A DESCRIPTION OF CLASSROOM AND FIELD BASED LEARNING ENVIRONMENTS

by

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THESIS
SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

In the Faculty
of
Education

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SIMON FRASER UNIVERSITY
December, 2003

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ABSTRACT

This thesis is the culmination of a research study designed to examine both the learning environment created in a classroom-based programme and the learning environment created in a field-based programme. This study combined quantitative and qualitative methodologies in an attempt to identify the critical components of each type of learning environment as perceived by the students. Trends identified from a Learning Environment questionnaire were used to guide conversations with students during small group interviews. Students demonstrated insightful understanding of the differences between the two types of learning environments and the effect those environments had on their learning.

The findings from this study indicate that, although widespread implementation of programmes with environmental focused field-based excursions would be problematic, the basic structure and pedagogy of these field-based programmes could be implemented in a widespread manner. Such changes as proposed by the findings of this study could encourage an improved sense of connection to the environment and to each other that is argued for in the academic literature in the field of Environmental Education.

Finally this study has successfully implemented the use a research methodology that accommodates the inter-disciplinary and grass roots nature of environment education programmes. The continued use of Learning Environment Research within the field of Environmental Education may prove to be a very effective methodology for this field.

DEDICATION

This thesis is dedicated to my family. To my parents, who passed on their love of the outdoors and active living to me at a very early age. My grandmothers, who were role models of what it means to be a strong independent woman and who, by example, taught me to be curious about the world and to love learning.

It is also dedicated to Gerry Sieben and Scott Robinson. Two individuals whose commitment to creating a positive learning environment for both staff and students make them outstanding educational leaders and inspiring people to teach with.

Finally, this thesis is dedicated to Marky Schermbrecker, a man who was always at the leading edge of innovation. A friend, whose memory continues to remind me daily, to live life to the fullest and experience all that is around me.

ACKNOWLEDGEMENTS

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1. INTRODUCTION

1.1 Introduction

This is a study that seeks to confirm my personal and professional opinion that integrated, experiential education programmes offer unique and effective learning experiences for students. After reflecting on my personal and professional experiences with programmes of this nature, I claim that they offer many benefits. This project originated as an inquiry into the effect of field experiences on students' learning processes but I then widened its scope to include an inquiry into the role that the development of a sense of community and belonging in students involved in integrated experiential programmes has on their learning. However, I was also interested in the effects on learning of the unique teacher-student interactions in integrated experiential programmes.

I began my research with a review of academic literature in three main areas: experiential education, environmental education and integrated and interdisciplinary education. The review of the literature grew to include a body of research known as the study of learning environments. This focus became an important part of the methodology for this study as the research explored student perceptions of the learning environment in experiential, interdisciplinary programmes. The study compared student perceptions of the learning environment in single discipline, classroom-based learning environments with perceptions of the learning environment in interdisciplinary, outdoor-based learning environments. In particular, I sought to describe how participation in integrated

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experiential programmes might change students' expectations of their learning experiences.

The research questions designed to guide the study were:

1. How the educational experience that happens in a field-based environment compares to the educational experience that happens in a classroom-based environment.

2. Whether or not a programme that incorporates field-based learning is educationally superior to a classroom-based learning environment.

3. What the critical components are that differ between a field-based learning environment and a classroom-based learning environment.

4. Whether or not the components that make the field-based learning environment successful can be applied to classroom-based learning environments.

5. Whether or not the components of a successful field-based education programme suggest a direction for educational reform, particularly focussed on educational programming for a sustainable future.

1.2 Rationale for this Study

Schools should prepare children for adulthood and citizenship in a democratic, free and socially just society. For this to occur, schools must provide more than the basic academic skills of reading, writing and arithmetic. Students must also learn to make choices that will allow society to function within the environmental limits of our planet (Smith 1992). I believe the basic foundations of our society are being called into question more and more frequently as we push the earth to the limits of its environmental capacity and as we push our society forward in an expanding search for continued growth that requires ever-increasing economic expansion. I would argue that we are not only reaching the physical limits of our environment, we are also reaching its social limits. In

these circumstances, schools must provide students with more than the skills to read, write and calculate.

