Significant Life Experiences that Have Inspired Environmental Educators in British Columbia, Canada

by

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Abstract

The growing interdependence between individuals and nations is reflected in the environmental conditions of our world. There is a need for individuals to be environmentally aware and proactive to live in harmony with the natural environment and prevent its continued degradation. A retrospective look at the lives of environmental educators may provide clues as to the types of experiences helpful in developing environmentally concerned and proactive citizens.

A purpose of this study was to determine experiences environmental educators in British Columbia, Canada considered significant in developing their interest in and dedication to the field of environmental education. A second purpose was to explore the relevance and applicability of earlier research findings about experiences formative in developing concern for the environment to a select group of environmental educators from the same population. Leaders in environmental education in British Columbia nominated the selected environmental educators as outstanding in their field for their action oriented environmental education programs.

These purposes were achieved through the use of a questionnaire sent to environmental educators in British Columbia [B.C.], Canada and through interviews of the selected outstanding environmental educators. Experiences with other people, experiences in natural areas and vocational experiences were most frequently mentioned as influential by questionnaire respondents. The interviewed educators mentioned experiences in natural areas, the influence of people and experiences of negative environmental impact, education and vocation as the most influential. The results were not entirely consistent with results reported in the literature from studies of other environmentally aware individuals. Possible reasons for the differences are presented. Information about the environmental education programs of the outstanding educators, their reasons for remaining as classroom teachers and what they consider potential barriers to teaching environmental education in a classroom based setting is also

summarized. Recommendations for implementation of the findings are presented, as are recommendations for future research.

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Table of Contents

page

Abstract..... ii
Table of Contents..... iv
List of Tables..... vii
List of Figures..... ix
Acknowledgements..... x

Chapter 1. Introduction and Literature Review..... 1

Research Problem..... 2
Research Objectives..... 4
Research Questions..... 5

Chapter 2. Literature Review..... 7

Career Choice..... 7
Significant Life Experiences/Chance Encounters..... 10
Environmental Action..... 12
Significant Life Experiences and Environmental
Responsibility and Education..... 16
Summary..... 34
Significant Life Experiences Research: Reviews,
Commentaries and Critiques.....39

Chapter 3 Methodology..... 52

Research Design..... 52
Research Method..... 52
Sample Selection and Data Collection..... 53
Questionnaire Respondents.....53

Outstanding British Columbia Environmental Educators..... 54
Data Analysis..... 58
Questionnaire Demographic and Environmental Activity Data..... 58
Questionnaire Autobiographical Statements..... 59
Interviews of Outstanding British Columbia Environmental Educators..... 62
Limitations..... 64

Chapter 4 Questionnaire Data Analysis..... 67

Sample Description..... 67
Analysis of Autobiographical Statements..... 69
Group factors of influence analysis..... 69
Single factors of influence analysis..... 71

Chapter 5 Analysis of Interviews of Outstanding Environmental Educators..... 83

Sample Description..... 83
Case Study Reports of Ten Outstanding Environmental Educators..... 86
Analysis of Significant Life Experiences..... 138
Group factors of influence analysis..... 138
Single factors of influence analysis..... 140
Action based Environmental Education Programs..... 149
Reason for Action Based Environmental Education Programs..... 150
Types of Action Based Environmental Education Programs..... 150
Reasons for Choosing to Teach Environmental Education..... 152

Additional Findings: Barriers to Teaching Environmental Education..... 153

Chapter 6 Discussion..... 156

Summary of Findings about Significant Life Experiences of Environmental Educators in British Columbia..... 157
Findings from Questionnaires..... 157
Findings from Interviews of Outstanding Environmental Educators..... 173
Action based Environmental Education Programs..... 178
Age-relatedness of Action Environmental Education Programs..... 180
Reasons for Choosing to Teach Environmental Education..... 183
Additional Findings: Barriers to Teaching Environmental Education..... 185
General Implications of Findings..... 187
Future Directions..... 189

Afterword..... 195

Bibliography..... 198

Appendix A Call for Subjects..... 204

Appendix B Letter to Respondents and Questionnaire..... 205

Appendix C Sample Letter to Nominating Committee Member..... 211

Appendix D Criteria for Nomination of Environmental Educators..... 212

Appendix E Nomination Form Blank..... 213

Appendix F Introductory Letter to Prospective Interviewees..... 214

Appendix G Consent Form for Participation in Research Study..... 215

Appendix H Interview Questions..... 219

Appendix I Factors of Influence Category Descriptions..... 220

Appendix J Questionnaire Autobiographical Statement Factors of Influence Analysis..... 222

Appendix K Interviewed Educators Factors of Influence Analysis..... 230

List of Tables

Table 1: Number of questionnaire respondents according to age and gender (N=56)..... 68

Table 2: Questionnaire respondents' most frequently mentioned factors of influence classified by group (N=56)..... 70

Table 3: Questionnaire respondents' most frequently mentioned factors of influence classified by single factor (N=56)..... 72

Table 4: Interviewed Environmental Educators according to age and gender..... 84

Table 5: Gender and teaching level of interviewed outstanding environmental educators..... 84

Table 6: Teaching level and geographic region of interviewed outstanding environmental educators..... 85

Table 7: Interviewed environmental educators' most frequently mentioned factors of influence classified by group. (N=10)..... 139

Table 8: Interviewed environmental educators' most frequently mentioned factors of influence classified by single factor. (N=10)..... 141

Table 9: A comparison of frequency of mention in categories of significant life experiences between Chawla (1999) and data from the questionnaire respondents of the current study..... 165

Table 10: A comparison of frequency of mention in categories of significant life experiences between Palmer, Suggate, Robottom & Hart (1999) and data from the questionnaire respondents of the current study..... 170

List of Figures

Figure 1: The Action Learning Triangle (Hammond, 1996/97) 13

Figure 2: A comparison of interviewed educators' action environmental education programs and differing student levels. 151

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Chapter 1: Introduction

There is a growing interdependence among individuals and nations reflected in the environmental conditions of our world. To develop a global perspective toward the natural environment and to develop into responsible citizens, learners must understand our interrelationship with the world environment (Stapp et al., 1983). The best hope for improving and maintaining the quality of the environment is to provide students with the means to understand their world and to make wise decisions regarding their local environment. Individuals need knowledge and understanding of the skills, attitudes, values and behaviours required to live in harmony with the environment. This knowledge and understanding will enable us to make informed decisions about human impact on the planet Earth. The goal of environmental education is the development of citizens who lead environmentally responsible lives (Tanner, 1980; Scholl-Wilder, 1983; Hines et al., 1986/87).

The British Columbia Ministry of Education document Environmental Concepts in the Classroom (Ministry of Education, 1995) defines environmental education as, "... a way of understanding environments, and how humans are part of, and influence, environments" (p. 5). Direct experience with the environment is one of the principles for integrating environmental concepts into classrooms recommended by the Ministry of Education (1995). Peterson (1982) noted individuals' "basic appreciation and concern for the natural environment" (p. 5) was directly related to their experiences in outdoor settings. In reference to pro-environmental behaviours, Finger (1994) stated, "environmental behavior appears to be mainly related to environmental experiences" (p. 159). The findings of both Peterson (1982) and Finger (1994) underline the need for students to have direct experience with the natural world.

The benefits of learning through experience, or learning through doing, have been suggested for many years (Hammond, 1996/97). Learning through experience often refers to the insights gained through personal experience, however, much can also be learned from the experiences of others. Experiences in the outdoors have been shown to be formative in the lives of many

environmental activists, educators and other environmentally aware adults (Tanner, 1980; Peterson, 1982; Scholl-Wilder, 1983; Peters Grant, 1987; James, 1995; Palmer and Suggate, 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Chawla, 1999; Palmer et al., 1999; Sward, 1999). A retrospective examination of the lives of environmental educators, a group shown to be concerned with the environment (Palmer, 1993; Palmer et al., 1999), may provide understanding of the types of experiences that develop individuals into environmentally aware and active citizens.

Research Problem

The purpose of this study was two-fold. First, it was the purpose of this study to determine experiences environmental educators in British Columbia, Canada considered significant in the development of their interest in and dedication to the field of environmental education. The second and primary purpose of this study was to explore the relevance and applicability of earlier research findings about formative experiences and a development of concern for the environment to a group of environmental educators selected for their active involvement in environmentally positive behaviour with their students. Further to this primary purpose was to provide rich, detailed descriptions of these environmental educators, their involvement in action oriented environmental education, and the experiences they considered to be formative in the development of their interest and dedication to teaching environmental education.

Quantitative studies of significant life experiences of environmental educators have been conducted in several countries (Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998) including Canada (Palmer et al., 1999). Several researchers (James, 1993; Chawla, 1999; Sward, 1999) interviewed professionals who were proactive environmentally, yet their data were also analyzed quantitatively. None of these studies provided rich, detailed descriptions of the interviewees, their experiences, or what made these influences formative for their subjects. Studies of this type have examined the categories of formative

experiences, but have not provided details about these experiences or the present day environmental activities of the individuals surveyed. It is a purpose of this research project to provide not only quantitative data of a general sample, but also descriptive detail about these types of experiences and how they were formative for a small group of environmental educators selected for their outstanding work in action environmental education. There has been a call to look at "whole individuals, not generalized people about whom the reader knows very little except their significant (environmental) life experiences." (Gough, A., 1999, p. 384). Chawla, (1998c) also made a recommendation for more "basic descriptive research" (p. 20) into significant life experiences of environmentally responsible citizens.

Simply knowing of the existence of these types of significant experiences is not sufficient to guide educators towards the goal of helping learners become environmentally responsible adults. It is necessary also to understand how and why these experiences directed people to be concerned about the environment and to pursue careers in environmental education. This further understanding will provide educators with more background for planning outdoor experiences that might generate the same concern for the environment that was felt by those studied by Tanner (1980), Peterson (1982), Palmer (1993), James (1995), Chawla (1999) and others.

Therefore, the area where research is lacking is in an in-depth look at formative experiences in the lives of environmental educators. The existing research concentrates on categorizing such formative experiences, but neglects to provide detail about the experiences or the research subjects. Since environmental educators are sufficiently concerned about environmental citizenship to want to teach and inspire others, they are a logical group on whom to focus this study. The Tbilisi Declaration (Hungerford & Peyton, 1980) states one of the objectives of environmental education to be providing opportunities for participants to work towards the resolution of environmental problems. None of the previous studies of significant life experiences have examined the lives of educators teaching environmental education programs where students are actively involved in resolving environmental issues. Such educators were the concentration of the main part of the current study.

Research Objectives

Through an examination of studies concerning career choice, significant life experiences/chance encounters, environmental action, and significant life experiences and environmental responsibility it can be seen that there is a progression of literature connecting these concepts. Studies about career choice (Boughn, 1994; Kersten et al., 1991; Xu et al., 1995) indicated that many factors influence an individual's career choice. In each of these studies the idea of life experience was considered. Boughn (1994) provided an example of a nursing student whose life path was altered through experiencing trauma; Kersten et al. (1991) and Xu et al. (1995) both alluded to the impact of life experience on their subjects' choice of career or career specialty. The literature on life path that was examined (Hutchinson and Buschner, 1996; Bandura, 1982) suggested life experience could certainly change the course of a person's life. Hutchinson and Buschner (1996) interviewed two physical education teacher education (PETE) adult students who indicated that particular experiences in their lives resulted in a change in career direction. The chance encounters described by Bandura (1982) are further examples of this occurrence. Bandura's study also indicated some factors might be beyond our control. For example, our social and cultural environment may lead us to certain chance encounters that change our life path. The final studies examined combined the concepts of the impact of significant life experiences and environmental responsibility. Citizens considered environmentally responsible responded in surveys and interviews that experiences in the outdoors were significant factors affecting their positive views towards the environment.

The examination of a particular profession, environmental education, and the influence of life experiences on individuals choosing to teach environmental education is a culmination of the reviewed studies. However, further research was necessary to continue this progression. One area of research required was to investigate whether formative experiences and influences as found by Tanner (1980), Peterson (1982), and Palmer, (1993), (also, Peters Grant, 1987; Palmer et al., 1996; Chawla, 1999; Palmer et al., 1999; Sward, 1999), are similar to influential experiences of environmental educators in British Columbia. A more specific

sample of environmental educators, those involved in action environmental education with their students, will expand and refine the findings of previous studies. Moreover, an in-depth qualitative examination of the experiences considered significant is lacking from previous studies of life experiences. The surface of this concept had been touched, but deeper investigation was necessary.

The objectives of this research were to determine if a selected group of environmental action educators in British Columbia had significant life experiences they believed led them to pursue careers in environmental education. It was also an objective to determine the similarity and differences in the categories of response between this sample and those found by other researchers (Tanner, 1980; Peterson, 1982; Peters Grant, 1987; Palmer, 1993; Palmer et al., 1996; Chawla, 1999; Palmer et al., 1999; Sward, 1999).

Research Questions

The following questions were addressed by this study:

I. Have environmental educators who responded to a questionnaire had life experiences or influences they believe were significant in leading them to an interest and dedication to the field of environmental education?
   a. If so, what were these experiences and are any of them common to a large segment of the group?
   b. Are these environmental educators personally and professionally proactive with regards to the environment?

II. Have outstanding environmental educators, selected because they teach action based environmental education programs, had significant life experiences or influences that they believe led them to be concerned about the environment and to become environmental educators?
   a. What were these experiences or influences and why were they significant and formative?
   b. Why have these outstanding educators chosen to involve their students in action based environmental education programs?

c. Do these action based environmental education programs take different forms depending on the age group of the students? (primary, intermediate, secondary)

d. Why have these outstanding environmental educators chosen teaching as a profession, rather than non-institutional environmental activism?

A purpose of environmental education is to produce adults whose behaviour shows a commitment to environmental quality (Tanner, 1998a). There are an increasing number of studies that have examined formative experiences in the lives of adults committed to environmental quality. Dr. Thomas Tanner, a pioneer in formative life experience research in environmental education, stated:

> The rationale for such research is simple: if we find that certain kinds of early experience were important in shaping such adults, perhaps environmental educators can, to the degree feasible, replicate those experiences in the education of the young. (Tanner, 1998a, p. 365)

It was the aim of this study to add to the body of work on formative life experiences through the investigation of a different population of environmental educators than had been studied previously, and to provide more detailed descriptions of those educators and their life experiences than had been done in previous research. This research is important because it furthers our understanding of the experiences and influences that developed environmentally aware and proactive individuals. Educators of today should aspire to help students develop into individuals such as these in order to protect our natural environment.

The following chapter provides an examination of selected literature related to career choice, life paths, action environmental education and environmental education research on significant and formative life experiences.

Chapter 2: Literature Review

This review is organized into five sections that provide a background for the concept of significant experiences in the lives of environmental educators. The literature review begins with a brief examination of selected literature on career choice. These papers were chosen for both their methodology, and their findings illustrating the connection between life experience and career choice. In the next section, two studies are reviewed that described significant life experiences and chance encounters in settings other than environmental education. The first study, by Hutchinson and Buschner (1996) was selected because it connects significant life experiences with a career choice in education. Bandura's study of chance encounters is included because it brings together Bandura's ideas on chance encounters with the ideas of others in the field of human development. The environmental action research that is reviewed was selected as a sample of the literature on this subject. It provides an overview necessary for understanding the selection of subjects for the interview portion of this study. It also includes a definition of environmental action. The largest section of the literature review is an examination of environmental education research into significant life experiences of environmentally aware adults. This literature review concludes with a review of commentaries on significant life experience research in environmental education.

Career Choice

There are many factors that influence a person's choice of career. When asked about such formative influences, people often respond with a story about an incident that altered the direction of their career path. For others, the path to a career has few deviations, but might have begun as a result of the influences of others or a childhood interest or experience.

Studies indicate that research into influences on career choice can assist in the process of attracting people to certain fields and in learning what is needed for them to remain in those careers (Boughn, 1994; Kersten, Bakewell & Meyer,

1991). It has been suggested that knowledge about why people choose certain careers could help high school counselors to direct students towards careers that are suited to their prior experiences and interests (Boughn, 1994; Shuman & Ham, 1997).

Boughn (1994) interviewed twelve male nursing students in a study aimed at determining why men choose nursing as a career. This study used grounded theory methodology and data were collected through interviews. The interview questions were derived from the literature and were reviewed by experts in nursing. During the course of one interview, a subject mentioned an incident that altered his career path:

> A sophomore nursing student who had suffered a severe trauma was able to use the experience to transform himself from a self-centered person to a person who wanted to care for others. It was this experience that motivated the subject to choose nursing (p. 408).

From these interviews Boughn (1994) determined that her subjects had chosen nursing as a career for primarily three reasons; a desire to care for others, job security and salary, and for personal empowerment. Upon an examination of the literature about general nursing students, Boughn (1994) found that caring and practicality (economic stability) were also motivation for those students' choice of nursing as a career.

In a study by Kersten, Bakewell & Meyer (1991), data were collected from a self-administered questionnaire with quantitative descriptive data and qualitative data resulting from answers to open-ended questions. The qualitative responses were categorized and percentages in each category of the total responses were calculated. The researchers determined, as did Boughn (1994), that a desire to nurture others was a primary motivation for choosing a career in nursing. They indicated that many students were influenced positively or negatively towards the nursing profession by experiences as patients themselves. Other factors that influenced the choice of nursing as a career for these students included belief of personal success in that career, the ability to meet financial and

social needs, the fulfillment of a life-long goal, and intrinsic and extrinsic motivation factors.

A study of the factors influencing physicians' choices of primary care as a career specialty indicated that early role models were a factor in male physician's choice, but family and personal factors were more of an influence in female physician's choice (Xu, Rattner, Veloski, Hojat, Fields & Barzansky, 1995). Using a questionnaire, this study examined the specialties of 1596 physicians who had been practicing for at least ten years. The objective of the study was to determine if there were differences in the influences on male and female physicians' choices of a specialty. Xu et al. (1995) indicated that simply experiencing an event may not influence a person's life, but the effect of such an experience is what counts. This was noted in reference to the effect on physicians of working with underprivileged patients. Although both men and women worked with such patients, women considered the experience to have had an influence on their choice of a primary care specialty whereas the men did not consider it to have been an influence.

The methods and results of the studies referred to in this section have been briefly summarized. Both Broughn (1994) and Xu et al. (1995) showed particular care in their methodology by using concepts in the literature and then having those questions (Boughn, 1994) and variables (Xu et al., 1995) reviewed by experts in the field. Kersten et al. (1991) do not explain the source of their questions used for collecting qualitative data; this is one of the weak points in their study. The fact that the questionnaires were self-administered under the supervision of untrained faculty is another. The results would be stronger if the researchers had administered the questionnaires. However, Kersten et al. (1991) considered this to be an exploratory study, and were aware of the shortcomings of their methodology. The only identified weak point in the methodology used by Xu et al. (1995) was the limited list of variables influencing specialty choice which were listed on the questionnaire. This may have restricted the responses given by the subjects and provided suggestions that the subjects may not have considered on their own. The researchers justify the use of these variables by stating that they were based on the relevant literature.

Boughn (1994) validated her results by reviewing the key concepts of her findings with her interviewees. Kersten et al. (1991) checked the content validity of their qualitative data results through the use of a pilot study. The reliability of the coders in their study was said to be established; yet how this was established was not made clear. All three studies concluded with recommendations for practical applications of their findings.

Significant Life Experiences/Chance Encounters

When a person is asked to reflect and comment on the path taken to reach his or her current place in life, the response often involves the recounting of an incident or incidents that directed that path. This type of incident is referred to as a critical incident or a significant life experience. "Critical incidents are life events that have a great impact on a person and that appear important to an outsider" (Shuman & Ham, 1997, p. 29). The phrase 'formative experience' is also used to describe an experience that had a profound effect on a person's life direction. Chance encounters with other people may affect a person's life path. Bandura (1982) considered these unexpected experiences as catalysts that alter the course of one's life.

Hutchinson and Buschner (1996) referred to significant life experiences as, "... life-triggering events..." (p. 214). Their study focused on two adult learners (ages 30 and 31) who returned to college to pursue careers as physical education teachers. In-depth audio taped phenomenological interviews provided data for this study. Each subject was interviewed three times and each interview had a different focus. The interviews focused on "...life history...", "...details of the experience...", and "...meaning made of the experience..." (p. 209). The interviews occurred over a span of two to three weeks in order that the subjects would have time for reflection between interviews. Transcripts of the interviews indicated that both subjects returned to college after, "... significant life transitions..." (p. 214). These transitions followed experiences that helped promote the idea of a career change. There were other factors involved in the decision to change careers, such as attractors to the field of teaching physical education (staying fit

themselves, and working with young people) and the learners' perceptions of the skills and abilities needed for this career. The conclusion of the study was that significant life experiences were the impetus for these two learners to re-evaluate their career choices and make a change.

Bandura (1982) considered chance encounters between people to play an important role in directing life paths. He mentioned human behaviour developmental models which suggested that "...childhood experiences set the course of later development" (p. 747), yet Bandura considered chance encounters could change that course. He provided several examples to support this claim, one being the example of a successful young man who by chance encountered the murderous Manson gang and was diverted from his life path by that encounter. Bandura's purpose in examining chance encounters was to show one way that people's life paths could be determined. The first section of the paper described chance encounters; the second explained how the impact of chance encounters could affect life paths. The final two sections of this study examined personal and social determinants of the effect of chance encounters. In conclusion Bandura stated, " Knowing what factors mediate the impact of chance encounters on life paths provides guides for how to foster and safeguard valued futures" (p. 754). He suggested that people have the ability to become many things, yet what they do become is partly a result of the culture and social systems to which they are exposed.

Both studies reviewed in this section indicate an understanding of the relevant literature and an appreciation for how their results fit into the existing research. Bandura's (1982) work is really an essay bringing together ideas of the author and other researchers in the field of human development. As such, it does not provide much data, but instead is a rich description of the author's ideas. The strongest attributes of Hutchinson and Buschner's (1996) study are their clear articulation of the sample selection and methodology used for their research. They did not attempt to generalize beyond the scope of their research. However, they also did not provide as thick a description of their data as was possible. Their study concluded with recommendations for practical applications of their findings.

Environmental Action

Hammond (1996/97) suggested that environmental action is the desired outcome of environmental education (EE). As such, a definition of environmental action must be generally accepted. One possible definition is the following (Newmann, 1975):

> Environmental competence, a proposed educational goal, defined as the ability to engage in behaviour that leads to one's intended consequences in the environment. (p.19)

Hungerford and Volk (1990) offer a definition based on the objectives of the 1977 Tbilisi
Intergovernmental Conference on Environmental Education:

> We might define an environmentally responsible citizen as one who has...active involvement at all levels in working toward resolution of environmental problems [and/or issues]. (p. 9)

These definitions essentially offer the same idea; that environmental action is working to resolve an environmental problem or issue. With this working definition, Hammond suggested ways for educators to reach the goal of environmental action with their students. He established that the difficulty most educators had providing environmental education to students resulted from the lack of emphasis in most school curricula and the lack of support from school administration. Hammond contended that part of this difficulty stemmed from the struggle between the postmodern paradigm (which includes EE) and the "...modernist, industrial school system" (p. 8). Five curriculum theories were briefly presented to provide background for Hammond's Action Learning Triangle framework (Figure 1), which provided a synthesis of the benefits of action projects.

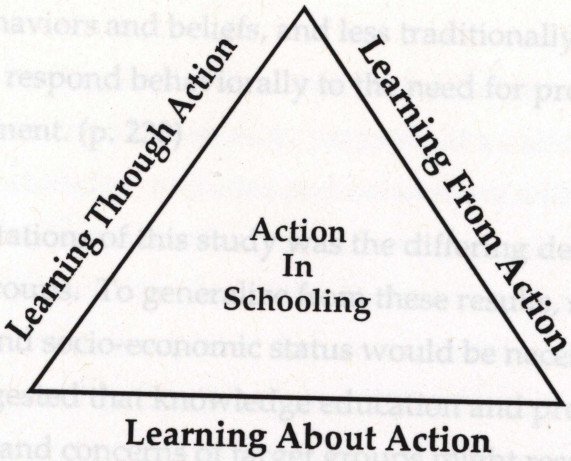


Figure 1: The Action Learning Triangle (Hammond, 1996/97).

Hammond suggested that all three types of learning (Figure 1) must be present in a balanced environmental action program. He provided an example from his own school district of a program that used the Action Learning Triangle in a successful environmental education action program. Hammond closed his discussion by emphasizing the need for students to be involved in successful action experiences as preparation for real-life choices.

In contrast to Hammond's (1996/97) discussion of school-based curriculum, Arbuthnot (1977) examined the environmental knowledge, attitude towards the environment, and commitment to environmental behaviour of two groups of adults. The first group was known recyclers who frequented a recycling center; the second group was church members from the same community. The study attempted to indicate the differences between those who were committed to environmentally responsible behaviour and those who were less involved. This study also examined possible variables predicting environmentally responsible behaviour. A third group, university students, was included in the final analysis for predictive variables. From statistical analyses of a voluntary questionnaire composed of seven factors (ranging from knowledge to attitudes), Arbuthnot concluded:

> Individuals who are generally more liberal-minded, more flexible in their behaviors and beliefs, and less traditionally oriented are more likely to respond behaviorally to the need for pro-environmental commitment. (p. 230)

One of the limitations of this study was the differing demographics of the two main sample groups. To generalize from these results, sample groups more similar in age and socio-economic status would be necessary. In conclusion, Arbuthnot suggested that knowledge education and programs tailored to the different needs and concerns of target groups might result in increased responsible behavioural commitments.

Borden and Schettino (1979) administered the Maloney, Ward, and Braucht ecology test to 500 undergraduate students enrolled in an introductory psychology course. The test was composed of four subscales (Affect, Knowledge, Actual Commitment and Verbal Commitment). Upon statistical analysis of the results of the test using correlations and analysis of variance, it was shown that environmental knowledge and affect (feelings) were additive in their effect on students' actual commitment to responsible environmental behaviour. Positive affect was more of a determinant than knowledge. Students' commitment to future positive environmental action (i.e. verbal commitment) was determined almost exclusively by the level of affect rather than the level of environmental knowledge. The researchers concluded that either a high level of affect or a high level of environmental knowledge could result in environmentally responsible behaviour in their sample. Thus, both the cognitive and affective domains are important in determining environmentally responsible behaviour. However, it also appeared from the results that these factors may be substitutable since they are additive. Borden and Schettino acknowledged the limitations of their study resulting from the limited sample and the lack of investigation into the means by which the students obtained their knowledge and affect concerning the environment. The statistical analysis of the data was sound, but it is noteworthy that participation in this study was mandatory for the students involved. This may have affected the results of the study. It is not mentioned whether either of

the researchers were the students' professors, a situation which could have biased the results.

A study by Bogner (1998) examined the results of a one-day field trip or five day residential outdoor ecology program at a national park in Germany on fifth graders' knowledge, attitudes and behaviours with respect to the environment. Students were from 24 different schools in rural areas. The researcher was neither a teacher of the students nor did he administer the intervention. Students completed the same questionnaire before and after the intervention. Control groups were used. Questionnaire results from after the five-day program indicated students' reported behaviours and verbal commitments to the environment were positively affected. Environmental knowledge increased in both programs. Bogner considered the most important conclusion of the study was the certainty with which students could make responsible decisions about the environment given additional tools such as direct experience, adequate preparation, interaction and reinforcement.

In contrast to the previously mentioned studies, Emmons (1997) presented a model of positive environmental action that did not attempt to discover predictors of individual behaviours. Instead, she suggested that positive environmental action is not an end result of environmental education, but part of a cycle of growth and action. Action was considered to have,"...an intentional quality that may or may not characterize behavior" (p. 35). Through observation, questionnaires, interviews and ancillary data, Emmons illustrated that the relationships between environmental learning and action are dynamic and interactive. She found these variables to be influenced by the participants in the study and the situation in which they were observed. Emmons used the results of her study of two groups attending a five-day program at a wildlife sanctuary to modify a model of positive environmental action. The original model indicated a linear relationship between learning and action, with action being the end result. The modified model illustrated the reciprocal relationship between action and learning and included influences and action occurring outside the field setting. Further research is needed to determine if the model proposed by Emmons is generalizeable. The limited sample used in this study (ten female students aged 15-20 years) prohibited any generalization of the conclusions.

Hammond (1996/97) suggested a practical approach to action based environmental education through the use of the Action Learning Triangle framework. This framework was based on curriculum theories of the role of action in environmental education. The research conducted by Arbuthnot (1977) hinted at some characteristics that might combine to indicate a person's tendency to participate in positive environmental behaviour. Borden and Schettino (1979) and Bogner (1998) indicated a positive relationship between increased knowledge of the environment and environmentally responsible behaviour. Borden and Schettino (1979) furthered this idea by determining that both knowledge and a positive affect are necessary for positive environmental behaviour. Emmons (1997) provided a different perspective on the connection between these variables by stating that it was not possible to either predict or manipulate responsible environmental behaviour.

Significant Life Experiences and Environmental Responsibility and Education

In this section, with the exception of the final report, the studies are reviewed following a methodological organizational structure. The first studies used questionnaires to collect data. Tanner (1980) and Palmer (1993) included a request for an autobiographical statement about significant life experiences with the questionnaires. Corcoran (1999) requested information about the respondents' heroes and heroines as well as the autobiographical statement. Scholl-Wilder (1983) collected data using a survey instrument alone. The remaining studies on significant life experiences and environmental responsibility used interviews as part of their data collection methodology. These studies are divided into three sections; significant life experiences (SLE) and environmental sensitivity (Peterson, 1982; Sward, 1999), SLE and vocational preference/choice (Peters Grant, 1987; James, 1995) and SLE and life path (Chawla, 1999). The final study reviewed here discusses a model for commitment to environmental education based on theories proposed by other authors (Shuman & Ham, 1997).

The first investigation of significant life experiences in the field of environmental education was by Tanner (1980). Tanner's purpose was to illustrate the kinds of learning experiences that produced environmentally active and informed citizens. Tanner examined autobiographical and biographical literature about conservationists and discovered similarities in the life experiences of these conservationists. He requested autobiographical statements from professional staff and/or chapter officers of four environmental conservation groups in the United States, National Wildlife Federation, The Nature Conservancy, National Audubon Society and the Sierra Club. The subjects were asked to provide three types of information; a statement of formative influences which led the person to work in conservation, the time of the influence and the person's age at that time, and a summary of conservation activities. The summary of conservation activities was to establish the individual as environmentally active. Significant life experiences as related by the 45 respondents were content analyzed and divided into nine categories after preliminary analysis of the responses. The nine categories of experiences in descending order of mention by the respondents were outdoors (35/45), habitat (26/45), parents (21/45), teachers (14/45), books (13/45), other adults (12/45), habitat alteration (11/45), solitude (3/45) and miscellaneous (14/45). Tanner described some categories in the following way:

> *Outdoors*. Interaction with natural, rural, or other relatively pristine habitats.
> *Habitat*. Frequent, perhaps daily, contact with natural, rural, or pristine habitats, either year-round or during summer vacation. The responses tallied here are a subset of those tallied in the *Out of doors* category.
> *Solitude*. Frequent contact with relatively pristine habitats, either alone or with just one or two friends. A subset of *Habitat*.
> *Habitat Alteration*. Witnessing the commercial development of one's habitat. A subset of *Habitat*.
> *Miscellaneous*. Overseas experiences; a reawakening during adult life of latent childhood interests, other. (p. 21)

Tanner graphically illustrated the grade level of the influence and the type of influence that teachers had on the respondents in his study. He indicated that initial interest was fostered by teachers of early grades, whereas reinforcing interest and career choice influence resulted from interactions with teachers in later grades and early university studies. Refinement of environmental interest was influenced by teachers at the degree level or post graduate level. He noted that positive experiences in the natural world, as opposed to negative experiences, were motivating influences for these conservationists. Tanner concluded that childhood and adolescent experiences in the outdoors and in relatively pristine environments were dominant influences on his subjects' choices to work in environmental conservation.

Palmer (1993) used Tanner's research as the basis for her study of formative experiences in the lives of environmental educators. Palmer's purpose was to provide data useful in curriculum planning for environmental education. She solicited written descriptions of significant life experiences from members of the National Association for Environmental Education in the United Kingdom. Palmer (1993) requested the subjects provide information on their most significant life experience and on which years of their lives they felt were influential in the development of a positive environmental attitude. She received 232 usable responses. Prior to the life experience analysis, Palmer determined that 90% of the participants were active environmentally (recycling, conservation activities, curriculum development and others) from their self-report of involvement in seven pro-environmental activities. In total, thirteen major categories of formative experiences were derived from the descriptions provided by environmental educators. The most frequently mentioned category of influences in the development of concern for the environment was Outdoors (90%). This category included the subcategories of childhood outdoors (42%), outdoor activities (39%) and wilderness/solitude (10%). Other important factors included courses in environmental subjects in higher education (59%), the influence of parents and other close relatives (38%) and membership in youth and adult organizations (36%). The remaining categories of formative experiences, in descending order of number of responses, were; television and

the media, friends and other individuals, travel abroad, disasters/negative issues, books, others (miscellaneous), becoming a parent, keeping pets/animals, and religion/God. Of the respondents, 80 mentioned a single most important experience in their development of a concern for the environment, the outdoors and parents/close relatives were the two most important categories mentioned. Palmer extended her analysis to examine 22 of 55 respondents under the age of 30 who had named a single most important factor. She found education and parents and relatives were the single most important influences reported for this age group. Palmer considered it notable that disasters/negative environmental issues were of importance to a number of the respondents (18%). This finding was contrary to Tanner's (1980) results, but Palmer had hypothesized it to be reflective of the changing society during the decade between the two studies. Also contrary to Tanner's study were the results of Palmer's education category, in which respondents only mentioned influential courses at the A-level and higher. Palmer concluded from her data analysis that her findings supported those of Tanner, however this is only the case if all subcategories of outdoors are grouped together. Childhood experiences outdoors were not as prevalent as in Tanner's study.

Palmer and Suggate (1996) reanalyzed data collected by Palmer (1993), resulting in a general confirmation of Tanner's (1980) work, but also a qualification of those findings. The general findings indicated, "the factors leading to adult concern for the environment in the UK are similar to those found by Tanner in the US" (Palmer and Suggate, 1996, p.120). Both in this analysis and in Tanner (1980), the authors determined that the most frequently cited experience in developing concern for the environment was experience in nature as a child. Palmer and Suggate performed statistical analyses on age group data to compare experiences of importance. The 30 to 50 years group was the largest, thus results for it were the same as for the whole sample analysis; childhood experiences in nature, tertiary education, work, and family were the most important individual influences. For the under 30 years age group the most important influences, in descending order, were tertiary education, 'negative' books, family and secondary education. This result was very different from the over 50 years of age group where work was the most important single influence,

followed by childhood experiences in nature and tertiary education. Palmer and Suggate considered these differences understandable in light of the changes in society during the past twenty years. They emphasized the importance of people as an influence as illustrated in the ranking by respondents. The researchers suggested these data showed the need for environmental education research to take age into account.

Palmer collaborated with researchers in nine other countries to publish a series of papers examining emergent environmentalism in adults (Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer et al., 1999). The methodology for each of these studies was the same as Palmer (1993). The only exception was an additional request for a statement about heroes or heroines from the American respondents (Palmer et al., 1996). In each study quantitative analysis of the data was performed and, generally, brief narratives from the subjects' autobiographical statements were included.

The subjects for the study by Palmer, Corcoran and Suggate (1996) were members of the North American Association of Environmental Educators with addresses in the United States. A comparison was done between data from the United States (USA) and the United Kingdom (UK). Corcoran requested a statement regarding the subject's heroes and heroines be included in the response. A total of 510 responses were received. Data from the USA and UK were compared relative to environmental activities, gender and age category. It was determined that, as in the UK, the subjects from the USA were active environmentally. Over 90% of subjects in both the USA and the UK regularly read about environmental issues whereas less than 50% of all subjects were environmentally politically active. The differences between the USA and the UK respondents in the remaining five categories of pro-environmental activities (outdoor recreation, recycling, practical conservation, curriculum development and alternative lifestyle) were statistically significant. It was noted that some of the differences were as little as 10%, yet the large sample sizes resulted in statistical significance. The results from the gender comparison indicated little difference in the involvement of males and females in specific environmental activities. However, there were more differences and those differences were

larger between genders in the UK than in the USA. The results of the age category comparisons (<30 years, 30-50 years, >50 years) were somewhat difficult to interpret due to the missing legend for the figures. However, it appeared that the under 30s were somewhat less involved than the over 30s in most areas of active environmentalism. The exceptions were the activities of recycling and alternative lifestyle in which the younger age groups were more involved. The researchers also noted a large contrast between involvement in curriculum development by the youngest age groups in the USA and the UK. The final comparison made by Palmer, Corcoran and Suggate was that of significant influences; factors relating to people were the only factors compared. The most important influence in both countries was family, with media personalities as the second most important followed by teachers, older friends, camp counselors and other professionals. However, it was noted that more analysis of the autobiographical statements from the USA was necessary. A later paper by Corcoran (1996) reported the results of this analysis. Palmer, Corcoran and Suggate concluded with a statement indicating the continuation of the emergent environmentalism research internationally and the intention for this research to be used in curriculum development.

Another paper in the series on emergent environmentalism examined significant, formative experiences in the lives of adults in the UK, Slovenia and Greece (Palmer, Suggate, Bajd & Tsaliki, 1998). Following the same methodology as described in Palmer (1993), the researchers received responses from 245 educators in Slovenia and 97 educators in Greece. In this study the researchers considered validity with regards to the accuracy of autobiographical memory. They addressed this issue by referring to research which suggested that when, "autobiographical memory is unconstrained, and it uses multiple cues, it is both durable and accurate" (p. 431). Comparisons between countries by gender and age category were not possible because of the very unequal numbers in the gender and age categories between the Greek and Slovenian subjects. The researchers determined a high level of environmental concern was shown by the subjects from the finding that at least 80% of the Slovenian subjects and at least 75% of the Greek subjects were involved in four of seven pro-environmental activities. The autobiographical accounts from the UK, Slovenia and Greece were

compared statistically. The analysis categories from the UK data (Palmer, 1993) were used with the addition of three categories for Slovenia (cleaning actions, community projects and general problems) and three for Greece (tree-felling or burning, development plans and general problems). The results for Slovenia indicated the effects of close family (38%), the concern at observing pollution and experiences as a child in the outdoors were the top three single factors that influenced the subjects. When the factors were grouped, people were the most important influence (51%) followed by negative factors (such as pollution, 42%) and childhood experiences of nature and education (both 29%). The results for Greece indicated the most common influence was the effect of pollution (41%), followed by childhood experiences in nature (~33%) and the subjects' work. The influence of environmental courses at college or university (24%) was the fourth most important individual influence mentioned by the Greek subjects. When factors were grouped, the top four groups of influences were negative factors (65%), childhood experiences in nature, work (both 37%), and media influence (35%). In the international comparisons of significant influences there was considerable variation in the number of factors mentioned by the subjects in their autobiographical accounts. On average, the subjects from the UK mentioned 4.50 factors; those from Slovenia mentioned 2.44 and those from Greece mentioned 2.95 factors. This variation was accounted for by comparing factors given by over 20% of the UK subjects, and over 10% of the Slovenian and Greek respondents. The comparison of single factors indicated that statistically the, "importance of childhood experiences of nature and work is roughly comparable across the three countries" (p.439). The influence of having children was small in all three countries. All other influences were less similar. The comparison of grouped factors essentially indicated that all were of higher frequency in the UK, likely a result of the greater number of influences given by the British subjects. In conclusion the researchers stated the influence of childhood experiences of nature was important in all three countries although its ranking among factors varied. It was also noted that negative influences, such as pollution, were more important than childhood experiences of nature for both Slovenian and Greek respondents. The final conclusions of the researchers were that childhood experiences in nature are important, pollution and environmental degradation issues need to be

addressed by teachers and that the attitudes of teachers who pass along environmental knowledge are important.

The theme of emergent environmentalism continues in an overview of significant influences in the lives of environmentally aware adults completed for nine countries by Palmer, Suggate, Bajd, Hart, Ho, Ofwono-Orecho, Peries, Robottom, Tsaliki, and van Staden (1998). The nine countries involved were Australia, Canada, Greece, Hong Kong, Slovenia, South Africa, Sri Lanka, Uganda, and the United Kingdom. The methodology was consistent with Palmer (1993). All participants were considered to be environmentally concerned as illustrated by the completion of a questionnaire about seven pro-environmental activities. At least 70% of the respondents were involved in reading about environmental issues, outdoor activities, buying environmentally friendly products and practical conservation (e.g. tree planting). Comparisons of significant life influences were made across the nine countries although the researchers admitted to complicating factors. Those complications were the number of subjects per country, which ranged from 48 (Canada) to 245 (Slovenia), and the average number of significant factors mentioned by the respondents, which ranged from 2.37 (Sri Lanka) to 5.44 (Canada). The total number of respondents was 1259. When the influences mentioned by these respondents were grouped, it was determined that experiences with nature were the most important factors over all nine countries. Childhood experiences of nature was the single most important factor mentioned by the subjects. Over half of the respondents in Australia, Canada, South Africa and the UK referred to childhood experiences. Other single factors mentioned by greater than 20% of the subjects were close family, college or university education, pollution and adult experiences in nature. When factors were grouped, experiences in nature were referred to by over 80% of the respondents in Australia and Canada. In the sample from Hong Kong only 37% of the respondents mentioned the influence of experiences in nature. The influence of people was the second most important group of factors. This group was particularly important in Australia, Canada, Slovenia, South Africa and the UK. The third most important group of factors was education; followed by negative experiences, work related influences and the media. At least 20% of the respondents in each country included education in

their responses. The influence of negative experiences was highest in Greece and Uganda. The comparison of age categories (<30 years and >30 years) was completed using data as received, then with adjusted values. The values were adjusted because generally the older age category wrote longer autobiographical statements, thus including more factors. Even when adjusted, the older age category referred to childhood experiences of nature and work more frequently than did the younger age category. The researchers noted that the more frequent mention of work could be attributed to the greater work experience of the over 30s, but that the difference in the frequency of childhood experiences in nature was of interest. The final comparison made by the researchers involved grouping the countries by trends in the autobiographical data. Single factors and groups of factors were ranked. The ranking of groups of factors suggested that in Australia, Canada, South Africa and the UK the most important group of factors was experiences in the natural world and the most important single factor was childhood experiences in nature. In the remaining five countries, negative factors seemed to be of more importance. The researchers suggested that as data from more countries became available, global trends might become apparent.

