difficult issues where there is little perceived consensus in Canada can be problematic and lead to conflict between parents and teachers or within the classroom. Also, bringing up emotions in the classroom can be awkward and uncomfortable for teachers, leading to the affective realm simply being ignored in the classroom. Training teachers to address emotions and teaching students to think critically and assess the origin of information as well as maintaining open communication with parents about material covered in class (emotions or climate change) emerged as important ways to deal with these challenges.