Some theorists believe we should change our educational institutions to prepare students to become productive, functioning adults within a new reality based on assumptions different from those of current models of growth economics (Smith 1992). Smith believes that schools currently encourage students to become independent from other people, look for personal security and view themselves first as individuals. In light of the physical limitations of our environment, we are going to need to encourage people to embrace a collective perspective and to pursue collective rather than individual success. Our 'pursuit of happiness' must be transformed into the pursuit of a collective happiness rather than an individual pursuit (Smith 1992).

These notions would require significant changes, not only in our world-views and educational philosophies but also in the actual structure of school programmes. Our current school curriculum is often segmented into isolated disciplines. If we hope to develop students' awareness of their personal and social interdependence on ecological systems, then we need to describe those connections more fully in the curricula of our educational institutions. We must minimise the isolation among individuals, different forms of knowledge and disciplines. This will require a restructuring of our school programmes and the learning environments of our students.

This study explores student perceptions of learning environments structured and designed to encourage connections between people and the environment.

1.3 Summary of Study

The focus of this study is to apply the theory of learning environment research to identify the significant differences between classroom-based learning environments and field-based learning environments that encourage integrated and collaborative models of education delivery. Learning environment research can provide an effective format for assessing formal education programmes that are interdisciplinary and experiential by structure and design. Two experiential, environmental education programmes in BC were selected to participate in this study. Learning Environment surveys were used to explore possible trends in student perceptions of learning experiences. Trends that were discovered through the questionnaires were further investigated through small group interviews with students from each of the programmes.

This study includes the following chapters.

1. Introduction: A brief overview of the guiding questions and the rationale for this study.

2. Literature Review: A review of the current literature in the field of learning environment research and how the literature informed this study.

3. Methodology: An outline of the methodology used to complete this study, including a detailed description of timelines, survey and interview questions and methods of analysis.

4. Results: A detailed description of both quantitative and qualitative results followed by an analysis of the results of the research synthesised with the literature review.

5. Conclusion: A description of the major conclusions supported by this research study.

2. LITERATURE REVIEW

2.1 Terms Used in this Chapter

Interdisciplinary – combining or involving two or more academic disciplines

Integrated – to combine more than one discipline or aspect of learning

Environmental Education – education in, for or about the environment

Experiential Education – education that allows students to learn by experiencing something first hand

Grass-roots Programme – a programme with curriculum developed for a specific local audience.

2.2 A Context for Environmental Education Programmes

The publication of <u>Silent Spring</u> by Rachel Carson in 1962 is often cited as the beginning of the modern environmental movement in the United States and Canada (Carson, 1962). She successfully sounded the alarm about the problems of pollution, highlighting that the problems were both global and long-term. It was another six years before the term "environmental education" first appeared in published literature (Hammond, 1998) and several more years after that before workable definitions and goals were established.

The field of environmental education has come a long way since <u>Silent Spring</u>. There have been several significant pieces of legislation and agreements that have influenced the development of the field of environmental education. During the 1970s the **Environmental Act of 1970**, the **Belgrade Charter** and the **Tiblisi Declaration** laid

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some foundation in the field by proposing working definitions and guiding principles. (North American Association for Environmental Education, 2002) In the late 1980s and early 1990s, the **World Commission on Environment and Development (1987), Our Common Future** along with the **Rio Declaration** and **Agenda 21** (UNESCO 2002; UNESCO 2003) introduced the terms of "sustainable development" and "environmental literacy". 1997 saw three important international conferences that impacted environmental education: Earth Summit II, The UNESCO International Workshop in Thessaloniki, Greece and the conference on global warming held in Kyoto, Japan (UNESCO 1997; UNFCCC, 2000; United Nations General Assembly 1997). Many of these documents and conferences were the result of many nations working together through the United Nations organisations.