The final paper reviewed in this series on emergent environmentalism concerned more detailed comparisons of data from Australia, Canada and the United Kingdom (Palmer, Suggate, Robottom & Hart, 1999). This paper was primarily a quantitative comparison; the researchers anticipated a more qualitative study to follow. There were 233 respondents from the UK, 82 from Australia and 48 from Canada. In this study only the autobiographical statements were analyzed. There were not sufficient numbers of respondents in each age category to make age comparisons and the researchers deferred gender comparisons to a later paper. In the comparisons between countries some of the differences found may be related to differences in the age and sex profiles of the samples. As in previous studies, the authors determined the pro-environmental activity level of the subjects to be high. The international comparison indicated average involvement (of a total of seven pro-environmental activities) was 5.2 in the UK, 6.0 in Australia and 6.1 in Canada. The categories used for the analysis of significant life influences were the same as those in Palmer (1993), with three additional categories in Australia (community projects, Aboriginal culture and

development plans) and one in Canada (hunting). After classification into categories, data were statistically analyzed and results illustrated graphically. Although the length of the accounts was similar, it was noted that the average number of factors (influences) mentioned by the respondents was 4.50 for the UK, 4.80 for Australia, and 5.44 for Canada. There were 22 categories of responses from the Australian sample and 20 categories from the Canadian sample. In both samples the most important single factor was childhood experiences in nature (71% in Australia, 75% in Canada) with work (60% in Australia, 60% in Canada) as the second most important followed by academic courses in college or university (43% in Australia, 54% in Canada). Close family were also important influences for respondents from both countries. When the categories of factors were grouped, childhood experiences of nature and people were the two most influential groups to the Australian respondents, followed by work factors. In the Canadian sample, people were the most important group factor followed closely by childhood experiences in nature. When the single factors of influence were grouped, the percentage for the education group was the most similar across the three countries. The highest ranked formative influence was experiences in nature (childhood and adult experiences of nature, and outdoors) referred to by 70% of the UK, 83% of the Australian and 85% of the Canadian respondents. The next three groups to rank highest in influence in all three countries were people, education and work. As in the comparison study of the UK, Slovenia and Greece (Palmer, Suggate, Bajd, & Tsaliki, 1998), the researchers suggested their research indicated the importance of providing opportunities for positive experiences in nature for young people.

As in the above studies, Corcoran (1999) collected data from environmental educators. This research was part of the study reported in Palmer, Corcoran and Suggate (1996). In addition to the results reported by Palmer, Corcoran and Suggate (1996), Corcoran gathered narratives from United State resident members of the North American Association for Environmental Education regarding positive influences resulting from heroes and heroines in their lives. Of the 510 questionnaire respondents, 437 mentioned influences of heroes and heroines. Corcoran briefly reiterated the results found by Palmer, Corcoran and Suggate (1996) as reviewed earlier in this chapter. He did,

however, point to an appreciably lower involvement in practical conservation and political activism in the youngest age group (under 30 years old) analyzed. Corcoran found the most commonly mentioned group of heroes and heroines were family members. These were cited by 70% of the respondents. The next most frequently cited group (62%) were people from the media, such as authors, explorers, activists and celebrities. The third most frequently cited were older friends (22%) such as teachers, camp counselors and professionals. When citations of heroes and heroines were analyzed individually, the most commonly mentioned people were authors, followed by fathers, mothers and various teachers. It was the combination of the father and mother influence citations that resulted in family members being the most influential heroes and heroines. Corcoran noted the similarity between the people mentioned as influential heroes and heroines in the United States sample and the people mentioned as significant influences in the United Kingdom sample. This was despite the fact that the UK sample was not asked to specifically cite influential heroes and heroines. Corcoran continued his report with samples of narratives from the respondents. In conclusion he stated his concern regarding the opportunities for today's youth to have experiences such as those he related, due to the changing state of our natural environment.

The study by Scholl-Wilder (1983) investigated the environmental learning experiences influential in the lives of suburban/urban residents and the similarities among these experiences. Scholl-Wilder used the survey instrument, the Childhood Learning Experiences Questionnaire, to collect data from 145 members of a Nature Center and a chapter of the Sierra Club. The participants were randomly selected from these two groups. Calculating an average ranking of the experiences tested the hypothesis that the experiences would be significantly similar among the environmentalists. Both contact with the outdoors and family were found to be significantly similar and highly influential. Scholl-Wilder determined these experiences occurred, "as daily play experiences, family vacations, outdoor sports participation, and weekend trips" (p.127). These were positive experiences occurring in groups of one to five people and usually daily to weekly in frequency. Scholl-Wilder concluded these results supported earlier findings by Tanner (1980) and others. Recommendations for

environmental educators included providing settings for outdoor experiences and family experiences for children. It was also suggested that further research into this field was necessary to determine appropriate experiences for effective environmental education.

The following five studies are similar in that each employed interviews as the method for data collection about significant life experiences. The first two studies employed an instrument combining questionnaire and interview formats for investigating sources for environmental sensitivity. The studies by Peters Grant (1987) and James (1995) investigate the connection between significant life experiences and vocational choice. The final study in this section looks at significant life experiences as they related to life paths.

Peterson's (1982) master degree research examined the life experiences of 22 environmental educators from the United States and Canada as they influenced the development of environmental sensitivity. Peterson defines environmental sensitivity as, "a set of affective attributes which result in an individual viewing the environment from an empathetic perspective." (p. 14). The participants in this research were primarily volunteers; although the researcher requested the participation of a few individuals. Peterson developed an instrument combining questionnaire and interview formats to measure developmental variables influencing the acquisition of environmental sensitivity (ES). The Environmental Sensitivity Profile Instrument (ESPI) was content validated after acceptance by jurors, five environmental/science professional educators, who suggested minor adjustments. The first two sections of the ESPI were designed to collect demographic and ancillary demographic information. The third section, the interview, collected information regarding developmental variables leading to environmental sensitivity. Peterson classified responses to the interview questions into ten categories with the assistance of three professional environmental educators. Only dominant generalizeable qualifiers for all experiences were reported. This meant a determination of the following was possible; age when the experience occurred, if it was a positive or negative experience, and social interactions associated with the experience. When participants ranked experiences, no one type of experience was found to be common as developing ES, but many top ranked experiences were outdoors

related. The category most frequently mentioned, ranked in any position, was outdoor experiences (91%). Hunting and fishing were the most frequently cited outdoor experiences. The next most frequently mentioned categories of experience were familial environmental sensitivity (59%), study of natural systems in formal and non-formal education (45%), and love (affinity) for the area where one was raised. When specifically asked about role models, 82% of the participants indicated role models had influenced their environmental attitudes. There were more non-familial role models mentioned than familial. 45% of participants considered his or her personality combined with the experience to have resulted in the development of environmental sensitivity. Peterson concluded the development of environmental sensitivity was a result of participation in outdoor experiences, role models, familial sensitivity to the environment, and individual personality. After making a comparison to Tanner (1980) that indicated similar general findings, Peterson suggested six educational implications resulting from her research. These included providing frequent contact with natural areas starting at a young age, providing environmentally active role models, and focusing on local issues. She also made recommendations for further research concentrating on environmental sensitivity and its development.

Sward (1999) replicated Peterson's (1982) study by using the Environmental Sensitivity Profile Instrument (ESPI) in an investigation into life experiences of El Salvadoran environmental professionals. The participants were 17 environmental professionals who had been selected by a professional organization to attend an environmental planning program offered at a university in the United States. Since the selection process had been rigorous and highly competitive, Sward felt the participants possessed the qualities considered necessary in environmentally sensitive individuals. She confirmed this with the responses to Sections 1 and 2 of the ESPI. The researcher categorized responses to the interview question regarding factors and life experiences and found outdoor experiences to be the most frequently mentioned life experiences instrumental in developing interest and sensitivity to the environment. This category, mentioned by 88% of the sample, included mentions of outdoor experiences as a youth with family (13 of 15 mentions) and friends (11 of 15). The

other influences mentioned by more than 25% of the sample, in descending order were, environmental destruction, positive formal education experiences and experiences with outdoors related organizations. Sward noted additional influences mentioned by the participants as background information. When a combination of influences mentioned in demographic, supplementary and interview questions was done, the most important influence remained outdoor experiences during youth. Sward concluded with recommendations for further research into environmental sensitivity in developing countries, and for environmental education programs. She suggested environmental education programs provide outdoor experiences throughout an individual's educational time, provide opportunities for students to interact with environmentally active adults and focus on local environmental problems and restoration.

Peters Grant (1987) investigated significant life experiences of docents working in marine environments. She was also interested in their vocational preferences and similarities and differences in their backgrounds. The director of the docent program selected 24 volunteers to participate in the study. The docents were involved in marine education programs as well as maintenance of a garden. Peters Grant used a combination of questionnaire and interview formats to explore life experiences that might have influenced the docents' interest and awareness for the environment. The Holland's Vocational Preference Inventory was administered to the participants to determine similarity and dissimilarities in personality patterns. The analysis of this inventory established the docents as having more similarities than differences in their backgrounds and having similar reasons for becoming marine docents. The questionnaire was designed to provide background and demographic information about the participants. Responses to the interview questions provided elaboration on background information and data about the influence of life experiences. Peters Grant provided detailed information about the participants' backgrounds and interests. The results to a specific question about influences formative in developing environmental interest indicated parents were the most common influence cited by the participants (27.3%). Other relatives were mentioned by 20% of the respondents. Other major influences were summer vacations (16.2%), natural curiousity (14.5%), teachers (11%), and camp experiences and the area where the

subject grew up (5.5% each). However, when combined with data obtained through other interview questions, Peters Grant determined "long term interactions with the outdoors and the influence of parents and other role models were important influences in the development of environmental sensitivity" (p.113). Many participants also indicated there had been a progression of experiences from childhood to adulthood that had influenced their environmental interest. Participants were frequently in contact with natural areas over the long term as children. This contact continued in their activities as adults. Peters Grant concluded that her findings support those of other researchers such as Tanner (1980). Recommendations for environmental education resulting from this study included long-term interaction with the outdoors with parental involvement, the encouragement of natural curiosity, and a concentration on local issues by environmentalists. Peters Grant recommended further research to develop the specific elements of the background of those with an interest in the environment, and the way in which experiences became influential to those people.

Tanner's (1980) study influenced a study of the multiculturalism of the profession of environmental education by Katherine James (1995). James (1995) investigated the answers to three questions posed to environmental educators of a variety of racial and ethnic backgrounds (African American, Asian American, Latino/Chicano/Mexican American, Native American and others). She was interested in the paths that led them to their careers, the barriers they overcame to work in environmental education (EE) and their ideas for increasing racial and cultural diversity in EE. From the analysis of 50 interviews James developed "The Opportunity System" (p. 15). James maintained that the, "... likelihood of any individual becoming involved in this profession [EE] is determined by the level of exposure to each component in the opportunity system" (p. 15). The six components of this system were: outdoor exposure, available information, personal values, job opportunities, organizational culture and societal prejudices/values. The component of outdoor exposure included experience in the outdoors with family or youth groups in rural or park settings, or on school field trips. The likelihood of a person becoming involved in environmental education was also affected by the availability of scientific information, cultural

information and information on the environment. The personal values component of the opportunity system included parental and community influence, worldview and mentorship. The fourth component, job opportunities, included the person's ability to acquire the necessary education, skills and training, access to jobs and the availability of positions in EE. Organizational culture, the fifth component, could be a barrier to pursuing a career in EE because the structure of an organization could restrict communication within that organization and limit the scope of what an environmental educator could do. The final component of the opportunity system as explained by James (1995) is the component of societal prejudices and values. This includes all forms of prejudice, racism, sexism, heterosexism, agism and abilism. The responses of our society to race can limit the number of environmental educators of various races involved in the profession. The component of this system most frequently cited by the respondents was outdoor exposure, although James stresses that this experience was not necessarily a prerequisite to working in EE. After discussing each of the components, James concluded with recommendations for ways to improve the opportunities presented by each component. She suggested that collaboration with existing environmental organizations and increasing access to outdoor experiences would increase the effectiveness of this component of the opportunity system. This paper was a summary of James' dissertation research, and she did not provide any detail regarding how she arrived at the opportunity system model.

Chawla (1999) provided further support that experiences of natural areas are influential in the lives of those who are environmentally responsible. However, she carries SLE research further by comparing the life experiences of environmentalists in two countries and reconstructing a generic life path of experiences. She and an assistant interviewed 30 environmentalists from Kentucky, United States, and 26 environmentalists from Norway. The environmentalists were recommended as particularly effective by well-known environmental figures in Kentucky and Norway. These participants were different from those of other studies because they ranged from being involved in recycling and waste management to wildlife and habitat preservation to urban planning to environmental education. Through structured open-ended

interviews Chawla determined the most common source of environmental commitment in both countries was experience of natural areas. Other sources mentioned by more than two thirds of the sample were, in descending mention rate, family, organizations, negative experiences (such as habitat destruction or pollution), and education. Chawla emphasized that 25% of participants considered concern for social justice what eventually led them to environmental concern. The categories of response were determined by a review of the literature on significant life experiences with the addition of new categories identified during initial review of the interview transcripts. Two independent readers assisted in the final determination of categories, resulting in an average interjudge agreement score of 86%. Chawla's life path of sources of environmental commitment illustrated the age at which different sources were prevalent. Most prevalent in childhood (under 18 years of age) were experiences of natural areas and family influences. During university years friends and education related influences were inspirational. For older adults the most prevalent sources of environmental commitment were organizations and vocation. Chawla noted that vocational influences were those that initiated or deepened environmental commitment. Chawla asked the Norwegian participants their reasons for persisting in environmental work. Two answers were predominant, "a commitment to principle of life or caring", primarily from those 40 years and older, and "the enjoyment of challenge and cooperative effort" (Chawla, 1999, p.22) primarily from those under 40 years of age. Lastly, Chawla requested suggestions for effectiveness in environmentalism from the participants. The top recommendations were to be informed about the issue, become a member of an environmental organization, to be politically active and to conserve personal energy to prevent burnout. In conclusion, Chawla noted that this study and that of James (1995) were the only two to indicate that social concerns as well as environmental concerns could lead to environmental action. She admitted the restrictions of this research due to the lack of a control group of people apathetic or opposed to environmental protection. However, Chawla contended such studies as this were necessary as foundations for the construction of theories for understanding experiences and actions. It is also mentioned that people who show small-scale responsible environmental responsibility, such as

weekly recycling, share some life experiences with participants from this study. Chawla concluded with three recommendations for environmental education that would involve the areas outside the classroom, parents and families of students and community organizations providing adult role models for environmental action.

A final study connecting environmental educators and significant life experiences did so in an attempt to discover why some teachers are more committed to teaching environmental education (EE) than other teachers (Shuman & Ham, 1997). The general premise of this paper is that environmental education is necessary in schools. Shuman and Ham (1997) noted that many of those who develop life-span theory (a theory which seeks to connect changes in behaviour with life events) have noted the importance of critical incidents and recollection of early events as affecting career choice. Shuman and Ham developed the Model of Environmental Education Commitment (MEEC) based on an expansion of the Theory of Planned Behavior that included life experiences. This model was developed through the theoretical analysis of four areas of inquiry: field theory, the theory of planned behavior, life-span development theory, and Tanner (1980) and Palmer's (1993) work on life experiences and environmental commitment. The MEEC provides, "...a theoretical framework that captures the potential for inclusion of life events in shaping teachers' propensity to teach EE despite the predictable existence of barriers" (p. 30). Shuman and Ham suggested that if a teacher has a strong commitment to teaching EE, it is more likely that he or she will overcome barriers (conceptual, logistical or educational) to that teaching. The stronger the teacher's commitment, the more likely the barriers will be overcome. They suggested that life experience, as shown by Tanner (1980) and Palmer (1993) and life stage are contributing factors to commitment to EE. In conclusion, Shuman and Ham suggested it may be possible to develop strategies for preparing EE in-service and young teachers to teach EE by understanding the developmental influences of teachers already committed to EE.

Summary

The articles reviewed in this section conclude that learning about life experiences and their connection to environmental awareness as adults or to environmental educators is essential to reach the goal of educating learners about the environment. Tanner (1980) and Palmer (1993) (and others) were searching for ways to help children learn to become environmentally responsible citizens. James (1995) was searching for ways to help the profession of environmental education become more multicultural. Shuman and Ham (1997) were searching for a model that could be used to link teacher's commitment to teaching EE and their life experiences. The purpose of this model was to aid in understanding teacher's commitment to EE such that strategies for preparing young teachers might be developed. Tanner (1980) and Palmer (1993; also Palmer & Suggate, 1996; Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer et al., 1999) considered it necessary to know the types of experiences that helped develop today's environmentally aware and active citizens in order to recreate such experiences for students. Palmer's interest was "... to generate data that could be useful in curriculum planning" (Palmer, 1993, p. 27); whereas Tanner's interest was in finding ways to attain the goal of environmental education. James (1995) sought to discover the types of opportunities necessary to encourage minority groups to enter the profession of environmental education. Tanner's (1980), Palmer's (1993, also Palmer & Suggate, 1996; Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer et al., 1999) and James' (1995) studies were directed toward the learner, whereas Shuman and Ham's (1997) work was directed toward helping the teachers of EE. However, all researchers were working towards the same end, determining ways to develop environmental awareness in learners in order to increase environmental concern and responsibility.

Tanner (1998c) emphasized the strength of all the studies by Palmer was providing respondents with only the research aims, so as to prevent bias in the autobiographical accounts. However, there are difficulties with some of these studies. Firstly, as Tanner (1980) points out, his study was, "modest in its

methods, and therefore reserved in its conclusions" (p. 21). The categorical analysis of significant life incidents was very conservative. Since the responses were written, Tanner did not have the opportunity to request clarification from the respondents, thus some responses, or portions thereof, were not included in the analysis. Tanner made no attempt to standardize his sample in terms of their attitudes or beliefs about the environment. He concluded, and perhaps rightly so, that because the respondents are all professional staff or chapter officers of well known conservation groups that they would adhere to a certain environmental ethic. However, his conclusions would have had more weight if the respondents' environmental responsibility had been illustrated. Tanner did some quantitative analysis of his data, but only in a rudimentary way. If he had illustrated that the number of significant experiences in the outdoors was statistically greater than in other categories, he would have been able to say with more certainty that these types of experiences are necessary for students.

Palmer (1993) emphasized the larger sample size used in her study as compared to that of Tanner (1980). She determined that the respondents in her study were adults who showed environmental concern through their indication of environmental activity according to a supplied list of potential activities. Unfortunately, this list of seven pro-environmental activities was not as specific as it might have been. For instance, "reading books and articles on environmental issues" (Palmer, 1993, p. 27) does not necessarily indicate a pro-environmental activity. It may indicate interest, but does it really show concern or action? Despite these drawbacks, this pro-environmental activity questionnaire provided Palmer with the standardizing feature that was absent from Tanner's (1980) study. Palmer's study was more rigorous than Tanner's and was a good answer to his call for more information and research into significant life experiences in environmental education. Unfortunately, Palmer did not review the literature thoroughly enough to discover the unpublished Master's thesis by Nancy J. Peterson which was completed in 1982. Palmer mentioned the lack of published analyses of significant life experience data on environmental educators, yet review of this thesis would have provided further support for her conclusions. Palmer and Suggate (1996) emphasize the similarity in the data analysis between their paper and Palmer (1993), despite the categorization of

data by different researchers. However, the total number of responses is different despite using the same data (N=232 in Palmer, 1993 and N=233 in Palmer and Suggate, 1996). This discrepancy is not explained. Tanner (1998d) mentioned other unexplained discrepancies between these two studies of the same data; the categories of childhood outdoors (Palmer, 1993) and childhood/nature/countryside (Palmer and Suggate, 1996) show different percentages of mention as do the categories for tertiary education.

The other studies in the series on emergent environmentalism (Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer et al., 1999) did not describe sample selection. The researchers attempted to illustrate the environmental concern of the subjects through a pro-environmental activity questionnaire; however, the solicitation of subjects was only discussed in Palmer (1993) and Palmer, Corcoran and Suggate (1996). As the researchers noted, there were cultural differences between the samples from different countries and the age category and gender profiles of the respondents were also different. All of these differences made comparisons difficult, which the researchers mentioned only in some instances (for example Palmer, Suggate, Bajd, Hart et al., 1998,;Palmer et al., 1999). The comparison between influential people mentioned by the United Kingdom and the United States respondents (Corcoran, 1999) seemed somewhat tenuous due to the difference in the manner of collecting data. The American respondents were discussing heroes and heroines who influenced their lives, whereas the British respondents were discussing significant life influences of any type. It must also be noted that the addition of a question about heroes and heroines may have altered the types of responses given by the US sample in their autobiographical statements. It is not stated whether this was of concern to the researchers (Palmer, Corcoran and Suggate, 1996). A final concern with the analysis by Corcoran (1999) was that he did not describe the process of categorization and tallying used to tabulate his findings regarding influences of heroes and heroines.

Scholl-Wilder (1983) provided a strong theoretical basis for her study. Her data were somewhat limited in that she used a questionnaire, with possible response categories given to the respondents. The questionnaire is not described, thus it is likely that potential influences that were not included in the

questionnaire responses would not be recorded. This was unfortunate, as it restricted the response categories. Chawla (1999) confronted the possible limitations of her study directly in the introduction and discussion. She accepted that a longitudinal study would be effective, and that a control group would provide a valuable comparison. However, she also contended that the research stood well as conducted for reasons mentioned earlier in this review. The study by Sward (1999) is thorough in its methodology, but is lacking slightly in analysis. Sward provides a very precise description of sections of the instrument used to collect her data. The analysis of the interview responses was not problematic, but she briefly mentioned additional influences on the development of environmental sensitivity without providing an explanation of the meaning of these data or why they were compiled. This causes some confusion as to her final results. Yet her recommendations seemed soundly grounded in the results of her interview question analysis. Peters Grant (1987) provided very detailed results from her questionnaire and interview questions. The analysis of these data leads to logical results except in the final conclusion where she indicated outdoor experience was a major influence in developing environmental interest in the participants in her study. The only question in the interview that specifically asked about major influences provided results showing parental influence was important, but not outdoors experience. A more explicit link between these data and this conclusion would have been helpful. It may be that the experiences involving parents occurred in the outdoors, as participants all indicated time spent in the outdoors as youngsters.

The study by Shuman and Ham (1997) was very different in its approach from the other two studies. Shuman and Ham's (1997) Model of Environmental Education Commitment (MEEC) was based on an analysis of theories developed by others. They provided a comprehensive explanation of these theories and a thorough description of the MEEC and its potential uses.

There is a chronology in the development of ideas by these researchers. Tanner (1980) states, "... this is a tentative exploration of a new research area" (p. 21). In his conclusion, he suggested areas for future research into significant life experiences, including examining the origins of people involved in other kinds of environmental issues. Palmer (1993) built on Tanner's conclusions by examining

the significant life events of environmental educators. She explained the motivation for her study this way:

> Although Tanner drew attention in 1980 to the void of research in the literature of environmental education that examines the lives of citizens who have demonstrated their active environmental concern, published analyses of autobiographical data on the formative life experiences of environmental educators are still unavailable. (p. 26)

Palmer (1993) also reminded her readers that the aim of environmental education is to "... help children learn and care for the environment..." (p. 27), thus environmental educators need to know the types of experiences likely to promote this aim. Such experiences can be ones patterned on significant life experiences of environmental educators. Palmer hoped that data from this study would further the case for environmental education in the United Kingdom. The other studies on emergent environmentalism (Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer et al., 1999) underlined Palmer's objectives. James (1995) further supported the importance of outdoor experience in the development of environmental educators. Shuman and Ham (1997) take Palmer's work that illustrated significant experiences in the lives of environmental educators contributed to their concern for the environment, and suggested that understanding such experiences was necessary, "in shaping teachers' propensity to teach EE despite the predictable existence of barriers" (p. 30). Shuman and Ham concluded by suggesting:

> The model [MEEC] provides a preliminary foundation for future research and invites continued inquiry into the developmental antecedents that influence teachers' commitments to teaching EE. The understanding gained through this research may provide important insights into ways to prepare EE teachers. (p. 31)

The next step in this chronology was to examine specific significant life experiences to understand why they are significant to the participant. The

reviewed literature, particularly Palmer (1993) (also Palmer et al., 1996; Palmer, Suggate, Bajd, Hart et al., 1998; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer et al., 1999) and Tanner (1980), categorized significant life experiences but did not seek to explain how or why they were significant. Shuman & Ham (1997) alluded to this next step when they discussed the need for measurement strategies for life experience constructs. They suggested that the Model of Environmental Education Commitment provided a foundation for future research; which might help prepare EE teachers. However, the model needed to be tested and to do so required more understanding of influential life experiences of committed environmental educators. A more in-depth look at significant life experiences would also provide local data supporting previous findings.

Significant Life Experiences Research: Reviews, Commentaries and Critiques

The closing section of this literature review is devoted to reviews, commentaries and critiques of significant life experience research in environmental education published in two special issues of *Environmental Education Research*. The reviews by Tanner (1998b) and Chawla (1998a, 1998b) were published in *Environmental Education Research 4(4)*. The critical commentaries, published in *Environmental Education Research 5(4)*, were written in response to those papers and others in that issue, as well as to three studies of significant life experience research in *Environmental Education Research 5(2)*. A final paper described here is a personal response to those commentaries from Chawla (2001). These commentaries are included in this literature review because they outline the progression of significant life experience research in environmental education and the debate that has developed over this field of research. These commentaries critically review the methodology and theoretical premise of significant life research in environmental education. With the exception of the commentary by Stephen Gough (1999), the commentaries are presented in the order in which they appeared in the two issues of *Environmental Education Research*. Stephen Gough's commentary draws heavily on those of the other authors, thus it is presented before Chawla (2001).

Chawla (1998a) reviewed the qualitative environmental education research on significant life experiences. The following review includes this paper and the original unabridged version (Chawla, 1998c). This research included most of what was reviewed in the previous section of this review (Tanner, 1980; Peterson, 1982; Scholl-Wilder, 1983; Peters Grant, 1987; Palmer, 1993; James, 1995; Palmer and Suggate, 1996; Sward, 1999 (forthcoming at that time); Chawla, 1999 (forthcoming at that time)) as well as two additional studies (Votaw's study & Gunderson's study as cited in Chawla 1998a). She examined the findings of each study and compared the conclusions. Votaw surveyed eight summer interpreters in Denali National Park, Alaska and found the two common antecedents contributing to his subjects' love and respect for the environment were "the natural environment and in most cases an adult" (Votaw as cited in Chawla, 1998a, p. 374). Gunderson interviewed 12 elementary school teachers and found time in the outdoors and former teachers were each mentioned by 83% of her sample when asked what influenced them to become environmental educators (Gunderson as cited in Chawla, 1998a). In some cases, Chawla reanalyzed data (Peters Grant, 1987) to use similar categories as the initial study by Tanner. The categories of response data for each study are presented in table form. Chawla determined that generally the studies supported Tanner's original results, but with some variability. This led to a critique of the research and suggested improvements in methodology. Tanner's (1980) and Peterson's (1982) studies involved predominately male subjects, which Chawla felt might have biased the results. Chawla noted the lack of description of categories in many of the studies, and she questioned Palmer's (1993) conclusion that her results confirmed Tanner's. Palmer's conclusion that childhood experience in the outdoors was the single most important factor of influence did not coincide with her data indicating only a slightly greater percentile of respondents mentioning this factor than outdoor activities, family, higher education or organizations. Chawla also noted that data regarding negative factors in Palmer's results did not necessarily show an increase in these factors due to the time between this study and Tanner's because the populations sampled were very different. Chawla considered that Palmer and Suggate (1996) had confounded age and gender in their examination of cohort differences. She noted that her study and that of Sward, both published

in 1999, expanded both the nationalities of the participants and the type of environmental work in which they were involved. One limitation of the research into significant life experiences is that none of it is comparative. As Chawla pointed out, there is no way, from this research, to show that people who are indifferent or against environmental preservation did not have the same types of experiences. She described two studies (Sia, 1984 & Sivek and Hungerford as cited in Chawla, 1998a) using environmental sensitivity questionnaires that suggested nature experiences, nature books and positive role models distinguish environmentally active people. It is noted though, that the best predictor of environmentally responsible behaviour was in fact people's own believed ability to use strategies for environmental action. Chawla had reservations about Scholl-Wilder's (1983) study due to the lack of directions given to questionnaire respondents and the omission of the size of the sample. In Chawla's brief discussion of environmental sensitivity she considered that different interpretations of the concept are not uncommon. She also strongly pointed out that the categories of factors concerning life experiences so far do not look at the internal environment of the person/child having the experience, only the external environment. Chawla concluded that the research shows there is "no single all-potent" experience leading to environmentally active citizens, but an interaction of many experiences. Chawla's recommendations for further research included focusing on action not just affective, more consistency in categories of influence, intercoder reliability in analysis, controls for multiple mentions of factors, comparative studies, descriptive studies and longitudinal study designs. She applauded the sample diversity, cohort and other comparisons and life span studies in recent research.

Chawla (1998b) reviewed existing qualitative research into significant life experience in environmental education to determine how well that research met the challenge of reliability and validity while remaining open "to subjects' emotional life and self-understanding" (p. 384). She outlined strengths and weaknesses of significant life experience research. Chawla considered there to be six strengths in current research:

- it is qualitative
- it builds on a cohesive research tradition

- it provides a lifespan perspective
- it uses open and close - ended methodologies
- there are new studies looking at sample diversity, cohort differences and longitudinal designs
- despite diverse methods and populations, results are coherent. (adapted from Table 1, p. 385)

A discussion regarding the validity and reliability of autobiographical memory followed the look at research strengths. Chawla noted research confirming that although memory may confuse details of an event, there is generally accuracy in the course of events. Opportunity for unrestrained recall, and prompts and cues during an interview tend to increase the number and detail of memories. These conditions make autobiographical memory "durable and roughly accurate" (p. 388).

Chawla's (1998b) main concern about weaknesses in significant life experience research centered around the difficulty encountered when making comparisons between studies. She listed three main types of weaknesses:

- inconsistencies in questions, criterion measures, and categories of analysis
- a lack of intercoder reliability testing, comparison groups and control of multiple responses by a single respondent
- little recognition of the way memory interprets events. (adapted from Table 2, p. 389)

Chawla concluded her review with recommendations to improve current methodologies and future research needs. The 16 recommendations included making improvements in design to counteract the mentioned weaknesses, integrating autobiographical memory research, adding new research approaches and noting cohort, gender, cultural and individual differences. In conclusion, Chawla suggested existing research had provided broad outlines about significant life experience that produced environmentally responsible people, but there was still much to learn.

Chawla (1998b) provided a synopsis of the strengths and weaknesses of existing significant life experience research in environmental education. The recommendations addressed the weaknesses and built upon the strengths.

Chawla's call for more reference to research on autobiographical memory made a strong point that somewhat counteracted her contention that the self-referencing tradition of significant life experience research was one of its strengths.

Tanner (1998b) examined ten studies dealing with significant life experience research. He scrutinized this research to determine the subjects studied. It was Tanner's contention that significant life experience research could not reach its potential importance unless it studied "the right people for the right reasons" (p. 399). Tanner maintained that the right subjects were those directly involved in pro-environmental activism or those who provided support to such activism through financial contributions to activist organizations. The ten studies under scrutiny were classified according to whether each dealt primarily, partially or indirectly with significant life experiences. Tanner maintained that only two studies dealt with populations of activists according to his definition. Those studies were his (1979 and 1980) and Chawla's (in press at the time, published 1999), both directly researching significant life experiences. Tanner believed authors of several studies not examining environmental activists, by his definition, still regarded their subjects as activists. Each of the ten studies was briefly summarized with emphasis on the sample selection procedures. He concluded with three main points. Firstly, significant life experience research on politically active subjects had produced similar findings. Secondly, subjects who purport NIABYism (not in any backyard ism) were preferable as research subjects to those purporting NIMBYism (not in my backyard ism), however the latter group included leaders of long, dangerous fights who would make good subjects, and could be considered. His final point supported Chawla's (1998b) contention that comparative studies are required with subjects who are the antithesis of those individuals politically proactive environmentally.

Tanner's (1998b) point that the scrutinized studies do not examine subjects with similar proof of activism is well made and supported. However, his definition of activist individuals is narrow; financial support for an organization does not necessarily indicate activism by an individual. Tanner did not acknowledge that much could be learned from researchers attempts to indicate environmental activism in their subjects (Palmer, 1993 for example). It would

seem that building on these attempts would help to standardize the definition of activism used in significant life experience research.

In his commentary, Payne (1999) supported continued research into significant life experiences, however, he cautioned that any self-referencing body of work, such as significant life experience research, needed to be looked at critically. He maintained that research into using the findings of significant life experience research to write "culturally sensitive and contextually specific curriculum" (p. 366) was required. Payne considered the lack of such research to be a gap in significant life experience (SLE) research. He identified two questions urgently requiring research efforts:

1) How have the findings of significant life experience research been implemented?
2) What audits have been conducted to show how certain significant life experience research findings might be knowingly or unknowingly in use already? (p. 366)

The purpose of Payne's commentary was "to critically advance future conceptions of SLE inquiries" (p. 367). He approached this purpose by examining the ontological issues of significant life experience research. Payne recommended more detail about the how and why of the significance of certain experiences. He agreed with Chawla (1998b) that significant life experience research needed to draw on findings from other fields and that longitudinal studies using grounded and narrative forms of inquiry were required. Payne stated concerns about significant life experience research underestimating the complexities of human experience. He considered the study of 'right' and 'wrong' subjects (Tanner, 1998b) to be advantageous as it might provide clarity about what does and does not work in terms of developing of environmental care. Payne discussed and challenged Tanner's (1998b) definition of the 'right' subjects for significant life experience research, stressing that activism is seen in many forms. Payne suggested expanding the concept of experience to include the continuity of experience and seemingly insignificant experiences. The final ontological issue contemplated by Payne is that of the 'inner' and 'outer' nature of a person. Chawla (1998b) suggested more attention needed to be directed toward the inner person who gave events their significance. Payne concurred,

warning against the dualism resulting from a disconnection of our bodies from their environment. Payne concluded by reiterating the significance of the significant life experience body of research; its findings provided grounding for 'grassroots' curriculum, pedagogical development or leadership, and it "paved part of the ground for exploring the ontological bases of human experience" (1999, p. 377).

Payne's 1999) commentary suggested well-grounded considerations necessary in the growing body of significant life experience research studies. It approached significant life experience research from an ontological perspective and considered some recommendations and comments by Tanner (1998b), Chawla (1998b) and others.

Annette Gough (1999) examined the environmental education research on significant life experience in terms of its usefulness in preparing environmental education curriculum considering intergenerational, age, gender, class and racial differences in populations. She maintained it would be more useful to examine the life experiences of young people involved in environmentally responsible actions, than to examine the experiences of those much older than today's youths for whom environmental education curriculum is being prepared. Gough promoted an examination of individuals rather than generalizations about people's experiences. She quoted studies on intergenerational and gender differences to emphasize her call for significant life experience research examining differences in age, gender, race and class. She pointed out that each of these variables could have considerable influence on the types of experiences available to individuals. Gough did not appear to be aware of the studies by James (1995) and the forthcoming study by Sward (1999), both of which investigated previously unstudied racial groups in significant life experience research. Due to the lack of information on the individuals whose life experiences were being investigated, Gough did not considered this research informative. She concluded, "we should be helping them [students] to find their own significant life experiences within the context of the SLE [significant life experiences] of their near peers" (p. 390). She appeared to consider learning about significant life experiences of those much older than the students of today to be of little value.

A critical examination of the methodology and findings of the group of studies by Palmer's emergent environmentalism research project is the concentration of a paper by Dillon, Kelsey and Duque-Aristizabal (1999). One of the authors' major concerns was what they consider a lack of conceptual framework to support the methodology and data analysis of the emergent environmentalism research project. They promoted the use of identity theories as a conceptual framework for significant life experience research. An examination of the subjects as individuals is also advocated, with qualitative descriptions rather than quantitative. Dillon, Kelsey and Duque-Aristizabal continued their discourse with a critique of the methodology employed by the emergent environmentalism research team. They were concerned with a perceived lack of description of sample selection, and the origin of categories used in determining environmental activism and in data analysis. The authors made the point that categorization of complex descriptions of significant life experiences could result in multiple interpretations of these data. While Annette Gough (1999) was concerned about the lack of racial comparisons, these authors were concerned about differences in nationality and culture that could affect response category values. Dillon et al. questioned the apparent self-referencing tradition of environmental education SLE research, particularly by the emergent environmentalism research project studies. Five factors considered to be undervalued by the research project in their studies were the subject's gender, occupation and family size, and the location and climate where they lived. In summary, Dillon, Kelsey and Duque-Aristizabal argued for the use of identity theories, research frameworks that empower subgroups within the sample, and the collection and analysis of data in such as way as to develop the understanding of the complexity of factors involved in life experience research.

Neil Gough (1999) provided an occasionally stinging appraisal of significant life experience research in environmental education as published in *Environmental Education Research* 4(4), 1998. The purpose of his appraisal was to compare the use of retrospective accounts in such research to autobiographical approaches to curriculum inquiry in the hermeneutic tradition. Gough briefly examined autobiographical methods for curriculum inquiry and comments on significant life experience research in that context. He argued the merits of

retrospective accounts of significant life experiences as the basis for the production of curriculum. It was his contention that significant life experience research lacked recognition of autobiography being affected by social factors. He referred to the replication of life experiences as "a form of intellectual cloning" (1999, p. 410) whereby students are shaped into the image of the previous generation for the best interest of themselves and the earth. Gough argued what was needed were ways to surpass the histories of those whose life experiences were being studied in order to provide new educational experiences to students. He maintained the methodology of significant life experience research reduced complex life experiences to simple experiences that could be categorized. Gough noted with concern the potential for the results of significant life experience research to be the outcome of an interaction between subject and researcher, rather than only a reflection of the subject's experiences. Gough ended his commentary by stating that children are our best hope for surpassing our own histories, and that we need to be careful not to 'foreclose' their autobiographies by having them replicate those of a prior generation.

The critique/commentary by Stephen Gough (1999) provided a particular viewpoint about significant life experience research, which he immediately stated was not being put forth as the only useful viewpoint on significant life experience research. He suggested a sequence for thinking about significant life experience research by posing four questions:

> Does SLE research make a valuable contribution to environmental education research?
>
> What is *actually* being studied in SLE research?
>
> What sort of research approach is most appropriate? and
>
> Has the research been conducted in an appropriate fashion? (taken from Fig. 1, p. 354)

Gough presented possible answers to these questions by including quotations and comments from other commentaries published in the same issue of *Environmental Education Research* (Dillon et al., 1999; A. Gough, 1999; N. Gough, 1999; Payne, 1999). S. Gough suggested the answer to the first question depended upon on the answer to a second question, "What is *actually* being

researched in SLE research?" (1999, p. 355). Five potential answers to this second question were suggested:

1. "how to save the earth" - a linear relationship where education is a possible determinate of behaviour which is a somewhat predicable determinant of "environmental outcomes" is suggested (Fig. 1, p.354).
2. the influences that were formative for current environmental activists and educators - a less linear relationship than suggested above, admitting more needs to be known before curriculum applications of SLE are suggested.
3. how current environmental educators construct their pasts - this suggested that subjects were recalling their constructions of the past, not necessarily concrete experiences of the past.

The final two potential answers to what is being researched in SLE research were considered supplementary to the first three:

4. an applied technique of curriculum development - S. Gough reiterates points made in other commentaries of *Environmental Education Research 5(4)*
5. an applied technique of teacher education - because teachers have been identified as important influences by SLE research, and suggesting that environmental education can produce both significance and experience for students.

S. Gough does not provide definitive answers to the questions he poses, rather he generally summarizes what other authors have suggested. He listed a number of different answers to the question of the appropriate research approach that had been suggested in the two special issues of *Environmental Education Research*, including:

- autobiographical inquiry
- phenomenological
- comparative
- cross-cultural
- ontological inquiry

S. Gough suggested the debate about SLE research raised basic questions about the need for quantitative or qualitative research approaches. He considered the

question of the appropriateness of the way research was conducted to be a straightforward question that was raised by the process of peer review seen in that issue of *Environmental Education Research.* S. Gough concluded by questioning if significant life experience researchers were prepared to look at and look for contrary evidence that might complicate the existing interpretations of SLE research. It was S. Gough's view that significant life experience research needed to move away from self-referencing and take a more open approach.

Chawla (2001) made a personal response to the commentaries in *Environmental Education Research* 5(4), 1999 and a symposium hosted by the Environmental and Ecological Education Special Interest Group on 'Critical Issues in Significant Life Experiences Research and Environmental Education Curriculum'. She considered the debate about significant life experience research to be healthy, and acknowledged that she personally would place any further works she might do in significant life experience within "a wider universe of consideration and cautions" (p. 452). Chawla accepted the usefulness of S. Gough's (1999) framework of questions about what significant life experience research explores and appropriate methodologies. However, she believed some criticisms of significant life experience research were extreme, particularly where it was suggested certain subjects or methods should never be used. Chawla challenged what she considered S. Gough's (1999) implication that environmental activists frequently do not produce desirable results. She felt S. Gough implied that activism should be discouraged when teaching environmental education because of possible undesirable consequences. Chawla's opinion was that teachers should not require their students to think and act as they do, but could encourage independent activism. She believed dedicated activists are needed in the environmental movement, as are dedicated teachers and citizens who help protect the environment in different ways. Therefore, the motivation of activists, teachers and citizens who support environmental protection needed to be understood. She considered understanding the motivation of individuals who follow and those who oppose environmentally proactive individuals was important as well, in order to see the commonalities and differences between these groups.

Chawla (2001) contended, "different research paradigms provide different forms of insight" (p. 456). She maintained that different research paradigms in significant life experience research were acceptable providing the rules of research within each paradigm were followed. That included using careful categorization of individual's statements in significant life experience research, but also using case studies, for example. Chawla pointed out that memory is based on the reconstruction of experiences and as such, the experiences recalled should be investigated more closely. Chawla disagreed with A. Gough's belief that experiences of an older generation were likely irrelevant to current children and youths. Since environmental education and environmental activism tend to be intergenerational, Chawla felt significant life experience research should be as well. She did agree that research into sources of children's environmental attitudes and women's experiences were important. Chawla concluded with a reminder that environmental education extended beyond formal school curricula and the findings of significant life experience research might help "determine effective priorities for sustainable community development" (2001, p. 459). She maintained that significant life experience research suggested environmental education needed to be extended beyond schools, and that the everyday world beyond the schoolroom was significant. With the deterioration of local environments and the limited access to those areas, and with opportunities for positive experiences in the environment with parents and other adults decreasing in number due to modern societal demands, Chawla felt it would take a strong group of people to protect children's environments and to provide them with quality experiences in the environment.

This section reviewing the critiques and commentaries of significant life experiences published in two special issues of *Environmental Education Research, 4(4) and 5(4)*, provides a background in the debate about the methodology, results and even the premise of such research. The current study has attempted to address a few of the concerns brought forth in these studies.

The purpose of this literature review was to place the present research within the framework of previous relevant research in environmental education. Chapter 3 describes the methodology of the current research study. The

remaining chapters present the findings of the study and place those findings within the context of previous related research.

Chapter 3: Methodology

Research Design

This research project was one of multiple case studies based on data collected from selected outstanding environmental educators. The selected educators had been nominated by leaders in environmental education in British Columbia and were involved in positive environmental action with their students in British Columbia (BC). In addition autobiographical statements and demographic data were collected from questionnaires sent to members of the Environmental Educators Provincial Specialist Association (EEPSA) of British Columbia. Questionnaire respondents were also requested from British Columbia environmental educator recipients of internet listserves coordinated by the Northwest Aquatic and Marine Educators association and EEPSA. The questionnaire respondents were from the larger population of environmental educators in BC, whereas the subjects of the case studies were a selected sample of that group. This study attempted to follow the methodology of Palmer's 1993 and subsequent studies (Palmer and Suggate, 1996; Palmer, Suggate, Bajd & Tsaliki, 1998; Palmer, Suggate, Bajd, Hart et al., 1998) with a different population. The current study also attempted to elaborate upon those studies by providing a rich description of the selected outstanding environmental educators and the significant life experiences that influenced their environmental concern and desire to teach environmental education.