Throughout the last 30 years there has been discussion, debate and disagreement within the field of environmental education. It is a field of education that encompasses many purposes, a variety of structures and unique programme implementations. Despite its great diversity, the field of environmental education has established itself within the Canadian schooling system. The academic debate fostered by the creation and development of the Canadian Journal of Environmental Education is strengthening the academic credibility of environmental education in Canada. The British Columbia Ministry of Education has provided curricular legitimacy to environmental education through the creation of Environmental Concepts in the Classroom (British Columbia Ministry of Education, 1995). It is a ministry document that encourages teachers to integrate environmental education across all curricular areas. Teachers in British

Columbia also continue to offer a variety of environmental education activities, units and programmes to their students.

2.3 Evaluation Research in the Environmental Education Field

Environmental education is by nature interdisciplinary. Unlike disciplinary studies, environmental education programmes draw from a variety of theoretical backgrounds and pedagogues. For this reason it is very difficult to develop one consistent research framework. In the same way that environmental education gains strength from each of the disciplines it incorporates, so too should the research field gain strength from the drawing together of various research foundations from all the disciplines (Aldridge, Fraser & Huang, 1999).

Often confounding the interdisciplinary aspect of environmental education is the grass-roots nature of environmental programmes, with curriculum being developed for specific local audiences. Due to the generally small size, many environmental education programmes are never formally evaluated or if they are, publication of the results may be difficult to find. It is often difficult to isolate specific outcomes to measure how effective a programme is. Experiences in environmental education may not demonstrate their effects until long after the educational experience is completed. Further, environmental education programmes are often process-based not outcome-based. For these reasons much of the past research in the field has been reliant on qualitative methodology.

This literature review has included one research study that makes an impressive attempt to overcome the various challenges presented to researchers in this field. In

1998, Lieberman and Hoody led a research project that included 40 schools that had all implemented programmes that used the **Environment as an Integrating Context for Learning** (Lieberman and Hoody, 1998). Within the background provided in the study, Lieberman and Hoody address the lack of rigorous research in the field of environmental education:

> Many educators, including specialists in education reform, have long insisted on the value of the problem-solving, hands-on approaches espoused by environmental educators (Lieberman, 1994). Most of this perceived value was, however, based on personal observations and anecdotal information rather than rigorous research. Therefore, educators could not make a strong case for the pedagogical significance of environment-based education to student learning. As a result, the mainstream education community has never fully embraced environment-based education as an integral part of the formal education system, relegating study of the environment to a long list of possible supplements to the traditional school curriculum (Lieberman and Hoody, 1998, p.1).

In an attempt to provide a source of rigorous research, Lieberman and Hoody undertook their research project.

Although some may interpret Lieberman and Hoody's words to suggest that qualitative research is less rigorous than research should be, I don't believe that when they say "personal comments and anecdotal information" they are referring to results found in a study using qualitative methodology. Hart challenges the idea that qualitative research is less rigorous than quantitative research but he also argues that qualitative research should still be grounded in methodology. He comments:

> I am disappointed most often by the lack of attention to grounding in methodology (Hart, 2002, p.143-144).

It is possible that Leiberman and Hoody are making a very similar comment. Later in their report they clarify that although they did do quantitative research, they

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consider their work to be a qualitative study itself. I find it hard to believe that they

would discredit qualitative research when that is what they consider their current research

to be.

> Although this study is not a quantitative assessment of the effects of EIC
> programs on students or teachers it is nevertheless, the most
> comprehensive and systematic effort to date to describe existing K-12
> programs that use the environment as an integrating context. In the near
> future, the Roundtable plans to initiate a quantitative study of the effects
> of EIC programs on learning, to supplement the qualitative evidence
> provided in this report (Lieberman and Hoody, 1998, p. 4).

Although the study included only American schools, the results of Lieberman and

Hoody's study provide a foundation to support further research in the international field

of environmental education. Russell and Barton (2000) completed a case study of an

Ontario-based integrated environmental education programme. The programme included

in their study is very similar to the programmes used in my research study. Russell and

Barton's conclusions were significantly similar to those of Leiberman and Hoody.

Although the authors did not include a quantitative component to their study, the

qualitative methodologies were similar to those of Leiberman and Hoody.

The future of research in the environmental education field has a lot to gain from

the integration of quantitative and qualitative research. While qualitative research can

offer important insights into the process of environmental education, quantitative

assessments may also be very useful in providing relevant generalisations for the field.

Quantitative research may include other measures deemed relevant to the learning

experience, such as the acquisition of content knowledge and specific skills. In this

regard research on psychosocial learning environments may provide an effective avenue

for combining both qualitative and quantitative research within the environmental

education field. This approach may show a way to accommodate both the diversity and the interdisciplinary nature of environmental education programmes while complementing the current qualitative methods in the field.

2.4 Learning Environment Research

When making policy, educational decision-makers often look to research that focuses on student achievement, with data often being collected through quantitative research methods. This is demonstrated by the recent resurgence towards the development of national standards based on standardised testing in the USA (Wals & van der Leij, 1997); however, teachers working directly in the field recognise the vast importance of the aspects of a child's learning that are not identifiable or measurable through standardised tests. Teachers are aware that there are many variables that greatly influence a student's success in school and in life and that many of those variables are not evaluated through achievement on standardised tests (Kohn, 2000). Qualitative research, with much success, has often tried to identify and evaluate the more intangible aspects of educational programmes.

In the past 30 years, the field of learning environment research has been developing and refining instruments to evaluate many of the more subtle aspects of learning experiences through a quantitative research methodology. An important aspect of this trend in research is a focus on the student perceptions of the learning environments. Because learning environment research uses student perceptions, the researcher is able to identify subtle components of a learning environment that an outside, objective observer would likely miss (Fraser, 1998a). Learning environment research has

recently strengthened its theoretical foundations. Combining the quantitative methodologies of learning environment research with a variety of qualitative research models may provide a very productive future for educational research generally and environmental education research specifically (Tobin and Fraser, 1998 & Fraser, 1998a).

The study of learning environments is based on a thirty-year research tradition that originated in science education. Although it has established itself within the field of education research, its potential for providing useful educational data has not yet been fully realised. Educators are continuing to realise the influence that students' perceptions of their learning environment has on their success. Social interactions and group dynamics also greatly influence the academic success and challenges students face in their school experience. Relationships in a classroom, particularly between the teacher and each student, are as important as the curriculum delivered. Evaluating social interactions, group dynamics and personal relationships is very difficult to do as an outside observer. Learning environment surveys (particularly when combined with qualitative methods) allow researchers to glimpse into the lives of students and to consider student perception of their learning experience (Fraser 1998a & Fraser 1998b).

The application of learning environment instruments to a variety of diverse educational settings is a growing field of research (Fisher & Fraser 1990; Taylor, Fraser & Fisher, 1997; Templeton & Johnson, 1998; Deller, 1998; Ferguson, 1999). Because it can be applied to a variety of educational situations, its use seems particularly appropriate in inter – or multi-disciplinary fields like environmental education.

2.5 Development of Learning Environment Research

A student's learning environment is made up of more than the physical setting in which he or she learns (Fraser, 1989). Although the physical space provided for students to learn in is important, the learning environment also includes the educational expectations and support provided for students, along with the relationships established between student and teacher and amongst the student body (Fraser, 1989). Learning environment research instruments attempt to assess student or student and teacher perceptions of their specific learning environment. This research theory is based on the idea that the closer a student's actual learning environment is to their preferred learning environment, the higher their academic success will be (Fraser, 1998a; Fraser, 1998b; Taylor, Fraser & Fisher, 1997; Newby & Fisher, 1997).

Although, as early as the late 1930's, Lewin and Murray introduced the importance of considering the interaction of individuals with their environment, (Fraser, 1998b) during the 1970's Herbert Walberg and Rudolf Moos were still considered pioneers in the development of learning environment research (Fraser, 1998a; Fraser 1998b). From his research with the Harvard Project Physics, Walberg developed the **Learning Environment Inventory** (LEI). Moos' work in psychiatric hospitals and prisons led to the development of the **Classroom Environment Scale** (CES). From these two significant research instruments, a new research tradition was begun (Fraser 1998a; Fraser 1998b; Newby & Fisher, 1997).