Research Method

This research project consisted of two parts. The first was the analysis of a questionnaire completed by environmental educators in British Columbia. Following Palmer (1993), the questionnaire established the demographics of a sample of environmental educators and their personal and professional levels of environmental activism. Respondents provided an autobiographical statement

about experiences and/or factors instrumental in developing their interest and dedication to the field of environmental education.

The main emphasis of the current research project was the analysis of audio taped semi-structured interviews with outstanding British Columbian environmental educators and reflective autobiographical statements from the same educators. The autobiographical statements and interviews promoted discourse with BC environmental educators about significant life experiences that led them to teach environmental education. Each interviewed educator was requested to review the partial interview transcript and case study report of his or her interview and statement for accuracy and clarity of analysis. Correspondence by letter, electronic mail and/or telephone prior to the inclusion of the transcripts and summaries in the analysis addressed any concerns about individual interview transcripts or case study reports.

Sample Selection and Data Collection

Questionnaire Respondents.

A call for subjects (Appendix A) was posted on the internet listserves of the Northwest Aquatic and Marine Educators association and the Environmental Educators Provincial Specialist Association of British Columbia. Questionnaires (Appendix B) were sent either by surface mail or electronic mail to respondents to the call for subjects, alternatively, some respondents completed and submitted the questionnaire through a purpose designed website. Questionnaires were also surface mailed or sent by electronic mail to the EEPSA membership and were available at a conference of the Environmental Educators Provincial Specialist Association of British Columbia. A letter stating the purpose of the study was included with each questionnaire.

In the questionnaire, respondents were requested to anonymously provide information about their approximate age, field of employment, number of years teaching (if a teacher), gender, approximate age of commitment to environmental concern and school-based environmental education, and the primary type of environment in which they spent their childhood. They were also requested to

subjects' work with their students, doing riparian plantings or raising salmon for example. Individuals of the nominating committee followed prescribed criteria (Appendix D) regarding their nominations.

The nominating committee consisted of three leading environmental educators in BC requested to participate by the researcher. Two of the nominators had been directly involved in environmental education in BC for more than 25 years. Both of these nominating committee members taught environmental education courses at the university level and supervised graduate students in environmental education. The third member of the nominating committee had been working in environmental education for more than 20 years. This nominator was an administrator at an outdoor school and supervised preservice teachers. In their professional and volunteer positions, each member of the nominating committee worked with and interacted with many environmental educators throughout BC. All three of the nominators continue to work in environmental education in British Columbia.

The nominating committee members were requested to nominate three to five educators in each of primary (Kindergarten to Grade 3), intermediate (Gr. 4-7) and secondary (Gr. 8-12) education (Appendix C). A short statement describing the reasons for nominating that particular individual was requested with the nomination (Appendix E). Although one of the nominators did not include these statements with his nominations, four of the educators he nominated were interviewed. Three of the four educators had been recommended by at least one other member of the nominating committee. The researcher knew of the fourth educator through the excellent reputation of his environmental education program, therefore he was also interviewed.

The educators selected for this study were, and continue to be, committed environmental educators. Each was committed to teaching environmental education within the school system despite the lack of an independent learning strand curriculum for environmental education from the British Columbia Ministry of Education. Often teachers involved in action to improve the environment have to work without the support of the education system (Hammond, 1996/97). Each of the interviewed educators convinced administrators, parents and students of the importance of his or her program and

persevered in teaching that program. These educators managed to maintain their commitment to environmental education while teaching within the school system. Educators engaged in positive environmental action with their students for a minimum of five years were selected in order to ensure the staying power of the educator. It is possible to arrive at a school and become very excited about environmental education for a few years, but to gradually lose that enthusiasm with the pressures of day-to-day teaching. Consequently, some environmental educators leave the classroom to work as consultants for the school system or in non-formal education positions. Classroom teachers who maintain an action based environmental education program for more than five years show a continued commitment and enthusiasm for environmental responsibility within the school system. Educators of this genre were the focus of the current study.

The researcher made the final selection of ten environmental educators from the twenty-one educators nominated who fit the criteria. Selection was based on the number of nominations for each educator received from the nominating committee, the subject's agreement to be interviewed, and a desired teaching level and geographic variability within the sample. Both male and female educators were chosen in order to provide gender variability. This proved challenging because five of the six women nominated were primary or intermediate teachers. The sixth female nominated taught a secondary school program co-developed with one of the male teachers selected. One member of the committee nominated the female teacher, whereas the male teacher received two nominations. For this reason the male teacher was interviewed.

It was desirable to interview educators from each of primary, intermediate and secondary education in order to look at the activity variability in their environmental education programs. Geographic variability was desirable because of the potential for different types of programs to develop in different regions, for example, marine programs and mountain-centered programs.

Initial contact with the ten selected environmental educators was by telephone or electronic mail with a follow-up letter. The initial contact served as an introduction of the researcher and the research project and a request for permission to send a letter of explanation (Appendix F) and a consent form (Appendix G) for participation in the study. The educator was advised that he or

she had been nominated and selected as an outstanding educator and therefore a possible subject for this study.

The letter (Appendix F) sent to each educator outlined the rationale for the research project and requested information about his or her approximate age, grade level taught, number of years teaching, gender, approximate age of commitment to environmental education and school-based environmental education, and the type of environment in which he or she spent his or her childhood. Each educator was requested to write a brief reflection on the statement: "The experience(s) and/or factors instrumental in developing my interest and dedication to the field of environmental education was (were)...". Although there are some disadvantages to divulging research interests prior to an interview, it was advantageous in this situation because it provided the interviewees time to reflect on their personal histories. This reflection also helped guide the interviews because the interviewees were prepared for the line of questioning and did not appear to feel pressured to provide quick answers to any questions. The autobiographical statement was made available to the researcher at the interview by seven of the interviewees. The remaining three educators mailed their autobiographical statements to the researcher because they had not been completed in advance of the interview. Seven of the ten educators were requested to write a short description of their positive action based environmental education program. The first three educators interviewed provided a verbal description only. As with the questionnaire respondents, interviewees were requested to demonstrate their personal and school-based commitment to the environment by indicating their participation in positive environmental activities (Appendix B, Sections 2 and 3).

The interviews were audio taped one-to-one, semi-structured interviews conducted in a private setting. One interview took place in a semi-private setting due to the limited availability of the interviewed educator. Written questions were used as guidelines to ensure that all areas of interest were discussed during the interviews (Appendix H). During each interview the researcher noted important points and wrote reminders of points needing elaboration or clarification. The researcher prompted the interviewees for elaboration of points specifically relating to the interview questions.

A partial transcript of the interview, which included demographic information and the autobiographical statement, and a preliminary case study report based on the interview, was given to each interviewee to review for accuracy and completeness. The partial transcript was a rearrangement of the interview transcript in order that comments answering each question could be grouped together. Interview comments unrelated to the questions or intention of the interview were not included in the partial transcript. This partial transcript was the basis for the case study report. Any insightful comments, contrary interpretations, elaborations or additions were discussed with the individual interviewees by letter, electronic mail or in a telephone conversation. This "Member checking" (Gall et al., 1996, p. 575) was designed to check the validity and reliability of the case study reports. This final interaction with the interviewees also provided an opportunity for clarification of any questions resulting from the interpretation.

Triangulation was achieved through the use of two data collection techniques, the autobiographical statements and the interview, and the interpretation by the researcher with member checking of the preliminary case study report and partial interview transcript for validity.

Data Analysis

Questionnaire Demographic and Environmental Activity Data.

There were fifty-six usable questionnaires received. Four questionnaires were not usable because they lacked an autobiographical statement. The questionnaires were analyzed to provide the percentage of total participants in particular demographic categories and to determine the percentage of the total involved in various positive environmental activities at home and with students. These data were expected to confirm the sample as a group of environmentally active and concerned citizens (Palmer, 1993; Palmer et al., 1996: Palmer & Suggate, 1996; Palmer et al., 1999), thus providing the background for the main part of the study.

The demographic and environmental activity data from the questionnaires were entered onto a Microsoft Excel:Mac 2001 spreadsheet. The totals for each question were tabulated and the percentage of the respondents determined. Some respondents did not complete all questions, or did not respond using the response key, thus categories of non-response and response not tabulated were added.

Questionnaire Autobiographical Statements.

The questionnaire autobiographical statements were analyzed according to single factors or experiences mentioned as influential by the respondent. A single factor of influence was an experience or person that was considered instrumental to the subject in the development of his or her dedication and interest in environmental education and concern for the environment.

A review of literature on significant life experiences of environmentally aware individuals (Tanner, 1980; Palmer, 1993; Palmer et al, 1996; Palmer and Suggate, 1996; Chawla, 1999; Palmer et al., 1999) suggested potential categories for sources of influence in the development of interest and dedication to the field of environmental education. The questionnaire autobiographical statements were subsequently read and possible single factors of influence and themes were noted. Autobiographical statements were generally written in point form or short phrases. This facilitated the classification of the single factors of influence. There were very specific factors of influence mentioned by the questionnaire respondents, thus it was impossible to use only Chawla's (1999) or Palmer's (1993) or any other researchers' categories. Chawla (1998a) made a case for consistency in the categories used in significant life research in environmental education, for ease of comparison between the findings of studies. However, the detail provided in some autobiographical statements in this study, made it necessary to include new categories (called groups of factors in the present study) and to divide other categories into sub groupings (called single factors of influence in the present study). If this had not been done, the specifics of the experiences would have been lost. Palmer, Suggate, Bajd and Tsaliki (1998) and Palmer, Suggate, Robottom and Hart (1999) noted they began with categories

established for United Kingdom (Palmer, 1993) and then added categories as required to classify all the influences described by respondents. Dillon, Kelsey and Duque-Aristizabal (1999) warned that detail about the individual must not be lost in the attempt to show patterns of response in significant life experience research. Forcing these data into pre-existing categories would have resulted in a loss of detail and distinction between responses.

On the basis of the literature and the first read through, thirty-four single factors of influence were determined and defined. The exact categories for single factors of influence from previous studies could not be used due to influences mentioned in the present study that were not noted in other studies. A combination of established categories from the literature and identification of new categories was also used by Chawla (1999) and Palmer et al. (1999). In the current study, single factors of related themes were grouped resulting in a total of eight groups. After the completion of the case study reports and the analysis of the interviewee autobiographical statements, one other single factor of influence category was added. The final number of single factors of influence was thirty-five, in eight groups. The researcher completed all the categorization of the autobiographical statements. This followed the methodology of Palmer (1993):

> One researcher undertook the analysis of all data so that there was no interresearch reliability judge. Reliability was achieved by scoring only those responses to which explicit or prominent references were made in statements about significant influences, and no attempt was made to weight or rank responses between or within statements. (p. 27)

Other researchers who undertook solo analysis of significant life experience data include Tanner (1980) and Sward (1999). As in prior studies, only explicitly stated single factors of influence were tallied (Peters Grant, 1987; Palmer, 1993; Chawla, 1999; Sward, 1999).

The summary of the analysis of the questionnaire autobiographical statements is shown in Appendix J. Dillon, Kelsey and Duque-Aristizabal (1999) emphasized the difficulties of categorizing autobiographical statements in significant life experiences research. Six descriptions of factors of influence were

placed in two categories because more than one factor of influence was mentioned within the phrase yet these were inseparable if the integrity of the experience was to be maintained. These accounted for less than 4% of the factors of influence analyzed. An example of such a description is:

> Spending time connecting with my father during camping trips in wilderness areas.

This phrase was categorized twice; in the group People - single factor Family, and the group Experience of Natural Areas - single factor Adult or Unspecified age. Only four of the twice-categorized statements affected the tallies because in the other two instances the respondents had provided other descriptions classified in the same single factor of influence category. For example one respondent listed the following influences, both of which were classified as childhood/youth experiences of natural areas:

> Growing up in a wilderness environment (1st five years & then all summers) on a lake in Northern Ontario.

> Many experiences in nature supported by parents who camped and encourage explorations.

There were a few other instances where a respondent provided more than one influence that fit into the same single factor of influence category. For example, the following phrases from one respondent were both categorized in the single factor of influence Principle, philosophy or belief, in the group Societal:

> A life long desire to share botanical and biological knowledge of the 'connectedness' of every person place and thing!

> Life long desire to reduce waist (mine ☺) and waste.

In such instances, the responses were counted as one because they were in the same single factor of influence category. There were only ten instances (5% of the

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> Life long desire to reduce waist (mine ☺) and waste.

In such instances, the responses were counted as one because they were in the same single factor of influence category. There were only ten instances (5% of the

total number of single factors mentioned) of multiple mentions for a single factor of influence.

The result of the analysis of autobiographical statements was summarized using simple, descriptive statistics. The mean and the mode of the factors of influences were determined from the count of single factors, without including the second categorization of statements or the multiple mentions by one respondent in a single factor of influence category.

Interviews of Outstanding British Columbia Environmental Educators.

The case study reports were written based on the information from the interview of each outstanding environmental educator and the autobiographical statement supplied by the educator. Each interview audiotape (or tapes) was first listened to in its entirety with the interview notes for reference. The researcher then transcribed the interview. The transcript of the interview was read, with an eye to grouping like themes that answered specific interview questions. The transcript was reorganized such that responses to each interview question were grouped together. Comments made during the interview that did not answer interview questions or were deemed by the researcher to be extraneous to the purpose of the interview were not included in this second, partial transcript. A case study report was written utilizing the partial transcript, the summary of demographic information provided by the interviewee, a copy of the autobiographical statement written by the interviewee, and the interviewee's brief description of his or her environmental education program. The summation of this information provided a rich description of each educator interviewed. This procedure was followed for nine of the ten interviews. One interviewee did not provide an autobiographical statement, so the researcher composed a brief statement in point form using comments from the interview. The educator accepted this as his autobiographical statement and it was incorporated into the case study report.

Each educator interviewed was presented with his or her partial interview transcript and case study report for approval. The accompanying letter explained how the partial transcript was obtained. Interviewees then either

approved the transcript and case study report as written, or made comments, additions or deletions in order to make them acceptable. In a few cases, the interviewee was asked to clarify information from the interview or provide further details.

The information regarding each educator's personal and school-based environmental activism was analyzed in the same manner as the equivalent information obtained from the questionnaire respondents (this chapter: Sample Selection and Data Collection, Questionnaire Respondents). No factors of influence descriptions were classified twice.

The interview transcripts and partial transcripts were read and explicitly stated influential significant life experiences were highlighted. The autobiographical statements supplemented the highlighted phrases from the interviews. The resulting factors of influence were categorized in the same manner as the questionnaire autobiographical statements. The factors of influence were generally mentioned in the responses to questions two, three and four of the interview (Appendix H). In several interviews the educator being interviewed added to his or her responses later on when another question prompted recollection of significant experiences. The experiences and factors of influence mentioned by the interviewees were summarized and compared (Appendix K).

Upon the completion of the analysis of significant life experiences and influences the interview transcripts were reread with an eye to locating common themes about activism and school-based environmental education. The researcher reread the interview transcripts concentrating on answers to interview questions six and seven (Appendix H) to determine why the interviewed educators had chosen to involve their students in environmental action programs. Once each educator's reasons had been noted, common themes were determined and individual differences were noted. The same process was followed to determine common themes regarding reasons for continuing to teach action environmental education within the school system. These themes were found the answers to interview question eight (Appendix H). The final analysis involved noting the environmental activities each educator was involved in with their students and the grade level of the students. The activities were then

compared by grade level to determine the form environmental activities take for different ages of students.

Limitations

There are several limitations to the current study. The small sample sizes of questionnaire respondents and interviewed educators are a limitation. The return rate for the mailed and emailed questionnaires was low (25%), particularly for the emailed questionnaires. Thus the researcher cannot be certain the respondents to the questionnaire are a representative sample of the environmental educators of British Columbia. Although questionnaires and survey instruments have been used in many studies of significant life experiences in environmental education research (Tanner, 1980; Scholl-Wilder, 1983; Palmer, 1983; Palmer, Corcoran and Suggate, 1996; Palmer and Suggate, 1996; Palmer, Suggate, Bajd, Hart et al., 1998, Palmer, Suggate, Bajd & Tsaliki, 1998; Palmer, Suggate, Robottom & Hart, 1999; Corcoran, 1999) the return rate was not reported in the majority of these studies, only the sample size. Gigliotti (1990) used a multiple mailing approach involving reminders and repeated mailings to obtain a response rate of 70% for his questionnaire on Cornell University students' willingness to take environmental action. Such an approach would likely have increased the response rate for the current study, as would electronically mailed reminders. The intent of the second part of this study was to provide rich descriptions of ten outstanding environmental educators and their significant life experiences. This sample size of ten interviewed educators was too small to permit extrapolation of the results to a larger population of environmental educators.

The questionnaire for this study was designed to take approximately 15 minutes to complete and it was made as straightforward as possible while still providing the necessary information. In the process of simplification, certain information was not requested, such as race, whether the respondent had children, and cultural background, all of which would have provided more detailed information about the respondents. Although the racial background of

environmental educators in the province was not determined for the current study, it is known by the researcher to be racially diverse. The questions were designed to maximize the information gained from classroom environmental educators, facilitating comparisons with the ten classroom educators interviewed for the second part of the current study. Consequently, it is possible that non-formal educators may not have responded to the questionnaire because they did not find the questions applicable to their environmental education situation.

The section of the questionnaire used to determine the environmental activism of the responding environmental educators may not have shown activism to the degree suggested by Tanner (1998b) as necessary in environmental education significant life experience research. The list of environmental activities was modified from Palmer (1993) and four additional activities were added. The purpose of basing the activities on those used by Palmer (1993) was to facilitate comparison of the activity levels of respondents between the current study and that of Palmer. Activities such as attendance at public meetings and membership in an organization, for example, may not be sufficient to indicate personal environmental responsibility (Tanner, 1998b). It was expected that the respondents would answer truthfully, however there was no way to know if that was really the case. Questionnaires and surveys are instruments that allow responses from a large sample size, thus concerns about self-reporting must be weighed against the advantages of obtaining data from a larger sample than might be possible if all subjects were to be nominated or recommended by experts in their field.

The interview technique employed limited the internal validity of the findings of the present study. The design of the study was appropriate, combining an interview with an autobiographical statement and the completion of a questionnaire. However, consistency in the location of the interviews and the scheduling of the interviews would increase the internal validity of the findings. The inexperience of the interviewer might have contributed to the brevity of the responses from one of the interviewees. Prompts for elaboration were given during the interview, but a more experienced interviewer might have been more effective.

Although there were limitations to the generalizability of the findings of the current study, similar experiences were reported in this research as were found to be influential in other studies of significant life experiences of environmentally aware and active individuals. As Chawla (1998b) noted, this does suggest that, "people understand the sources of their environmental attitudes and actions in similar ways." (p. 385).

The results of the analysis of the questionnaire data are found in Chapter 4. The results of the analysis of the interviews, and the case study reports based on those interviews are found in Chapter 5.

Chapter 4: Questionnaire Data Analysis

The results of the analysis of data from the questionnaires are presented in this chapter. The questionnaires were received from members of the British Columbia Environmental Educator Specialist Association and respondents to a call for subjects posted on the internet listserve of that association and the listserve of the Northwest Association of Marine Educators. Included in each questionnaire were demographic and environmental activity data, and an autobiographical statement completing the following phrase;

> *The experience(s) and/or factors instrumental in developing my interest and dedication to the field of environmental education was (were) ...*

Sample Description

Sixty-two responses to the questionnaire were returned. Of these, four responses were not usable because they lacked an autobiographical statement. Thirty-seven of the respondents (66%) were teachers of kindergarten to Grade 12 students. Three of these teachers also worked in post secondary institutions or another type of employment. Of the remaining respondents, six (11%) were employed in post secondary institutions, two (4%) worked in post secondary education and other employment, and eight (14%) were in some other type of employment. Those noting other employment included non-formal educators such as environmental education consultants, and employees of non-governmental organizations. Three respondents did not provide their employment type.

In terms of gender distribution, 62.5% of the respondents were women, and 37.5% of the respondents were men (Table 1). The most represented age group of respondents was between the ages of 30 and 50 years (52%). 32% of the respondents were over 50 years of age, and 16% were less than 30 years of age.

Table 1: Number of questionnaire respondents according to age and gender (N=56).

Group	Age (years)			*Total*
	under 30	30 - 50	over 50	
Male	1	11	9	*21*
Female	8	18	9	*35*
Total	*9*	*29*	*18*	

The percentage of respondents who spent their childhood years in a rural environment was 36%. Almost as many (32%) grew up in a suburban environment, and 25% lived in an urban environment as children. Two respondents indicated childhood years spent in both rural and urban environments and one respondent grew up in urban and suburban areas. One respondent did not indicate where she spent her childhood years.

Data gathered from the questionnaires show the respondents to be a group of environmentally proactive citizens. A high percentage (96%) of the respondents indicated they lived an environmentally friendly lifestyle involving activities such as making a conscious effort to buy environmentally friendly products. They also read about environmental issues (96%), were involved in outdoor recreation (89%), and attended professional development sessions in environmental education (86%). The percentage of respondents who were involved in recycling activities (73%) and practical conservation such as tree planting and wildlife gardening (61%) was also quite high. The respondents were not as involved in more public pro-environmental activism. Slightly more than half of the respondents (54%) attended public meetings and membership in pro-environmental organizations such as the Western Canada Wilderness Committee, the Sierra Club, and Greenpeace was indicated by 52% of the respondents. Less than half the respondents had been involved in letter writing campaigns, or writing articles. The percentage of respondents involved in environmental curriculum development (66%) was higher than that of those who provided workshops in environmental education (43%) and those involved in community outreach programs (39%). Membership in professional environmental education organizations was high (86%). This was expected since

respondents were recruited from the provincial environmental education association membership list and environmental education and marine education association internet listserves.

A majority of the environmental educators (71%) participated in recycling with their students. More than a third of the respondents were involved in outdoor recreation (48%), planting trees (43%), stream or beach clean up (36%) and Greening Schoolyards (34%) with their students. Of those respondents who were Kindergarten to Grade 12 teachers, 30% took their students on more than three environmental education based field trips per year and 50% took their students on one to three such field trips a year.

Analysis of Autobiographical Statements

Group Factors of Influence Analysis

The experiences and factors identified as instrumental in the development of interest and dedication to the field of environmental education in the autobiographical statements by the questionnaire respondents were categorized into thirty-four single factors of influence. Similarly themed single factors of influence were assembled into eight groups. A description of factors of influence used for classification is given in Appendix I. It is noted that nine of the thirty-four single factors of influence were mentioned by only one respondent. The mean number of groups of factors of influence per person was 2.8 with a range of one to six. The mode for groups of factors of influence was two groups per person.

Table 2: Questionnaire respondents' most frequently mentioned factors of influence classified by group (N=56).

Group	Number	Percent
People	33	59
Experience of natural areas	30	54
Vocation	23	41
Education	20	36
Societal	19	34
Experiences of negative environmental impact	16	29
Organizations	6	11
Others	12	21

The questionnaire respondents most frequently mentioned factors of influence involving People (59%) as instrumental in the development of interest and dedication to the field of environmental education (Table 2). The single factors of family, students or children not one's own, teachers, mentors, and friends, colleagues and other individuals were included in this group. The second most frequently mentioned group of influences was Experience of natural areas (50%). Included in this group were the single factors of childhood or youth experiences in natural areas, adult experiences and experiences at an unspecified age in natural areas, living on a farm or in a rural area, and emotional responses to natural areas.

Vocation or work (41%) was the third most frequently mentioned group of influences instrumental in developing interest and dedication to the field of environmental education. Within this group were the single factors of paid employment and volunteer work. Influential experiences or factors resulting from educational courses or programs were mentioned by 36% of the respondents. This group of educational influences included; primary and/or secondary school experiences, college or university undergraduate experiences, graduate education experiences and professional development experiences. Societal factors such as a sense of social justice, a principle or belief, and concern for future generations were cited by 36% of the respondents. Experiences of negative environmental impact were the sixth most frequently mentioned group of influences (29%). Respondents referred to single factors of influence such as a

negative change to a natural area that had been enjoyed as a child or adult, habitat degradation, and pollution, resource use or abuse, residential development and litter.

The least frequently mentioned group of factors was Organizations (11%). This included child or youth organizations, as well as, adult organizations and professional associations.

The final group of influences, Others (21%), included all other single factors of influence; pets and animals, learning plant use, unsure of influential factors, travel, opportunity, media, love of performing, heritage, photography, comfort in the outdoors and life path influences. Each of these was a distinctive, influential factor or experience for the respondent. None of these single factors of influence were closely associated with any others mentioned during this study, therefore they were categorized in the group Others.

Single Factors of Influence Analysis

The single factors of influence mentioned as instrumental in the development of interest and dedication to environmental education by more than 10% of the respondents are shown in Table 3. The mean number of single factors of influence per person was 3.3 with a range of one to seven. The mode for single factors of influence was three.

Table 3: Questionnaire respondents' most frequently mentioned factors of influence classified by single factor (N=56).

Single factor of Influence[a] (Grouped factors classification in parentheses)	Number	Percent
Employment (Vocation)	22	39
Principle, philosophy or belief (Societal)	17	30
Family (People)	11	20
Students/children (not own) (People)	11	20
Adult/unspecified age experiences in natural areas (Experience of natural areas)	11	20
Emotional response to natural areas (Experience of natural areas)	11	20
College/university undergraduate courses or program (Education)	11	20
Professional development (Education)	9	16
Friends/colleagues/other individuals (People)	8	14
Habitat/environmental degradation (Experiences of negative environmental impact)	8	14
Home on farm or in rural area (Experience of natural areas)	7	13
Pollution, resource use/abuse, residential development, litter (Experiences of negative environmental impact)	7	13
Childhood/youth experiences in natural areas (Experience of natural areas)	6	11

[a] Remaining 12 single factors of influence were each cited by less than six people (<10%): teachers, mentors, graduate courses or program, child or youth organizations, a negative change in childhood or adult area, concern for future generations, Kindergarten to Grade 12 courses, pets or animals, volunteer position, learning plant use, those unsure if there were any influences instrumental to them, sense of social justice, travel, opportunity, media, love of performing, heritage, photography, comfort in the outdoors, and life path.

Employment.

The most frequently mentioned single factor of influence was employment (39%). The employment experience of the respondents varied greatly. For a few, the influence was a result of employment not directly involved in environmental education:

> I began doing ecology based work in B.C. with fisheries and wildlife research, but felt that the information was very closed within the scientific community. This attracted me to the field of environmental education.

For others, the location in which they taught encouraged utilizing the outdoors for education:

> First six years of teaching in a rural community in Ontario - lots of field trips within walking distance.

> Having a great location to teach environmentally made a big difference.

There were respondents whose instrumental experience was a result of their teaching position. For example:

> Seeing a real lack in environmental education - projects seemed trite or more like arts and crafts than serous attempts at changing lifestyles/increasing awareness.

> I started with a will to get students/school involved in their city. We started with Earth Day celebrations - school wide. I think that the difference 'EE with kids' can do in a city is the major factor in developing my interest in EE.

A number of respondents had worked in the field of nature interpretation prior to or while teaching. Employment prior to teaching appeared to be one factor instrumental in developing dedication to environmental education. Others mentioned becoming involved in facilitating professional development workshops in environmental education.

For some respondents, the employment to which they referred was in a field related to environmental studies. This indicated a prior interest and concern for the environment. However, it remains that in developing their dedication to environmental education the respondents considered these experiences instrumental. The majority of those who mentioned employment as an instrumental factor were Kindergarten to Grade 12 teachers.

Principle, philosophy or belief.

The second most frequently mentioned single factor of influence instrumental in developing dedication to environmental education was a Principle, philosophy or belief (30%). Respondents mentioned beliefs in particular environmental principles or actions:

> The belief that students need to have a connection to real things to make the curriculum have value to them.
>
> The world is going to hell in a hand-cart; we are part of nature only, and ought to act as such in any way we can.
>
> A wish to keep the natural beauty of our province.

Respondents also mentioned a desire to share their knowledge, beliefs or enjoyment of the natural environment with others:

> Understanding how important my role is in helping the earth through teaching others - feeling empowered - able to empower.
>
> The challenge of helping people examine their habits and question their methods from a environmental preservation angle.
>
> Life long desire to share botanical and biological knowledge of the 'connectedness' of every person place and thing!
>
> Everyone I met needed to know about the cool life we have around here.

The following five single factors of influence were each mentioned by 20% of the respondents. The order in which they are presented is only reflective of the decreasing order of frequency of mention of the groups of factors in which they have been classified.

Family.

Experiences relating to family members were mentioned as factors instrumental in developing respondents' interest and dedication to the field of environmental education. In general these experiences connected natural areas with one or more family member:

> Spending time connecting with my father during camping trips in wilderness areas.

> Family members who enjoyed being in the outdoors - fishing, berry-picking.

> Many experiences in nature supported by parents who camped and encouraged explorations.

Family related experiences included references to lifestyle as well:

> My parents' love and appreciation of the natural world, and their very matter-of-fact lifestyle: preservation, conservation, recycling.

One respondent mentioned her father's travels and discussions about those travels as instrumental, instilling a personal desire to travel.

Students and/or children not one's own.

The influences of one's students and other people's children were as instrumental as family members. Respondents were divided between having a desire to share their knowledge with children, and feeling a need to educate children with regards to the environment. Examples of such instrumental factors are:

> Enjoyment benefited from sharing knowledge with children.

> My desire to have students make reasonably informed decisions - based on more than one viewpoint (brainwashing).

> Having conversations with young people and realizing their overall ignorance about environmental resource issues in the province.

One respondent considered the students themselves to have been the influencing factor:

> Student concerns about car pollution, cutting down the forest.

One respondent mentioned the enthusiasm and understanding of his students as an instrumental factor in his interest in environmental education:

> Watching students 'turn on' and caring.

Adult, or unspecified age, experiences in natural areas.

The factors of influence included in this category mentioned experiences in the outdoors or nature as adults or at an unspecified age. In the responses without mention of age, it was not possible to know if any of these activities were enjoyed as a child or youth. The activities mentioned by these individuals included hiking, kayaking, boating, skiing, fly-fishing, camping, and backpacking,

> My experiences in the outdoors (hiking, kayaking etc.).

> Young adult experiences backpacking into remote areas of SE BC [Southeastern British Columbia].

> Personal hiking and camping experiences.

Emotional response to natural areas.

Many respondents described an emotional response to natural areas, wildlife, or nature in general as having been influential to them. The phrases generally included the words "love", "enjoy" or "enjoyment". These factors of influence all show heartfelt feelings for the natural environment and were all

mentioned by women:

> First a deep, long lasting love of the natural beauty around me.

> My love of the outdoors. I have a small place in a forest by the ocean. I have always loved the outdoors here and in other countries where I've traveled.

> My love for the ocean. I grew up around it and when I took up scuba diving was fascinated at the fabulous life I didn't know existed! I never looked back from there.

College or university undergraduate courses.

The final single factor of influence mentioned by 20% of the respondents was college and university undergraduate courses and programs. Respondents cited courses and programs such as marine biology, forestry, science, ecology, biology, environmental studies, natural resource management, and Native and cross-cultural studies as being influential:

> Ecology was a concentration during my undergrad work.

> University courses (Env. Studies and Biology) developed an understanding of issues and environmental problems we face.

Other influences were more general:

> learning about systems and how easy it is to disrupt them.

> learning about environmental issues.

Professional development.

Professional development courses were mentioned by 16% of the respondents as being influential to their dedication to, and interest in, environmental education. In the nine mentions of professional development,

several respondents consider specific environmental education programs to have been influential to them:

> Marine Biology for Teachers course at Bamfield Marine Station.
>
> SEEDS [Society, Energy, Environment, and Development Studies] program.
>
> The school's involvement with SEP [Salmonid Enhancement Program] and their community advisors.

One respondent considered professional development to have been the most influential factor in his dedication:

> While I have degrees in Science, it was exposure to experiential education through a Project Wild workshop that made the biggest difference in my dedication.

Friends, colleagues and other individuals.

14% of single factors of influence included mention of friends, work colleagues, environmental education leaders and other individuals who were instrumental in developing respondents' interest and dedication to environmental education. Examples of such influential factors are:

> Meeting a unique nature lover in my early teens.
>
> An opportunity, as a teen, to spend time with an interpreter in a provincial park (which led to subsequent job choices).
>
> A variety of District 'Leaders' (i.e. Educators who organize the Salmonid Prog., Streamkeepers etc.) were also influential in steering me towards environmental ed.

Habitat or environmental degradation.

Factors of influence mentioning concern and awareness of habitat or environmental degradation were included in this category. Some citations were quite general:

> My concern for environmental degradation.

Other respondents were very specific in their awareness and concern:

> We had to save a bat colony, so we learned about bats and built bat houses.

> Going on a trip to Bamfield and seeing the massive clearcuts and feeling the hurt of the land.

These types of influences were mentioned by 14% of the respondents.

Home on farm or in rural area.

There were a number of respondents (13%) who mentioned where they grew up, or lived as an adult as influential:

> Growing up on a small farm with a small garden, orchard and many animals.

> Growing up in a rural setting where we were taught to conserve and protect.

> Living and teaching up North on reserves, the outdoors and nature was our entertainment.

Pollution, resource use/abuse, residential development, litter.

Sources of experiences of negative environmental impact in the natural world, other than negative changes to a familiar area, or habitat degradation, were categorized together. 13% of respondents mentioned this single factor of

influence. Some respondents referred to pollution generally:

> Knowledge that - the planet is getting more crowded and polluted and we are using more and more resources.

Others related specifically to resource use and/or abuse or residential development:

> Encroachment of logging camps; mismanagement and imbalance - Resources; near extinction of certain sea foods (abalone); increased, unregulated sports fishery.

> The disgusting sight of once-beautiful treed hillsides now covered with gigantic ostentatious houses with postage stamp yards (3 cars - 2 people).

One respondent expressed a great deal of emotion in connection with resource use:

> The sure knowledge that if we don't switch NOW to ethanol and hydrogen, we are totally dammed and so is the rest of the planet. GODDAMN the internal combustion engine!

Childhood or youth experiences in nature.

Childhood experiences in the outdoors or natural world were mentioned by 11% of respondents in their citations. There were several mentions of experiences "growing up" in a wilderness environment and camping:

> Growing up in a wilderness environment (1st five years and then all summers) on a lake in Northern Ontario.

> Growing up camping during the summer and attending park programs.

Other experiences considered instrumental were:

> Playing outside as a kid (tree forts, parks, beach etc.).

Direct experiences with nature as a youth.

The remaining single factors of influence were each mentioned by less than six people. These factors included teachers (9%), mentors (9%), graduate courses or program (9%), child or youth organizations (9%), a negative change in a familiar childhood or adult area (5%), concern for future generations (5%), Kindergarten to Grade 12 courses or schooling (5%), pets or animals (5%), a volunteer position (4%), learning plant use (4%). There were also two respondents who were unsure of what experiences had influenced their dedication to environmental education, or even if there had been such influences. However, in both cases, the respondent did in fact also mention experiences that were instrumental. This is perhaps indicative of the respondent's first reaction to examining his or her life for influencing factors, then a later reconsideration. The final single factors of influence were only mentioned by one person (2%); a sense of social justice, travel, the opportunity for environmental education, media, a love of performing, personal heritage, an interest in photography, being comfortable in the outdoors, and life path direction. The following are examples of these infrequently mentioned factors of influence:

Love of performing, desire to use communication skills.

My aboriginal heritage.

An interest in photography made me look carefully at nature.

Feeling comfortable being and teaching out-of-doors.

Mentors guiding and encouraging me.

In summary, the findings from the questionnaire autobiographical statements show the most frequently mentioned influential group of factors was People, with Experiences of natural areas being mentioned nearly as frequently. Other group factors of influence mentioned by more than a third of the

respondents were Vocational, Educational, and Societal influences. The only single factor of influence mentioned by more than a third of the questionnaire respondents was the influence of employment. The second most frequently mentioned single factor of influence, a principle, philosophy or belief, was mentioned by 30% of the respondents. All other single factors of influence were mentioned by fewer than 20% of the questionnaire respondents. The findings from the questionnaire analysis are discussed and related to the literature in Chapter 6.

The following chapter presents the results of the analysis and case study reports from the interviews of outstanding British Columbia environmental educators.

Chapter 5: Analysis of Interviews of Outstanding Environmental Educators

Ten outstanding environmental educators were interviewed for this part of the current study. There were other educators nominated as subjects for this study, all considered outstanding by the nominating committee. Perhaps it should be considered fortunate that leaders in the field of environmental education recognized so many educators for their work in environmental education.

The interviewed educators are inspirational teachers. They are people with prolonged, continuous involvement in environmental education. These educators have developed ways to involve their students in action environmental education without being frontline protestors. They teach action skills and strategies and have involved their students in non-controversial, positive environmental action, providing the opportunity to be a part of the solution to environmental problems. The ten teachers selected for this study exemplify environmental educators who are classroom teachers in British Columbia (BC) working in innovative, student-involved programs. Their students get out into the natural world and are actively involved in its conservation.

Pseudonyms have been used in order to protect the identity of the educators and individuals and places mentioned during the interviews.

Sample Description

Eight men and two women were interviewed for the current study. Both women and six of the men were over the age of fifty years (Table 4). The other two men were between thirty and fifty years of age. All of the educators were classroom teachers.

Table 4: Interviewed Environmental Educators according to age and gender.

Age group	30 - 50 years	over 50 years	*Total*
Male	2	6	*8*
Female	0	2	2
Total	2	*8*	

The interviewed educators had all been involved in school based environmental education for more than five years. All of the interviewees had been teaching for more than 10 years; three for between 15 and 25 years, and six for more than 25 years. One teacher worked with primary (Kindergarten -Grade 3) students, and two others worked with Kindergarten to Grade 7 students due to the nature of their position (teacher librarian) or the nature of the program (a primary teacher who ran a program at lunchtime and extracurricularly). One teacher taught in a middle school, but also ran a program for Grade 8 – 12 students. This educator was on a sabbatical year at the time of the interview; he returned to his intermediate level classroom the following year. Three teachers worked with intermediate (Grade 4 –7) students and three teachers worked with high school students (Grade 8 – 12) in their programs (Table 5).

Table 5: Gender and teaching level of interviewed outstanding environmental educators.

	Primary (K – Gr. 3)	Intermediate (Gr. 4 – 7)	Secondary (Gr. 8 – 12)
Male		5[a]	3
Female	2		

[a] one Elementary teacher-librarian worked with students Grades 1-7

The geographical distribution and teaching level of the interviewed educators is shown in Table 6. The educators taught in three regions of British Columbia; the Lower Mainland (the area of the Fraser River delta and the North

Shore Mountains), the Interior (the southern region, east of the Coast Mountains and west of the Rocky Mountains), and southern Vancouver Island.

Table 6: Teaching level and geographic region of interviewed outstanding environmental educators.

	Primary (K – Gr. 3)	Intermediate (Gr. 4 – 7)	Secondary (Gr. 8 – 12)
Lower Mainland		1	1
Interior	1	2[a]	1
Vancouver Island	1	2	1

[a]one Elementary teacher-librarian worked with students Grades 1-7.

The interviewed educators were a group of personally environmentally proactive citizens. All were involved in outdoor recreation, read about environmental issues and attended professional development in environmental education. All but one of the educators indicated they lived an environmentally friendly lifestyle involving activities such as making a conscious effort to buy environmentally friendly products. One educator considered himself not living as environmentally friendly a lifestyle as possible because he drove a small truck. There was a high personal involvement in recycling activities (90%), practical conservation (80%), curriculum development in environmental education (80%), and in providing workshops in environmental education (80%). Eight of the interviewees were members of organizations actively involved in environmental matters such as the Western Canada Wilderness Committee, the Sierra Club, and Greenpeace. Only two of the educators interviewed were not members of any professional environmental organization. As was found with the questionnaire respondents, participation in more public pro-environmental activities was less than in other types of activism. Just over half of the educators attended public meetings (60%), whereas less than half wrote articles (40%), participated in letter

writing campaigns (30%), or were involved in community outreach programs (30%).

The interviewed environmental educators were involved in many school-based positive environmental actions. These are described in the case study reports and later in this chapter.

Case Study Reports of Ten Outstanding Environmental Educators

The case study reports that follow are descriptions of ten outstanding environmental educators in British Columbia. The descriptions are based on responses to interview questions, demographic and environmental activity data, and autobiographical statements provide by the educators. Leaders in the field of environmental educators nominated these environmental educators as outstanding. The following is a segment from one of the nominations (pseudonyms have been used):

> For the past 12 years Chris has revealed himself as an exemplary environmental educator.... Chris put Apple School in the forefront of the movement known as "Greening the School Grounds" when in 1989 he worked with [two organizations] to enhance habitat and all their students and staff were involved in hedgerow plantings around part of the parameter of the school yard. Students completed trails, developed a pond, planted native species and fulfilled the requirements to become a Green School and during 1999, a Jade School.

These educators had not only developed and facilitated environmental education programs, but they were also active as coordinators and facilitators of programs for other teachers at other schools. Two of the educators continue as instructors in a summer environmental education course for pre-service and inservice

teachers and at least four of the educators have received awards for their contributions to environmental education.

These are amazing, motivated and inspirational educators. When Corcoran (1999) provided narratives as well as quantitative data about his subjects he gave the following reason:

> To know our subjects is to know much more than the numbers emanating from their autobiographical statements; the stories themselves are so rich, varied, and profoundly felt that they bear sharing with others. (p. 207)

The information about the educators interviewed for the present study is provided in case study format for the same reason; their stories bear telling as more than scattered phrases.

* * * * * * * *

Pamela (Primary Teacher)

Pamela is a primary teacher over 50 years old who has been teaching for 19 years. She made a conscious commitment to environmental concern before she was 18 years old. Her active involvement in environmental education began when she was between 26 and 40 years of age.

Pamela's childhood was spent in a rural environment, with the summer months either at a lakeshore or in the bush with her father at his mining/prospecting claims. Her early years were spent living in a village on a lake, playing with her sister and brothers on a high sandy hill above their old frame house. Smells of sage, wild onion, cottonwood and ponderosa pine permeate her memories of that time. At the age of five, she moved with her family to a little farm with an orchard in a valley. She describes growing up as a "... free range ..." kid; catching frogs and hiking with her sister and a friend. She recalls spending hours and hours over on a hill, in the mud and in the sandy bank, digging and telling stories. These activities she describes as a kind of sociodramatic play. They would wander over to the lake and spend hours in the lake, just "puddling" and nibbling on wild onion, "... all my experiences were outdoor experiences that I remember". Pamela had her own garden as a child, as well as working in the orchard and raising goats, pigs, chickens and rabbits. They always had pets as well, dogs and cats.