Since it's beginnings, several learning environment instruments have been developed, tested and validated in a variety of educational settings and in a variety of

countries. These instruments have been made up of scales that are used to identify specific aspects of a learning environment. Examples of these scales include: student cohesion, teacher involvement, material environment, co-operation, task orientation and equity. Each scale consists of several questions that have been designed to evaluate that specific aspect of the learning environment. Over the years and through use in a variety of countries, these scales have been used and tested for both validity and reliability. Ensuring validity and reliability of questionnaires used in international research projects required several revisions due to difficulties with translations (Aldridgge, Fraser & Huang, 1999). Through on-going revisions and continued testing, over time, these scales have proved to evaluate discrete components of a learning environment (Fraser, 1998a).

Appropriate scales are selected and combined by researchers depending on what their research questions are. Once the scales have been selected, a researcher would likely have students complete two different types of forms of the questionnaire: an actual form and a preferred form. These two types of forms ask students to respond to similar questions using the same response scale; however their responses will be based on two different environments. Their responses on the "actual" form will refer to the learning environment in which they are currently learning and their responses on the "preferred" form will refer to the learning environment in which they would like to be learning under ideal conditions. The preferred forms identify what the students think the learning environment should be like (Fraser, 1998a & Fraser 1998b). A comparison of the wording from an "actual" and a "preferred" form of the **Science Laboratory Environment Inventory (SLEI)** follows:

Actual: "I get to know students in this laboratory class well."

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Preferred: "I would get to know students in this laboratory class well" (Fraser, Giddings & McRobbie, 1992).

The researcher who was administering the questionnaire would provide clarification about the differences between these two types of questionnaire. The researcher would also clarify the difference between personal forms and class forms for the participants.

Researchers choose whether to word the questions to create personal or class forms. On personal forms, students would respond based solely on their personal experience in the learning environment. On class forms, students would respond based on their perception of the experience of students in general in that learning environment. For example, on a personal form, a student may respond to the question "the teacher helps me with my work" with "almost never"; however, that same student may respond "usually" to the question "the teacher helps students with their work" (as it would be worded on a class form). Although the individual student may not receive help, they may recognise that most students do receive help from the teacher. A researcher would have to choose which type of form would best suit his or her particular research goals.

Over the years several researchers have developed several well-established learning environment research instruments. These research instruments include: the **Classroom Environment Scale (CES)**, the **Learning Environment Inventory (LEI)**, the **Questionnaire on Teacher Interactions (QTI)**, **the Science Learning Environment Inventory (SLEI)**, the **Constructavist Learning Survey (CLES)** and the **What is Happening in this Classroom (WIHIC)**. Since their beginnings, these research instruments have not only been tested to provide validity and reliability of the

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instruments themselves but they have been used to evaluate diverse aspects in a variety of

learning environments. Table one describes the relevant aspects of each of these

instruments

Table 2-1: Summary of Learning Environment Instruments – Adapted from Science Learning Environments: Assessment, Effects and Determinants by Barry J. Fraser (Fraser 1998b)

Instrument	Date	Creator	# of Scales	Names of Scales
Classroom Environment Scale (CES)	Mid 1970's	Rudolph Moos	9	Involvement, Affiliation, Teacher Support, Task Orientation, Competition, Order and Organization, Rule Clarity, Teacher Control, Innovation
Learning Environment Inventory (LEI)	Early 1970's	Hebert Walberg	15	Cohesiveness, Friction, Favouritism, Cliqueness, Satisfaction, Apathy, Speed, Difficulty, Competitiveness, Diversity, Formality, Material Environment, Goal Direction, Disorganization, Democracy
Science Learning Environment Inventory (SLEI)	Early 1990's		5	Student Cohesiveness, Open-Endedness, Integration, Rule Clarity, Material Environment
Constructivist Learning Environment Survey (CLES)	Mid 1990's		5	Personal Relevance, Uncertainty, Critical Voice, Shared Control, Student Negotiation
Questionnaire on Teacher Interaction (QTI)	Early 1990's	Breklemans, Wubbles	8	Helpful/Friendly, Understanding, Dissatisfied, Admonishing, Leadership, Student Responsibility and Freedom, Uncertain, Strict
What is Happening in this Classroom (WIHIC)	Mid 1990's		7	Student Cohesiveness, Teacher Support, Involvement, Investigation, Task Orientation, Cooperation, Equity

During the 1980's, Walberg and Fraser, amongst others, considered various meta-

analyses of learning environment research to conclude that students had higher

achievement results in classrooms where they perceived environmental factors of

cohesiveness, satisfaction and goal direction to be higher (Fraser 1998b; Newby &

Fisher, 1997; Fraser, Giddings & McRobbie, 1992). Their work established a strong link

between student outcomes, student attitudes and the components of the classroom learning environment.

Having established a potential link between improved student outcomes and attitudes with learning environments that more closely represented the students' preferred environments, researchers used the learning environment instruments to explore ways to improve students' learning environments. By using the actual and preferred forms of an instrument, researchers could help teachers identify the components of the learning environment that appeared to have the largest gaps between the actual and preferred results. Once these components were identified, teachers could develop intervention plans to try to improve that particular aspect of the learning environment. Presumably, once the learning environment was closer to the students' preferred learning environment, both their attitudes and their cognitive achievement would improve.

Learning environment instruments are useful for researchers investigating innovative educational programmes. Because the instruments identify student perceptions of the environment, they can focus on the intangible aspects in a particular environment. Learning environment instruments may be able to identify differences in particular components of a learning environment before the effects of that learning environment are seen in student outcomes (personal opinion). By their nature, innovative educational programmes do not have a large research base to work with, nor do they allow for data over time to provide comparisons. By the time they have a large research base and historical data to work with, they are no longer considered innovations. Although smaller research samples can provide statistical difficulties, when combined

with qualitative research methods, learning environment instruments can provide relevant data to assist in the evaluation of educational innovations.

Learning environment research can be combined with qualitative research methods in two ways. First, learning environment instruments can be used to provide some quantitative data and identify potential trends to investigate further through qualitative research methods. Second, once qualitative research has begun, learning environment instruments can be used to confirm hypotheses developed through the qualitative research. Combining learning environment research with qualitative methods of research is a trend that is likely to continue (Fraser 1998a; Fraser 1998b; Taylor, Fraser & Fisher, 1997; Fraser & Tobin, 1991; Tobin & Fraser 1998). It is because of the unique, interdisciplinary nature of the environmental education programmes being used in this study that learning environment research has been combined with qualitative research methods.

Other uses of learning environment research that are not directly relevant to this study include, cross-national studies, transitions between elementary and high schools, use in teacher education and use in teacher assessment.

3. METHODOLOGY

3.1 Introduction

This chapter outlines the methodology employed to complete this study. It also clarifies the criteria used for selecting the school programmes used in this study. Finally both the process and rationale regarding data collection methods will be summarised and justified.

3.2 Main Study

The main study attempted to investigate:

1. How the educational experience that happens in a field-based environment compares to the educational experience that happens in a classroom-based environment.

2. Whether or not a programme that incorporates field-based learning is educationally superior to a classroom-based learning environment.

3. What the critical components are that differ between a field-based learning environment and a classroom-based learning environment.

4. Whether or not the components that make the field-based learning environment successful can be applied to classroom-based learning environments.

5. Whether or not the components of a successful field-based education programme suggest a direction for educational reform, particularly focussed on educational programming for a sustainable future.

3.3 Selection and Description of Study Sites

Several criteria were considered when selecting the programmes used as the research sites for this study. First a programme needed to be a long-term experience with

students participating in daily environmental education activities over several months. It needed to be a well-established programme, officially offered through the public education system and running for several years. The programme needed to be developed based on an interdisciplinary curriculum delivered to a cohort of students by a small team of teachers. The programme also needed to include several multi-night expeditions venturing into the backcountry. Based on these criteria, two programmes in BC were selected to provide data collection for this study.