According to Pamela, environmental concern is something that is in your blood; you sort of develop a social conscience in spite of yourself. As children, she believes we are probably selfish, but as we grow older there are things that bother us. She thinks this may be what developed into her concern for the environment. Pamela spent her childhood questioning and wanting to fix things, to make things right. She believes this is a consequence of social concerns at home. Pamela felt a very strong draw to growing things, to dig, to act, and to literature. She found solace in looking after her garden. She speaks of having her fingers in the soil during the healing part of her life; moving plants, learning to make them grow, all healers of a distressed family situation. Her social perspective of the world was totally integrated with her environmental perspective. She was always a questioner, wondering, why does it have to be this

way. This led to wondering about solutions to big problems such as overpopulation. These elements, plus experience hiking and camping with Brownies and Guides and having some good high school science teachers, combined to generate her concern for the environment.

It seems that Pamela's concern for the environment and her social perspective were established long before she considered teaching as a profession. During times of distressed family situations and times when she needed healing, she found solace in working in the soil. She was in her teens in the sixties. Her university years were during the time of the assassinations of President Kennedy and Martin Luther King, the Cuban Crisis, and the Vietnam War. These were formative years for her. Young adults were feeling very, very pessimistic about the social processes in the world, feeling that the world was, "... going to hell in a handbasket ...". During university Pamela was involved in grassroots movements such as an environmental teach-in when people from around the world came to teach for a weekend. Her role was to organize the music for the weekend, the sharing of environmental songs about how the world will end and how to keep that from happening. She felt they could not get away from the civil rights, environmental and war issues because they are all interrelated. As young adults Pamela and her peers were looking at what they could do to make a difference.

Pamela describes five influences of particular significance in determining her life direction; the environment in which she grew up, her family situation, her desire to seek out interesting people, the premature death of her soul mate, and her subsequent employment as his replacement teaching kindergarten. Although some people appear to have life by the reins, resulting in their lives following a certain direction, Pamela considers her life to have happened by accident. Her life direction seems to have resulted from a series of horrible and wonderful accidents.

Her situation while growing up was both a wonderful and a horrible accident. The wonderful accident was the environment in which she was born and grew up, right by a lake and then on a farm near another lake. These settings provided her early experiences in the outdoors and contributed to her concern for the environment. However, as a child she was also influenced by her father's

mental illness and learning to deal with that situation with support from both her parents. The outdoors and her garden helped provide healing.

As a university student in the seventies, Pamela actively sought out interesting people; connecting with war resistors, international students and others whose experiences were very different from her own. She met her husband, a social activist and war resistor, at that time.

After the birth of their child, Pamela found that practical matters came to the fore and she focused on balancing their lives when her husband returned to university. Pamela began taking the children at her child's daycare out for walks and to lie in fields watching birds. She was fascinated by how incredible the young human organism is, and how open children are to nature. Her husband's death from leukemia while their child was still young had a profound effect on Pamela's life. It felt to Pamela that she was carrying on his life for their child, consequently she felt a need to be more that just herself. She felt, "...some kind of responsibility to carry on his moral obligation as well, or his intensity into my life somehow ...".

As a young single mother with a young child, she needed to find employment. Pamela eventually took over teaching her husband's kindergarten class. Pamela and her husband had both felt the kindergarten program was designed along children's needs and provided curricular freedom. Pamela needed a profession in order to raise their child alone, so she taught half time and farmed half time. A teaching position was not something she would have considered prior to that time. She had felt she was much too impatient to be a teacher. After completing her degree in science and literature, Pamela had experienced a rather poor teaching internship, which had dissuaded her from entering the profession. The period after her husband's death was a significant time of growth for Pamela as she learned about emotional healing.

Pamela has never considered herself a trained environmental educator, but believes that real education has to be environmental education. The combination of her experience with gardening and healing through growing plants and working with soil, and her desire to teach with a degree of curricular freedom have resulted in her becoming an environmental educator. "As an environmental educator, how do you separate what you're learning in life from

what you're doing in life?". For instance, Pamela believes environmental education cannot be separate from learning about grieving, because children are going to learn about life and death when they bring organisms into the classroom. Pamela feels those lessons will help them with their big issues, the social issues that come into environmental education and make teaching meaningful.

Pamela's environmental education program is an attempt to make a place for children to study nature on the school ground with native plants around them. It is also making a place for them to play amongst native plants. She found that her students rarely went on hikes in natural areas despite their proximity on the edge of town. Prior to the environmental education program that she has been most recently involved in, Pamela helped organize tree planting on other school grounds. She organized the planting of trees at the school she was at for her internship, but this was not an ongoing program. She then organized the planting of trees at the elementary school her child was attending. Her most recent planting program began when teachers noticed trees on this other school ground and wanted the same for their school. Pamela agreed to organize the project with staff and student support. The project was student based. In partners, the students planted about 250 trees into ten areas on the school ground. The planting and care of the trees has continued since 1989. The students who were in Grade 1 when the program began then helped with the care of the trees and were leaders for the other students. Every Earth Day and each fall they planted trees. The students also did the mulching around the trees to retain moisture. The students who were involved in helping with the trees formed a biology club, calling themselves EcoKids. Once a week at the school assembly, Grade 6 volunteer leaders of the biology club announced the activities for noon hour that day. Sometimes they mulched or watered the plantings, other times they planted new plants or studied insects or made fake fossils. Pamela wanted the students to have hands-on learning, to see what happened if they broke sticks off the willows, and to have the opportunity to create little pretend campfires and make up stories.

The projects that Pamela has been involved in, plantings on school grounds, provide students with an opportunity to interact with nature on a

regular basis. It is helping students to be aware of their native environment by bringing bits of nature onto their school ground.

There are several reasons why Pamela involves her students in greening their school ground environments. Firstly, she wants to do things that are developmentally appropriate for her students, Grade 1s. Her feeling is that if you only follow the curriculum with the goal of getting it completed, you are accomplishing only superficial objectives, but not necessarily meeting the needs of the students. She believes what is best for kids is for them to be learning about their place in a real world, thus subjects taught out of context are meaningless. Students need to be able to integrate what they learn into the real world. It is a way of a looking at humans as part of the ecosystem and how we can enhance that ecosystem so that our ecological footprint is not going to destroy other organisms' ecological footprints. Finally, growing and caring for plants and trees may be at the core of what she wants to do with students because that is what helped her to heal and deal with life.

Initially Pamela became a teacher out of necessity, however, now she works as a classroom environmental educator because she really wants to fight to make children's lives meaningful and connected to reality. She is concerned what will be here for children in the next fifty, sixty or a hundred years. Her hope is that our schools will not become completely barren and out of touch with nature. If she could accomplish that outside the teaching realm, then she would do it there as well. However, she thinks that probably there is more effectiveness in being in the classroom.

Pamela feels that her contribution to school-based environmental education is very intangible, like the light in a child's eye when he or she understands something through experience. However, there is also the tangible contribution of the school ground plantings. There are now twelve clusters of trees and plants in the schoolyard where students can study nature and play. Pamela has observed students develop leadership skills through the school ground plantings project. Some of her students have gone on to environmental education programs in secondary school, and students have moved from there on to bigger environmental lives.

Pamela considers there to be three main barriers to teaching environmental education in the classroom. Firstly, teachers are highly socialized individuals who fear negative judgments. Thus, embarking on new programs can be a great risk. Secondly, people whose societal preferences are a result of the school ground environment they remember from their school years, make decisions about the structure of school grounds. From her own graduate studies research, Pamela discovered that boys generally prefer concrete in school grounds for the playing of sports. Many of the administrators at the district level are men. Finally, Pamela believes that teachers are so busy with their day to day work, that they do not have time to think or communicate effectively. As a result, there are difficulties and misunderstandings with other members of the school community, such as maintenance workers, who may not share the teacher's vision.

Pamela considered her willingness to take risks, having the time, a supportive husband, and being persistent as the reasons she was able to overcome the barriers to environmental education in the classroom. In her view, if you want to do anything unusual in education, you have to be willing to do what you think might be the right thing and not be concerned about losing your job as a result. In addition to this belief, Pamela felt she was fortunate to be working half time, until a few years ago, and to have a supportive husband. She considered herself to have had a different quest from a lot of teachers, at least initially. In her words, "... the ... secrets of success are persistence, persistence and persistence, and risk-taking ...".

* * * * * * * *

<u>Helen (Primary Teacher)</u>

Helen is over fifty years old and teaches primary school. Currently she is teaching Grade 3, but she has taught other primary grades, as well as science methods at the university level. She has twenty-five years of teaching experience. She spent her childhood in a suburban environment, with summers

in a rural setting. Helen became actively involved in school-based environmental education after she was forty years old.

Helen grew up in a suburban neighbourhood; she does not consider herself a city kid at all because she spent a lot of time outdoors. She lived an unfettered existence, playing at the beach and in swampy areas, revisiting the same places time after time. Visits to her relatives' farms on the prairies and on Dawn Island contributed to her rural experiences. She often spent summers on a rustic farm on Dawn Island with no other children around. Consequently, she spent time connecting with the animals and plants and she saw changes in these over time.

As Helen returned to the same seashore and rural areas, familiarity bred a love and respect for those places. Her concern for the environment grew from seeing these places change in ways she felt made them less special and wild. For example in areas where she had camped or hiked as an older teenager or young adult, she would notice garbage and plant damage from other users. Helen also noticed fewer fish and animals in these places. This caused her concern because the fish and animal life were the reasons why she had enjoyed and respected those areas initially. At that time, environmental groups such as Greenpeace were becoming more known and Helen began to understand that she was seeing first hand the sorts of changes these groups were trying to bring to the public's attention. These connections with the natural environment were also influenced by her interest in science, particularly the biological sciences, as a student in elementary and high school.

There were two particularly significant influences in Helen's evolution into an environmental educator. Firstly, after teaching for about ten years, she left the school system to raise a family. Upon returning to teaching, she found that students were not aware of what was going on around them in the natural world. They were moving away from the connections she felt were important in order to love and respect their local ecosystems. Secondly, her interest in sciences led her to pursue a Master's degree in science education. Two of the electives she attended were environmental education courses. These courses reaffirmed the type of teaching she had been doing up until then and gave her the opportunity to investigate why she was teaching awareness of the environment.

Helen's thesis research was based around student's attitudes, knowledge and stances towards environmental issues. At this time she also reread Silent Spring by Rachel Carson and read Sand County Almanac by Aldo Leopold. These books and her thesis research gave her a feeling of urgency and a more explicit focus for her teaching. She now had an underlying consciousness of why she was teaching about environmental connections and she was able to choose activities to meet that end.

The main focus of Helen's environmental education program is to begin where her students are at in terms of their environmental awareness and their concept of the connectedness of living things, and to broaden their understanding of those connections to local, regional and international ecosystems. Using her own experiences of developing a sense of place as a guide, Helen and her students visit local areas repeatedly through the school year. They return to these places in order to see the changes which occur to the plants and animals. She wants her students to hook on to something in their own experience, and then build on that to the wider perspective. They look at how people and their impact fit into these wild places. Incorporated into this program is the Salmonid Enhancement program. Salmon eggs are incubated in the classroom, then the salmon fry are released into the local stream. Helen has been a coordinator for the Salmonid Enhancement Program for about ten years.

For the past three or four years, Helen and her students have also been involved in a local Watershed Stewardship Program. They complete activities throughout the year, and attend a culminating activity at the end of the school year. The program shows students the human impacts on local watersheds and gives them an opportunity to be out in a watershed doing activities such as investigating stream quality. Helen supplements the Watershed program with trips to local natural areas where she and her students discuss what they see. It is her hope that when students return to those areas on their own, they will think about the connections between living things.

Helen's students are involved in action based environmental education through the Salmonid Enhancement Program, as well as through animal adoption programs. The students raise money for the adoption of local endangered species. For example, they have raised money to adopt a Vancouver

Island Marmot. Helen considers it important for students to be aware of local species that are in danger, not just well publicized endangered species in the world.

Helen believes programs such as the salmon egg incubation, and adoption programs make students aware of the living things in their environment and the impact they can have on those organisms. Meaningful experiences and the meaningful connections they inspire are a kind of seed that Helen plants in her students. She has always been a proponent of hands-on teaching and of the modeling aspect of teaching. She considers experience necessary for understanding for any child, but particularly for small children. Children's curiosity and questions come from real life experience. In her teaching, Helen considers a knowledge base very important, but she feels it is hands-on experiences that children remember for the rest of their lives. This belief is reinforced by visits from former students who talk about the salmon enhancement program and mention noticing the salmon in the local stream.

First and foremost, Helen sees herself as a teacher. For that reason, she has not considered teaching environmental education outside of the school system. Also, she does not see herself as an expert in the field of environmental education; she feels one need be an expert to work as a consultant. Her main focus is the children she teaches. She is currently working as a teaching administrator and found even the decision to be in an administrative position was difficult. Working directly with her students gives Helen the opportunity to see the fruits of her labours. She is working at the grassroots level, which she really enjoys.

It is her ability to teach children to learn about and love wild places that she considers her most significant contribution to school-based environmental education. It is her belief that you cannot love what you do not know, therefore she teaches her students about their local ecosystems. It is her hope that as her students grow up and become the decision makers in our world, they will remember the connections between all life on earth and their impact on so many living and non-living parts of this earth.

Helen finds teaching environmental education difficult given the constraints of teaching the whole curriculum and the timetables associated with

being an elementary school teacher. However, by doing integrated studies, she is able to teach the curriculum within themes such as the environment. Another barrier to teaching environmental education in the classroom can be the cost of taking students to natural areas. Helen feels fortunate she has taught in schools where natural areas are within walking distance. This gives her the freedom to go to these places with her students on a regular basis. There is much, however, that a teacher can do within the school community, such as the salmon enhancement program, and taking students to local park areas. Although it takes a bit of work and effort, if you strongly believe in what you are doing, Helen feels it is not work and effort to teach environmental education. She also finds teachers tend to work in isolation so it is difficult to get a universal focus with your teaching. She had hoped to organize workshops with friends with similar interests, but it just has not happened. However, it is her strong belief that if you want to teach environmental education badly enough, you will find a way to do it. It may not be as refined or to the extent that you wanted it to happen, but if you are at least doing part of it and working to find ways to meet your objectives, then you are overcoming barriers.

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John (Primary/Intermediate Teacher-Librarian)

John is a teacher-librarian in an elementary school. He is over 50 years old and has been teaching for 26 years. John made a conscious commitment to environmental concern between the ages of 19 and 26 years. His active involvement in school-based environmental education began when he was between 26 and 40 years old. John grew up in towns and small cities, with easy access to the natural environment.

John spent much of his childhood outdoors, hiking in the hills and mountains near the towns he lived in. John feels he grew up in a semi rural environment because his family lived in towns and small cities. He recalls weekends swimming in an irrigation canal near a city they lived in.

As a young boy, John did a lot of hunting with his father. He also went fishing and camping with his family. He considers that both his parents were concerned for the environment. As teachers, they perhaps had a gentler ethic than if they had industrial backgrounds. He was involved in Cubs and Scouts and camped with those groups as well. John noticed when the places where he and his father had gone hunting disappeared, and the numbers of fish and songbirds declined. Perhaps because he lived in small towns, John noticed changes such as development and paving of natural areas. These experiences contributed to his concern for the environment. As he grew older, mentors such as a university professor, helped him keep going with his environmental education activities.

Becoming a teacher was not John's original intent when he entered university. In fact, he kept avoiding entering teaching because he came from a family of teachers. However, after moving from faculty to faculty, he eventually entered the Faculty of Education and became a teacher. John has always felt it important to get his students outside. This results from his memories of studying biology and zoology from specimens preserved in formaldehyde. He does not believe in studying something from a book if you can go and see, touch and experience it.

After teaching for five years, John began work on his Masters degree in environmental education. He was fortunate to be able to attend a program based out of a town near to where he was living. John became more involved in environmental education when he became involved in the Salmonid Enhancement Program.

Information about the Salmonid Enhancement program had been included in teaching publications John received. However, the projects all seemed to be at the west coast, so he contacted the federal department of fisheries to make inquiries. Soon John and his class were raising salmon. One July, shortly after the end of school, the creek where the salmon had been released was dry and the salmon fry were trapped in small pools. John organized a group to capture the salmon and move them downstream to more water. This experience emphasized to John the importance of habitat to the well-being of species. He felt that you could not just raise salmon then release them into degraded habitat, so he began

working on riparian replanting. This was the beginning of John's interest in having a more ecological focus. Now his environmental education programs are focused on trying to have a complete, healthy ecosystem.

Initially, John's environmental education programs were mostly about camping with his students. He was a science specialist in the school, and he gave his classes an environmental theme. The salmon enhancement program and tree planting are activities John was involved in with his classes. As a teacher-librarian, John no longer has his own class, however, he maintains an environmental theme through the work he does with classes using the library. John works closely with teachers at the school on riparian replanting with their classes and classes from the local high school. This includes teaming up younger and older students. John does the organization, gets the plants and has the tools necessary for the planting. This expertise in planting resulted from help from a friend who is a research scientist. Other schools call John to help with their environmental projects. John is also involved in a student exchange program with a Japanese salmon association. Every two years 20 Japanese students join 20 students from his local area to work on tree planting.

A number of years ago, John was on leave from teaching while he developed a water stewardship program. This program required John to travel and do activities, such as planting, with schools in the area. Currently the school where John works has ongoing projects in recycling and composting. They are also involved in planting on the school grounds. The salmon theme continues each year, with the aquarium in the library. John is finding that in his teaching, he is starting to get into themes about global warming and global climate change. He finds that students do not understand that people are part of the ecosystem and that, unlike other animals; we should be smart enough to replant and clean up after ourselves. These are the areas he now emphasizes in his teaching.

Another aspect of John's work in environmental education is his involvement as an instructor in a summer environmental education program for teachers and student teachers. This university affiliated intensive summer course instructs the teachers and student teachers in the use of such programs as Water Stewardship, StreamKeepers and Project Wild, as well as looking at ways to get their students outside and doing environmental action.

John believes in an awareness, knowledge, and action sequence for environmental education. He does not believe in taking action with his students without the other two parts of the sequence, "... without awareness you can't and without the knowledge you probably shouldn't ...". This sequence is apparent in the Salmonid Enhancement program John teaches. John begins by teaching the salmon life cycle and looking at the requirements of the salmon. He and the class then discuss some of the ways the water might be degraded, such as cattle defoliating stream banks. This leads to the student action of replanting the stream banks. John is also assisting a class with an energy awareness program involving audits of school energy and water use. These baseline data are used to help the school determine where energy and water use can be cut, leading to a lifestyle campaign to bring about these changes. This program is organized through a non-governmental environmental organization.

Environmental education activism with students will hopefully result in an environmental ethic in future adults. This is one of the reasons why John believes in environmental activism with students. He also feels that one of the better ways to educate parents is through their children. Sometimes parents attend field trips and learn along with their children; sometimes children go home and teach their parents by nagging them about recycling and energy conservation after learning about it at school.

It is John's belief that public education in the schools is where environmental education has to happen. Personal financial security is another reason he teaches environmental education in a classroom as opposed to through a non-institutional environmental education organization. He does not enjoy writing proposals and he feels that environmental education must be ongoing, not a one-shot thing as it is with some programs. This can be achieved through a holistic well-rounded program in a school, which allows long-term ethic development.

John considers his most significant contribution to environmental education to be the water stewardship program and manual that he created during his leave from teaching. The program takes a holistic ecological view rather than emphasizing single species enhancement. He also feels that working with students in the summer environmental education course for teachers is very

worthwhile. By working with about 50 teachers each year, each with about 30 students the following fall, John and the other instructors have quite an impact on furthering environmental education in classrooms.

It is John's opinion that most barriers to teaching environmental education in the classroom are a result of mental barriers, perhaps more imaginary than real. He does consider that lack of money might be a barrier to some teachers, as they might not be able to go on field trips as often as they would wish. This barrier can be overcome, however, because many schools have a creek within walking distance. John has learned that he must be careful about biases when teaching environmental education. In his classes, he knows there will be children whose parents are involved in many different professions, thus it is important that everybody in the class feel comfortable with what they are doing. He does not consider himself to be valueless, but he tries to give a balanced view of issues by looking at the science rather than the emotional baggage that goes along with some environmental issues.

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Owen (Intermediate Teacher)

Owen is an intermediate teacher between 30 and 50 years old. Before the age of 18 years, Owen had made a commitment to environmental concern. He has been teaching for fourteen years, with his involvement in active school based environmental education beginning between the ages of 26 and 40.

Owen grew up on the edge of an urban area, surrounded by different types of natural environments. The local forest, swamp and rock outcroppings were his playground. He was allowed to play freely in these natural environments for long periods of time. He recalls his mother packing him a lunch before he headed off for the day. Although there were a fair number of houses in his neighbourhood, there was also a large undeveloped area for exploration. Owen and a friend explored that area together. By the time Owen grew older and left the neighbourhood, the area had been developed with houses.

Owen does not consider there to have been a single significant event that was important in terms of his life direction. He considers there to have been many such events forming a lifelong pattern. Near the end of Owen's elementary school years, the area in which he explored began to be developed. Owen vividly recalls how outraged he and his friends were when the developers tried to drain their swamp. He remembers plugging the drainage system, over and over. Another stage of the development involved leaving debris from bulldozing the area to burn over a weekend. Owen and a friend decided this was terrible, as the whole forest could burn down, so they attempted to douse the fires with small buckets of water. A somewhat painful experience for Owen, as it resulted in a trip to the hospital with burnt feet. Although he does not recall this as a key event, his family looks back on his childhood and considers it as no surprise that he is now an environmental educator.

The era of Jacques Cousteau was a significant time for Owen. Jacques Cousteau was a hero to him; someone to follow and emulate. Owen became a scuba diver and even had his mother knit him a toque, to emulate Mr. Cousteau. He and a friend told their teachers that one day it would be their undersea world, not the world of Jacques Cousteau!

Owen recalls high school urban and human geography classes that focused on environmental type issues and the role people had to take in those issues. Those courses, as well as a university environmental geography course, had a big impact on him. Owen grew up at a time when young people felt they could change things, there seemed to be unlimited opportunity.

As a young adult, Owen was not actively involved in environmental pursuits, although he still appreciated wildlife and wild settings. He attended university with the intent of becoming a marine biologist, but he was "...put off..." by the whole university biology experience. He felt his connection to the environment was more spiritual and experiential than scientific, so he headed to the west coast for a vacation. The west coast intrigued Owen with its wildness and abundant wildlife. His scuba diving experience helped him to get a job working for a local marine business where he did a lot of diving and maintained facilities for marine mammals. Subsequently he built and lived on a sailboat on the northwest coast, living very closely to nature. Owen also spent some time

working in commercial fishing and logging, both of which kept him closely connected to the environment.

What headed Owen towards teaching was having a son. He became reconnected with children through his son's preschool. As a high school student Owen had worked with younger students through theatre and drama, but had never considered teaching as a profession. Owen's teaching concentration is special education. He did not enter the teaching profession to become an environmental educator, despite taking an environmental geography course. Owen wanted to be a teacher of children, and he felt a background in special education would make him a better teacher. Once he started to feel comfortable in the classroom he was able to bring his other interests into his teaching.

Owen looks at his involvement in environmental education as being a magical ride, where he was at the right place in the right time. He feels the recent past has been a very prolific time for the development of environmental education. With the support of school and district administrators, Owen built on his interest in environmental awareness through professional development. He became involved in professional development opportunities offered through the provincial Ministry of the Environment and the federal Department of Fisheries and Oceans. An expectation of these programs was that participants share their new knowledge with other teachers. Consequently, Owen became a facilitator for environmental education programs and has run teacher inservices for many years. As part of a project requirement for a professional development program, he and a colleague developed an environmental education program based on watershed stewardship and geography that linked teachers within a watershed. The program involves teacher inservice, classroom study, field trips and a culminating celebration. Each year the teacher inservice focuses on a different environmental education program, such as StreamKeepers, Water Stewardship, Project Wet, or AquaWild. Initially, Owen and his colleague were able to obtain community funding, so teachers were given equipment to use in their classrooms while teaching about watershed stewardship and geography. An example of the field trips offered, as part of the program, was a trip where students visited three or four different sites from the headwaters to the estuary of the watershed. For a year-end celebration the teachers and students from the watershed stewardship

program might set up displays in an arena, alongside community group displays, similar to a large science fair; stage a concert with an environmental theme; or create environmental displays for a shopping mall. Some of the students involved in the watershed stewardship program while in elementary school are now in high school and giving watershed stewardship workshops to elementary students or helping with field trips.

Owen is also involved in environmental education within the school where he teaches. His class takes part in the watershed stewardship program as well as other environmental education activities. The school community was very fortunate in being involved in the process of designing their new school, including discussions with a landscape architect. One feature of the school is a water system in which water from the roof and parking lot is collected and meanders through the school grounds to a pond for biological filtration prior to entering the local stream. Owen and his colleagues contributed ideas to help connect the school to the outdoor environment. The school now has a native plant garden that Owen and his students have been planting and caring for. A lack of funding resulted in the whole community being involved in the greening of the school grounds through the donation of trees and labour.

It is Owen's belief that environmental education must reach the level of action in order for students to learn about being part of the solution to environmental problems. He is, however, quite specific about the type of action he feels is appropriate for intermediate level students. Simple, direct action that leads to a solution, such as walking or biking to school to cut down on the use of vehicles, is the type of positive action Owen encourages in his students. He believes in immediate action, like planting on school grounds, that does not bring conflict. Owen feels his role, as a teacher, is to be aware of his community such that his teaching of environmental education does not alienate families.

Owen's classes participate in positive environmental activism because he considers activism to be the final part of a three-component environmental education scheme. Firstly students need an awareness and appreciation of the environment. Some of the ways this can be developed are through a field trip, spending time outdoors in the schoolyard, or even through paintings and music. The second component is the development of knowledge through learning about

ecological principles and complex ecological systems. This helps students to recognize there are problems with the environment. Owen cautions that this knowledge and recognition of issues must be approached carefully because students tend to see things as black or white. The third component, action, is necessary in order that students learn they can be part of the solution. It is unfair, in Owen's opinion, to tell students the world is falling apart, then leave them with nothing they can do about it. For this reason he involves his students in simple direct action which leads to a solution. This action includes raising salmon, planting, recycling, energy conservation, fund raising and other environmentally oriented activities.

Through his professional development with the Ministry of Environment, Owen gained skills that were marketable and needed by others. As a result, he has worked as an environmental education consultant. Now, Owen is at a crossroads, a point where he has had to pull back from some of the program facilitating he has been doing for other classes. When he began teaching environmental education, he had a lot of financial support, now he must work very hard to get the funding he needs to continue the watershed stewardship program. This has been taking a toll on his personal health, so Owen is planning a sabbatical year to return to university and hopefully get some new ideas for environmental education.

Owen's most enjoyable and meaningful environmental education moments have been when developing the awareness, knowledge and appreciation of the environment with small groups of students, such as his own classes. However, he considers his most significant contribution to school-based environmental education to be the leadership, support and encouragement he has provided to other teachers. By providing professional development for colleagues, as well as opportunities for class studies, field trips and Enviro Festivals through his environmental education program, Owen has made sure the message of environmental education goes to as wide an audience as possible; approximately 1000 people per year. As one of his mentors once suggested, Owen has had a ripple effect by reaching teachers, their students, those students' parents and their communities. He has also helped develop a life long environmental ethic for students participating in the watershed project.

According to Owen, it is the lack of leadership in environmental education within the educational system that is a huge barrier to teaching environmental education through the classroom. Owen considers the education system, at the level of the provincial government, does not recognize that to survive in the future, environmentally literate citizens will be required. As Owen sees it, professional development for teachers is based on the provincial curriculum and there is no provincially mandated independent learning strand for environmental education. Thus money and resources are not directed towards environmental education. This means that only individuals who are willing to make it happen take on environmental education. A further barrier to environmental education in the classroom is a lack of support from administrators.

Initially these barriers were not an issue for Owen because he had a budget to begin and run the watershed stewardship program, and he had a very supportive school and district administrators. Currently he finds it much more difficult to facilitate the water stewardship program because he must write grant proposals to get funding, and some administrators do not support the teachers who want their classes to partake. As well as a need for provincial leadership in environmental education, Owen also sees a need for a focus to promote the understanding in administrators of their role in environmental education.

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Nathan (Intermediate Teacher)

Nathan teaches Intermediate grade level students. He is over fifty years old and has been teaching for twenty-six years. His commitment to environmental concern was made between the ages of twenty-six and forty. He became actively involved in school-based environmental education during the same period of time. Nathan spent his childhood years in an urban environment.

Nathan's childhood was spent in an urban environment, but very close to beaches and an undeveloped bush area. He lived in a part of a large city where he could easily walk to the beach, and he spent a lot of time there as a child. As a child, Nathan's holidays were often spent traveling the waterways of the west

coast with his family in their converted fishing boat. They would go to secluded places and catch crab and fish from their boat. He remembers there being a lot of sea life around in those days, and they would eat lots of seafood. His family also did a fair amount of camping near and in the coastal mountains when he was a child.

Nathan's father studied and appreciated wild flora and fauna. He always seemed to be collecting things, such as snakes, that he would show to Nathan. Nathan considers the time he spent in Cubs and Scouts to have sparked his interest in camping and the outdoors. During high school, Nathan was not associated with nature much at all in terms of his mind set. What brought him back towards nature was meeting his wife. She introduced him to hiking and the outdoors. Together they began canoeing and joined university outdoor clubs and got involved in outdoor pursuits. Nathan attributes his interest in birds and birdwatching to his wife who had taken a course in ornithology. He focused mainly on birds when he was out in nature, and from there developed and interest in plants and plant identification. As university students, Nathan and his wife joined the local Natural History Society. They attended illustrated lectures and went on field trips with the Society.

There were several other people who influenced Nathan's interest in the environment and environmental education. After developing an interest in birds, he met a prominent British Columbia bird biologist who was an educator and curator of a bird collection museum. He found this biologist to be an awesome person. While teaching a university science course, Nathan met and worked with several environmental educators. He found that meeting that group of people and seeing what they had to offer in terms of environmental education was influential to him. Nathan did a teaching practicum at an outdoor school. He found the program there very worthwhile and influential on his teaching. These people and experiences led to his concern for the environment and his involvement in environmental education.

There were five influences or experiences that were particularly significant in terms of Nathan's life direction; meeting his wife, other environmental educators and a prominent bird biologist as well as a geography course at college and a teaching practicum at an outdoor school. These influences and experiences

were significant because they generally involved Nathan being outside and getting connected to his ecosystem. He enjoyed the hands-on action and education that had him connecting to his habitat. He always thought it important to work towards saving and improving what there was in the natural world. To this end he is personally involved in positive environmental action as well as the action he does with his students.

Ever since he began teaching Nathan has taken his students camping. This camping experience is now a four day Outdoor School trip for his grade fours and fives. Each day there are field studies taught by Nathan and other local experts, on subjects such as plant biology, edible plants, insects, birds and forests. As part of these studies, the students learn to identify birds and trees and they observe ant behaviour. There are charts, worksheets or questions to complete during each field study. They also have the opportunity to swim, fish and canoe while at Outdoor School. The students go on at least one hike, as well as, sensory awareness walks. They learn about compass bearings and orienteering. While at the Outdoor School, students learn about the importance of keeping the ecosystem together and the links within that system. This includes learning about such things as water quality.

Each year Nathan teaches a unit on birds. This unit is a thorough bird study, including field trips in the fall and the spring to local birding areas. Some years the students build birdboxes or bird feeders. His students are involved in river and habitat restoration projects. They plant trees along the banks of a local river to prevent erosion and to improve fish rearing habitat. The students work with a local environmental organization to learn and help with the riverside restoration. They work on different parts of the river each year. This action has really improved the river habitat, particularly since local farmers have become involved by preventing their livestock from accessing the river. Nathan's students and the school environment club clean up a local trail and work on stream restoration and clean up. They are also doing some landscape habitat planning for around the school, although the funding for that project was not available this year.

Nathan and several students have conducted audits of school energy and water use as part of an energy awareness program. Now the audits are

completed, they make plans to reduce energy and water use and try to get the school community on board to change their energy use. The program is organized through a non-governmental environmental organization, Conservation Direct.

Currently, Nathan's students help with recycling at the school, work on river and stream habitat restoration and trail clean up. Nathan uses Project Wild activities to show students the links within an ecosystem. In the coming years, Nathan has plans to get his students involved in environmental action to help save songbird populations. He hopes to focus on bird species that need help by building bird boxes, learning about their food plant species and growing these plants. Nathan and his students are involved in these positive environmental actions because Nathan believes in the importance of these actions and has an underlying interest in environmental action. Nathan feels that if you can change some of students' attitudes now, it may carry over into their adult lives, which is an important reason for getting them involved.

Nathan considers that he, "... kinda fell into ..." teaching. He had worked as a Cub leader while at university, and found he liked working with children. Also, Nathan liked geography, and knew he would be able to teach Canadian geography at the intermediate level, so he became a teacher. He has continued with teaching because he gets to work with young people who have fresh ideas and he appreciates the funny things that happen during a day of teaching. Another reason Nathan continues teaching is because it is, "... one way of getting at people and changing their values without being autocratic about it...". He finds the new social studies curriculum has a lot of room in it for teaching environmental issues. This means that what he has been doing all along is now part of the curriculum.

The Outdoor School camping trip that he runs every year is what Nathan considers his most significant contribution to school-based environmental education. The students not only study nature, but also consider environmental questions and learn about the importance of keeping the ecosystem together.

Although Nathan has been successful in running an outdoor experience and other environmental education programs for his students for 26 years, he still finds there are barriers to teaching environmental education as a classroom

teacher. He considers there to be three barriers; lack of funding, people's consumptive attitudes towards their environment and the lack of support and interest from others. Funding is a major barrier because the Outdoor School costs money to run. Given the choice of charging the students or fundraising, Nathan has chosen to fundraise with his students. However, fundraising is always a lot of work. For projects such as habitat landscaping of the school grounds, Nathan must apply for grants, which is also a lot of work. He feels money should be more easily available for projects that are good for the environment.

Nathan feels that students these days have so much material stuff and are so busy that they have difficulty slowing down and enjoying their environment. That is why he finds people's consumptive attitudes can be a barrier to environmental education. These attitudes can result in a lack of support and interest in environmental education.

However, supportive administrators and a refusal to be discouraged have helped Nathan to continue to teach environmental education. He feels that in order to teach environmental education you must be willing to keep going, when one thing fails, you have to try something else. In his opinion, students have their own values and although you are not going to be able to change them dramatically, those students are the way of the future. So, you need to keep trying to give them an understanding of good environmental practices. Also, you need to instill an appreciation for their vital connections with their natural environment and to encourage them to take positive actions to enhance a healthy interconnected ecological system.

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Ian (Intermediate Teacher)

Ian is an intermediate grade teacher who has been teaching for more than thirty years. His commitment to environmental concern and his active involvement in school-based environmental education began between the ages of twenty-six and forty years. Ian is over fifty years old. He spent his childhood in

a suburban environment. Most of his childhood summers were also spent in suburban areas, although he did visit rural areas on occasion.

Ian lived in only two different cities while growing up. In both cities he lived in suburban neighbourhoods with a fair amount of open space because the entire area had not yet been developed. Undeveloped, treed lands remained within a bike ride from his neighbourhood, and Ian would ride there to be outside. He was also able to visit a university run farm in the same area. Ian wanted to be a veterinarian when he was a child, and animals fascinated him. He felt that he had the benefit of having a suburban life with the ability of going to a rural type farm. During the summer months if his family traveled it was to a prairie city to visit family in a similar suburban environment, although they occasionally went to a beach for a while.

Ian's concern for the environment grew from experiencing negative changes to his natural environment and from reading about environmental changes on a larger scale. As a child, Ian watched the deterioration and lessening of green spaces around him in the city. At first he considered these developments as different areas in which to play, with construction sites and then buildings, however after a while he began to lament the fact that he did not have those green areas any longer. These areas became much more conducive to walking on pavement than to running through trails and building tree forts. During "... the environmental period of my life ...", Ian read Rachel Carson's Silent Spring and a few of those kind of writings that led him to do some thinking about changes that were coming. He felt that he needed to concern himself with those changes. This, as well as seeing the lessening of green spaces, contributed to Ian's concern for the environment.

There were several experiences that led Ian towards teaching environmental education. While training as an infantry officer during the summers, Ian spent a lot of time outside on exercises and doing things that were less than comfortable in the outdoors. He lost a lot of fear of terrible weather, poor conditions and environmental discomfort. He considers that time to have been a great help to him in teaching environmental education because he has not met too many situations that he has felt were absolutely unbearable. Ian also spent time by himself in the outdoors while training and he found that he

enjoyed the time alone and he became very appreciative of the world around him.

After high school, Ian initially attended university in the pre-engineering program, on the advice of high school counselors. He did not enjoy the program, except for the one biology course he took. After a year, he transferred to the Faculty of Education. Because of his unsuccessful year in pre-engineering, he was required by his parents to pay more of his tuition fees. Ian considers his life to have been shaped by the necessity to work during his university years He worked for a botany professor, showing slides at the end of lectures. By listening carefully to each lecture in order to know when to advance the slides, he found he really began to enjoy that part of the lecture. Ian considers it a fortuitous event that he worked for the botany professor because through his contact with that professor, Ian became acquainted with other professors in the biology department. These professors were able to help Ian obtain permission to take more biology courses than usual, for a student in the Faculty of Education. Ian really enjoyed taking courses from professors with whom he was familiar, and from this familiarity he recognized that teachers were real people, with varied interests.

Other significant experiences in Ian's life were the summer he spent as a park naturalist in a mountainous provincial park in British Columbia and teaching a summer environmental education course. A park naturalist who had heard of Ian's outdoor experiences with his Grade 12 science students asked him to join the naturalist corps. While working as a naturalist, he enjoyed the beauty of watching alpine meadows change throughout a summer season in the Park. Ian found it tremendously exciting to see things sprouting and growing and to learn from the other naturalists. The need to find answers to the many questions asked by park visitors who attended naturalist walks meant it was a summer of tremendous self-learning for Ian. After this experience, Ian was asked to help teach a summer university course in environmental education by a friend. It was a residential course and Ian was able to take the course as well as be an instructor, gleaning knowledge from other instructors that first summer. That experience helped him realize that teaching environmental education was a possibility.

Ian considers these experiences to have been fortuitous events that just occurred. He would not have sought out a job as a park naturalist, and he would not have involved himself with an environmental education course. However, the time was right and people asked the right questions of him and gave him the opportunity to be involved, also, he was not doing anything else at the time. These events were very shaping in terms of the environmental education that he teaches, and they gave him a wonderful background.

Working as a park naturalist and as an environmental education instructor were significant to Ian because as he walked in the outdoors with Park visitors or students, he would see things he had never seen before. People would point out interesting things, especially little children, who saw things from a different vantage point. Ian learned about seeing everything with new eyes, and he realized he never wanted to put out the fire in children who wanted to show him things. He wanted to let children feel that they had been a huge piece of teaching him.

This desire has resulted in Ian's involvement in environmental education at an intermediate grade level. He has always wanted to get students away from school, and has done so in a variety of ways. Ian wanted students to realize they could learn on their own, and face some of the things he felt were so important, such as being by yourself in the outdoors, walking dark trails, staying out at night. He felt these were a great help to him in understanding himself, so he tries to put students into those kinds of situations. When he taught high school science, Ian took his students on overnight camping trips so they could experience the outdoors at night. For years Ian took his intermediate level students on a bike experience that involved going to a small island park. They would cycle the park, walk, build shelters, and just live. It was a safe environment, easy to reach, yet away from everyone else. There were times when they were the only ones on the island from the time of the last ferry at night to the first ferry in the morning.

When Ian began working in a team situation in a middle school, he did not continue the bike experience trips. He had enjoyed taking his class, but found the experience lost that edge when he taught more than one class of students. He recognized that when you do things with a large number of people it becomes

very different than when you do it with a private group that you know. Also the experience became altered by the use of park trails by mountain bikers and the popularity of the island park. Ian continued to maintain some outdoor experiences, but he did not feel he could do the same kinds of adventures and base the students the same way. Also, his supply of good outdoor equipment dried up. Initially, Ian built up a supply of equipment for his students to use, however, the school board dispersed the equipment. This meant Ian did not have a reliable supply of equipment in good condition for his students and he had found that access to good gear was very conducive to a good experience for his students.

Ian and his students worked with a well-known marine educator and had wonderful experiences at the beach. For instance, they would put sculpins under different coloured seaweeds and watch them change colour. They also learned about fish habitats and tides while fishing for cod. The students fished, then cooked and ate their catch.

Ian's current involvement in school-based environmental education includes an outdoor school. All the students in the middle school attend at the same time. He teaches the fishing aspect of the outdoor school. He also continues as an instructor of the university summer environmental education course. Ian has been teaching this course for thirty-two summers. The students who attend this course are undergraduate students and practicing teachers. Some of the students are experienced teachers who are looking for something a little different, others are older teachers who are returning to teaching, and there are teachers in training who may have just completed a teaching practicum, or not even that yet.

Ian's middle school students and his summer university course students are involved in some environmental clean up activities. Ian considers this maintenance work and patching up work rather than distinct environmental action. A big part of his teachings to students was to leave no marks behind after camping. They would take away their own litter as well as any left by other campers. Ian would describe three ways of thinking about nature to his students, "... humans against nature, ... humans with nature, and ... humans in nature...".

He wanted his students to come to grips with the fact that they were part of this world, and they needed to go through without leaving a lot of messes.

In terms of other positive environmental actions, Ian feels students should get the power for environmental action themselves; he does not want to drive them to do action. If he sees his students are interested in an issue, he will make it easy for them to get to where they need to be and to get the information they need to do things properly. A group of his students were against a development on a local mountain, so Ian drove them to the proposed development site in order that they could see what would be affected. The students then vigorously objected to the development at a public meeting, shouting down politicians and demanding if they had been to the site. Ian thinks the students were instrumental in the defeat of the development proposal. His role had been to let the students see what would be affected and then leave them to do their own action as a result. Ian does not want to be seen as using students to attack an issue; he wants the students to get the power themselves.

Ian continues to teach school-based environmental education because he likes the variety of teaching in a school. In the school system he is able to be involved in drama, sports, science and writing. He never gets tired of what he does because it is always changing. Ian considers his most significant contribution to school-based environmental education to be his ability to go out and do things with students, and to give them the courage to get out and do things by themselves. He has introduced students to camping under shelters and not needing all the accoutrements of city living. He has allowed students to experience the joy of being away from a very controlled environment, and to experience the excitement of saying, I can do this, I can manage. He also feels he has contributed by helping other teachers to take students on trips and to plan trips. Ian thinks he has been able to give people courage to do environmental education by leading, not just telling them how to do it.

There are three possible barriers to teaching environmental education in Ian's experience. Firstly, he believes that many teachers are not too excited about being in uncomfortable and unfamiliar surroundings. Secondly, he feels some teachers are not secure enough or knowledgeable enough to be able to handle difficulties, such as injuries, that might occur while teaching environmental

education. Thirdly, Ian realizes many teachers may not have the support from parents and administrators that he does.