One programme, "Lifestyles," is offered by a large urban school district and operated out of a school located in a very affluent area of the city. The programmes does utilize a variety of wilderness areas for their expeditions, the rest of their time is based out of the secondary school. Grade 10 students from any school in the district can apply to the 5-month programme. Students must complete an application process including: group interview process, completed interview questionnaire, community reference letters, in-class writing sample, medical form and physical fitness test. 54 students are accepted to work with 5 teachers for each semester of the programme. Students who are accepted attend the host school for their entire grade 10 year, with one "academic" semester and one "programme" semester. During the programme semester, students gain credit for English 10, Physical Education 10, Social Studies 10 and a locally developed course credit. Students have an opportunity to fulfill their other curricular requirements during the "academic" semester. Although students from any school in the district can apply for the programme there is a higher percentage of applicants from the host school than from other schools, leading to a group of successful candidates who may not be representative of all the grade 10 students in the district. The students in the programme must

participate in several traditional fundraising activities for the programme. The funds raise cover most of the costs associated with programme; however there is an extra semester fee that students must pay.

The second programme, "Journey," is offered by a small municipal school district. Although the programme is linked to one of the district's secondary schools, much of the students' time is spent either at an outdoor site developed in a rural setting or on multi-day wilderness expeditions. Grade 11 students from any school in the district can apply for the "Journey" programme. Application to this programme is made through teacher and counselor referral. Programme teachers speak to a student's previous teacher or counselor. Acceptance to the programme is mostly based on attitude and ability to be self-motivated. Each semester there are between 30 – 38 students accepted to the programme with two teachers. With each student group entering the programme, an attempt is made to balance for a mix of high academic achievers, average academic achievers and students who struggle with academic achievement in the regular classroom. The programme is a 5-month semester that gives students credit for: Social Studies 11, Physical Education 11, Earth Science 11 and Career Prep Work Experience 12. During the alternate semester, students in this programme attend regular classes at their home schools. Like the "Lifestyles" programme, students in the "Journey" programme must also participate in fundraising activities and pay additional semester fees.

Staff from both programmes were very co-operative and supportive of the research study, allowing adequate access to students in both programmes. The programmes were well established, both having been in existence for over twenty years. They both included multi-day expeditions, interdisciplinary teaching and curriculum

integration taught mainly in the outdoors. Because both programmes were run by public school districts in BC, the information gained through the study should be relevant for application to the public education system in BC.

In both of the selected programmes, students participate for a five-month term (one semester). Because the students spend a significant amount of time in the programmes, their impacts should be more apparent than on students who participate in short term programmes. The length of the programme also allowed access to students several times during the course of the field research. Gathering data from students who participate in a short-term (1-week) programme could be skewed by a particularly good or a particularly poor week. . The length of the two study programmes allowed students to develop stronger perceptions of the learning environment. Their responses should have been based on the overall experience.

Both sample programmes are well established in British Columbia. They have each been operating for over twenty years. Both programmes are also offered through BC school districts which means that the programmes are available to all students, not just the students who can afford to pay for private tuition.

Although each programme covers slightly different curricular outcomes, both programmes integrate curriculum from a variety of disciplines (as stated above). Connections are made between disciplines and concepts are taught from a holistic perspective. Both programmes also emphasise active participation in learning with most learning experiences being of a "hands-on" nature. Learning often takes place in the outdoors or in the community. Classroom activities are always linked to experiences in

the "real world". Both programmes also involve multi-day expedition trips, often in the backcountry. Both programmes have an environmental focus, teaching students about, in and for the environment.