Ian has continued to teach environmental education, despite such barriers because, although he is careful not to disregard safety, he does not worry about litigation or concern himself with liability. He realizes that during environmental education activities people do get hurt and sick, but that is a part of life and can happen when you do something out of the ordinary. He does what his heart tells him to do; he looks after his students and tries to avoid injury. Ian does not go into situations he considers dangerous with his students; he does not want to create a situation where somebody gets hurt. Another advantage Ian has is his reputation as a teacher of environmental education. Parents are supportive, and they are willing to provide funds for environmental education experiences. Training as an officer in the infantry gave Ian experience working with people in a hierarchical situation, and he considers this to have been advantageous in dealing with parents and administrators. Sometimes his plans for environmental education experiences get altered, but generally he is able to do as he pleases because he has autonomy in his teaching. It is Ian's belief that teachers need to learn to get autonomy by finding reasons for environmental education, and speaking towards those reasons with conviction and a certain amount of understanding.

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Greg (Intermediate Teacher)

Greg is a teacher between the ages of thirty to fifty years who works with intermediate students. He has been teaching for twenty years. Greg made a conscious commitment to environmental concern before he was eighteen years old and his involvement in school-based environmental education began when he was between nineteen and twenty-five years old. His childhood years were spent in a rural environment.

Greg and his family lived outside Altaville in C. Bay. It was a rural area at that time, although it is now part of the city. There were many summer cabins in

the community. His summers were spent on Pole Island at his great-grandparent's place. They had a 200 acre plot on the waterfront with oysters, clams, crabs, fish and, "... anything we ever wanted...". Greg now considers those summers a valuable experience.

Greg's development of concern for the environment seems to have resulted primarily from seeing his local environment change for the worse. Greg lived in one neighbourhood for a long time; in fact his mother still lives in the same house. He saw changes such as signs of pollution, declining numbers of fish and residential development occur in the area. The experiences he had as a child, such as walking around enjoying the area and seeing the birds, started to disappear as residential development increased. Greg is very aware of the rapidity with which these changes have occurred.

According to Greg teaching is a flexible job that you can do anywhere in the world. That is one reason why he became an educator. He enjoys the teaching aspect of education, and being a physical education (P.E.) teacher means he is not restricted to a classroom. He likes the big classroom atmosphere of P.E. teaching, and the physical nature of being outside. Teaching P.E. provides Greg with opportunities for empowering his students to be leaders and take some initiative of their own. Teaching environmental education followed closely with Greg's love of the outdoors and his belief that learning increases in a lot of ways when he takes his students outside. He also finds the physical space of his classroom is not conducive to learning, as it is in an old building which gets very hot and has poor air quality. Thus, it seemed sensible to him to take his students outside when possible, especially since the school is in a rural area. To Greg, taking students outside is not a break, it is an opportunity to do something a little different and look at what is going on in the world around them. Meeting the needs of his students is another reason why Greg teaches in the outdoors. Everybody learns in a different way and for some students being in one room all day just does not work. When he is outdoors with his students, Greg finds there are more 'wow' moments; times when students are inspired by their surroundings.

One particularly significant experience resulted in Greg becoming more involved as an environmental educator. He had always taken his students on

camping trips, but one year he began a classroom incubation project for salmon enhancement organized by the federal government department of fisheries. The first year the program was available in the district Greg and his class raised salmon eggs; two years later he was coordinator for the district. This experience was significant because as well as being involved in a program which had his students returning something to the environment, Greg also had the opportunity to go to other schools, support the program and network with other teachers. The classroom incubation project required students to learn about salmon, but also to learn about the environment to which the salmon were being returned. He likes this program because,

> "... you brought this egg in, and it was something that you could hold onto, and when it actually hatched and it stayed alive and you had to care for it and look after it and you could actually put it into the stream and hopefully in three years, ... [it] might somehow come back as an adult and so that intrigues me and it intrigues the kids...".

Greg considers this to be a "feel good type of thing..." because students are doing something to improve the environment and the area that they live in. Becoming involved in such a well organized, educationally sound and well-funded program inspired Greg to become even more active in environmental education. He has based almost all his other environmental education programs on salmonid enhancement and the network he established through his position as district coordinator.

Currently Greg is involved in five environmental education programs and initiatives. He continues to be a coordinator for salmon incubation in the classroom projects as well as raising salmon with his own intermediate class. The salmon incubation project led Greg and others to question the viability of the habitat where they were releasing the salmon fry. So, he and a number of other teachers and people from the federal fisheries department took a Streamkeepers course. This inspired Greg and another local teacher, to develop activities for students that could be done in conjunction with watershed stewardship in their local watershed. They put together a booklet identifying certain streams and activities that centered on what students could do around that particular stream. These activities/investigations required teaching support in order to be

manageable for elementary students. That requirement and the desire for the students to be taught by people closer to their own age, led to the development of a high school initiative in environmental education.

Through his contacts as a salmon incubation project coordinator, Greg found local high schools willing to have students volunteer as part of their career preparation program and Career and Personal Planning course requirements. High school students are trained in the Streamkeepers program, and then they volunteer at streamside stations teaching elementary students such activities as dissolved oxygen and pH tests. At each of the high schools involved, the students form a club with an executive and are linked to other high schools through email. Through this program, Greg estimates that three to four hundred high school students have been trained as Streamkeepers and stream activity center teachers.

The fourth environmental education program in which Greg is involved is a non-point source pollution program. High school students accompany a large watershed model to elementary schools and through demonstrations, teach students about non-point source watershed pollution. The students are able to physically pollute the watershed model and show the effect of that pollution. For many of the elementary schools, the model is of their local watershed. This program has been in existence since 1996.

The final program Greg has developed is an outdoor education camp experience for elementary students. Initially it was only Greg's class that attended camp, however, due to the popularity of the program, he now organizes camps for other classes from elementary schools throughout the district. Teachers who have just finished their education degrees teach the lessons at the camp. Greg's hope is that not only are the elementary students getting an outdoor experience, but so are the new teachers and this may affect their teaching as they begin their careers.

Although Greg does not use the term 'activism', his environmental education programs do include positive environmental action. His students are involved in releasing salmon fry to a local stream each year. The high school students who run the non-point source pollution models help organize action activities with the elementary students. One such action might be storm drain

marking to increase awareness that storm drains lead to local streams and waterways. This involves painting storm drains with yellow fish, and providing explanatory literature to the residents of the neighbourhood. Greg's students are also involved in collecting baseline data during their stream studies. These data are sent to the provincial Streamkeepers Database and are used to compare what is happening over the years in a local stream.

Greg's students are involved in environmental action because he feels it is important for students to be empowered to do something positive for the environment. He also considers it important for educators to model environmental action by simple acts such as riding a bike to work. Greg thinks his generation needs to encourage the next generation to make positive environmental changes.

Greg considers his most significant contribution to school-based environmental education has been giving high school students a voice. He likes getting high school students involved and enjoying environmental activities. Having others recognize the potential of high school students encourages him. Greg also feels he has made a contribution to environmental education through the programs he has been able to offer to others. The more that educators are out doing these types of programs, the more individuals in their twenties and thirties there will be who have the training and want to get involved in environmental education. This provides volunteers who want to be involved in environmental education programs.

Despite all the programs and initiatives Greg has developed and been involved with, he still considers there to be barriers to teaching environmental education at the classroom level. He has found that the structure of schools has forced teachers and students to be inside the classroom. This is a result of the number of curriculum changes and the amount of curriculum that teachers are asked to cover. There seems to be a huge demand to prepare students for testing, and Greg considers this to cause teachers to keep hammering at the curriculum over and over again. The school system also makes it difficult for a teacher to take his or her students outside because of the paperwork that is involved. Greg finds that all the forms that need filling out and the necessity of informing the parents have made it very difficult for a teacher to take their students outside just

for an hour's walk. He is also finding that the high school students are required to complete a large amount of paperwork before they are permitted to help with the environmental education programs. Greg feels this might be a deterrent for some students.

Greg thinks that another difficulty with teaching environmental education has to do with the age of the current teaching population. He feels many teachers are reaching their late forties and early fifties and a lot of them are not really interested in doing activities in the outdoors. Often it is much easier to just teach indoors.

Two other barriers to teaching environmental education at a classroom level mentioned by Greg are the cost of transportation and time. There is not money available for transporting students to environmental areas, and so much is being asked of teachers, they do not have the time to organize and teach environmental education.

The lack of time became such an issue to Greg that in 2000/2001 he took leave from his classroom position to explore the possibilities of working as an environmental education support teacher for the district. He found that as he became more involved in environmental education, people encouraged him to continue to provide programs. He had a good understanding of what environmental education programs were available and he enjoyed working with educators, so he decided to explore his possibilities. However, prior to that time, Greg had been a full-time classroom teacher in the school system. He points out that he became an educator to educate people and he was tired of being compartmentalized as a teacher. He has been able to help other teachers deal with being overburdened, by giving them one to one support for environmental programs. As district coordinator, Greg acts as a mentor for teachers working on the salmon incubation project. He is also trying to get release time for teachers so they can get together to discuss the progression of environmental education programs from the primary level to the intermediate level.

One reason Greg continues to be involved in environmental education at the classroom level because other people inspire him. They work together to help each other survive.

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Todd (Secondary Teacher)

Todd is a secondary school teacher with 27 years of experience. He grew up in a suburban environment, but spent the summer months wandering beaches and exploring parks. Todd is over 50 years old. He became actively involved in school-based environmental education between the ages of 26 and 40 years. He considers that he made a conscious commitment to concern for the environment when he was between 19 and 25 years old.

Todd grew up in a small city, near the beach. As a child he spent time "... messing around ..." on the beach and in local parks. He also recalls spending time at a relative's cottage in a lake district in central Canada. Todd was active in the Scouting movement and spent time camping and on horse-back journeys as a youngster.

Todd's first comment, when asked about the development of his concern for the environment, was that an assumption that he was concerned for the environment was being made. Although he did not deny this concern, he did point out that it was not a concern that drove his teaching. Sand County Almanac, by Aldo Leopold, and books by Rachel Carson may have shaped his work, but he does not consider he made a conscious decision to teach about the natural environment in order to save it. Rather his perspective is that it is extremely important to get students out of classrooms and into the natural environment.

The days that he spent "... hacking around ..." down at the beach may have had a bearing on the fact that he likes to take students to those types of places. He believes that if you allow students to experience places that are undisturbed, or wild, they might one day make the right decisions.

There is no one experience that led to Todd becoming an environmental educator. In his words, "... it was just something that I could do...". Todd's beginnings in environmental education at the classroom level were a result of his university background in invertebrate zoology, physiology and taxonomy, as well as several experiences at a marine station both as a university student and as a teacher assisting a group from another school. The combination of the promotion of the marine station by its staff as a place for secondary students, and

a principal who knew of Todd's interest in marine science resulted in his development of an elective course in marine biology. The principal of the school took the unusual step of asking Todd to develop a new course. Todd considered this unusual because in his discussions with other teachers he has found that generally it is the teacher who approaches the school administration with the idea of a new course, not vice versa. With the promise of assistance with the funding of the course, Todd developed a marine biology elective course including a five-day visit to the marine station.

The environmental education course Todd developed and teaches is a semestered science elective that emphasizes intertidal ecology and biodiversity. The course continues to evolve; Todd finds he does not teach it the same way twice. The students are in grades nine and ten, primarily grade nine for the past few years. Todd noted there has been a gender shift in students taking the course, last year 80% of the students were girls. They learn about invertebrate zoology and taxonomy. The overall theme of the course is biodiversity and its importance. They discuss ethics, ethical behaviour and the interconnectedness of all things. Students go out into the field and learn to use field notebooks and keep a species list. Students attend a marine station for five days as part of this elective course. At the marine station they are involved in beach trawls and tide pool studies as they work on projects. Upon returning to school, students formalize their field experiences at the marine station in written projects and reports.

As part of the Natural History Club that Todd organizes, students compare and contrast tropical and temperate regions. This involves a trip to a tropical island every couple of years to study a tropical urban area. Todd believes students should have as many experiences outside of school as possible.

There is no specific active environmental education element to either the course or the club in terms of working to resolve an environmental issue or problem. However, environmental issues are discussed in the course. Todd finds it is easy to have students give the correct answer in terms of environmental activism, but much more difficult to get them to act in the right way. These types of attitudes were an area of interest of Todd's Masters degree in Science Education.

Todd considers his most significant contribution to school-based environmental education to be getting kids outside the classroom to wild places they have not seen before. Many of his students have never been away from home overnight so there is a large social/maturation component to overnight trips during the course and through the Club.

For practical reasons as well as a love of teaching, Todd continues to teach in a classroom. There are financial reasons to teach in a classroom rather than work in non-institutional environmental education. Primarily though, Todd loves teaching and still enjoys the age group of students that he works with. He teaches regular science classes as well as his environmental education course and he finds his students enjoyable.

Todd finds financial barriers a major difficulty with teaching environmental education in the classroom. Initially, financial concerns were not an issue for the intertidal ecology course because the school district made a funding commitment as they felt the course was worthwhile. Overcoming the financial barrier has required students to pay a course fee for Todd's environmental education course. In his present school this does not provide too much of a deterrent for most students. Although, he acknowledges that some students may be unable to attend the course despite the school's attempts to help them with funding. He questions whether the course would have continued had he been teaching in a less affluent school community. In Todd's view, one of the difficulties is the necessity for students to now cover the costs of a substitute teacher when their course teacher takes them on field trips. He feels this is more of an issue with secondary school teachers because elementary teachers generally have one class and often take all their students with them on a field trip.

A second barrier to environmental education in the classroom is timetabling. There are difficulties with students taking elective courses, such as environmental education, when they are limited by their timetables. Todd had difficulty initially in getting other staff involved in the course. A final barrier is the lack of support locally for environmental education. There are no local facilities to offer support, although this may change in the near future.

A supportive school community has also helped in the continuation of the environmental education course. Students follow procedures, including getting

written permission from all their teachers prior to attending the week at the marine station. The students attending the course are generally very good academically which is a bonus. The school administration has also been supportive, although not as supportive as in the past.

As a constructivist, Todd believes that students must experience their education. They need to be out doing what biologists do in order to learn about biology. Because he does not, "...hammer them with it (the concept of environmental concern) ...", Todd considers himself a covert environmental educator.

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Mark (Secondary Teacher)

Mark is a secondary teacher who has been teaching for more than twenty-six years. He made a commitment to environmental concern before he reached the age of eighteen years. His active involvement in school-based environmental education began when he was between nineteen and twenty-six years old. Mark spent his childhood years in a rural environment, living in a small prairie town.

In terms of his life direction, Mark considers it important that he grew up in a small town. He was always looking for different things to do, and his parents were not nervous about Mark and a friend hiking in the local area. Also, the proximity of wild areas to his home meant they could just ride their bikes out of town and go hiking. The town was within seven miles of a river, with old coulees, and seven to eight miles from a sandhills region. The sandhills region was like the African savannah to Mark. He describes the sandhills area as being about 250 square miles of nothing; at that time there were not even roads criss-crossing the area.

At a very young age, Mark and a friend began hiking the coulees and sandhills around their home area. They would spend at least one weekend a month going into those areas for adventure. These hiking and camping trips were a significant time for Mark. They hiked and camped in spring, summer and winter. At twelve years old they went on their first winter tobogganing trip, by

themselves. During these trips they tracked animals, discovered arrowheads and native teepee ring pits, listened to herds of antelope and philosophized about life in general before falling asleep under the stars. Occasionally they went duck hunting, but an encounter with hunters spraying mud hens with shot, probably wounding many, made them reconsider whether they really wanted to be hunting. Mark and his friend realized that the coulees and sandhills were important areas even though they did not have any knowledge of the ecosystems of those areas. At an early age they talked about the importance and uniqueness of these places and that they hoped the coulees and sandhills would always be there. While on one of these hiking trips, Mark killed an owl with a rock. He does not recall why he killed it, but believes it to have been an accident, not expecting to actually hit the owl. Both Mark and his friend felt terrible about this incident, and it had quite an impact on them. He still feels badly that he would kill an owl that was harmless and was just out hunting. Mark got into snaring rattlesnakes when he was about fifteen years old to earn money. However, although he enjoyed the hunting because he liked looking at them, he did not enjoy the killing part. He considers this to have been a time when he learned about rattlesnakes and began to understand them and where they fit into the whole scheme of things. Mark decided that, like killing the owl, killing rattlesnakes was not something he should be doing, so he stopped. These experiences all contributed to Mark's growing sense of concern for the environment.

Mark also attributes his concern for the environment to his interest in native culture. After he had been teaching for a few years, Mark met a native fellow through canoeing who later invited him on a trip with native elders. They lived totally off the land in the desert country for two weeks. The trip increased Mark's appreciation for that country and he found it to be a very powerful experience. Afterwards he spent more time with native elders, learning about edible plants, how to tan deer hides and other skills.

Mark left the small town of his childhood to attend university. He did not enjoy being in the city, but he was unsure of what else to do. As he did not have a farm to work on, he decided that he had to get some sort of education so that he could have control of what he did. Mark entered teaching after a friend

suggested that the teachers' college had a favourable ratio of girls to guys, and that there were a group of guys there that had a lot of fun together. Mark had not considered teaching as a profession prior to that time. However, he had worked as a lifeguard and swim instructor, and he knew he enjoyed that type of teaching. He found that he enjoyed working with students. Mark's first teaching assignment was in a northern area. He had chosen this location because he wanted to spend time doing outdoor activities in the nearby mountains. Teaching environmental education was not something Mark thought about at that time. He wanted to spend time in the outdoors, and if he got involved in teaching something related to the outdoors, that would be great. One of the real keys at this point was that Mark met a fellow teacher who ran an outdoor program. This teacher became his mentor. Mark considers mentoring to be very important because of the influence of this teacher. Mark was able to watch the way this teacher worked with kids and learn from his ideas on the environment. Mark became this teacher's assistant. This was also a time when Mark was doing quite a few solo outdoor trips and returning with a desire to tell his students about the trips and how important protecting that environment was.

Mark taught in the regular school program, for a time, and ran an outdoor section. This involved five or six overnight outdoors trips during the year. However, he felt the trips were too much of a vacation from school and that he did not have enough time with the students to have them really appreciate the environment. Mark had worked at a mountain skills school, so he had a fair number of hard outdoor skills. He had always been interested in the adventure of being out in the wilderness. After the canoe trip in the desert with native elders, Mark decided that he wanted to run a program that involved a long-term commitment, a whole school semester. He wanted to do something that schools were not doing at the time. He wanted to develop a program that would help kids understand themselves a lot more and understand the environment. Mark decided to put together a program at school that would be a lot more holistic than anything he had done before.

One of the main goals of Mark's environmental education program is to help teenage students develop as individuals. In the program they are exposed to situations where they develop accountability, responsibility and maturity

through mentoring. This is accomplished through a semester of outdoor expeditions, course tasks, and native studies. By working through various tasks, students learn to overcome their fears, to push themselves and to develop an awareness and understanding of the environment in which they are working. Mark considers this program to be very holistic; the instructors have a real focus on where they want to go and they want the students to be focused on where they want to go as well.

The environmental education program is for grade eleven students from all ability levels, highly academic to modified program students. Students must apply for the program, and there is a selection process. The purpose of the selection process is mainly to weed out students that are not serious about the program. Students receive credit for three grade eleven courses, social studies, physical education and earth science, as well as Career Preparation Work Experience 12. During their non-environmental education semester students attend four other academic courses at the school. The environmental education program is composed of two main parts, outdoor expeditions and course challenges. The expeditions involve backpacking, ski touring, kayaking (white water and ocean), rock climbing and cycling. The course challenges include work in native technology, environmental studies, earth science, leadership skills and career preparation work experience.

For each of the expeditions during the program, students are required to complete pre-expedition and post-expedition assignments as well as an assignment while on the expedition. These assignments require communication skills and upper level thinking skills such as problem solving. Mark considers these university level skills. Once students have had the exhilarating experience of an expedition, there is discussion about the importance of the environment that they experienced. They also discuss such issues as the protection of the resource. The purpose of these expeditions is not to produce great kayakers, for instance, but to help students understand the environment. Guest speakers are invited to discuss issues such as sustainable logging with the students.

One of the most unique project students do is a tracking type project. Each pair of students is assigned an area that they must map, and observe for seventy hours. The students are required to include on the map locations of animal lairs.

Other details of the area are recorded in a journal, for instance what they found in the area, birds that were identified, sketches of plants of ethnobotanical origin, and their personal feelings. Students must conduct their own research to identify the plants, birds and animals they find. In this way, they are not only learners, but also their own teachers. Part of program philosophy is that students need to discover for themselves. The project developed out of Mark's experiences as a child discovering the natural world of the coulees and sandhills near his home.

The native studies component is primarily taught in traditional Interior Salish pit houses built for the program. Students learn skills such as deer hide tanning, using bow hand drills to start fires and arrowhead flaking. The idea of learning the skill is two-fold; students develop persistence, patience, responsibility, accountability and maturity while gaining an understanding of the source of the material they are working with, such as a deer. Students also meet elders and learn about native culture from them.

Throughout the duration of the environmental education program, Mark and the other program teacher discuss with each student his or her progress and status. The students keep journals in order to facilitate time for reflection. Mark considers it important for students to take the time to slow down and reflect on their learning. In fact, he believes that towards the end of the program the time students spend their own in reflection is more important than time spent with the teachers. Without this reflection and journal writing time, students tend to get caught up in their teenage society and do not internalize as much from their learning. Teachers have periodical discussions on a one to one basis with the students to help keep them on track in the program. These discussions are facilitated by the students' journal writings.

Mark finds that during this environmental education program students undergo personal development on a daily basis. Parents see their child taking on more responsibility and becoming more accountable. From Mark's perspective, the payoff of the program is seeing the development of students into leaders. Alumni from the program have obtained doctorate degrees, some have their own environmental companies and some have become leaders within the program.

Students study local issues that relate to stream and lake problems, such as the dumping of effluent into the lake. If there is a hot local environmental issue,

guest speakers will be brought in to look at both sides of the issue. The idea is that students will then take a broader scope of things and look at their own role in the future related to environmental issues. The intention is to show students different viewpoints in order that they will be able to base their opinions on experience. This means students make up their own minds as to whether they will be activists or not.

With regards to environmental activism, the students become involved in site clean ups during expeditions and out-trips. At the beginning of the program, Mark and the other instructors are very strict about having the students leave a camping area without any traces of their visit. Their objective is for the students to take this responsibility onto themselves as the program progresses. This is the simplest and most obvious form of positive environmental action in which the students are involved. Students not only take on the responsibility of cleaning up their own garbage, but they will also clean areas they encounter which have been left littered by others. There was an instance when students precipitated and assisted in a site clean up by other campers who had intended to leave the area littered with their garbage and smoldering fire. The students took on this responsibility themselves because they were concerned. Another example of this action is the local area clean up they do while on sea kayaking expeditions. Mark has involved his students in this type of environmental action because he considers it a good starting point for high school students. It is hands on, simple, makes a lot of sense, everyone can be involved and it affects them immediately. This sense of responsibility towards the environment transfers into student's home lives as well. They have been known to change their parents' behaviour to be more environmentally aware. Students have also shown environmentally responsible actions while with peer groups, showing courage in their convictions, sometimes despite the scorn of their peers.

Mark continues to teach school-based environmental education, after twenty years, because he enjoys seeing his students grow and understand. Each student is unique and has a different set of problems they need help to overcome. Mark believes that our survival on earth depends on educating students so that they will understand earth like the native people did before the arrival of Europeans. He feels that perhaps we have not spent enough time educating our

young people and that environmental education should be the number one subject in schools. It is Mark's belief that if we do a really good job of educating people then we will not get into situations of over harvesting natural resources because people are much more aware of protecting those resources. He likes having a role to play in educating our future leaders:

> "... I know these kids go out and become real, real big time leaders in this field, I mean, you can't get that kind of exposure through a club, ... we affect so many people..."

Like a pebble thrown into a pond is the way Mark describes his most significant contribution to school-based environmental education. He and the other teacher of the program have a ripple effect that touches not only their students, and the students' friends, but also the families of those students. Some parents of students in the environmental education program have changed the way they eat to become more environmentally friendly, and have a greater interest in the environment and the way they handle that environment. To Mark, the exciting part about being an educator is that if you educate in the right way, you can have that effect. And the most amazing part, in his mind, is that he does not have to be brilliant in order to do this. He has an interest in kids, he has a focus as to where he wants them to go and thus he is able to build this legacy of so many students who have experienced and learned from this program.

Mark's environmental education program has now been in existence for twenty years, however, he encountered barriers during its development. When he began teaching at the school, students went on a camping trip that was like a big holiday. Mark was disgusted by the attitude of those involved in the trip. He wanted to do some out-trips with students the following year and he approached the principal about having some school time for the trips. It was the principal's opinion that students could go out into the natural world on their own and that he not only would not give Mark any school time for these trips, he also would not give his support even if the trips were done outside of school time. This meant Mark would be completely responsible should there be any difficulties on the trips. Despite this, Mark went ahead and operated an environmental education program, albeit with some conflicts here and there.

When a new principal was appointed, Mark approached him right away with a proposal for an environmental education program. Mark had clearly written what he wanted to do, how he wanted to do it, and his goals and objectives for the program. The principal was supportive and the program began. Then, there was another change in principals and the new principal tried to shut down the program and battled Mark for several years. There were also difficulties with senior administrators trying to control what was done in the program. Mark has also encountered tremendous opposition from the teaching staff who he believes saw the program as a threat. However, none of the staff came to talk to him about it or asked what his objectives were. Mark feels it is tough to get an environmental education program going because expeditions, like the ones his students do, are still looked upon as kind of a holiday time. Often people are not aware of the assignments his students do before, during and after the expeditions and they cannot see the learning that goes on during the expeditions.

Despite the difficulties of lack of administrative and colleague support and a lack of understanding by others of what goes on in his program, Mark has been able to teach environmental education. Supportive parents have been helpful in maintaining Mark's environmental education program. He keeps parents informed of the objectives of the program and he wants them involved. The parent group associated with his program consists of parents of current students in the program as well as parents of alumni from the program. They work on fund raising for the program and provide support in other ways. The key to school-based environmental education, Mark feels, is to carefully think through what it is you want to do, why you want to run the program and what is the maximum you can get out of it for students and for the environment, "... so when it's all over and said and done with, it's gotta be more than just, woo, that was a lot of fun ...".

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Stewart (Secondary Teacher)

Stewart is currently a secondary school teacher, although he has taught students from kindergarten to university level in the past. He has been teaching for more than thirty years and is over fifty years old. Stewart's commitment to environmental concern was made between the ages of twenty-six and forty. He became actively involved in school-based environmental education during the same period of time. Stewart spent his childhood in both urban and rural areas. His summer months were spent in a rural environment.

For as long as he can remember, Stewart has spent time around the water and on boats. As a child, Stewart went fishing all the time with his family; he thought fishing with his father was the greatest thing. Stewart liked to fish and he liked the outdoors. In fact, he liked fishing so much that when he was very young, Stewart went to bed holding a fish rather than a teddy bear! In his early childhood he spent his time building rafts and hanging around beaches. Stewart inherited a fish boat from an uncle, when he was fifteen years old. Stewart considers that his childhood experiences shaped what he became.

As a child Stewart was really consumptive. His family lived in a more rural area, fish were easy to catch and they were everywhere. Stewart would catch ling cod, then trade them for ground beef. The salmon industry and the logging industry were booming at that time. Stewart had the opportunity to get into herring fishing, but he disagreed with the industry philosophically. During the 1940s, '50s and early '60s things were pretty good; west coast fishing boats were able to fish from May until Sept. Then, as time passed, it became more difficult to get fish.

It was when Stewart lived in town and went to university that he noticed a beautiful creek that was devoid of fish. He would check each season for signs of life in the creek, but there were none. The fish had been "... poached out of existence..." by the local residents. Stewart and another teacher initiated a program to restore the creek. This was the beginning of his work with salmon enhancement, twenty-five years ago, before there was a federal salmonid enhancement program with a Public Involvement Program.

Stewart feels that you only have a real desire to work and to transmit the care for those things you are aware of. If you are not aware of something, it is hard to really worry about it or want to do something or work with it. He had a keen awareness of what was happening to the fish stocks and he thought that through education he could actually make a difference.

Teaching was not Stewart's original career choice. However, he found his academic degree in biology did not provide him with practical skills. He considers he was unemployable when he graduated from university. Stewart applied for a job at an aquarium, but was not successful. After a job peddling drugs for a big drug company, Stewart returned to university to become a teacher. He considers that he "... sort of fell into [teaching] by accident...", it was by chance rather than by choice that he began teaching. Stewart enjoyed teaching, but he missed being around water and being in boats. He felt a bit claustrophobic in the classroom, so, he started doing the things he liked doing, and took his students with him. He found they enjoyed being outside more than inside, and that they were energizing him because of their curiosity. Stewart found that the more different and stimulating an environment, the more interested in that environment that his students became. In the summers Stewart continued working on boats, but everything he did on boats had a bit of an educational touch to it.

There were several particularly significant experiences in Stewart's life which he believes led him in the direction of teaching environmental education. Firstly, as a child he accompanied his parents on trips to the sea and the forest. Also the positive experiences of working as a boat captain in the marine environment with knowledgeable people, and being part of a 'team' of environmental educators in a university setting were significant experiences for him. Seeing his students' wanting to make a difference, and their energy and enthusiasm also influenced Stewart's life direction.

There were also experiences of negative human impacts on the environment that influenced Stewart's life direction. He noticed a decline in the numbers of fish available for catching. The discovery of a seemingly healthy creek devoid of fish due to poaching and urbanization had a significant influence on Stewart. A final influence was the realization that his children would not be

able to experience the wilderness and wildlife that he had, due to the decline in the abundance of that wildlife.

Currently Stewart's environmental education program consists of two locally developed courses and two work experience courses at the senior school level. Stewart and another teacher developed a Fisheries Ecology course to introduce students to aquatic systems. The course is centered on a salmon hatchery and sea-pen operation. Salmon are used as a keystone species from which students learn about the interdependencies of species and the complexities of biotic communities. The second locally developed course is called Wildlife of B.C. 11. In this course, students from Grades 10 to 12 learn about the plants and animals of British Columbia. The work experience courses have students working in fisheries and bioscience positions. For the past twenty-six years, Stewart and another teacher have operated a Salmon Club twice a week for students interested in running the salmon hatchery and sea-pen operations. As well as the hatchery and sea-pen, the club and Fisheries Ecology classes have a school bus, two marine motor vessels, and a multitude of marine equipment used for environmental monitoring. Stewart's classes and the Salmon Club work out of the hatchery, the sea-pen and the boats. Stewart has found the classes use the hatchery to a lesser extent than the Club because of the assignment and test requirements of the courses. In the Salmon Club students are able to make more decisions about how they spend their time and, they have made the decision to be there helping. Stewart feels he does more and better teaching in the Club and that students from the Club have a higher success rate and involvement in fisheries in their careers. As well as working at the hatchery and sea-pen, Stewart's students are involved in an environmental monitoring program in Burrard Inlet. They are doing water quality testing as part of an effort to monitor the environmental effects of a thermal electric plant on the watershed. The students work in partnership with the electrical energy company that owns the plant and some students do their work experience placements with the company. When the plant is fully functional it will likely be the second largest producer of electricity in British Columbia. It is Stewart's feeling that since we all use electricity, rather than looking at the company as the enemy, it is important to look at conservation and sustainability.

The salmon hatchery and sea-pen are two examples of the positive environmental action in which Stewart and his students are involved. The hatchery and the public education that has gone hand-in-hand with the hatchery have had a huge impact on the local community. These programs have made a difference to the local ecosystem. A stream that was previously devoid of salmon, now has returning salmon each year. The environmental monitoring conducted by Stewart's classes and the Salmon Club is also a positive environmental action. It is Stewart's belief that you only have a real desire to work and to care for those things you are aware of. It is difficult to instill a desire to protect a site or an animal if you do not have any experiences, thus you have to experience something before you can really take it on. This is one of the reasons why Stewart felt it was important to get his students involved in environmental action. He personally had a keen awareness of what was going on with salmon populations, and felt that through education he could really make a difference. Stewart found that he was inspiring the students in his academic science classes and they were going on to university to take biology, but did not have any employable skills when they graduated. He decided that maybe he should be giving them the types of experiences which would provide them with skills and practical things such as being involved in a network with others associated with fisheries. When students are involved in working at the hatchery they are using all of their senses, not just reading about raising salmon, also, environmental action has an impact. The returning salmon are evidence of this. Students want to volunteer, but often do not know what to do to initiate change. Environmental action such as helping at the hatchery or sea-pen or conducting environmental monitoring gives them an opportunity to be involved.

Although teaching was not Stewart's first choice of profession, as a social reconstructivist he believes change happens through education. By teaching environmental education, Stewart is able to make a difference in people's lives, so they can make a difference. He feels he is not that successful dealing with the media or the masses, by for instance making a video that would change people and the way they thing and behave. He considers that those you work with directly are the ones you have the biggest impact on. Stewart considers his most

significant contribution to school-based environmental education to be a legacy of students who care about the environment.

> "... but when you ask me what's the greatest thing, it isn't in money it's just in, in having a belief that you're doing something with your time and making a difference in people's lives ..."

It is Stewart's belief that the barriers experienced by people trying to teach environmental education are in their own minds. He believes perceived barriers are excuses for teachers not to teach environmental education. Stewart considers environmental education to fit into every subject area, but to require a long-term commitment. He has been successful in teaching environmental education for twenty-six years because he has made a long-term commitment to something he believes in. This commitment has included owning equipment such as a pick-up truck, boats and other items necessary for marine education. Stewart believes that young teachers are not as likely to make such a long-term commitment. He considers that a lot of teachers begin an environmental education program, run it for a few years, become successful and then move into administration with no one prepared to take over the program. This is of direct concern to Stewart because he is retiring at the end of the current school year and has not been able to find a teacher willing to continue the program.

Stewart recently received an award for his contributions to environmental and marine education in British Columbia.

* * * * * * * *

The analyses that follow examine three specific aspects of the case study reports. Firstly, the significant life experiences that the educators felt led them to concern for the environment and to an interest and dedication to environmental education are compared. A summary of the reasons the interviewed educators chose to teach action oriented environmental education programs are then reported. The final section of this chapter reports the reasons why the educators chose teaching in a classroom as their profession rather than working in non-formal environmental education.

Analysis of Significant Life Experiences (Research Question IIa)

The following analysis of significant life experiences of the interviewed educators allows for comparison with the findings reported in Chapter 3 for the more general population of environmental educators in B.C. and with previous findings reported in the literature. This analysis limits the ability to understand these educators as individuals and their experiences simply by virtue of brevity and categorization. The experiences of these people are better understood in the context of their past and current activities as demonstrated in the case study reports

Group Factors of Influence Analysis

The factors and experiences identified as leading to concern for the environment, and interest and dedication to environmental education were categorized into twenty-six single factors of influence. All but two of these single factors of influence had been mentioned by the questionnaire respondents. Similarly themed factors were assembled into eight groups. Five of the twenty-six single factors of influence were mentioned by only one of the interviewed educators. The mean number of groups of factors of influence mentioned per person was 5.4, with a range of four to seven. The mode for the groups of factors was five per person.

All interviewed educators mentioned factors of influence in two groups; Experience of natural areas and People (Table 7). The group People included the single factors of family, students or children not one's own, teachers, mentors, and friends, colleagues and other individuals. The group of factors categorized as Experience of natural areas included the single factors of childhood or youth experiences in natural areas, adult experiences and experiences at an unspecified age in natural areas, living on a farm or in a rural area and gardening, and emotional responses to natural areas.

Table 7: Interviewed environmental educators' most frequently mentioned factors of influence classified by group. (N=10)

Group	Number	Percent
Experience of natural areas	10	100
People	10	100
Experiences of negative environmental impact	7	70
Education	7	70
Vocation	6	60
Organizations	5	50
Societal	5	50
Others	4	40

Experiences of negative environmental impact and Education were the third most frequently mentioned groups of influences leading to concern for the environment, and interest and dedication to environmental education for the interviewed educators. Seven people mentioned factors of influence in each of these groups. Educators referred to the single factors of influence of a negative change to a natural area that had been enjoyed as a child or adult, habitat degradation, and pollution, resource use or abuse, residential development and litter. Single factors of influence in the group Education included; primary and/or secondary school experiences, college or university undergraduate experiences, graduate education experiences and professional development experiences.

Six of the interviewed educators mentioned vocational influences as being significant. These included paid employment and volunteer work influences. The influences of Organizations were mentioned by five of the interviewed environmental educators. This included child or youth organizations, as well as, adult organizations and professional associations. Societal factors such as a sense of social justice, a principle or belief, a concern for future generations, and involvement and influence of the community were cited by five of the interviewed educators.

The final group of influences included all other single factors of influence; pets and animals, unsure of influential factors, and recognition for work done in environmental education. Each of these was a distinctive, influential factor or

experience for the respondent. None of these single factors of influence were closely associated with any others mentioned during this study, therefore they were categorized in the group Others.

Single Factors of Influence Analysis

The single factors of influence mentioned by two or more of the interviewed educators are listed in Table 8. The mean number of single factors of influence mentioned per person was 8.2, with a range of six to thirteen factors. The mode for single factors of influence was six.

Table 8: Interviewed environmental educators' most frequently mentioned factors of influence classified by single factor. (N=10)

Single factor of Influence[a] (Grouped factors classification in parentheses)	Number	Percent
Childhood/youth (Experience of natural areas)	10	100
Friends/colleagues/other individuals (People)	5	50
Change in childhood or adult area (Experiences of negative environmental impact)	5	50
College/university undergraduate courses (Education)	5	50
Employment (Vocation)	5	50
Adult or unspecified age (Experience of natural areas)	4	40
Family (People)	4	40
Students/children (not own) (People)	4	40
Kindergarten to Grade 12 classes (Education)	4	40
Professional development (Education)	4	40
Teachers (People)	3	30
Mentors (People)	3	30
Child/Youth organizations (Organizations)	3	30
Adult/Professional organizations (Organizations)	3	30
Principle, philosophy or belief (Societal)	3	30
Emotional response (Experience of natural areas)	2	20
Pollution, resource use/abuse, residential development, litter (Experiences of negative environmental impact)	2	20
Graduate courses or program (Education)	2	20
Community (Societal)	2	20
Pets/Animals (Others)	2	20
Unsure of or if influence exists (Others)	2	20

[a] Remaining single factors of influence were each cited by one person (10%); Home on farm or rural area/gardening (Experience of natural areas), Habitat degradation (Experiences of negative environmental impact), Volunteer work (Vocation), Concern for future generations (Societal), Recognition (Others).

Childhood or youth experiences in nature.

All ten educators mentioned experiences in nature as children as being influential in leading to their concern for the environment, and interest and dedication to environmental education. Some examples of mentions of childhood or youth experiences in nature were:

Early years - years of play in natural settings.

> Hunting, fishing, hiking, camping, swimming etc. as a youngster.

> Early childhood (till 5 yrs. old) in village on Chico Lake, free to play with my sister and brothers on the high sandy hill above our old frame house: smells of sage, wild onion, cottonwood and ponderosa pine.

> It was such a unique place, we could lay out in these coulees and often sleep out under the stars and we'd listen to , well, in those days herds of antelope we could hear them thundering sort of thing, goin by in the nighttime.

> I liked fish and I liked outdoors and, my first memories are on boats on the water.

Others mentioned spending time in the outdoors, at the ocean, and in the bush as factors of influence. Childhood or youth experiences in nature were the only single factors of influence mentioned by more than half of the interviewed educators. The remaining single factors of influence were mentioned by five or fewer of the interviewed educators.

Friends, colleagues and other individuals.

Five educators mentioned experiences or factors involving friends, colleagues or other individuals as influential. These factors included teaching and administrative colleagues, a prominent bird biologist and authors:

> Influential environmentalists (Rachel Carson, Aldo Leopold, John Muir).

> Rachel Carson and Silent Spring ... and a few of those kinds of writings that led me to do some thinking that there [were] certainly some changes coming and we needed to concern ourselves with them.

Change in familiar childhood or adult area.

Urbanization was the most frequently mentioned change in a familiar childhood or adult natural area. The rich descriptions of these negative impacts is an indication of how memorable they were:

> I watched the deterioration and the lessening of green spaces around me in the city and although at first it represented a different area to play in, you know with the construction and then the buildings, after a while I began to lament the fact that we didn't have those spots to do the same kinds of things.

> I very quickly saw that the area that I grew up in, where I was able to do so many things, signs of pollution started to come up and fish started to disappear, and there was a real lack of opportunities to just wander around in the fields that I used to 'cause they all became subdivisions and all of a sudden all these people started showing up that weren't there before, the experiences that I had as a child when I was able to walk around and see the birds and just enjoy the area just started to disappear very quickly.

Other educators mentioned more general negative changes to familiar areas:

> Just seeing these places that I visited change in a way that there was less of what I considered important or less of what I considered to be part of what made that place wild and special.

> Early years - became protective to natural settings when they were threatened.

College or university undergraduate courses.

Courses and programs attending during early years at university were influential for these educators:

> Course in environmental geography.

> I did a lot of invert zoology and physiology and taxonomy and all that kind of stuff at university, I have a B.Sc. in biology.

> Another major one was in teacher training when I went to [*an outdoor school*], I went there as part of my practicum.

Employment.

As was noted in Chapter 4, employment influences were sometimes a result of prior interest in environmental education:

> Taking my own classes for a four day Outdoor Education Program and camping trip made me aware of the importance of environmental education.

For other educators, the employment was not directly related to environmental education or concern, but was influential in promoting interest in the environment:

> My active participation as a boat captain, being out in the marine environment with a host of knowledgeable people.

> One of the jobs I had was showing slides for a botany professor.

The next five single factors of influence were each mentioned by four of the interviewed educators.

Adult, or unspecified age, experiences in natural areas.

The factors of influence mentioned in this category were all experiences after childhood. In many cases these experiences resulted from an already developed interest in the environment:

> Fishing, camping, hiking (wilderness) – off beaten track.

> Becoming a naturalist and avid bird watcher in my early twenties.

> I was on my own quite a bit in the army and I remember at one point having about a six or seven day exercise by myself, ... I was able to sort of hide out

> and, be by myself in the outdoors and be by myself in the black and the dark and not worrying about it and becoming very appreciative of the world around me.

Family.

The influence of family to many of the educators was apparent. For one educator, it was his children who were influential:

> Having great experiences with my own children camping and enjoying living in a rural community.

Whereas for others it was their parents who influenced their interest in the environment:

> My father studied and appreciated wild flora and fauna. He often shared his discoveries with me such as finding a snake den.

Students and/or children not one's own.

The educators' students were influential in their dedication to environmental education. Students were influential because of their enthusiasm, curiosity and sometimes lack of knowledge:

> I realized that they [*students*] were getting away from those connections that I saw as a child, that I felt was important to me, and that sort of, love and connection to the places that they call their neighbourhoods, their communities, just their local ecosystems … they just didn't seem to, number one know about them or sort of have any knowledge about any relationships and if you don't have that, how can you love and respect anything, so that was kind of my focus.

Kindergarten to Grade 12 classes.

The educators also considered their primary and secondary teachers to have been influential:

> Having some good Science teachers in high school.
>
> Courses in environmental geography.

Professional development.

A program that was considered to be influential to all four of the educators' who mentioned professional development was a federal government program for the enhancement of fish populations:

> Opportunities for professional development - project Wild, DFO [Department of Fisheries and Oceans].
>
> Becoming involved in well-organized programs (classroom incubation projects) that are educational sound and well funded.
>
> I think there's one big one, ... DFO started a classroom incubation project for salmon enhancement ... I started the project when it first hit our school district and within two years I became the coordinator 'cause I'd actually stuck with it for two years.
>
> Salmonid enhancement [program].

The following five single factors of influence were each mentioned by three of the interviewed educators. Examples from each category are given following the heading.

Teachers.

> Graduate supervisor ... brought it all together for me.
>
> A Geography teacher that I had in [*college*].

Mentors.

I've had some mentors that have got me, helped me goin', keep going in the environment, [*one person*] mainly.

He was a tremendous mentor, that's certainly one of the reason I certainly believe in mentoring it's a very, very important.

Child/Youth organizations.

Hiking, camping & earning badges with Brownies and Guides.

Scouting as a youngster.

Adult/Professional organizations.

NAME [Northwest Association of Marine Educators] – brought it all together for me.

Joined the [*university*] Outdoor Club and did stuff with them, and then later [*another university*] Outdoors Club.

Principle, Philosophy or Belief.

My personal beliefs for the future of our planet.

[I] am a constructivist re: educational methodology.

Six single factors of influence (Emotional response to natural areas; Pollution, resource use/abuse, residential development, and litter; Graduate courses or program; Community influences; Pets and Animal care; and being Unsure of or if an influence exists) were each mentioned by two educators. One

educator mentioned an emotional response to natural areas:

> Love of wild places developed early.

Another educator had a vivid memory that his work in salmonid enhancement began as a result of seeing the effects of resource abuse and residential development:

> I crossed these beautiful creeks every day on the way to work and there was nothing in them, and I'd stop and check them out, the water flowed, ..., it was a beautiful creek but devoid of fish, they'd all been poached out of existence by the residents that had lived there forever ... it really sort of pointed out that extinction is forever so when the run is gone, it's gone.

Graduate programs in science education appeared to reinforce already held ideas of environmental concern and further learning about the environment. Two educators mentioned the involvement and influence of the community on their interest in environmental education. Community involvement was considered to have increase student's learning and to provide support for continuing the environmental education program. The support came by way of helping with planting and working with students. Raising animals and dealing directly with the care of live fish were two influences mentioned by educators in the single factor of influence category of Pets and Animals.

Of particular note are comments by two educators that they were unsure what influences affected their concern for the environment and their dedication to environmental education:

> Hard to put it down to one thing or things.

> I'm sort of stumped there, ... I really can't, there's not one ... it just seemed to be something that I could do.

These comments are noteworthy because both educators during the course of their interviews and in their autobiographical statements mentioned several factors and experiences of influence. It appeared that on first consideration they

could not think why they had become environmental educators, but upon deeper consideration they felt there were influences that affected them. One of the educators commented that he had never been asked to consider influences on his life direction before. It should be noted that he was one of the educators who had not completed the requested autobiographical statement prior to the interview.

The remaining single factors of influence were each mentioned by only one individual. These factors were; Home on a farm or in a rural area and gardening, Habitat degradation, Volunteer work, Concern for future generations, and Recognition for efforts in environmental education. Each of these factors or experiences had a definite impact on the educator who mentioned it. An example of this was a rich description about the influence of realizing the impacts of habitat degradation:

> We were raising these salmon and putting them back into a creek, ...one July, the first week of July after school had stopped, the creek was dry and our salmon were trapped in little small pools and they were getting quite warm and so, we had a SOS, save our salmon, and went out and moved them ... the light bulb experience there was that, you got to work on the habitat, you can't just.....raise the creatures and then put them back into a degraded habitat, so my interests shifted.

After this experience, the educator became further involved in action environmental education by working on stream rehabilitation as well as continuing with raising salmonids in his school.

Action based environmental education programs (Research Questions IIb and IIc)

The educators interviewed for the current research project were selected because they taught environmental education programs containing an action component. The first section under this heading examines the educators' reasons for involving their students in positive action based environmental education programs. The second section compares these programs by grade level.

Reasons For Action Based Environmental Education Programs

The interviewed educators gave four primary reasons for involving their students in positive action environmental education:

- To show students how they fit into the ecosystems around them and how humans impact those ecosystems.
- To bring a logical conclusion to an awareness → knowledge → action sequence of environmental education.
- To empower students to be part of environmental solutions in an immediate way.
- To stimulate a change in students' environmental attitudes and ethics that might carry over to adulthood.

A minimum of three educators stated each of these four primary reasons. Individual educators gave three other reasons for providing action environmental education programs:

- To provide students an outlet for dealing with life and healing by caring for plants
- To provide hands-on experiences for young children because those types of experiences are connected to understanding, particularly in young children
- To provide a setting for learning skills transferable to future employment opportunities

Types of Action Based Environmental Education Programs

The environmental education programs described in the case study reports are the main programs facilitated, and usually developed, by these teachers. They are involved in many other activities with their students supplemental to these programs. A graphic representation of the main programs taught by these educators at the different grade levels is shown in Figure 2.

Action Environmental Education Program	Student level		
	Primary (Kindergarten to Gr. 3)	Intermediate/ Middle School (Gr. 4 to 7) / (Gr. 6 to 8)	Secondary (Gr. 8 to 12)
Wildlife adoption	▨		
Planting on school grounds	▨	▨	
Energy conservation		▨	
Riparian & streamside planting		▨	
Environmental monitoring		▨	▨
Collecting baseline stream data			▨
Salmon hatchery and sea pen			▨
Salmonid enhancement	▨	▨	▨
Recycling & Habitat clean up	▨	▨	▨
Painting fish on storm drains	▨	▨	▨
Watershed Stewardship	▨	▨	▨

▨ = Participation

Figure 2: A comparison of interviewed educators' action environmental education programs and differing student levels.

The goals of the educators were reflected in the positive environmental action undertaken by their students. For example, Pamela's students were very active in school ground planting because she wanted to provide opportunities for caring for other organisms, an awareness of other organisms in their environment and an understanding of human impacts on those organisms. Goals of the intermediate teachers included wanting their students to feel empowered, wanting students to participate in environmental action that is simple, immediate and leads to a solution, and taking their students through the final step of the awareness → knowledge → action sequence. It was also a goal of these educators to teach students about positive action in the hope that their students would become adults with a positive environmental ethic. One of Stewart's goals with the salmon hatchery and sea pen program was for students

to have experiences where skills for the work force could be learned and practiced.

Reasons for Choosing to Teach Environmental Education (Research Question IId)

There were four reasons, mentioned by at least three educators each, for teaching environmental education as a classroom teacher rather than working in non-institutional environmental education:

- A love of teaching and working with children.
- A belief or philosophy regarding the purpose of public education.
- Concerns about the future and a desire to instigate environmental change.
- Practical reasons such as financial security.

Five educators mentioned a love of teaching and the enjoyment they had working with children. They liked the day-to-day interaction with students and the variety offered by teaching in a school setting. Others mentioned an overall philosophy about the purpose of public education as their reason for remaining a classroom teacher. John felt environmental education needed to happen in the schools because there it could be part of a holistic, well-rounded program allowing for long-term ethic development. Concerns about the future were expressed as a reason for teaching in a school setting. Pamela voiced concerns about what the environment would be like for future generations, and Mark considered our survival on earth to depend on the way we interact with the environment in the future. Several teachers felt there were practical reasons to work as classroom teachers. The financial security of teaching had been an incentive for some to enter the profession, for others it was the challenge of writing funding proposals that deterred them from leaving the profession for consultant work.

Two of the interviewed educators did not provide actual reasons for choosing teaching as a profession because they were both in transitional phases when interviewed. One educator was nearing the end of a sabbatical year during which he had been working as an environmental education consultant. He had

become an educator to educate people, and he found it difficult to do that in the school system because of all the class responsibilities and trying to coordinate environmental education at the same time. This educator returned to the classroom the following year. The other educator was contemplating taking a sabbatical year the following year to work as a consultant. He had been working as a consultant while teaching and was also finding the combined responsibilities of the classroom and facilitating environmental education to be too taxing.

Additional Findings: Barriers to Teaching Environmental Education

There were five general barriers to teaching environmental education each suggested by two or more of the interviewed educators. The most frequently mentioned barrier was funding for programs and for student transportation to natural areas. Finding programs that could be done within the school community, or going to local natural areas within walking distance overcame this difficulty. One educator found student fundraising was a means to enable an outdoor school program to continue each year. Another educator was in a situation where the cost of the program and the transportation costs were almost entirely paid by the student participants. There was some bursary funding available within the school to assist when needed. Unfortunately, this program has since been cancelled due to lack of support.

A lack of support by school administrators, colleagues, parents or the local community was considered a major barrier to environmental education by five of the educators interviewed. Educators seemed to overcome this difficulty through perseverance; once their program had been in existence for some time, it gained the necessary support to continue. Three educators felt the structure of school timetables and the demands of curriculum were barriers to teaching environmental education. Interestingly, it was one educator from each level of teaching who mentioned this difficulty. Helen, a primary teacher, overcame the limitations of timetable and curriculum by teaching integrated units with the environment as a theme. Greg found the structure of schooling with examinations and the paperwork (permission forms for example) required for

students to go into the natural world to be restrictive. As a secondary teacher, Todd overcame the difficulties of taking students away for five days by requiring his students to obtain permission and work from the teachers whose classes they would be missing. It was also necessary to have substitute teachers replace him and any other teachers accompanying the students. This became a financial issue as well.

Two educators considered the lack of time to be a difficulty associated with teaching environmental education. Teachers' lives were already so busy within the school community and teaching the curriculum that making time to develop and teach environmental education was difficult. Pamela was working as a part-time teacher when she began school ground planting, which she felt gave her the advantage of time to organize and run the program. Greg was finding the time constraints very difficult as he became more involved in environmental education programs and was taking a year's sabbatical to work exclusively in environmental education. There were two interviewed educators who felt the barriers to environmental education were mental barriers. One of these educators felt teachers made excuses for not being able to teach environmental education because they were not willing to make the effort or the long-term commitment required.

Individual educators mentioned several other barriers to teaching environmental education within the school system. These included a lack of leadership at the level of the British Columbia Ministry of Education, society's consumptive attitude towards the environment, teacher's insecurity and lack of knowledge about being in the outdoors, the age of the teaching population, and the long-term commitment required for a successful environmental education program. The socialization of teachers was also considered a barrier because they were afraid to risk negative judgments about themselves and their programs. The educator who mentioned this barrier considered she had taken many risks and pushed the system in order to teach environmental education action programs. A final barrier that was mentioned specifically referred to programs for planting on school grounds. The barrier was that the individuals who determined the school ground environment had a preconceived idea about what they had enjoyed and felt the same was required for current students.

These decision makers were generally men who had enjoyed sports grounds in their school grounds.

Eight of the ten outstanding environmental educators interviewed considered there to be at least two major barriers to teaching environmental education within the school system. That educators who had been so successful in developing and teaching environmental action programs despite such difficulties were aware of such barriers indicates the difficulties that must face other educators in British Columbia.

This chapter and the previous chapter have presented the findings of the current research study. Chapter 6 summarizes those findings, explains the meaning of the findings and relates them to previous studies.

Chapter 6: Discussion

With this study, the populations studied in significant life experience research have been expanded to include environmental educators in British Columbia. The first part of the current study examined significant life experiences of 56 environmental educators with addresses in British Columbia who responded to a questionnaire. Each respondent provided demographic information and indicated personal participation in eleven positive environmental activities and participation with students in positive environmental activities. In the second part of the study, ten outstanding environmental educators nominated by leaders in environmental education in British Columbia, were interviewed regarding their life experiences. Case study reports of these ten educators were presented in Chapter 5. In both parts of the study the factors and experiences of influence mentioned by the subjects were classified into categories and compared to determine percentages of mention. The environmental education programs of the interviewed educators and their reasons for involving students in environmental action were compared. The interviewed educators' reasons for working as classroom teachers rather than as environmental activists or educators outside the formal school system were compared. Lastly, a discussion of barriers to environmental education was presented.

This chapter is divided into six sections. The first section describes the findings about significant life experiences from the analysis of the questionnaire autobiographical statements and from the interviews of outstanding environmental educators. The second section discusses the action based environmental education programs of the ten interviewed educators. These programs are compared based on their age-relatedness. The interviewed environmental educators' reasons for choosing teaching as a profession are discussed in the third section. The fourth section presents barriers to teaching environmental education in the classroom as seen by the interviewed educators. General implications of the research findings are discussed in the fourth section and specific research needed to clarify and extend the findings are suggested in the fifth section. The final section of this chapter discusses the future direction of

significant life experience research as suggested by the findings of the current research.

Summary of Findings about Significant Life Experiences of Environmental Educators

Findings from Questionnaires

The questionnaire respondents were involved in positive environmental activities on a personal level as well as with their students. More than two thirds of the respondents indicated environmental responsibility through activities such as living an environmentally friendly lifestyle (96%), reading about environmental issues (96%), outdoor recreation (89%), attending professional development in environmental education (86%), membership in professional environmental education organizations (86%), recycling (73%), and political activism (80%) in the form of membership in environmental organizations, attending public meetings, letter writing campaigns and writing articles. The majority of respondents also self-reported involvement in practical conservation (tree planting and wildlife gardening for example, 61%) and working on curriculum development in environmental education (66%). A majority of the environmental educators (71%) participated in recycling with their students. More than a third of the respondents were involved in outdoor recreation (48%), planting trees (43%), stream or beach clean up (36%) and Greening Schoolyards (34%) with their students. Of those questionnaire respondents who were Kindergarten to Grade 12 teachers, 30% took their students on more than three environmental education based field trips per year and 50% took their students on one to three such field trips a year.

The analysis of autobiographical statements regarding influences instrumental in developing interest and dedication to environmental education indicated the influences of people (59%) to be predominant to the respondents. The second most instrumental group of influences was experiences in natural areas (54%). Vocations (41%) were also important influences. Educational courses at all levels (36%) and societal concerns and influences (34%) were

mentioned by the respondents as being influential in the development of their interest and dedication to environmental education. Two other groupings of factors of influence, experiences of negative environmental impact (29%) and organizations (11%), were each mentioned by less than a third of the respondents. There were eleven single factors of influence that did not naturally fit into groupings. Each of those was mentioned by 5% or less of the respondents.

No single factor of influence was mentioned by more than 40% of the respondents as being instrumental in the development of their interest and dedication to environmental education. The two single influences mentioned most frequently were the influence of employment (39%) and personal principles, philosophies or beliefs (30%). Five single influences; experience of natural areas as an adult, or at unspecified age, emotional response to experience of natural areas, family, students or children (not one's own) and college or university undergraduate courses, were mentioned by 20% of the respondents as being influential. The remaining single factors of influence mentioned by more than 10% of the respondents were; professional development (16%), friends or colleagues or other individuals (14%), habitat degradation (14%), a home on a farm or in a rural area (13%), pollution or resource use/abuse or residential development or litter (13%), and childhood or youth experience in natural areas (11%). Fewer than six respondents cited each of the remaining single factors (Table 3).

Environmental educators in British Columbia are involved in a great variety of positive environmental activities ranging from practical conservation to outdoor recreation to professional development and political activism. Participation in these activities indicates environmental responsibility and activism. Respondents were shown as individuals environmentally responsible and active in the same manner as Palmer (1993; Palmer, Corcoran and Suggate, 1996; Palmer and Suggate, 1996; Palmer, Suggate, Bajd, & Tsaliki, 1998; Palmer, Suggate, et al 1999). In this study positive environmental action was defined as working to resolve an environmental problem or issue. Tanner (1998b) defines an activist as:

> One who engages directly in pro-environmental political activism and/or provides it financial support as through contributions to selected activist organizations. (p. 400)

The subjects of this study satisfy both of these definitions of environmental activism through the activities in which they partake. For instance, 96% of the respondents consider themselves to live an environmentally responsible lifestyle, and 73% report recycling. Both activities are working towards solving the environmental problems of waste disposal and energy conservation in packaging and merchandising. Since the respondents are from different regions of British Columbia it is not possible to know why more are not involved in recycling, which is prevalent in many communities in the province. It may be that some respondents live in communities where recycling is not yet possible. Four types of political activism were suggested in the questionnaire (membership in an environmental organization, attending public meetings, letter writing campaigns, writing articles) and 80% of the respondents participate in at least one of these. According to Tanner's (1998b) definition, at least 52% of the respondents are politically active because they are members of environmental organizations, thus providing financial support for environmental action. These educators are also informed with regards to the environment as evidenced by the high percentage that read about environmental issues. From the number of respondents involved in different environmental activities, it is possible to say this is a group of people who are environmentally aware and proactive.

The most frequently mentioned groups of experiences instrumental in developing the respondents' interest and dedication to environmental education were experiences with other people and experiences in natural areas. The influence of people was either an experience participated in with another person or persons, or it was the person who was the influencing factor. Not surprisingly, the most influential people were family members, generally parents. These parents took their children into the natural world, they acted as role models and they instilled their own enjoyment of traveling and the outdoors in their children. Experiences of natural areas came in several forms, many as adult experiences either enjoying the outdoors, or participating in recreational

activities such as camping, hiking or fishing. The prevalence of both experiences with environmentally aware people and experiences in natural areas suggest that providing such experiences for today's children and youth might encourage the environmental awareness and dedication shown by the subjects of the current study.

Overall, the number of times each factor of influence was mentioned was lower than anticipated. The responses were spread out over a large number of groups of factors rather than being concentrated on a few groups. Therefore, the factors and experiences that influenced interest and dedication to environmental education in the respondents were generally more varied rather than similar between the respondents. A comparison of the mean and range of frequency of mention between the current study and the findings from the Kentucky environmentalist sample by Chawla (1999), finds the values to be similar. Chawla reported an average number of responses per person of four with a range of one to six. In the current study the average number of response categories per person was 3.3 with a range of one to seven. It must be noted however, that the mean number of responses for the current study does not take into account multiple mentions within a single factor of influence category by the same respondent. Therefore, the actual number of responses is slightly higher than the mean suggests. However, it does consider multiple responses that were in different categories of single factors of influence. This comparison of mean and range supports the finding of more varied and less similar responses in the current study than were found in previous studies. There were a number of influential factors affecting these respondents rather than only a few, thus the low frequency of response values for the factors of influence.

Despite this, there were definite single factors of influence or experiences that were mentioned by more respondents than others. The most frequently mentioned single factor of influence was that of employment. Unfortunately it is difficult to determine from the autobiographical statements if the interest in environmental education preceded the employment, or was a result of that employment. This is seen in statements such as, "working in the field of nature interpretation", "teaching in Ucluelet Secondary School in the wild west coast of Vancouver Island", and "I started with a will to get students/school involved in

their city". In other instances, the influence of the employment definitely increased the interest in environmental education, for example:

> I began doing ecology based work in BC with fisheries and wildlife research, but felt that the information was very closed within the scientific community. This attracted me to the field of environmental education.

Chawla (1999) overcame this difficulty of classifying mentions of the influence of employment by only including experiences "explicitly said to motivate a new or deeper level of environmental interest" (p. 18). However, in this study, respondents were specifically requested to provide experiences and/or factors instrumental in developing their interest and dedication to the field of environmental education, therefore, all employment experiences noted were classified. It was understood by the researcher that if the respondent mentioned the influence, it was therefore considered instrumental by that respondent and thus must be classified.

The second most frequently mentioned single factor of influence was a personal principle, philosophy or belief, indicating the respondents felt strongly about their ideas regarding the environment and its care. It is not possible to determine from the autobiographical statements where and how these principles and philosophies arose. There was also a strong desire to share beliefs about environmental stewardship and care indicated by the respondents. This ties together with the influence of students mentioned by many participants in the study. This was an unexpected category of influence, as it had not been reported in previous studies. It appeared that educators saw a lack of understanding or a lack of consideration exhibited by their students or other non-related children that they were inspired to address through the teaching of environmental education. The combination of a desire to share knowledge and understanding, and a perceived need in students resulted in many individual's interest and dedication to the field of environmental education.

Almost twice as many people mentioned influential experiences in the natural world as an adult or at an unspecified age than as a child. This might be partially explained by the knowledge that more than half of the respondents

grew up in urban or suburban areas. It may be that their experiences in the natural world as children were infrequent or not noteworthy to them.

The only other single factor of influence mentioned by at least 20% of the respondents was the influence of college or university undergraduate courses or program. As with the mention of employment, these courses were obviously influential, yet it is difficult to know if the individual attended a course as a result of a prior interest in the environment, or if the course itself fostered or sparked that interest.

There was only one mention of media of any type influencing a respondent, in reference to an anti-litter campaign on television, and that respondent was in the middle age group (30 - 50 years old). This was surprising due to the suggestion in the literature that the prevalence of different type of media in our lives should result in it being more influential to young people (Palmer and Suggate, 1996). Television and the media (films) were also found to be very influential in a study by Snively and Sheppy (Snively, personal communication, July 30, 2002).

The results indicate that experiences in natural areas are important in the development of interest and dedication to environmental education and by extension environmental awareness. These findings support the general findings of other research into significant life experiences of environmentally aware and responsible adults. However, also of importance are experiences with other people, especially family members, friends, colleagues and other individuals such as authors (but not teachers or mentors).

Findings related to past literature.

Environmental educators in British Columbia were found to be pro-environmentally active individuals. This is consistent with findings of significant life experience research of other groups of environmental educators (Palmer et al., 1993 - 1999). The findings from the analysis of the autobiographic statements from the questionnaire respondents both converge and diverge with the findings reported in the literature. Before the areas of convergence and divergence are discussed, it must be noted that comparisons between studies are difficult due to

the variation in research questions, populations studied, and definitions of categories used for classifying significant life experiences (Chawla, 1998a).

The percentages of mention of the factors of influence instrumental in the development of interest and dedication to the field of environmental education are all less than 60% for the groups of factors, and 40% of respondents for the single factors of influence. These tallies are low compared to the 75% or more of participants citing the most frequently mentioned influences reported in the literature (Tanner, 1980; Peterson, 1982; Palmer, 1993; Chawla, 1999; Palmer, Suggate, Robottom and Hart, 1999). In a review of research on significant life experiences, Chawla (1998a) concluded that similar experiences were noted as sources of environmental concern, activism, interest and career choice:

> Positive experiences in natural areas, adult role models, environmental organizations, education, negative experiences of environmental degradation, books and other media, and on-the-job experience. (p. 377-378)

The subjects in this study mentioned all of these types of experiences although they were mentioned by proportionately fewer participants than in previous studies. The two most frequently mentioned factors of influence instrumental in the development of interest and dedicated to the field of environmental education were the group of factors categorized as People and those categorized as Experiences in Natural Areas. In the literature family influences have been categorized both as a single factor of influence, and as part of a group of factors, generally titled People, which is then subdivided into single factors. Therefore, it is possible to say, as found in previous research, that experiences in natural areas is one of the most frequently mentioned group of factors of influences in the lives of environmental educators in British Columbia.

The most frequently mentioned group of influences in the development of interest and dedication to the field of environmental education by British Columbia environmental educators is the influence of people. People are considered influential factors in all previous environmental education studies of significant life experiences. The ranking of people as an influence varies from

being reported as the second most influential group (Scholl-Wilder, 1983; Chawla, 1999) to being of importance to less than a third of the population studied (Palmer, Suggate, Bajd, and Tsaliki, 1998 (Greek sample); Palmer, Suggate, Bajd, Hart et al, 1998, (Uganda sample).

The second most frequently mentioned group of influences in this study was experience of natural areas. Experience of natural areas is one of the most frequently reported significant influences in other studies of significant life experiences of environmental educators, conservationists, environmentalists, and environmental professionals (Chawla, 1998c). Again though, there is a difficulty in making comparisons between studies due to the differing definitions used for the group of influences considered experiences of the natural environment. As mentioned in A. Gough (1999) and Dillon et al, (1999) it is difficult, if not impossible, to make comparisons between countries and cultures. For these reasons, the remainder of this discussion will center on comparisons between the results of the current study and those of Chawla (1999) and Palmer, Suggate, Robottom and Hart (1999). The categories of factors of influence used in the analysis of the results of this research were based on the categories used by Chawla (1999), thus legitimate comparisons can be made. Data from Chawla (1999) used for comparison will be restricted to those obtained from American environmentalists in order to minimize cultural differences. The other environmentalists interviewed by Chawla were Norwegian. Palmer, Suggate, Robottom and Hart (1999) reported results from a study that included a sample of Canadian environmental educators, thus it is of interest to compare their findings with those of the current study. That is the only previous study of significant life experiences in the field of environmental education that specifically uses data from Canadian subjects. Peterson (1982) interviewed 22 environmental educators, some of whom were Canadian, however, she does not distinguish data obtained from Canadians from those of the Americans. Furthermore, Peterson was very specifically investigating life experiences leading to environmental sensitivity and her categories of experiences were very different from those used here.

Five of 11 sources of commitment to environmental protection determined by Chawla (1999, p. 18) have comparable category definitions to those used in the

current study (Appendix I). It is noted that three of Chawla's categories are groups of factors in the current study (Experience of natural areas, Organizations, and Experiences of negative environmental impact) and two (Family, Principle, philosophy or belief) are considered single factors of influence. The comparison is valid however, because it is the percent mention rate from each sample that is compared.

Table 9: A comparison of frequency of mention in categories of significant life experiences between Chawla (1999) and data from the questionnaire respondents of the current study.

Chawla (1999)		Current Study	
Factors of Influence Categories	Kentucky n=30 (Rank)	N=56 (Rank)	Factors of Influence Categories
Experience of natural areas	87% (1)	54% (2)	Experience of natural areas
Family	80% (2)	20%[a]	Family (People)[b]
Organizations	53% (3)	11% (8)	Organizations
Negative experiences	33% (5)	29% (6)	Experiences of negative environmental impact
Principles or religion	10% (8)	30%[a]	Principle, philosophy or belief (Societal)[b]

[a]no rank given because these are single factors of influence thus cannot be ranked in comparison to the groups of factors ranking.
[b]group of factors in which single factor is included is given in parentheses.

The comparison (Table 9) indicates none of the categories have similar ranking in the two studies. In both studies the importance of experience of natural areas was indicated. If the single factors of influence Family and Principle, philosophy or belief, were ranked as groups of factors, they would be ranked seventh and fifth respectively. As noted in Table 3, Family members were one of the third most frequently mentioned single factors of influence in the current study. Thus, although they were only mentioned by 20% of the respondents, their influence was of relative importance since only two single

factors were mentioned more frequently. Corcoran (1999) also found the greatest human influence on subjects from both the United States and the United Kingdom was the family.

The differences in the percent of mention and ranking for the factors between the questionnaire respondents' autobiographical statements and data from Chawla (1999) may be a result of a number of differences in the subjects and methodology between the studies.

Firstly, the populations were different in terms of their vocations. Chawla interviewed environmentalists who had been recommended by well known environmental figures in Kentucky. Her participants had been recommended by more than one person, or had shown particular achievement in environmentalism. These environmentalists were experienced activists considered particularly effective at achieving the resolution of environmental issues such as recycling and waste management, land use planning, transportation, regulation of surface mining and habitat and wildlife preservation. By contrast, respondents to a call for subjects posted on the Northwest Aquatic and Marine Educators (NAME) association and the Environmental Educators Provincial Specialist Association of British Columbia (EEPSA) listserves and a mail out to the membership of EEPSA were the subjects for this part of the current study. The environmental awareness and activity of the subjects of the current study was established through self-reporting of participation in pro-environmental activities. Thus, it is possible that Chawla's subjects were a more homogenous group in terms of their commitment to environmental activism because of their past achievements in that field. The members of the provincial environmental education association ranged from non-formal educators who offer environmental education programs, to teachers who integrate environmental education into their curriculum. Some of the respondents worked as teachers and consultants or non-formal educators either concurrently or consecutively, thus they were a diverse group with likely different levels of interest and dedication to the field of environmental education. It can be seen therefore, that the subjects for the current study and Chawla's study, although all concerned about the environment and involved in positive environmental activism, were possibly different in their dedication and approach

to environmental activism. Chawla's subjects were individuals on the front lines of environmental activism, fighting for changes that would affect multitudes of other people. On the other hand, the subjects of the current study were educators, first and foremost, and working on environmental activism as an extension of their lives as educators. This does not negate the possibility of their being involved in the front lines of activism, but it is less likely than was seen in Chawla's sample. Indeed, teachers might lose their jobs if they were arrested and acquired a criminal record. Thus these groups had different approaches to environmental activism, the approaches perhaps having been affected by their life experiences.

Secondly, there are differences in age and gender distribution between the subjects of the current study and those of Chawla. Chawla's sample consisted of 60% of subjects aged 30 to 49 years, and 40% of subjects aged 50 years and older. The age distribution was slightly different in the sample for this study; 16% under 30 years, 52% aged 30 to 50 years and 32% over 50 years of age. It is of particular note that this sample contained subjects under 30 years of age, whereas Chawla's sample of Kentucky environmentalists did not. Palmer, Suggate, Bajd, Hart et al. (1998) noted striking differences in the frequency of mention of influences in the categories of childhood experiences of nature and work for those subjects under 30 years of age and those over 30. Those under 30 years of age mentioned such experiences less frequently (Palmer, Suggate, Bajd, Hart et al., 1998). It was results such as these that prompted Annette Gough (1999) to call for more research to look at age and gender differences and differences in significant life experiences. This has not yet been done and was not undertaken in the current study. The analysis of the questionnaire responses was a baseline for the more detailed description of the ten outstanding environmental educators who had been recommended by leaders in environmental education in B.C. There is sufficient data for age and gender comparison to be done at a later date. Gender differences between the Chawla subjects and the questionnaire respondents for the present study were more marked than the age differences. Two thirds of Chawla's environmentalists were male whereas only 38% of this sample was male. The largest age group in both studies was the middle age group, thus this age group had the greatest impact on the total frequency of

factors of influence. Within this age group, 43% were male in Chawla's study and only 20% were male in this study. A. Gough (1999) pointed out that women have different knowledge of the environment and different attitudes towards the environment that could result in different life experiences related to the environment. The described vocational and demographic differences between the current study and that by Chawla (1999) may help explain some of the variation in the results of the two studies.

Thirdly, there are differences in methodology between this part of the current study and Chawla's (1999) study. Data collection for this part of the current study was done through the completion of questionnaires, including an autobiographical statement about the development of interest and dedication to the environment. The factors of influence mentioned in each respondent's autobiographical statement were categorized. Chawla, by contrast, interviewed her subjects, and used the interview transcripts to determine sources of environmental concern, which were then categorized. The structured open-ended interview technique used by Chawla allowed for probing for elaboration and further detail in responses. Such clarification was not a possibility with the questionnaires utilized in this study. The average number of single factors of influence mentioned per person was 3.3 with a range of one to seven for the B.C. environmental educators. Chawla had a range of response of one to six with an average of four responses per person.

Chawla (1999) noted that five of the Norwegian environmentalists she interviewed did not consider their extensive use of the outdoors as children "to set them apart from others, because "that is just being Norwegian"." (p.19). There may be fewer mentions of experiences in natural areas by the respondents in the current study because they too considered such experiences to be typical of those who live in British Columbia. Certainly British Columbians are fortunate in having vast tracts of wilderness available for exploration and recreation, although these areas are decreasing in size and number each year. More research would need to be conducted to determine if this was part of the reason experiences in the natural world were not mentioned more frequently as significant life experiences.

A comparison of single factors of influence with similar category definitions shows very different percents of mention between Chawla (1999) and the current study. One respondent (2% of the sample) in the current study mentioned the influence of a sense of social justice, whereas 23% of the Kentucky environmentalists mentioned this influence as being significant in their lives. Of the other two single factors of influence that can be compared, the influence of a book or author was mentioned by 7% of the Kentucky sample, but was not mentioned by any of the British Columbia questionnaire respondents. Likewise, the B.C. sample mentioned concern for future generations as being a significant influence, but none of the Kentucky sample mentioned that influence.

The comparison between the findings of the significant life experiences reported by the questionnaire respondents in the current study and the sample of environmentalists from Kentucky in Chawla's 1999 study, indicate both similarities and differences. The findings of the current study support the findings of Chawla's study in that family and experiences in natural areas are influential in the development of environmental responsibility and awareness.

Palmer, Suggate, Robottom and Hart (1999) stated one of the objectives of the research project of which their study was a part, as being "to identify formative influences and significant life experiences (SLE) in the lives of environmental educators" (p. 181). This was also an objective of this study. Palmer et al. (1999) requested an autobiographical statement about significant life experiences leading to concern for the environment, rather than leading to dedication to environmental education as was requested for this study. A comparison between the Canadian sample from Palmer, Suggate, Robottom and Hart (1999) and this part of the current study, indicates more similarities in terms of the rank of grouped factors of influence (Table 10) than was found in the comparison with Chawla (1999).

Table 10: A comparison of frequency of mention in categories of significant life experiences between Palmer, Suggate, Robottom & Hart (1999) and data from the questionnaire respondents of the current study.

Palmer, Suggate, Robottom & Hart (1999)		Current Study	
Factors of Influence Categories	Canada n=48 (Rank)	N=56 (Rank)	Factors of Influence Categories
People	77% (1)	59% (1)	People
Childhood nature/outdoors	75% (2)	11%[a]	Childhood/youth (Experience of natural areas)[b]
Work	60% (3)	41% (3)	Vocation
Adult nature/outdoors	56% (4)	20%[a]	Adult/unspecified age (Experience of natural areas)[b]
Education	56% (4)	36% (4)	Education

[a]no rank given because these are single factors of influence thus cannot be ranked in comparison to the groups of factors ranking.
[b]group of factors in which single factor is included is given in parentheses

As with Chawla (1999), the percent of mention of many factors of influence was lower for the current study than for Palmer, Suggate, Robottom and Hart (1999), however, the ranking of the compared groups of factors is similar (Table 10). The similar rankings may result from the similarity in vocation between the subjects of the current study and those of Palmer et al. The factors of influence grouped under the heading of People were the most frequently mentioned influences by both sample groups. The groups titled Vocation and Education were also ranked similarly in both studies. Even without category descriptions provided by Palmer et al, it is apparent that similar types of influences were important to participants in both studies.

Palmer, Suggate, Robottom and Hart (1999) do not describe how the Canadian environmental educators in their study were selected. Thus it is not possible to compare the participants in more specific terms than to say that in both studies they were determined to be environmentally responsible

individuals. Interestingly, Palmer et al report that at least 79% of the sample participated in each of seven suggested pro-environmental activities. This was a much higher participation rate than acknowledged for some of the same activities for the participants of the current study. With regards to gender and age, approximately half of the participants in Palmer et al's study were female, with 83% between the ages of 30 and 50 years, and none less than 30 years old. In comparison, the participants in the current study were nearly two-thirds female, and 52% were between the ages of 30 to 50 years, with 16% less than 30 years of age. The middle age group in both studies had the greatest impact on the tallies of frequency of mention of factors of influences.

The most frequently mentioned group of factors instrumental in the development and interest in environmental education by the participants in both studies were influences involving people. In both studies the group People was subdivided into single factors of influence. Those single factors of influence in the current study were family, students or other people's children, friends or colleagues or other individuals, teachers, and mentors in decreasing frequency of mention. In the study by Palmer, Suggate, Robottom and Hart (1999), the group People was divided into the single factors of close family, older friends, and having children, in decreasing frequency of mention. Palmer et al. (1999) also listed a single factor of influence category Friends, but the frequency of mention of this category is not given. Subjects in both studies mentioned similar single factors of influence. Palmer et al. noted that significant experiences with close family members were often, "linked with childhood experiences of nature" (p.195). This was also true of many experiences with family members mentioned by the questionnaire respondents in the current study. Therefore, although there were differences in the samples, both studies determined the most frequently mentioned significant influences were people, and the most influential people were family members. This makes innate sense, as it would be expected that for most individuals, more time is spent with family members than any other people. This result also suggests many respondents' experiences with nature were in the company of at least one family member.

The second most frequently mentioned group of factors of influence in the current study was Experiences of natural areas. This group of factors from the

current study does not compare well with the categories used by Palmer, Suggate, Robottom and Hart (1999), because it includes all the influences Palmer et al. (1999) separated into the two groups of Nature/outdoors (child) and Nature/outdoors (adult).

The categorization by Palmer, Suggate, Robottom and Hart (1999) subdivided the group of experiences in natural areas into childhood and adult experiences. Childhood experiences were mentioned by 75% of the participants whereas adult experiences were mentioned by 56%. Adult experiences in natural areas were important factors for 20% of the subjects in the current study, and childhood experiences were mentioned by only 11% of the subjects. These results are surprising given the relative similarities in the population demographics and that both populations were Canadian. It was expected there would be closer agreement in the results. However, without more information regarding sample selection by Palmer et al., it is very difficult to hypothesize the source of the divergence. It is also noteworthy that there were two other single factors of influence mentioned in the current study that were not considered separate categories by Palmer et al.; the influence of having an emotional response to natural areas and the influence of having a home on a farm or in a rural area. These were very distinct influences in the current study. Palmer et al. provided examples of each category, and one participant describes living "back to the land" (1999, p. 191). This is categorized as adult gardening or agriculture.

The frequencies of mention of the remaining single factors of influence are more divergent. Although the categories did not appear to be identical, it was still apparent that more individuals in Palmer et al's study were influenced by pollution, tertiary education and travel experiences than in the current study.

The limited comparisons between the findings of the current study and those of Chawla (1999) and Palmer, Suggate, Robottom and Hart (1999) indicate there is some converge and some divergence in the results. Even with consideration taken for the differing purposes of the research and the different populations studied, all three studies found experiences in natural areas, the influence of people, educational influences, and job related experiences were important in the development of environmentalists and environmental educators. The frequency with which each group of influences was mentioned

varied considerably between the studies, yet all three indicated the importance of these influences to the participants. These results are in general agreement with the findings of other environmental education research into significant life experiences (Chawla, 1998b). Thus, although the generalizability of the current findings is limited, they do support previous research on populations of environmental educators.

The current research has extended the populations whose significant life experiences have been studied. This is the first study concentrating on a sample of environmental educators from a Canadian province. The implications of this research coincide with the implications suggested by other environmental education research into significant life experiences; that is the importance of experiences in natural areas, and the critical influence of people in developing personal environmental awareness and responsibility (Scholl-Wilder, 1983; Palmer, 1993; Palmer, Suggate, Robottom & Hart, 1999; Sward, 1999; Chawla, 1999; Corcoran, 1999).

The results of this research also illustrate that there are a range of important influences that produce environmentally aware individuals who are dedicated to the field of environmental education. There were several important groupings of experiences, which together produced these individuals. This finding supports the conclusion of Chawla (1998c):

> There is no single all-potent experience that produces environmentally informed and active citizens, but many together. (p. 19)

Findings from Interviews of Outstanding Environmental Educators

The second part of the current study concentrated on data collected through interviews of environmental educators nominated as outstanding by leaders in the field of environmental education in British Columbia. The interviewed educators were more environmentally active with their students than were the questionnaire respondents with their students. This greater involvement in school-based positive environmental action was determined by

the comparison of the results of Section 3 of the questionnaire (Appendix B). The Tbilisi Declaration states it to be a goal of environmental education to provide opportunities for individuals and groups to be actively involved in the resolution of environmental problems (Hungerford and Peyton, 1980). The environmental educators interviewed for the current study provided such opportunities to their students.

It is necessary to place the demographics of the interviewees in context with the demographics of the larger sample of environmental educators from British Columbia who responded to the questionnaire. There were two women educators interviewed, both over the age of 50. This was representative of the same demographic of the questionnaire respondents. Although 62.5% of the questionnaire respondents were women, only 21% of the respondents were female Kindergarten to Grade 12 teachers over 50 years old. The male teachers interviewed were not a representative sample of the environmental educators who responded to the questionnaire. The percentage of male Kindergarten to Grade 12 teachers between 30 and 50 years old was very similar; 24% for the questionnaire sample and 20% for the interview sample. However, the percentage of male teachers in the older age group (over 50 years of age) was not comparable because only 9% of the questionnaire respondents fit into that demographic compared to 60% of the interviewees. The reason for this difference was likely the more rigorous criteria of environmental involvement for nomination of educators for interviews (Appendix D). It must be considered that the differing demographics may be an artifact of sampling selection because one third fewer male than female environmental educators returned the questionnaire. The numbers of years the interviewees have each taught suggests the interviewees are a subset, but not a representative subset of the environmental educator questionnaire respondents. 60% of the interviewees had taught for more than 25 years, compared to 22% of the questionnaire respondents who were elementary and secondary school teachers. In light of suggestions by A. Gough (1999) to examine significant life experiences of people in environmental fields with regards to gender and age differences, it is important to note the similarities and differences between the demographics of the questionnaire respondent sample and the interviewees of the current study. This

comparison shows the interviewees to be a representative subset of the questionnaire respondents in most parameters, with the exception of the oldest age group of male interviewees and the interviewees with the most years of teaching experience. The interviewed sample group was more weighted towards older male teachers than the respondents to the questionnaire.

The outstanding environmental educators interviewed for the current study provided an autobiographical statement about significant life experiences instrumental to the development of interest and dedication to the field of environmental education. This statement was combined with the information from the interview about the development of concern for the environment and life path into environmental education to determine influential factors and experiences in the lives of these educators.

The analysis of these formative experiences shows experiences in natural areas and the influence of people were mentioned the most frequently. All interviewed educators mentioned factors in each of these groups. They felt that time spent alone, or more often, with family or friends in the natural world was formative in their lives. Many of the educators had specific places they visited frequently and came to know. This familiarity led to recognition of changes to the area as urban development took over natural spaces. It is not surprising therefore that the next most frequently mentioned group of factors was experiences of negative environmental impact. Also mentioned by 70% of the interviewees were education courses or programs. The interviewees generally referred to education courses and programs, including professional development as increasing their dedication to environmental education, although they were inclined towards environmental concern before attending these courses. The interview situation permitted elaboration on the influence of education courses, which had not been possible with the mention of this group of factors of influence by the questionnaire respondents.

As indicated by the questionnaire respondents, vocational influences (60%) were instrumental to the interviewed educators. The educators entered their employments with a sense of environmental responsibility already developed, but the employment motivated a deeper dedication to environmental concern and environmental education. The groups of organizational and societal

influences were mentioned by 50% of the interviewed educators. None of the single factors within these groups were mentioned by more than three of the interviewees. Organizations had an equal influence when the educators were youths as it did in adulthood. The Scouting and Guiding organizations were the only child and youth organizations mentioned by the interviewees.

The only single factor of influence mentioned by all interviewees was childhood experiences in natural areas. These activities included time spent playing in nearby rural and undeveloped areas, as well as time spent involved in outdoor recreation in more wilderness type environments. The detailed descriptions of these experiences are an indication of how significant they were to the participants. These were the only descriptions of significant experiences so vivid that the smells and sounds of the experiences could be relived:

> Mark: " ... herds of antelope, we could hear them thundering ..."
> Pamela: " smells of sage, wild onion, cottonwood and ponderosa pine ..."

No other single factors of influence were mentioned by more than five of the interviewed educators. The single factors of the influences of friends and other individuals, a change in a childhood or adult area that was frequented, college or undergraduate university courses, and employment were each mentioned by five educators. Other people, other levels of education courses and adult experiences of natural areas were all factors of influences mentioned by four of the educators. Only one or two of the educators mentioned the other single factors of influence (Table 6).

The findings of the analysis of the significant life experiences of outstanding environmental educators involved in action environmental education with their students indicate the experiences most influential in developing their concern for the environment and dedication to environmental education were experiences in natural areas as children. That all of the educators mentioned such experiences indicates their importance. These findings support previous research which indicated experiences in natural areas to be the most frequently mentioned influential factors for developing environmental sensitivity and responsibility in the lives of environmental educators (Peterson, 1982;

Palmer, Suggate, Bajd, Hart et al.; 1998), environmentalists (Chawla, 1999), and environmental professionals (Sward, 1999).

Findings from interviews related to past literature.

All of the interviewed educators mentioned childhood time in the outdoors as a formative factor, however, other single factors were mentioned by at the most 50% of the participants. These low frequencies of mention emphasize the importance of childhood experiences in natural areas and imply a great variety of other experiences and influences as instrumental. In past research, the two most frequently mentioned single factors of influence were often mentioned by greater than 50% of the participants (Tanner, 1980; Peterson, 1982; Scholl-Wilder, 1983; Chawla, 1999; Palmer, Suggate, Robottom & Hart, 1999 - Australia and Canada data only).

The average number of factors mentioned in autobiographical statements for Canadian data (Palmer, Suggate, Bajd, Hart et al., 1998) was 5.44. In the current study, the average number of factors mentioned was 3.3 (range one to seven) for the questionnaire respondent autobiographical statements (similar methodology to Palmer's) and 8.2 (range 6-13) for the interviewees, a combination of autobiographical statement and interview. Chawla had an average number of factors of four (range one to six). There is no other data on range to compare, but this implies that the interview methodology obtains more factors from the participants than does the questionnaire or survey autobiographical statement methodology. Interviews permit the researcher to use prompts for elaboration (Chawla, 1999), which might explain the greater average number of factors mentioned. Certainly elaboration of some of the autobiographical statements would have provided clarity as to the experience.

These findings provided a rich description of ten environmental educators whose reported experiences are similar to those described in the literature. The results of the analysis of significant life experiences of the interviewees are on their own very limited in generalizability due to the small sample size. However, when combined with past results on significant life experiences of environmentalists, conservationists, environmental professionals and

environmental educators they support a need to ensure children are given opportunities for experiences in natural areas.

Action based Environmental Education Programs

An environmentally responsible individual is someone who is aware and sensitive to the environment and its problems, has a basic understanding of the environment, shows concern for the state of the environment, is motivated and active in environmental protection and has the necessary skills to identify and solve environmental problems (Hungerford and Volk, 1990). To help students attain these characteristics is a goal of environmental education. It has been shown that knowledge and awareness of environmental issues are not sufficient for individuals to act in an environmentally responsible way. Students need both knowledge of environmental action strategies and skill in using these strategies to develop environmentally responsible behaviours (Sia, Hungerford & Tomera, 1985/86). The educators interviewed for the current study are environmentally responsible citizens and they involved their students in action strategies as part of their environmental education programs. The teaching and practicing of action strategies is supported by the literature as a means to develop environmentally responsible citizens (Sia, Hungerford & Tomera, 1985/86; Hines, Hungerford & Tomera, 1986/87; Ramsay, Hungerford & Volk, 1992; Hammond, 1996/97).

The environmental education programs developed and/or facilitated by these environmental educators included school ground plantings, watershed stewardship, raising and releasing salmon, wildlife adoption, courses in marine biology, fisheries and wildlife, riparian planting, stream and marine ecosystem monitoring, outdoor camps, habitat clean-up, salmon hatchery and sea-pen operation, energy conservation, and outdoor and native study skills and appreciation. These programs can be divided into three groups based on the environmental action participated in by the students. The first group includes those with a strong positive environmental action component. The second group is composed of those with an environmental action component along with other

emphases such as spending time in the outdoors appreciating and learning about the natural environment, and outdoor camps where knowledge and awareness are stressed more than environmental action. The final group includes environmental education programs where the main focus of the program in not action, however students are involved in positive environmental action to some degree. The definition of environmental action, working to resolve an environmental issue or problem, defines the environmental action taken in these programs or in association with them. Recycling and litter clean up are positive environmental actions, although the end results are perhaps not immediately obvious as resolving an environmental problem. On the other hand, a salmon hatchery program is very definitely helping to resolve the problem of declining salmon stocks on the west coast. As the ten environmental educators were nominated for having outstanding environmental education programs, their programs were all included in the current study regardless of which group they fit into. Of the ten programs discussed, the case studies of two secondary educators and one intermediate educator did not include descriptions of strong action components in their programs. In all three instances however, the educator's students were involved in action; salmon enhancement, planting, habitat clean up or similar, but this was not part of the main environmental education program taught by the educator.

There were four primary reasons why the interviewed educators made the decision to involve their students in positive action environmental education. Firstly, environmental action was a way of showing students how they fit into the ecosystems around them and the impact humans make on those ecosystems. Secondly, action was the logical conclusion to an environmental education program that had already taught awareness and knowledge of the environment. The third reason for engaging students in environmental action was to empower them, to show them how to be part of the solution of environmental problems in an immediate way. The final reason for an environmental action component was to stimulate a change in students' environmental attitudes and ethics that might carry over into their home lives and environmental behaviours as adults. Individual educators gave three other reasons for engaging their students in environmental action; to provide an outlet for dealing with life and healing by

caring for plants, to provide hands-on experiences for young children because those types of experiences are connected to understanding, and to provide a setting for learning skills transferable to careers. There was no single reason common to all educators for choosing environmental action as part of their programs. This is likely explained by the different ways in which the educators became involved in environmental education. For example, Helen's belief in planting trees and caring for plants as a healing action comes from the effect these actions had on her during times of difficulty in her life. Stewart's desire to provide students with practical skills resulted from his own experiences in the job market after graduating with a Bachelor of Science degree and no transferable skills. Nathan feels strongly that action should be a part of environmental education because he is very involved in environmental action in his personal life and has an underlying interest in that aspect of environmental education. Although the ten environmental educators interviewed have had some similar significant life experiences, the paths they took to teaching environmental education were varied.

Age-relatedness of Action Environmental Education Programs

The action environmental education programs of these ten educators took different forms depending on the age of the students involved. The primary teachers and students were generally involved in action programs in close proximity to their schools. Activities such as planting trees and vegetables on school grounds and painting fish on storm drains (as reminders of the need to keep the water system clean) are two programs in which very young children were involved. Helen's primary classes participated in an adoption program for endangered marmots. Although at first this may not appear as an action program, the students raised funds for the support of research into these marmots and their declining habitat. The research will initiate and support action to preserve the marmots and their habitat; therefore the funds provided by the students are helping finance the resolution of an environmental problem. Both schoolyard planting programs and adoption programs allow students to

participate in positive environmental action without moving far from the reassuring sphere of their school community. These activities provided students with hands-on experiences that achieve the goals Pamela and Helen had for their students; to enhance the ecosystem and look at humans as part of that ecosystem, to provide opportunities for caring for plants as a form of self-healing and learning about life, and to make students aware of living things in their environment and their impact on those living organisms.

Unique to the intermediate grades environmental education programs were energy conservation programs designed to reduce the energy consumption of an entire school community. Both John's and Nathan's intermediate grade students were involved in such programs. The intermediate grade students were more involved in riparian and streamside planting than either the primary or secondary students of the interviewed educators. As with the primary teachers, the forms of environmental activism in the intermediate grades satisfied the specific goals of the intermediate level teachers. These teachers wanted their students to be involved in environmental education that would make them feel empowered, and that would involve immediate action. Both the planting projects and the energy conservation programs were particularly appropriate for achieving the goal of providing students with the means of making changes now that might carry over into their adult lives. These actions were accompanied by learning about the ecosystems to be rehabilitated by the planting. The action was a completion of the three part sequence of environmental education outlined by Owen and John; awareness, knowledge and action.

The Salmonid Enhancement Program is an action environmental education program that spans the ages of students. All grade levels of educators had been involved in this program. For the younger students the program consisted of raising the salmon from eggs to fry in the classroom, then releasing them into the local stream. John's intermediate age students looked after the local stream habitat, as part of enhancing habitat for species. Stewart's secondary students participated extensively in salmon enhancement. They ran a hatchery and were involved in the entire salmon life cycle from capturing returning salmon, fertilizing eggs, incubating the eggs to releasing of the young salmon. These secondary students learned practical skills in fisheries management that

were transferable into employment situations in fisheries. It is interesting to note that the Salmonid Enhancement Program is a program funded and facilitated by the federal Department of Fisheries and Oceans (DFO) of Canada. This degree of funding and support is rarely available for environmental education programs. This is not to say that the salmon hatchery and sea pen operation run by Stewart, another teacher and their students and alumni students, and the extended programs run by the other interviewed educators were entirely funded by DFO; it is certain that they were not.

Both intermediate and secondary students participated in environmental monitoring activities. Several of the educators interviewed for the current study considered it important for students to understand their connection to the environment and to feel empowered to make positive environmental change. Actions such as environmental monitoring were appropriate for these older students because they took place along stream and marine coastlines. Such environments might be less suitable for very young students.

Students of all ages participated in recycling and habitat clean up activities. These were hands-on, simple actions with immediate, obvious results. Although recycling may not have been a formal part of the environmental education programs of these educators, it was a part of the lifestyle of the schools in which they taught. Collecting litter and generally removing traces of human impact on habitats were also positive environmental actions that many of the educators participated in with their students. Both Mark and Ian emphasized with their students the necessity of keeping the environment free of human traces after its use. All ages of students were also involved in painting storm drains with fish to increase awareness of point source water pollution. The final environmental education program that involved all grade levels of students was a Watershed Stewardship program. Primary and intermediate students were participants in activities run by secondary school students, teachers and other adults. This program had an action component because the students were learning monitoring skills. The older students collected baseline stream data for a provincial Streamkeepers Database.

The programs unique to the primary students and intermediate students described here are not necessarily only appropriate to this age group. Stewart's

secondary students were involved in planting trees but it was not the main aim of the environmental education program. For the primary and intermediate students the action of planting trees was more central to their environmental education program. The primary students concentrated on greening their immediate habitat (schoolyard), whereas the intermediate students planted in their school grounds but also moved further afield to local waterways.

As this summary indicates, the environmental education programs of the interviewed environmental educators do take different forms depending on the age group of the students. There are many programs that are cross age group participated in by educators and their students at each level of schooling.

Reasons for Choosing to Teach Environmental Education

The interviewed educators reasons for continuing as teachers in the school system rather than working in non-institutional environmental activism have been summarized as follows. There are four prevalent themes in their responses; a love of teaching and working with children, a belief or philosophy regarding public education, concerns about the future and a desire to instigate environmental change, and practical reasons such as financial security. Some of these educators saw themselves first and foremost as teachers, enjoying the variety and challenge of working with students. Day to day interactions with students provided an opportunity for working at the grassroots level of change. Environmental education and activism were important, yet it was the students themselves that keep these educators in the classroom. For several educators there was an overriding belief of the need to instill change through education in schools. For Stewart this meant having the biggest impact on those you worked with directly, for John it was a feeling that he wanted to be a teacher because as an environmental education consultant, "you're kind of a foreigner" because you are not in the schools. This tied in with his belief in a holistic, well-rounded program that allowed for long-term ethic development. In Mark's view the survival of people on earth depended on an understanding of the environment similar to that of pre-contact native peoples. Educating students over the long

term, allows the development of this understanding. The desire to make a change was another reason for educators to remain in the classroom. They felt that venue to be the most effective in instigating positive environmental change. Teaching at a classroom level can make a difference in students' lives so that they can then make a difference. Several educators considered practical reasons for being a classroom teacher. It was a job that provided financial security, either necessary in the past or currently. The prospect of working in environmental education outside of formal education institutions often meant writing grant proposals to find money to finance environmental education. Although many of these educators had to find funding for their environmental education programs, they received a salary as a teacher.

In addition to the reasons given above, one educator mentioned his reason for teaching environmental education was, "it just seemed to be something that I could do". This statement is noteworthy because it refers to his "subjective warrant" (Hutchinson & Buschner, 1996, p.213). An individual's subjective warrant is his beliefs and perceptions of the skills, knowledge and ability required to enter into and perform in a specific occupation, in this case to teach environmental education. Hutchinson and Buschner found that two physical education teacher education students had utilized their subjective warrants when making the decision to change careers and become physical education teachers. In the current study, Todd appeared to make the decision to develop and teach an environmental education by utilizing his subject warrant.

Two of the interviewed educators had a different view of teaching environmental education in the classroom than the others because they were very involved in acting as consultants and facilitators as well as being classroom teachers. Greg had found it difficult to be an educator in the school system because he was being overburdened by class responsibilities and environmental education program responsibilities. At the time of the interview he was ending a sabbatical year working in environmental education. He returned to the classroom the following year. Owen was contemplating leaving the classroom for a sabbatical year to work in environmental education. It was becoming increasingly difficult for him to find funding for the watershed stewardship program that he facilitated and he wanted to devote more time to environmental

education. Neither Greg nor Owen provided reasons for choosing teaching as a profession as they were both in a transitional phase at the time of the interviews.

Additional Findings: Barriers to Teaching Environmental Education in the Classroom

Teaching environmental education within the school system is challenging. As Hammond (1996/97) pointed out, "Teachers who try to provide students with opportunities to take action to improve the environment must often swim upstream against the system" (p. 6). The educators interviewed for the current research were all 'swimming upstream' at some point during the development and facilitation of their environmental education programs. Leaders in environmental education considered these educators outstanding in their field for their teaching and programs. Each educator was dedicated to environmental education, and most were passionate about that dedication and their concern for the environment. Yet, all of these educators considered there to be barriers to teaching environmental education within the school system in British Columbia. Most of these barriers were ones they themselves had encountered, and overcome, in order to develop and teach their programs.

The barrier to teaching environmental education mentioned by the most interviewed educators was the lack of financial support. Educators overcame this difficulty by going on field trips within walking distance of the school and finding environmental education programs that could be done within the school community to eliminate transportation costs. One educator held fundraising events with his students, and another's program required a fee payment from the participating students. Another difficulty encountered by many of the educators was a lack of support from school administrators, colleagues, parents of students and the community (in the form of environmental education facilities). Other serious barriers to teaching environmental education were restrictive timetables and curriculum, and a lack of preparation and facilitation time. Educators were able to overcome timetable and curriculum restrictions by teaching integrated themed units on the environment and by careful planning to ensure students did

not get behind in other courses while on environmental education field trips. There were several other barriers mentioned; a lack of leadership at the level of the British Columbia Ministry of Education, society's consumptive attitude towards the environment, teacher's insecurity and lack of knowledge about being in the outdoors, the age of the teaching population, and the long-term commitment required for a successful environmental education program. The socialization of teachers, which reduced their desire to take risks, and the need to work against decision makers who wanted school grounds as sports areas were also mentioned as specific barriers. These barriers were overcome through the persistence of the educators and their belief in the need to provide environmental education to their students. It should be noted that two educators considered the barriers to teaching to be mental, and thus not barriers at all, but rather attitudinal difficulties.

Shuman and Ham (1997) found that although teachers consider environmental education to be important, this attitude was not translated into a commitment to teaching environmental education. It was found that barriers to teaching environmental education intervened between attitudes and practice. Certainly the educators interviewed for the current study considered teaching environmental education to require overcoming barriers. As noted by Shuman and Ham, certain teachers are able to overcome such barriers, while others are not. They suggested a model to predict a teacher's commitment to teaching environmental education based on life experiences, beliefs and attitude. According to the model life experience constructs may be directly related to teachers' attitudes, subjective norms and perceived control related to teaching environmental education. Life experience constructs also appeared to be related to teachers' intention to teach environmental education, thus influencing whether they actually carry through with teaching. The model predicted the stronger a teacher's commitment to teaching environmental education, the more likely he or she is to overcome barriers in order to do it. The commitment illustrated by the educators interviewed for the present study supports the model constructed by Shuman and Ham (1997). Research into life experiences and commitment to environmental education is needed to further test this model.

General Implications of Findings

Environmental education research into significant life experiences of conservationists, environmentalists, environmental professionals and educators suggests the most important formative experiences of these individuals include positive experiences in natural areas and the outdoors, adult role models, organizations, education, experiences of negative impacts on the environment, employment experiences, and books or other media. The findings of the current study support the findings of previous studies in that the studied population considered these same types of experiences and influences significant in the development of interest and dedication to the field of environmental education. The theory that environmentally aware and responsible individuals have had similar significant life experiences is supported by the current study. The results of previous studies predicted experiences in the natural world, particularly those during childhood, would be the most frequently mentioned of significant life experiences. This was not the finding from the analysis of the questionnaire autobiographical statements in the current study. It was however, the finding of the analysis of the significant life experiences of the ten interviewed environmental educators. Yet, neither the frequencies of mention nor the orders of importance of these influences in the current study were consistent with previous studies (Tanner, 1980; Scholl-Wilder, 1983; Palmer and Suggate, 1996; Chawla, 1999).

People's beliefs and desire to share their love or enjoyment of the outdoors with others was a very strong influence in their dedication to environmental education. What is unclear from this study is the origin of those principles, philosophies and beliefs. Some respondents were specific that their parents instilled in them certain environmental ethics, but many only stated that they believed in certain principles, but not the source of those principles. It is necessary to explore deeper into people's lives to determine how those principles were formed and where those beliefs came from. Pooley and O'Connor (200) suggested that positive emotions and beliefs about the environment needed to be targeted in environmental education programs. Their study indicated attitudes towards environmental issues might be predicted by feelings and beliefs about

those issues. If the principles and beliefs of the subjects of the current study are a reflection of their environmental attitude, that further supports that affect and cognition must both be addressed in environmental education programs.

Providing these types of experiences mentioned as significant by the participants in the current study will not necessarily guarantee children become adults who are environmentally responsible and active. However, by providing these experiences we are providing the opportunity for that to happen. As Chawla (1999) suggested, "EE can increase the opportunities, and thus the chances, that lives will take an environmentally responsible form." (p. 25). Without these types of experiences children may not have those chances. We also need to provide for our youths a variety of experiences in natural areas with environmentally aware and active individuals who can act as mentors. These individuals need to have principles that are consistent with positive environmental behaviour so that young people can learn from them.

Recommendations in reports on significant life experience research include providing students with frequent opportunities to experience the natural world with adult role models (Peterson, 1982), providing more opportunities for family involvement in environmental education programs (Scholl-Wilder, 1983) and supporting community organizations that provide adult role models (Chawla, 1999). These recommendations are supported by the results of the current study, which indicate that opportunities for experiences in natural areas can be instrumental and that people play a vital role in development of interest and dedication to environmental awareness and environmental education. The results of the current study also indicate that both formal (school-based) and non-formal environmental education must consider providing such opportunities for students. The influences of teachers and education courses were important, but the influences of other groups of people were also important. Programs providing environmental education opportunities for families and peer groups also have a role to play in developing environmentally responsible citizens.

Future Directions

Research is needed to clarify and extend the findings of the current study. A larger sample size of questionnaire respondents and interviewed educators is required to determine if the findings of the current study are representative of the significant life experiences of environmental educators in British Columbia. The questionnaire respondents from the current study might be representative of EEPSA and NAME, but neither organization is racially diverse, which in itself raises questions about the connection between ethnicity and environmental educators. This issue should be investigated. There are various cultural traditions within BC and they were not necessarily represented in the current study. An investigation into the diversity of environmental educators in BC is needed. Attempts should be made to include teachers at denominational, independent and First Nations Band schools in future studies of significant life experiences.

To clarify the findings of the interview part of the current study a larger number of environmental educators must be interviewed. As with the questionnaire respondents, the larger sample needs to have a racial, age and gender diversity representative of environmental educators in British Columbia. This would provide more generalizable findings to support practical applications of the results. It would be beneficial to request nominations of outstanding environmental educators involved in action environmental education from the membership of the Environmental Educators Provincial Specialist Association, the Environmental Educators of British Columbia Society, and the Northwest Aquatic and Marine Educators association. This would provide a greater diversity in the demographics of the outstanding environmental educators interviewed. Specific criteria would be necessary to ensure a minimum level of environmental activism in the programs of nominated educators.

For significant life experiences of large populations to be investigated, a more precise and culturally adaptable checklist or similar instrument must be developed. Firstly, the questionnaire should have a section related to specific activities non-formal environmental educators are involved in with students. A great number of classroom teachers work with non-formal environmental

educators to provide programs for their students. These can be in the form of workshops, classroom visits or field trips to environmental education facilities. These types of activities were not specifically investigated by the questionnaire used in the current study. Also important in a questionnaire would be requesting information about race and culture to provide information about the diversity of environmental educators sampled. Age and gender differences were noted in the current study, but not racial or cultural differences. It is necessary for significant life research to include a diversity of subjects and to be aware of the possibility of making a sample group homogeneous when the population is not.

Palmer, Suggate, Bajd, Hart et al. (1998) briefly mentioned the differences noted between countries before combining the data from all countries and analyzing them as one sample group. That is not a realistic approach to significant life experience data because the culture and background of individuals from different countries can be very different. Annette Gough (1999) suggested homogenization of data was not a valid approach to significant life experience data. Large sample sizes in a variety of countries need to be recruited for research into significant life experiences; also, the method of determining personal environmental activism must be appropriate for the country and possible for various regions within countries. It must reflect the differing types of activism present in various countries and cultures otherwise it is not possible to make valid comparisons between populations. For example, in a country where all glass containers are collected and recycled for a refund of money paid as a deposit is recycling necessarily a reflection of environmental activism to the same degree as in a country where glass recycling requires collecting, washing and returning containers to a neighbourhood recycling bin? There is no financial incentive to recycle in the second instance, so perhaps a personal concern for the environment is more of the reason for such environmental activism. Designing culturally appropriate questionnaires to investigate environmental activism and significant life experiences is a serious challenge for future research. If the purpose of significant life experience research is to examine the lives of environmentally aware, responsible and active citizens, then the study subjects must be shown as such. The criteria for inclusion in studies of significant life

experiences need to be carefully identified to ensure a minimum level of activism amongst all research participants.

As suggested by Chawla (1998b), one of the difficulties with significant life experience research in environmental education is the variation in the research questions and categories used for factor of influence analysis. This suggests a need for further in-depth research of populations using identical research questions, coding techniques and categories of factors. It is necessary to find a way of standardizing response categories so that results from studies can be compared. This is very difficult because samples from different cultures and countries are likely to provide some similar but also some different factors of influence. In the current study and others (Chawla, 1999, Palmer et al. 1996 - 1999) this difficulty was approached by using previously reported categories of influence and adding new categories specific to the population under study. Another approach would be to standardize the definitions of categories of the most frequently repeated factors of influence, such as experiences in natural areas and family. More general categories such as those used by Chawla (1999) reduce the confusion resulting from many category subdivisions; however, some detail of the findings can be lost through oversimplification.

Finally, what is lacking in the current study and other environmental education research into significant life experiences is a comparison group of individuals not environmentally responsible, aware or proactive. This was a concern raised by Chawla (1998b) and reiterated by S. Gough (1999). A comparison needs to be made between significant life experiences of the environmentally aware and responsible, and individuals who are not environmentally responsible and aware to determine if influential experiences are similar or dissimilar. This would clarify if the findings of the current study are specific to those environmentally concerned, and those interested and dedicated to environmental education, or if these significant life experiences are common to a larger portion of the population. A questionnaire sent to the membership of the British Columbia College of Teachers would provide a sample of teachers, both environmental educators and other classroom teachers for comparison.

Chawla (1998a) noted the necessity for longitudinal studies in significant life experience research. Students who have had teachers such as those interviewed for the current study need to be interviewed periodically over a long period of time to see if there is any difference in the environmental activism or responsibility within the group compared to those students who did not have attend the same environmental education programs with the same teachers. This would be quite easy to do in programs such as Stewart's or Mark's where alumni tend to keep in touch with teachers. It would be important to follow students for quite a number of years since an environmental ethic might not be established for some time.

There have been valid criticisms made about subject selection, methodology, and analysis of significant life experience research in environmental education. Yet, it is important to this research as it will help us to better understand the changes that have occurred in individuals' significant life experiences over time. However, such research must be coupled with long-term studies of students involved in action environmental education programs now, and see whether or not they become environmentally responsible adults. It is the combination of these two research veins that will provide information to help provide appropriate, meaningful experience opportunities for the youth of today and of the future.

There is a great deal going on in environmental education in British Columbia, but there is not enough communication between teachers to spread the ideas and programs around. One of the educators interviewed felt strongly that the educators interviewed for this study be identified in order that they could be mentors for new teachers. He considered his mentor in environmental education to have been a very significant influence on his desire to work in environmental education. A mentorship program would enable new teachers to learn from experienced environmental educators and learn about the program possibilities in environmental education.

Significant life experiences are a very complex subject because there are so many factors involved in making an experience meaningful and important. Thus far we have only scratched the surface of what needs to be learned.

> One aim of Canada's Green Plan is to create a culture of environmental citizenship which demands voluntary action on environmental issues by an informed and educated citizenry. (Hogan, 1995, p. 95)

Canada's Green Plan was developed by Environment Canada.

The basis of environmental education is to help people gain the knowledge, understanding and skills needed to live in harmony with the environment, thus looking at the types of experiences that have formed people who live in this way may provide clues as to experiences that should be made available to today's youth. Until we are able to gain results from long-term studies of individuals we need to use past experiences as a guide to what might help produce an environmentally aware, responsible and active citizenry.

The most satisfying and humbling aspect of embarking on this research was learning how teachers are getting their students into the natural world, and helping them make sense of their world and how they are teaching students to make it a better place. It is satisfying and exhilarating to know there is so much happening in environmental education in B.C., despite the barriers referred to by the interviewees. This is humbling because these people have been quietly going about their teaching, inspiring and motivating students, yet their work is not necessarily known or appreciated by the general public who will reap the benefits of having a more environmentally aware and responsible citizenship in years to come.

The findings of this study indicate there are significant life experiences that environmental educators in British Columbia feel were instrumental in developing their concern for the environment and their interest and dedication to the field of environmental education. Although these significant experiences are varied, there are indications that time spent in the natural environment, with environmentally aware and concerned individuals, is particularly influential. This research has practical applications in that it indicates the need for educators and other members of society to provide opportunities for youths to experience the natural world with environmentally aware individuals such as family

members. The findings of this research also suggest the need for students to learn positive environmental action strategies in order to empower them to become environmentally responsible citizens. Both formal and non-formal environmental education programs have a role to play in educating youth to be environmentally responsible. These programs need to consider developing the knowledge base of students, but also the cognitive and affective domains. Currently, programs involving environmental action are being taught by classroom teachers in British Columbia despite the difficulties associated with teaching environmental education in a classroom based school system.

There is much research remaining to be done to understand the significance of life experiences and how understanding those experiences can help today's learners develop into environmentally responsible citizens. The findings of the current study have extended the research in significant life experiences to include environmental educators in British Columbia, Canada. This study has also provided rich descriptions of exemplary educators who are environmentally active with their students to maintain and improve their natural environment.

Afterword

When I began this research project, I hoped to provide findings that would show the absolute necessity of increasing the environmental education opportunities in natural areas in the province of British Columbia. What I expected to find were results indicating that experience in the natural world was mentioned by all environmental educators and was by far the most influential experience in their lives. Instead, I discovered that only in a small sample of exemplary environmental educators were experiences in the natural world as a child overwhelmingly the most significant single influential experiences in the development of their concern for the environment and their dedication to environmental education. I believe these results show that helping young people (students) to become environmentally aware, responsible and active requires much more than time spent in natural areas. We need to provide an education for our young people that is much more diverse than at present. We need much more than an environmental education curriculum in the province of B.C., we need an educational lifestyle that provides students with time in the natural world with teachers, friends and family to experience the joys of exploration and discovery. I no longer believe that structured environmental education programs are the only way for students to learn environmental concern and awareness. The passion and environmental dedication of the adults in their lives may be equally, or even more important than structured programs. There is a positive and hopeful slant to the findings of the importance of the influence of people. They indicate that educators and experiences with people do make a difference. There is hope that a child growing up in an urban environment may still develop an appreciation and concern for the environment. The role of parents and other influential adults in developing this appreciation and concern is definitely important. The educators interviewed for this study spoke eloquently about their time as children exploring on their own, as well as the significance of certain people in their lives. These educators are passionate about what they do, they have to be in order to maintain their environmental principles in a school system

based on teaching children about life and its systems from indoors rather than permitting children to experience the natural world.

I still believe experiences in natural areas are an essential part of a child's education, absolutely. However, this research does not indicate that these types of experiences are the only ones which will help produce environmentally aware and responsible individuals, or people willing to dedicate themselves to environmental education. We are better to provide opportunities that might increase the chance of young people developing a positive environmental ethic, than not providing those opportunities simply because research has not shown definitively that such experiences are a prerequisite to desirable environmental behaviour.

The dynamics of human interactions in our world have changed dramatically since the educators interviewed for this study were children. In a society where frequently both parents are working and children spend a great deal of time in organized activities, there is little family time left for unstructured exploration of the natural world.

> Access to natural areas in the local environment, friendly urban environments, and positive experiences in the environment with parents and other adults appear to be eroding for more and more children - as parents work longer hours, electronic media entertain us indoors, traffic rates increase, neighborhoods become more dangerous, and asphalt and buildings cover more and more open spaces. (Chawla, 2001, p. 460)

What I have discovered during this study is that these people had childhoods where they spent time outdoors, some more than others, some in more organized settings than others. But primarily, they seem to have spent unorganized time outdoors when they could wander and investigate and imagine on their own or with relatives and friends. That type of existence is much harder for children to have in our present world. Few parents I know would be willing to let their child wander in the woods, or go camping with only a friend. Perhaps we need to organize outdoor experiences for children in the present world, because they are

unlikely to get these experiences in a family setting due to the 'scary' nature of leaving children on their own in present society. But maybe even more importantly is to structure an education system that permits time to explore and experience. As Mark pointed out during our interview, he learned about rattlesnakes in the prairies by following them and watching them, learning their habits. Children these days have little opportunity for such unstructured exploration. Perhaps it is our responsibility as educators to provide them with that time.

Corcoran (1999) stated my feelings upon concluding the interviews with the outstanding educators much better than I could:

> I derive great inspiration from the likelihood that my respondents are now, in turn, providing opportunities for the kind of significant life experiences they themselves so vividly and appreciatively describe as having been provided to them. Perhaps in this way our fortunate lives as environmental educators truly become 'lasting and significant'. (p. 220)

Bibliography

Arbuthnot, J. (1977). The roles of attitudinal and personality variables in the prediction of environmental behavior and knowledge. Environment and Behavior, 9(2), 217-232.

Bandura, A. (1982). The psychology of chance encounters and life paths. American Psychologist, 37(7), 747-755.

Bogner, F.X. (1998). The influence of short-term outdoor ecology education on long-term variables of environmental perspective. Journal of Environmental Education, 29(4), 17-29.

Borden, R.J. & Schettino, A.P. (1979). Determinants of environmentally responsible behavior. Journal of Environmental Education, 10(4), 35-39.

Boughn, S. (1994). Why do men choose nursing? Nursing and Health Care, 15(8), 406-411.

Chawla, L. (1998a). Significant life experiences revisited: A review of research on sources of environmental sensitivity. Environmental Education Research, 4(4), 369-382.

Chawla, L. (1998b). Research methods to investigate significant life experiences: Review and recommendations. Environmental Education Research, 4(4), 383 - 397.

Chawla, L. (1998c). Significant life experiences revisited: A review of research on sources of environmental sensitivity. Journal of Environmental Education, 29(3), 11-21.

Chawla, L. (1999). Life paths into effective environmental action. Journal of Environmental Education, 31(1), 15-26.

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.

Corcoran, P.B. (1999). Formative influences in the lives of environmental educators in the United States. Environmental Education Research, 5(2), 207-220.

Dillon, J., Kelsey, E. & Duque-Aristizabal, A.M. (1999). Identity and culture: theorizing emergent environmentalism. Environmental Education Research, 5(4), 395-405

Emmons, K.M. (1997). Perspectives on environmental action: Reflection and revision through practical experience. Journal of Environmental Education, 29(1), 34-44.

Feehan, M. (1996). Stories of healing from Native Indian residential school abuse. Unpublished master's thesis, University of Victoria, Canada.

Finger, M. (1994). From knowledge to action? Exploring the relationships between environmental experiences, learning, and behaviour. Journal of Social Issues, 50(3), 141-160.

Gall, M.D., Borg, W.R. & Gall, J.P. (1996). Educational Research: An Introduction, Sixth Edition. New York: Longman Publishers USA.

Gigliotti, L.M. (1994). Environmental issues: Cornell students' willingness to take action, 1990. Journal of Environmental Education 26(1), 34-42.

Gough, A. (1999). Kids don't like wearing the same jeans as their Mums and Dads: so whose 'life' should be in significant life experiences research? Environmental Education Research, 5(4), 383-394.

Gough, N. (1999). Surpassing our own histories: Autobiographical methds for environmental education research. Environmental Education Research, 5(4), 407-418

Gough, S. (1999). Significant life experiences (SLE) research: a view fro somewhere. Environmental Education Research, 5(4), 353-363.

Hammond, W.F. (1996/97). Educating for action: A framework for thinking about the place of action in environmental education. Green Teacher, 50, 6-14.

Hines, J.M., Hungerford, H.R. & Tomera, A.N. (1986/87). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. Journal of Environmental Education 18(2),1-8.

Hogan, C.T. (1995). Canada: National Environmental Citizenship Initiative. In Palmer, J., Goldstein, W. & Curnow, A. (Eds.). Planning Education to Care for the Earth (pp. 95-102). Bellegarde-sur-Valserine, France: SADAG.

Hungerford, H.R. & Peyton, R.B. (1980). A paradigm for citizen responsibility: environmental action, in: A.B. Sacks, L.L. Burris-Bammel, C.B. Davis & L.A. Iozzi (Eds.) Current Issues VI: The Yearbook of Environmental Education and Environmental Studies (Columbus, OH, Educational Resources Information Center and National [now North American] Association for Environmental Education).

Hungerford, H.R., & Volk, T.L. (1990). Changing learner behavior through environmental education. Journal of Environmental Education, 21(3), 8-21.

Hutchinson, G.E., & Buschner, C.A. (1996). Delayed-entry undergraduates in physical education teacher education: Examining life experiences and career choice. Journal of Teaching in Physical Education, 15, 205-223.

James, K. (1995). Creating a multiculturally diverse profession. Pathways to Outdoor Communication, 5(1), 14-18.

Kersten, J., Bakewell, K. & Meyer, D. (1991). Motivating factors in a student's choice of nursing as a career. Journal of Nursing Education, 30(1), 30-33.

Ministry of Education. (1995). Environmental concepts in the classroom: A guide for teachers. Victoria, British Columbia: Ministry of Education, Province of British Columbia.

Newmann, F.M. (1975). Education for citizen action: Challenge for Secondary Curriculum. Berkeley, California: McCutchan Publishing Corporation, USA.

Palmer, J.A. (1993). Development of concern for the environment and formative experiences of educators. Journal of Environmental Education, 24(3), 26-30.

Palmer, J. A., Corcoran, P.B., & Suggate, J. (1996). Formative experiences of environmental educators: Overview and comparison of empirical research in two nations. Environmental Education, 52(3), 5-8.

Palmer, J.A. & Suggate, J. (1996). Influences and experiences affecting the pro-environmental behaviour of educators. Environmental Education Research, 2(1), 109-121.

Palmer, J.A., Suggate, J., Bajd, B., & Tsaliki, E. (1998). Significant influences on the development of adults' environmental awareness in the UK, Slovenia and Greece. Environmental Education Research, 4(4), 429-444.

Palmer, J.A., Suggate, J., Bajd, B., Hart, P., Ho, R.K.P., Ofwono-Orecho, J.K.W., Peries, M., Robottom, I., Tsaliki, E., & van Staden, C. (1998). An overview of significant influences and formative experiences on the development of adults' environmental awareness in nine countries. Environmental Education Research, 4(4), 445-464.

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), 181-202.

Payne, P. (1999). The significance of experience in SLE research. Environmental Education Research, 5(4), 365-381.

Peters Grant, V. M. (1986). The influence of life experiences in the vocational interests of volunteer environmental workers. Unpublished doctoral dissertation, University of Maine at Orono, United States of America.

Peterson, N. J. (1982). Developmental variables affecting environmental sensitivity in professional environmental educators. Unpublished master's thesis, Southern Illinois University at Carbondale, United States of America.

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.

Scholl-Wilder, M. (1983). Significant childhood environmental learning experiences of suburban/urban environmentalists. In: J.H. Baldwin (Ed.) Crossroads: Society & Technology (pp. 125-129). Troy, OH: National [now North American] Association for Environmental Education.

Shuman, D. K. & Ham, S.H. (1997). Toward a theory of commitment to environmental education teaching. Journal of Environmental Education, 28(2), 25-32.

Sia, A., Hungerford, J. & Tomera, A. (1985-1986). Selected predictors of responsible environmental behavior. Journal of Environmental Education,17(2), 31-40.

Sivek, D.J. (2002). Environmental sensitivity among Wisconsin high school students. Environmental Education Research, 8(2), 155-170.

Stapp, W.B., Cox, D.A., Zeph, P.T., & Zimelman, K.S. (1983). International environmental education: The development, implementation, and evaluation of a transportation curriculum module for middle school-aged youth. Journal of Environmental Education, 14(3), 3-12.

Sward, L.L. (1999). Significant life experiences affecting the environmental sensitivity of El Salvadoran environmental professionals. Environmental Education Research, 5(2), 201-206.

Tanner, T. (1980). Significant life experiences: A new research area in environmental education. Journal of Environmental Education, 11(4), 20-24.

Tanner, T. (1998a). Introduction. Environmental Education Research, 4(4), 365-368.

Tanner, T. (1998b). Choosing the right subjects in significant life experiences research. Environmental Education Research, 4(4), 399-417.

Tanner, T. (1998c). Editor's preface to Part II. Environmental Education Research, 4(4), 425-428.

Tanner, T. (1999). Preface. Environmental Education Research, 5(2), 179-180.

Xu, G., Rattner, S.L., Veloski, J.J., Hojat, M., Fields, S.K. & Barzansky, B. (1995). A national study of the factors influencing men and women physicians' choices of primary care specialties. Academic Medicine, 70(5), 398-404.

Appendix A

Call for Subjects

Environmental Educators

Volunteers needed to complete a short questionnaire about environmental activities

The purpose of the questionnaire is to provide a general overview of environmental educators in British Columbia and the types environmental activities in which they are involved. Responses will be anonymous. Your assistance with this research would be much appreciated. The questionnaire is short, it will take perhaps 20 minutes to complete. The questionnaire can by sent to you via email or in print form.

The study is being conducted by a Master of Arts in environmental education student at the University of Victoria.

If you are willing to complete this short questionnaire, please contact:

Appendix B

Letter to Respondents and Questionnaire

Dear Environmental Educator:

Thank you for offering to complete this questionnaire. The information gathered through this questionnaire will be included as part of a master's degree thesis in the Faculty of Education at the University of Victoria. The purpose of the questionnaire is to provide a general overview of environmental educators in British Columbia and the types environmental activities in which they are involved. Your assistance with this research is much appreciated.

There are three sections to this questionnaire. The first section requests demographic information and the second section requests information about your responsible environmental activities and those which you are involved in with your students. The final section of the questionnaire is optional. If possible please write a brief statement explaining what experiences and factors were influential in your decision to become involved in environmental education. Please be aware that you have the right not to answer any question on the questionnaire.

If you have colleagues who would be interested in completing this questionnaire, please notify me by email ( ) or by telephone ( ). I would be happy to send them a copy.

Once again thank you for taking the time to complete this questionnaire. As a teacher I can appreciate that this adds another demand on your time.

Sincerely,

Kate Ottnad
Graduate Student, Faculty of Education
University of Victoria

Thank you for your offer to complete the following questionnaire. Your assistance is invaluable in my research. If you are interested in the results of this survey, please contact me at [redacted].

Questionnaire

Section 1: Demographic Information

1. Age: ___ under 30 years ___ 30-50 years ___ over 50 years

2. Employment:

___ K-12 education (continue to #3) ___ Post secondary institution (continue to #3)

___ other (please specify) _____ (skip to #4)

3. Number of years teaching: ___ years

4. Sex: ___ Male ___ Female

5. Conscious commitment to environmental concern made:

___ under 18 years ___ 19-25 yrs. ___ 26-40 yrs. ___ over 40 yrs.

6. Active involvement in school-based environmental education began at:

___ under 18 years ___ 19-25 yrs. ___ 26-40 yrs. ___ over 40 yrs.

7. Childhood years spent primarily in the following type of environment:
(please indicate if summer months spent in a different environment)

___ rural ___ urban ___ suburban

Section 2: Personal Environmental Responsibility

Indicate with a ✓ the activities in which you are involved:

Practical conservation (e.g. tree planting, wildlife gardening)	
Recycling activities	
Activism: a) membership in organizations actively involved in environmental matters, animal rights, land use issues ..... ___ Western Canada Wilderness Committee ___ Sierra Club ___ GreenPeace ___ other (please specify) .... b) attending public meetings e.g. ..... c) letter writing campaigns e.g. ..... d) writing newspaper, magazine, journal articles e.g	
Curriculum development in environmental education	
Outdoor recreation (e.g. wildlife watching, hiking, kayaking)	
Environmentally friendly lifestyle (e.g. making a conscious effort to buy environmentally friendly products and have a 'green' lifestyle)	
Read about environmental issues	
Attend professional development and continuing education in EE	
Community outreach programs	
Membership in professional environmental education organizations ___ Environmental Educators Provincial Specialists Assoc. of B.C. ___ North American Association of Environmental Educators ___ Northwest Association of Marine Educators ___ National Marine Educators Association ___ InterpCanada ___ other (please specify)	
Give workshops on environmental education please specify	

Section 3: School-Based Environmental Activism

Indicate with a ✓ the activities in which you are involved, or have been involved at some time during the last 3 or more years, with your students:

(consider local as within your community, regional as extending to the province and global as outside the province - not all categories will be appropriate for each heading)

	local	regional	global
Practical conservation: - planting trees			
- planting a butterfly garden			
- growing vegetables			
- painting fish on storm drains			
- Greening Schoolyards			
- fund raising for a local, regional or global environmental issue			
- fund raising to directly support wildlife (e.g. adopt-a-whale, support an acre of rainforest, Wildlife Rescue Assoc.), please specify			
- environmental monitoring program			
- energy conservation program			
- stream or beach clean-up			
- salmonid enhancement			
- other (please specify)			
Outdoor Recreation (e.g. wildlife watching, hiking, kayaking)			
Activism a) membership in organizations actively involved in environmental matters, animal rights, land use issues ___ Western Canada Wilderness Committee ___ Sierra Club ___ GreenPeace ___ other (please specify) .... b) attending public meetings e.g. ..... c) letter writing campaigns e.g. ..... d) writing newspaper, magazine, journal articles e.g			
Recycling			
Other (please specify)			

A. How often do you take your students on environmental education based field trips?

___ never ____ 1-3 times a year ____ 4-6 times a year

___ 6 or more times a year

B. Approximately how often are your students involved in the following when learning about the environment?
Use **F - frequently (once a week or so), **O** - often , **C** - occasionally, **R** - rarely (1-2 times/year), and **N** - never.*

___ lectures with notes ___ Internet

___ experiments (in classroom or lab) ___ field journals

___ field experiences ___ reading a textbook or article

___ research project ___ videos/films

___ questioning or interviewing someone outside of the class

___ guest speaker or workshop from EE resource person

C. In your opinion, what are the obstacles to environmental education in B.C.? Number the following items in rank order from most important (1) to least important (9).

to you:	to the average teacher in B.C.:	
___	___	Lack of quality curriculum materials.
___	___	Lack of equipment.
___	___	Lack of money for field trips.
___	___	Lack of training for teachers.
___	___	Lack of district support.
___	___	The current B.C. IRPs.
___	___	Lack of Ministry of Education support.
___	___	Distance from accessible natural areas.
___	___	Other (please specify) _____

D. In your opinion, what is the number one obstacle to environmental education in British Columbia?

How did you overcome this obstacle?

E. Please comment on any aspects of your environmental education program that makes it unique.

Section 4: Autobiographical Statement

Please write a brief completion to the following statement *(point form would be fine):*

The experience(s) and/or factors instrumental in developing my interest and dedication to the field of environmental education was (were)...

Appendix C
Sample Letter to Nominating Committee Member

Dear :

Thank you for agreeing to nominate outstanding environmental educators for my thesis research. Please find enclosed a copy of the nomination criteria. As I mentioned during our telephone conversation, I am investigating significant life experiences in the lives of environmental educators who are involved in environmental action with their students.

The type of person who should be nominated for this study is one who is a committed environmental educator. He or she has made a decision to remain in the school system to teach environmental education despite possibly working without the support of the educational system. As you know, there are many environmental educators who no longer teach in a classroom because of the difficulty in working with students in the natural world. I am interested in interviewing those who have managed to maintain their commitment to environmental education while teaching in the school system. I believe it is possible to arrive at a school and become very excited about environmental education for a few years, but to gradually lose that enthusiasm with the pressures of day-to-day teaching. Those who maintain an action based environmental education program for five or more years show a continued commitment and enthusiasm for environmental responsibility.

The final selection of ten environmental educators from those nominated will be done by myself. Selection will be based on the number of nominations received from the selection committee, the subject's agreement to be interviewed, and a desired geographical variability. It is desirable to have educators from each of primary, intermediate and secondary education in order that a range of educators be interviewed.

Please nominate three to five B.C. educators from each of Primary (K - Gr. 3), Intermediate (Gr. 4 - 7) and Secondary (Gr. 8 - 12) education. Along with the educator's name and position, please provide a brief (less than 100 words) explanation of your reasons for nominating this person. I would appreciate receiving your nominations before August 18th. Please use the enclosed forms and envelope or send your nomination by email to

Upon receiving your nominations I will contact the nominee and request to interview him or her for this research. Although the nominee will not be given the name of his or her nominator, the nominee will be given the nomination criteria and told he or she was peer nominated as a possible interviewee for this research.

Thank you for your kind assistance.

Sincerely,

Kate Ottnad
Graduate Student, Faculty of Education
University of Victoria

Enclosure

Appendix D

Criteria for Nomination of Environmental Educators

The nominee:

- is currently teaching in a primary, intermediate or secondary school capacity in British Columbia
- is considered to be spearheading/teaching an outstanding environmental education program
- is committed to and involved in positive environmental action (defined as working to resolve an environmental problem or issue) with his or her students
- has been involved in environmental education in the kindergarten to grade 12 school system for more than 5 years
- teaches an innovative, creative program not necessarily mandated by the school or district, preferably one that is his or her own initiative

Appendix E

Nomination Form Blank

PRIMARY (K - Gr. 3) ____ **INTERMEDIATE (Gr. 4 - 7)** ____

SECONDARY (GR. 8 - 12) ____

Grade levels taught: _____

Present teaching position and location: _____

Name: _____

Work address, phone number or email: _____

_____

Reason for nomination: _____

_____

_____

_____

_____

_____

_____

Appendix F

Introductory Letter to Prospective Interviewees

Kate Ottnad
[redacted]

Name
Street
City, Prov. Postal Code

Date

Dear

You have been nominated as an outstanding environmental educator by your peers. As a Master of Arts student at the University of Victoria, I am investigating significant life experiences of environmental educators and the impact of these experiences on life direction. At my request, a small group of environmental educators were asked to nominate candidates who are outstanding in their field. You are one of the educators considered to meet the criteria for this research project. In particular, you have been nominated as a classroom educator who is involved in positive environmental action with your students. As well, you are considered to teach an innovative, creative program and have been involved in environmental education in the kindergarten to grade 12 school system for more than 5 years.

The purpose of this research is to examine a sample of environmental educators in British Columbia to investigate the relevance and applicability of research findings about formative experiences and the development of concern for the environment in environmental educators. The research consists of audio-taped interviews of nominated outstanding environmental educators such as yourself. Those who agree to be interviewed will also be asked to write an autobiographical statement about the factors which influenced his/her life direction.

You may be assured of complete confidentiality. Your name will never be mentioned in connection with this study. Any identifying names or places mentioned during the interview will be altered for the reporting of the data. You will be asked to review the transcript of the interview for accuracy and correct interpretation.

I will be following this letter with a phone call requesting your assistance as a subject for this research. At that time I will ask to schedule a day, time and place at your convenience when I might interview you for about an hour to an hour and a half. If you have any questions, please feel free to contact me. I can be reached at home on weekends or in the evenings at [redacted], or by email anytime at [redacted]. I will return your call or answer your message promptly.

Thank you for your support and assistance.

Sincerely,

Kate Ottnad
Master of Arts Student,
University of Victoria

Appendix G

Significant Life Experiences of Environmental Educators in British Columbia

A Research Project undertaken by Kathleen Ottnad (€
with the supervision of Dr. Gloria Snively (€ .)

Consent Form for Participation in Research Study

I understand that this research project is part of Kathleen Ottnad's Master of Arts Thesis in the Faculty of Education at the University of Victoria. The interview which I will take part in is about significant life experiences that have led me towards a career in environmental education. The purpose of this project is to examine a sample of activist environmental educators in British Columbia to determine the relevance and applicability of research findings about formative experiences and a development of concern for the environment. Research of this type is important because it contributes to our understanding of the relationship between environmental sensitivity and formative experiences.

I understand that my participation is completely voluntary and that I can withdraw from the study at any time, without explanation. If I should withdraw, any data resulting from my participation will be destroyed immediately. I understand that there are no known or anticipated risks to me by participating in this research.

I understand that any data collected in the study will remain confidential. My anonymity, and that of those whose names I mention, will be strictly protected through the use of pseudonyms. Any contextual information in the interview that might lead to my identity will be changed or deleted. Data which identifies me will be only accessible to the principal investigator (Kathleen Ottnad). All data, as well as the list linking pseudonyms to actual names, will be kept in a locked area accessible only to Kathleen Ottnad. The treated data (i.e. using pseudonyms and lacking contextual identifying remarks) may be included in professional and research articles submitted to environmental journals.

I also understand that it is important for me to protect the privacy of other individuals whom I may mention during the interview and that their anonymity must be ensured.

I understand that the autobiographical statement that I submit as part of this interview process will be destroyed after the thoughts/feelings/experiences that I relate are analyzed and this thesis has been accepted as partial fulfillment of the degree of Master of Arts.

I understand that my interview will be audio taped and that the tape will be destroyed after the thoughts/feelings/experiences that I talk about are transcribed and analyzed. I understand that I have the right not to answer any question.

- ☐ I give my consent to have my interview audio-taped.
- ☐ My interview may not be audio-taped but notes may be taken by the interviewer during the interview.

I understand that the audio tape (if used) and autobiographical statement will be destroyed within 6 months of the acceptance of this thesis as partial fulfillment of the degree of Master of Arts.

I understand that I will be given a copy of the transcript and analysis of my interview to read prior to the completion of this thesis. If I have any concerns those will be addressed and changes made or this interview will not be included in this thesis.

In addition to being able to contact the researcher and, the supervisor at the above phone numbers, I understand that I may verify the ethical approval of this study, or raise any concerns I might have, by contacting the Associate Vice President Research at the University of Victoria (250-721-7968).

Name: _____ Date: _____

Participant Signature: _____

A COPY OF THIS CONSENT WILL BE LEFT WITH ME, AND A COPY WILL BE TAKEN BY THE RESEARCHER (Kathleen Ottnad).

Significant Life Experiences of Environmental Educators in British Columbia

A Research Project undertaken by Kathleen Ottnad (
with the supervision of Dr. Gloria Snively (

Name: _____

Section 1: Demographic Information

1. Age: ___ under 30 years ___ 30-50 years ___ over 50 years

2. Primary (K - Gr. 3) _____ Intermediate (Gr. 4 - 7) _____
   Secondary (Gr. 8 - 12) _____

3. Number of years teaching: ___ years

4. Sex: ___ Male ___ Female

5. Conscious commitment to environmental concern made at:
   ___ under 18 years old ___ 19-25 yrs. ___ 26-40 yrs. ___ over 40 yrs.

6. Active involvement in school-based environmental education began at:
   ___ under 18 years old ___ 19-25 yrs. ___ 26-40 yrs. ___ over 40 yrs.

7. Childhood years spent primarily in the following type of environment:
   ___ rural ___ urban ___ suburban

   Please indicate if summer months spent in a different environment
   ___ rural ___ urban ___ suburban

Section 2: Environmental Education Program

Please write a description of your environmental education program in 100 words or less._____

_____

_____

_____

_____

_____

over --->

Section 3: Autobiographical Statement

Please write a brief completion to the following statement *(point form would be fine):*

The experience(s) and/or factors instrumental in developing my interest and dedication to the field of environmental education was (were)...

Appendix H

Interview Questions

1. In what type of environment did you grow up? Urban? Rural? Both?
2. What led you to be concerned for the environment? *Details such as books, people, places, experiences??*
3. What life experiences led you to become an environmental educator?
4. Which experiences would you consider particularly significant in terms of your life direction?

   What about these experiences/influences made them significant?
5. Describe the essence of your own EE program in 100 words or less.
6. Given the definition of EE activism as, working to resolve an environmental problem or issue, what EE activism are you and your students involved in?
7. What prompted you to become involved in EE activism with your students?
8. Why do you teach EE? i.e. why this career as opposed to non-institutional environmental activism?
9. What do you consider your most significant contribution to school-based EE?
10. In your own experiences, what have been barriers to teaching EE in the classroom?

    How have you overcome these barriers?

Appendix I

Factors of Influence Category Descriptions

Group: People

a) *family* - parents, siblings, other relatives; this frequently included mention of activities or experiences in outdoor setting with family member
b) *students*/children (not own) - may be a result of vocation, but emphasis was on students as influencing factor, not job; sometimes indicated as a desire to share knowledge with children or students or an understanding of their lack of knowledge of the environment and a desire to change that
c) *teacher* - was not specifically mentioned as a mentor, it was the teacher who was influencing factor, not the course
d) *mentor* - term mentor was generally mentioned, might be a teacher, colleague, public figure, or hero
e) *friends/colleagues/other individuals* - activities or experiences in natural settings with specific friends, interactions with colleagues which encouraged or resulted in increased environmental awareness or involvement in environmental education, reading a particular book or author which resulted in increased environmental awareness or concern

Group: Experience of natural areas

a) *childhood/youth*- positive experiences in the outdoors/natural world where childhood or youth or young age was specifically mentioned
b) *adult/unspecified age* - positive experiences in the outdoors/natural world as adult or where age not specified, outdoor activities participated in as an adult or at unspecified age, participation in specific outdoor activities in natural settings, such as camping, hiking, kayaking, backpacking
c) *home* on farm or rural area/gardening - enjoyment of home area on farm or in rural setting, enjoyment of gardening at home
d) *emotional response* to natural areas - feelings such as 'love', 'joy' and others indicating close, emotional bond to natural settings

Group: Vocation

a) *employment* - paid employment which encouraged or resulted in increased environmental awareness or involvement in environmental education
b) *volunteer* - specifically stated that experience was a result of unpaid work

Group: Education

a) *K-12* - specifically mentions course or experience associated with school years, does not include teacher as influence factor
b) *college/university undergraduate* - college or university undergraduate course or experience resulting from program
c) *graduate* - coursework or research experience as a result of pursuit of graduate degree
d) *professional development* - workshop, course or experience resulting from professional development while working, often related to environmental education program or conference

Group: Societal

a) *principle, philosophy or belief* - personal philosophy, belief in particular environmental principles or actions, desire to share knowledge/love with others
b) *concern for future generations* - belief that future generations may not have the type of environment enjoyed by this generation, but that they should have that opportunity

Questionnaire Respondents:

c) *sense of social justice* - loss of rights to environmental stewardship and access

Interviewees:

c) *community* - involvement of community resulted in participant's increased environmental awareness or involvement in environmental education; or made activity more environmentally meaningful

Group: Experiences of Negative Environmental Impact

a) *change in childhood or adult area* - impact of a negative environmental change on a natural setting cherished and enjoyed as a child or adult
b) *environmental/habitat degradation* - changes to natural environment noted as a result of specifically habitat or environmental degradation
c) *pollution, resource use/abuse, residential development, litter* - changes to natural environment noted as a result of such negative impacts

Group: Organizations

a) *child/youth* - groups such as Brownies, Guides, Scouts, Youth groups
b) *adult/professional association* - other, non-youth organizations, or membership in a professional association (e.g. Environmental Educators Provincial Specialist Assoc.)

Group: Others

Questionnaire Respondents:

a) *pets/animals* - experience of caring for pet, or farm animals
b) *learning plant use* - desire to gain knowledge of plant use which increased environmental sensitivity
c) *unsure of or if influence exists* - of specific influence or in some cases, if influence present, described as a collection of experiences
d) travel*
e) opportunity*
f) media*
g) love of performing*
h) personal heritage*
i) photography*
j) feeling comfort in the outdoors*
k) life path*

Interviewees:

a) *pets/animals* - experience of caring for pet, or farm animals
b) *unsure of or if influence exists* - of specific influence or in some cases, if influence present, described as a collection of experiences
c) recognition*

*influences which were cited by only one respondent

Appendix J

The following classification of factors of influence should be read with the understanding that in qualitative research it is necessary to read all the responses in their entirety to facilitate classification. Reading only the phrases listed here, which are segments of responses, will not necessarily give the reader a complete understanding of the reasons for this classification of the responses by the researcher.

Questionnaire Autobiographical Statement Factors of Influence Analysis

* indicates statement is classified in two categories
The numbers indicate the questionnaire respondent number.

Group: People

a) Family

5*. Many experiences in nature supported by parents who camped and encouraged explorations
7*. spending time connecting with my father during camping trips in wilderness areas
10. a family background steeped in giving back rather than egocentrism
29. My Dad traveling to many places in the world would tell about how things were different (instilled a desire to travel & see for myself)
35. My parents' love and appreciation of the natural world, & their very matter-of-fact lifestyle: preservation, conservation, recycling
37*. Growing up on a farm, my mom knew all the birds & my dad knew all the trees. My brother is still a farmer, struggling to get his crops off in a rainy, climate changed by city drivers. At one point, a nearby city also wanted to use his farm as a landfill
45. Family members who enjoyed being in the outdoors – fishing, berry-picking; partner extremely involved in EE
47. Grandparents took me out a lot
49. Parents were educators/ one was a science teacher/ they loved the outdoors
51. Parents who appreciated natural environments & living in a rural environment
60*. My father, my brother-in-law, my brother, … I have always been involved in the out of doors and the above mentioned people taught me & encouraged me from early childhood

b) Students/Children (not own)

2. Having conversations with young people and realizing their overall ignorance about environmental resource issues in the province
4. for many years I taught ESL students who were mainly from H.K. & Taiwan. Their lack of experience & understanding of their environment was a major factor in bringing awareness of the environment to my students & their parents. As future (& present) Canadians they must take ownership of our environment & its importance to their own futures.
8*. Due to my love of the outdoors I wanted to share that with my students.
24. Watching students turn 'on' &caring
26. I saw that children really get the concepts of ecological and it is a framework for all learning
27. My desire to have students make reasonably informed decisions – based on more than one viewpoint (brain washing);
39. Student concerns about car pollution, cutting down the forest
40. desire to make school more FUN and relevant to students' lives
48. Enjoyment benefited from sharing knowledge with children
51. liking kids! Understanding the lack of connection existing between youth & the natural environment
55. and my students reinforced my interest in the field and they continue to inspire me now - I have been 'educated' by some of the finest teachers in BC – many of them my own students

c) Teachers

14. My teachers in elementary & high school
19. A great H.S. environ. ed. Teacher
21. Grade five teacher interesting me in the study of photosynthesis
35*. My masters degree in outdoor education, where my ideas were shaped by my professors
60. My teachers - I have always been involved in the out of doors and the above mentioned people taught me & encouraged me from early childhood

d) Mentor

6. The people I fell in working with were the key to "opening my eyes" to the world of education, specifically EE. As I learned more from these mentors … [see Societal]
24. Early exposure to dedicated mentors (beginning teaching days)
31. Mentoring by an old man, grandfather image, named … from ages 10-17
50. Mentors guiding & encouraging me
52. I also had great mentors: Gr. 9/10 biology teacher and outdoor club leader

e) Friends/Colleagues/Other individuals

9. Meeting a unique nature lover in my early teens
12. Hearing David Suzuki talk
20. Going to university at UVic and being surrounded by environmentalists
22. An opportunity, as a teen, to spend time with an interpreter in a provincial park (which led to subsequent job choices
24. listening to others, reading, observing
37. An Australian exchange teacher who was also an incredible cyclist made me realize that traditional in-class teaching is very bad for teachers' physical & mental health. Cycling is perfect for exercise, stress reduction & getting out into nature AND IT'S FUN! And every kid has a bike
43. A variety of District 'Leaders' (i.e. Educators who organize the Salmonid Prog., Streamkeepers etc.) were also influential in steering me towards environmental ed.
55. My professional contacts and [*see e)*] reinforced my interest in the field and they continue to inspire me now

<u>Group: Experience of Natural Areas</u>

a) Childhood/Youth

5. Growing up in a wilderness environment (1st 5 years & then all summers) on a lake in Northern Ontario: direct exposure to natural world
- freedom in the outdoors
* - Many experiences in nature supported by parents who camped and encouraged explorations
29. Playing outside as a kid (tree forts, parks, beach etc.)
32. Growing up in a resource based town & spending much of my youth enjoying outdoor activities
45. early experiences hiking, gardening, exploring
52. Growing up camping during the summer & attending park programs
62. Direct experiences with nature as a youth

b) Adult or unspecified age

2. Being outdoors & participating in recreational activities. For example: hiking, kayaking & boating
7*. spending time connecting with my father during camping trips in wilderness areas
9. being an active outdoors user all my life (hiking, camping, fly-fishing, skiing, etc.)
12. Living in such a biologically diverse place as B.C.

19. My experiences in the outdoors (hiking, kayaking etc.)
24. Personal involvement in outdoor education and activities all my life
38. wonderful camping trips
45. young adult experiences backpacking into remote areas of SE BC
47. Being in & near nature; variety of nature nearby
49. Personal hiking & camping experiences
60. My environment
- I have always been involved in the out of doors
* - My father, my brother-in-law, my brother, ... I have always been involved in the out of doors and the above mentioned people taught me & encouraged me from early childhood

c) Home on farm or rural area
7. Growing up on a farm
15. Living in rural areas; spending summers at a fishing lodge
29*. Living & teaching up North on reserves, the outdoors and nature was our entertainment
37*. Growing up on a farm, my mom knew all the birds & my dad knew all the trees.
38. Growing up on a small farm with a small garden, orchard and many animals
45. Area where I grew up – lake front, interior plateau, rural, unrestricted access to natural settings
58. growing up in a rural setting where we were taught to conserve & protect

d) Emotional response to natural areas
4. My love of the outdoors. I have a small place in a forest by the ocean. I have always loved the outdoors, here & in other countries where I've traveled.
8*. Due to my love of the outdoors I wanted to share that with my students.
14. Personal love of the environment
20. my love of nature and wanting to protect it - my need to share my love of nature - loving being at the ocean and being able to tell people what I know (this is where it all began!)
30. First a deep, long lasting love of the natural beauty around me
34. My love of animals & wilderness
35. My personal enjoyment of the out-of-doors
40. my love of the outdoors
50. Enjoying the env. from a young age
57. My love for the ocean. I grew up around it & when I took up scuba diving was fascinated at the fabulous life I didn't know existed! I never looked back from there.
59. Life long love of outdoors & fresh air

<u>Group: Vocation</u>

a) Employment
3. I began doing ecology based work in BC with fisheries & wildlife research, but felt that the information was very closed within the scientific community. This attracted me to the field of environmental education
8. I have a guiding background in hiking & canoeing & ocean kayaking. EE is very hands on so it suits my teaching style & was always interesting for students. I then got involved with collecting data which really made our class activities relevant
9. founding (co-founding actually) the SFU EE Summer Institute
17. Having worked with students in the past in camp settings where environmental education was part of the goal of the camp (Haida Gwaii Rediscovery Camp), I saw the benefit of not just talking about the natural world but in actually getting kids out there to experience it. Once I began talking to other educators, seeing the kinds of programs which were out there, and collecting curriculum (or making my own), began to see how practical this approach was
20. Working as a park naturalist and understanding how much people want to learn and how interested they are
21. teaching in Ucluelet Secondary School in the wild west coast of Vancouver Island

22. A summer job that turned into a 'real' job in interpretation
29*. Living & teaching up North on reserves, the outdoors and nature was our entertainment
31. I went on to work as a provincial park naturalist in the summers from age 17-24 and for a full year age 24-25
32. working in the field of nature interpretation
33. Worked as a canvasser for Greenpeace summer '93
- EE course taught at UBC summer 1999
40. seeing a real lack in environmental education – projects seemed trite or more like 'arts & crafts; than serious attempts at changing lifestyles/increasing awareness
46. I started with a will to get students/school involved in their city. We started with Earth Day Celebrations – school wide. I think that the difference 'EE with kids' can do in a city is the major factor in developing my interest in EE.
47. env. ed integrates well with existing subjects
48. Personal interest & work requirement
49. First 6 years of teaching in a rural community in Ontario – lots of field trips within walking distance
50. a co-op term teaching at an outdoor center
51. Began working in outdoor education as a youth (through a counselor in training)
52. This appreciation [*of natural surroundings*] was enhanced by … summer jobs working outside with kids (watching the looks on their faces, hearing their questions etc.)
55. My scientific background combined with my academic appointment to SFU in Biosciences and Education happened in the late 60's at a time when the term EE first appeared in the literature and when public concern was high. I had the freedom to pursue innovative programming in EE and was in a series of positions where I could exploit the opportunity
56. Having a great location to teach environmentally made a big difference
58. becoming involved with zero population growth & facilitating teacher in-service workshops
- being able to make a difference in my workplace in regards to reducing and recycling paper and creating awareness of environmental issues;
- being able to influence students to encourage them to follow the 5 r's – rethink, refuse, reduce, reuse and recycle

b) Volunteer

16. From that [*see Educ.*] I became involved in Project Wet and in the development of Project LNT/Scouting Ahead program teaching wilderness ethics
32. Working as a volunteer after graduation for environmental organizations

<u>Group: Education</u>

a) Kindergarten to Grade 12

21. developed interest and competence in science through elementary and junior high school; invited to join a marine biology summer school class in high school, as my town was a narrow isthmus sticking out into the Atlantic Ocean
33. Some interest in environmental activism in high school
42. High School Outdoor Recreation Program (Surrey) learned to appreciate challenges & beauties offered by Nature through recreation and nature appreciation studies

b) College/University undergraduate

12. Learning about environmental issues at UVic
15. 1979/1980 – studied forestry at BCIT
19. an interesting uni program
20. learning about systems and how easy it is to disrupt them
21. studying marine ecology at University
30. these [*see Nat. Exp. & Societal*] coupled with my early interest in science and my university science courses alerted me to the dangers of not recognizing the interconnected nature of our world

33. ecology was a concentration during my undergrad work
39. University courses
42. university courses (Env. Studies & Biology) developed an understanding of issues & environmental problems we face
52. This appreciation (*of natural surroundings*) was enhanced by learning more by studying Natural Resource Conservation at UBC
62. Exposure to environmental thought & philosophy in university; courses in Native & Cross-cultural studies

c) Graduate

21. freshwater ecology in graduate school
24. M.Sc. in evolutionary & ecological genetics
39. SFU PDP program that included environmental modules & field trips
43. UVic – Env. Ed. Course … as part of our Masters Prog. sparked my interest
49. M.S. Ed – Outdoor Teacher Education; PhD – Science Education

d) Professional development

15. Summer 2000 Marine Biology for Teachers course at Bamfield Marine Station
16. While I have degrees in Science, it was exposure to experiential education through a Project Wild workshop that made the biggest difference in my dedication
20. attending an EEPSA session and realizing there were others who thought like me
28. SEEDS program
39. attending BC Science Teachers Conference & going to sessions there
40. finding good resources on the Internet & in classrooms, I work as a TOC (quite a variety since I'm at so many schools)
48. large amount of EE resources available
50. access to curriculum & professional training
56. I also benefited from some good workshops and networking with other individuals trying things; the school's involvement with SEP and their community advisors had been excellent as well

<u>Group: Societal</u>

a) Principle, philosophy or belief

6. I became aware of the critical need for EE in schools & informally
8. interest in not just the "fun-in-bush" (fush) type of EE but in the urban environment where we (exp. kids) spend most of our lives
12. Gravitated to work on the environment as an "underdog" issue (figured if people can respect nature, they will respect everything else by default)
17. The belief that students needed to have a connection to real things to make the curriculum have value to them
18. The challenge of helping people examine their habits and question their methods from an environmental preservation angle
20. Needing to make a difference in my world
22. The need/opportunity to instill an appreciation for the environment in others
    A desire to share my own joy of nature with others
26. I just see that our lifestyle in the West is not sustainable
27. I prefer practical approaches and wish to counteract those who would have us stop using anything
    - attempt to demonstrate value of <u>R</u>educe & <u>R</u>euse, well in advance of final step: <u>R</u>ecycle. So many people today feel they have done their part if they <u>R</u>ecycle huge volumes.
    - demonstrate balanced use of natural & synthetic materials Reality must enter into the decisions
30. All of these [*see other categories*] led me to believe that first we must awake curiosity about the natural world – then teach awareness about interrelationships
35. a wish to keep the natural beauty of our province

40. Personal beliefs in the importance of environmental issues
47. Integrate in my whole life-style & passion
50. Understanding how imp. my role is in helping the earth through teaching others – feeling empowered – able to empower
53. The world is going to hell in a hand-cart; we are part of nature only, & ought act as such in any way we can
- recently: not enough time & effort is going into the facilitation of the expertise of non-formal educators
57. Everyone I met needed to know about the cool life we have around here
59. life long desire to share botanical & biological knowledge of the 'connectedness' of every person place & thing!
- life long desire to reduce waist (mine :-)) & waste

b) Concern for future generations
18. Kenyan Proverb "This land was not given to us by our forefathers, it is borrowed from our children"
30. A fear that these (a deep, long lasting love of the natural beauty around me) would not be there for my children and grandchildren
34. My concern for future generations

c) Sense of social justice
25. Loss of power re stewardship & access

<u>Group: Experiences of negative environmental impact</u>

a) Change in childhood or adult area
3. Seeing my small town lose a great deal of community & green space through urban sprawl
38. There was a small 'woods' that I can clearly recall with all my senses when I need peace. It has been destroyed and paved over
44. Living in a very fragile ecosystem where changes are visible and immediate with possible annihilation of the whole environmental system. I come from the Maldive Islands. One of the most diverse reef eco-systems in the world

b) Habitat degradation
12. Learning about the environmental destruction occurring locally, regionally and globally
20. Going on a trip to Bamfield and seeing the massive clearcuts and feeling the hurt of the land
21. Concern about environmental degradation
24. watching the world's environment collapse over 35 years of involvement - i.e. experience may help to predict what lies ahead
30. I became aware that too often our society, through a combination of ignorance and short term self interest is destroying the very things that not only support life but add to its quality
34. My concern for environmental degradation
35. My awareness of the acceleration of environmental degradation caused by people
46. We had to save a bat colony, so we learned about bats and built bat houses … putting the school & its students on front page of local newspaper.

c) Pollution, resource use/abuse, residential/commercial development, litter
1. Knowledge that - the planet is getting more crowded & polluted & we are using more & more resources
3. Tree planting in northern B.C. & seeing the extent of devastation to our forests through consumption

11. The factor that started my interest in the environment was seeing the mess people leave on rivers. Most people do not seem to care and have no respect for the envir. and just leave garbage where ever they are
25. Encroachment of logging camps; mismanagement & imbalance – Resources; near extinction of certain sea foods (abalone); increased, unregulated sports fishery
29. Coming home from North seeing smog of city led to wanting to choose a country place for a permanent home
37. the sure knowledge that if we don't switch NOW to ethanol & hydrogen, we are totally dammed & so is the rest of the planet. GODDAMN the internal combustion engine!
38. the disgusting sight of once-beautiful treed hillsides now covered with gigantic ostentatious houses with postage stamp yards (3 cars – 2 people); seeing the clear cuts on the way to Long Beach when I was a teenager; seeing the clear cuts as I fly over the country

Group: Organizations

a) Child/Youth

9. early involvement in Scouting Movement
31. Member of the Victoria Junior Natural History Society ... We had field trips every second Saturday (sometimes more often), and summer camps. We specifically learned about our natural environment – from identification to ecology.
42. Brownies – playing in the forest & experiencing it's magical qualities; Guiding & Scouting
52. active involvement in a youth outdoor club instilled a love for my natural surroundings
60. scouts

b) Adult/General/Professional

42. University Environmental Groups – developed awareness of issues & LOVE for wild areas near Victoria & on Vanc. Island (Garry Oak meadows, salmon streams, Old Growth Forests)
49. EEPSA since ~ 1981; COEO (Ontario Outdoor Educators) prior to 1981

Group: Others

a) Pets/Animals

15. Having pets and farm animals to care for
5. A love of animals
62. Pets while growing up

b) Learning plant use

28. interest in & study of edible wilds & herbs for healing
29. (living up North on reserves) led to interest in plant uses by natives etc

c) Unsure of or if influence exists

10. There is no singular, seminal factor, rather, a collection of life experiences
26. I don't know why - I just am. I was raised in a suburb with no eco-awareness and didn't particularly care during university.

d) Travel

26. traveling throughout BC was also very helpful to raise my awareness

e) Opportunity

28. Corporate funds to build school gardens

f) Media

12. Seeing a (US EPA) anti-litter campaign TV commercial in the 1970s (in my teens)

g) Love of performing

3. Love of performing, desire to use communication skills

h) Heritage

25. My aboriginal heritage

i) Photography

29. an interest in photography made me look carefully at nature

j) Comfort in outdoors

50. feeling comfortable being & teaching out-of-doors

k) Life path

21. the journal [journey??] from young interest and immersion, to academic exposure, to professional commitment

Appendix K

The following classification of factors of influence should be read with the understanding that in qualitative research it is necessary to read all the responses in their entirety to facilitate classification. Reading only the phrases listed here, which are segments of responses, will not necessarily give the reader a complete understanding of the reasons for this classification of the responses by the researcher.

Interviewed Educators Factors of Influence Analysis

Group: Experience of Natural Areas

a) Childhood/Youth

Pamela - early childhood (till 5 yrs. old) in village on Chico Lake, free to play with my sister and brothers on the high sandy hill above our old frame house: smells of sage, wild onion, cottonwood and ponderosa pine.

Owen - early years - years of play in natural settings

Helen - summers spent at ocean/farm as a child, revisiting same places – growing to love/respect

Todd - spent a great deal of time outside as a kid

Greg - having great experiences in the outdoors as a youth

John - hunting, fishing, hiking, camping, swimming etc. as a youngster

Mark - *grew up in small prairie town near coulees and sandhills; freedom to explore and discover area - as child; tracked animals, found arrowheads and teepee ring pits, listened to antelope herds, philosophized while laying under the stars, occasional duck hunting*
- ** "… it was such a unique place, we could lay out in these coulees and often sleep out under the stars and we'd listen to , well, in those days herds of antelope we could hear them thundering sort of thing, goin by in the nighttime"
- ** "… got into snaring rattlesnakes"

Nathan - ** "… [*as a child*] spent quite a bit of time in the bush … it was sort of undeveloped bush, which probably influenced my connections to nature, just the fact that I got out and that"

Stewart - ** " … and so early childhood was, I spent my time building rafts and hanging around the beaches"
- ** "… I liked fish and I liked outdoors and, my first memories are on boats on the water"

Ian - ** "… we had the Lands which became a spot although, I needed to ride my bike to them they were a little bit far away, but it was still worthwhile to get up in there and then be in the outside"

b) Adult or unspecified age

Helen - fishing, camping, hiking (wilderness) – off beaten track

Mark - *spent time on solo trips in outdoors as adult*

Nathan - becoming a naturalist and avid bird watcher in my early twenties

Ian - ** "… I was on my own quite a bit in the army and I remember at one point having about a six or seven day exercise by myself, … I was able to sort of hide out and, be by myself in the outdoors and be by myself in the black and the dark and not worrying about it and becoming very appreciative of the world around me"

c) Home on farm or rural area/gardening

Pamela - growing up on our farm in the Co. Valley as a "free range" kid – catching frogs, hiking for miles with my sister & a friend
- planting native trees & shrubs on our farm every spring and fall from the age of 8

- growing my own garden, as a kid, working in the orchard

d) Emotional response to natural areas

Owen - appreciation for wildlife and wild settings

Helen - love of wild places developed early

Group: People

a) Family

Greg - having great experiences with my own children camping and enjoying living in a rural community

John - ** "... I did a lot of hunting with my father"
- ** "... I did a lot of fishing with my family, a lot of camping"
- ** "... I guess my parents were, both had been concerned with the environment"

Nathan - my father studied and appreciated wild flora and fauna. He often shared his discoveries with me such as finding a snake den
- my wife got me started on bird watching and she often initiated hikes, canoeing, camping and other outdoor activities

Stewart - my parents, from childhood, always took me with them to sea & the forest
- ** "... I used to go fishing all the time with the family and I used to think fishing was just the greatest with my dad"

b) Students/Children (not own)

Pamela - seeing the pride children took in creating playground landscapes with native tree & shrub cluster plantings over a ten-year period.

Helen - ** "... I realized that they [*students*] were getting away from those connections that I saw as a child, that I felt was important to me, and that sort of, love and connection to the places that they call their neighbourhoods, their communities, just their local ecosystems ... they just didn't seem to, number one know about them or sort of have any knowledge about any relationships and if you don't have that, how can you love and respect anything, so that was kind of my focus"

Greg - watching how students personalities and learning styles change when introduced to an outdoor experience
- how attending an outdoor camp for 3 or 4 days allows students to see the world around them in a different light

Stewart - seeing students wanting to make a difference & feeding off their energy & enthusiasm

c) Teachers

Helen - graduate supervisor ... brought it all together for me
- * inspiring teachers, professors, and colleagues

Nathan - ** "... a Geography teacher that I had in [*college*]"

Ian - *botany professor at university and by association other faculty members of the biology department*

d) Mentor

Owen - teen years - an environmental hero Jacques Cousteau led to interest in diving, photography, biology, ecology, conservation
- ** mentor - a prominent environmental educator

John - ** "... I've had some mentors that have got me, helped me goin', keep going in the environment, [*one person*] mainly "

Mark - *mentor - first teaching post in town near mountains where he met a teacher running an outdoor program who became his mentor - very significant and important influence*
- ** "... he was a tremendous mentor, that's certainly one of the reason I certainly believe in mentoring it's a very, very important"

e) Friends/Colleagues/Other individuals

Helen - * inspiring teachers, professors, and colleagues
- * influential environmentalists (Rachel Carson, Aldo Leopold, John Muir)

Todd - ** " I had a school principal who came to me, said, look, you've been to the station with another school, we were working in a quarter system, which would allow you to develop a course"
- ** "I've read all the standard.... authors. Starting with Sand County Almanac, and Rachel Carson and through the whole, and I suppose that shaped my work, but I didn't sit down and say well, I've got to teach these kids about the environment because it's really important, cause you've got to save it"
- R.W. Service, The Call of the Wild

Mark - *hiked and camped from young age with a friend - spring, summer and winter*
- trip in desert country with native elders - living off the land for two weeks

Nathan - ** "... another person that influence me was [*names a prominent bird biologist from the province*]"
- ** "... when I was doing, teaching science at [*university*], I had ... [*names two well known environmental educators*], ... was still a public school teacher but she was seconded to [*university*] at that time, and I did field trips with her, cool field trips, and also [*another teacher*], he does a lot more pure science, but he's still very interested in the environment, so meeting that group of people and seeing what they had to offer"

Ian - ** "... Rachel Carson and Silent Spring ... and a few of those kinds of writings that led me to do some thinking that there was certainly some changes coming and we needed to concern ourselves with them"

Group: Experiences of Negative Environmental Impact

a) Change in childhood or adult area

Owen - early years - became protective to natural settings when they were threatened

Helen - ** " just seeing these places that I visited change in a way that there was less of what I considered important or less of what I considered to be part of what made that place wild and special"

Greg - watching the local environment change for the worst very quickly
- ** "... I very quickly saw that the area that I grew up in, where I was able to do so many things, signs of pollution started to come up and fish started to disappear, and there was a real lack of opportunities to just wander around in the fields that I used to 'cause they all became subdivisions and all of a sudden all these people started showing up that weren't there before, the experiences that I had as a child when I was able to walk around and see the birds and just enjoy the area just started to disappear very quickly"

John - ** "... just seeing things changed from living in small places & watching stuff get developed & paved & whatnot ... watching the places we would go hunting disappeared, the number of fish declining, watching the songbirds in the sixties seemed to be declining quite a bit & in the fifties there had seemed to me, there had been a lot more, I used to see a lot more birds"

Ian - ** "... I watched the deterioration and the lessening of green spaces around me in the city and although at first it represented a different area to play in, you know with the construction and then the buildings, after a while I began to lament the fact that we didn't have those spots to do the same kinds of things"

b) Habitat degradation

John - observing unsustainable development and degradation of wild life habitat as an adult
- ** "... we were raising these salmon and putting them back into a creek, ...one July, the first week of July after school had stopped, the creek was dry and our salmon were trapped in little small pools and they were getting quite warm and so, we had a SOS, save our salmon, and went out and moved them ... the light bulb experience there was that, you got to work on the habitat, you can't just.....raise the creatures and then put them back into a degraded habitat, so my interests shifted"

c) Pollution, resource use/abuse, residential/commercial development, litter

Mark - ** "... I remember real young, again, coming across areas on some of our hikes where there'd been partiers and they'd left smashed beer bottles and real garbage dump"

Stewart - *negative experiences of decreasing fish stocks and seeing a seemingly healthy creek devoid of fish due to poaching and urbanization*
- ** "... I crossed these beautiful creeks every day on the way to work and there was nothing in them, and I'd stop and check them out, the water flowed, ..., it was a beautiful creek but devoid of fish, they'd all been poached out of existence by the residents that had lived there forever ... it really sort of pointed out that extinction is forever so when the run is gone, it's gone"

Group: Education

a) Kindergarten to Grade 12

Pamela - having some good Science teachers in high school

Owen - courses in environmental geography

Helen - natural sciences always interest school/university

John - ** "... I took Bi 11 for example and Zoo 101 & stuff like that & we never went out in the field we were looking at stuff in formaldehyde, & you know, it was stupid, so I guess that stuck with me, & I decided I wouldn't be like that"

b) College/University undergraduate

Owen - course in environmental geography

Helen - natural sciences always interest school/university

Todd - ** " I did a lot of invert zoology and physiology and taxonomy and all that kind of stuff at university, I have a B.Sc. in biology"

John - ** "... I took Bi 11 for example and Zoo 101 & stuff like that & we never went out in the field we were looking at stuff in formaldehyde, & you know, it was stupid, so I guess that stuck with me, & I decided I wouldn't be like that"

Nathan - ** "... another major one was in teacher training when I went to [*an outdoor school*], I went there as part of my practicum"

c) Graduate

Helen - university – M.A. in Science (Envir. Ed. Focus)

Todd - **"... a Masters in science education"

d) Professional development

Owen - opportunities for professional development - project Wild, DFO

Helen - salmonid enhancement – C.I.D. – coordinator 10 yrs watershed stewardship

Greg - becoming involved in well organized programs (classroom incubation projects) that are educational sound and well funded
- ** "... I think there's one big one, ... DFO started a classroom incubation project for salmon enhancement ... I started the project when it first hit our school district and within two years I became the coordinator 'cause I'd actually stuck with it for two years"

John - ** "... salmonid enhancement [*program*]..."

Group: Vocation

a) Employment

Pamela - as a teacher, having the freedom to take children on pond study or grassland hike field trips.
- seeing how organized outdoor nature study trips made the rest of the curriculum so much more meaningful and rooted in reality

Mark - *worked at Outward Bound for a while*
Nathan - taking my own classes for a four day Outdoor Education Program and camping trip made me aware of the importance of environmental education
Stewart - my active participation as a boat captain, being out in the marine environment with a host of knowledgeable people
- being part of a "team" of environmental educators [*at two universities*]
Ian - working at [*a university*] and becoming a member of an Environmental Education Team
- this association gave me the imprimatur of one who could take children out into the environment and also advise others who wished to do the same
- many successful experiences and continued involvement in the Environmental Education Program added to my resolve
- ** "... one of the jobs I had was showing slides for a botany professor"
- *working as a provincial park naturalist*
- ** "... I trained as an infantry officer, as a summer soldier with the Canadian Officer Training Corps"

b) Volunteer
Greg - developing a strong mentorship program to encourage individuals who want to be outdoors

Group: Organizations

a) Child/Youth
Pamela - hiking, camping & earning badges with Brownies and Guides
John - scouting as a youngster
- ** "Cubs & Scouts"
Nathan - ** "... Cubs and Scouts probably helped to spark my interest in camping and outdoors"

b) Adult/General
Owen - professional associations
Helen ... NAME – brought it all together for me
Nathan - ** "... joined the [*university*] Outdoor Club and did stuff with them, and then later [*another university*] Outdoors Club"
- ** "... joining the [*city*] Natural History Society when I was still a student"

Group: Societal

a) Principle, philosophy or belief
Owen - ethics about the rights of other species - begins with proper animal (pet) care
Helen - * my personal beliefs for the future of our planet
- * my respect and reverence for living things
Todd - am a constructivist re: educational methodology

b) Concern for future generations
Stewart - seeing the disappearance of the abundance of wildlife & realizing my children will not be able to experience the wilderness & wildlife that I have been able to

c) Community
Pamela - involving parents, grandparents and extended family in these outdoor activities made them very meaningful to the children
- involving the community in the classroom through Greening Schoolgrounds

Owen - support from community group

Group: Others

a) Pets/Animals

Pamela - raising goats, pigs, chickens, rabbits – pets always (dogs, & cats)
Stewart - getting my hand on wildlife, - fish, animals & caring for them after first "consuming" them

b) Unsure of or if influence

Owen - hard to put it down to one thing or things
Todd - **"... I'm sort of stumped there, ... I really can't, there's not one ... it just seemed to be something that I could do"

c) Recognition

Owen - * recognition for my efforts

* from questionnaire autobiographical statement
**came from interview, not autobiographical statement by interviewee
- *italics* are my words in summary from interview