3.4 Learning Environment Questionnaires

Learning environment research tools have been used to evaluate many different types of science-based learning environments. Researchers have had success in using learning environment instruments to examine innovative education programmes (Fraser 1998b). Using questionnaires to examine the two programmes selected for this study was an effective means to determine student perceptions of their overall learning environment. The questionnaires allowed for an examination of specific, unique aspects of the field-based learning environment and consideration of how those compared to the student perceptions of their classroom-based learning environment. Although the sample size was not large enough to provide a statistically significant quantitative study, the quantitative data provided by the questionnaires was useful in extending the findings of the qualitative aspects of the research study.

Learning environment instruments can be completed based on the experience a student has in an actual learning environment or they can be based on the experience a student thinks they would have in a preferred learning environment. If students are asked to complete both types of questionnaires, comparisons can be made between students' perceptions of their actual learning environment and their preferred learning environment. Quantitative data collection began by having students complete both a preferred form and actual form based on their previous classroom-based learning

environment experiences. These questionnaires were completed on the very first day of the programme term. This was done to ensure that there was no influence of the programme philosophies prior to students completing the first set of questionnaires.

The questionnaire was created by taking scales from four different established learning environment inventories: the **Environmental Science Learning Environment Inventory** (ESLEI) (Henderson & Reid 2000), the "**What is Happening in this Class**" (WIHIC), the **Science Learning Environment Inventory** (SLEI) (Fraser, Giddings & McRobbie, 1992), and the **Science Outdoor Learning Environment Instrument** (SOLEI) (Orion, Hofstein, Pichas & Giddings, 1994). A total of seven scales drawn from four inventories were used. The scales of Student Cohesion, Integration, and Involvement were taken from the ESLEI. The scales of Teacher Support and Co-operation were taken from the WIHIC questionnaire. The scale of Open-Endedness was taken from the SLEI and the final scale of Environment Interaction was taken from the SOLEI. Both the SLEI and the WIHIC have been used and validated in several large research studies. (Fraser 1998a; Fraser, Giddings & McRobbie, 1992) David Henderson, in Australia, designed the ESLEI (Henderson & Reid, 2000). This adaptation was selected to allow for future collaboration of results from this study with research results from further studies completed in Australia. The SOLEI is a questionnaire that has been developed by Nir Orion and Avi Hofstein in Israel (Orion, Hofstein, Pichas & Giddings, 1994.) The scale called Environment Interaction was of particular interest from this questionnaire. The SOLEI was developed to look specifically at Science classrooms that used a lot of fieldwork in their teaching.

The scale of student cohesion looked at how students interact with each other and included questions like "Students are able to depend on each other for help during this programme". The role of co-operation within the learning community was investigated through the co-operation scale and included questions like "Students work with each other on projects in this programme". The scale of teacher support looked at the interaction between students and the teachers. One of the questions from this scale was "The teacher is interested in students' problems". Student cohesion, co-operation and teacher support are important factors in creating a sense of community and belonging in the learning environment. Involvement looked at the active participation of students in their learning. A sample question from this scale is "Students explain their ideas to other students". "We use the theory from our academic learning during our field experiences" is a sample question from the integration scale, which considered how theory and practical knowledge were connected in a learning environment. The open-endedness scale examined how much control students had over how they learned and demonstrated their learning. A sample question from this scale is "There are opportunities to pursue our own interests in this programme". It was hoped that the three scales (involvement, integration and open-endedness) would indicate any differences in how curriculum was delivered and how learning happened in the two types of learning environments being compared. "Students who are generally silent in the classroom can be more outgoing during the field experience" is one of the questions from the final scale of "environment interaction". It looked at the impact of fieldwork on the learning process.

The questionnaires, in their entirety, can be found in appendices A-D.

Table 3-1: Sample Questions from the Learning Environment Questionnaire used for this study.

Sample Questions from each scale	Almost Never	Seldom	Sometimes	Often	Very Often
Student Cohesion					
Students are able to depend on each other for help during this programme	1	2	3	4	5
Integration					
We use the theory from our academic learning during our field experiences	1	2	3	4	5
Involvement					
Students explain their ideas to other students	1	2	3	4	5
Teacher Support					
The teacher is interested in students' problems	1	2	3	4	5
Cooperation					
Students work with each other on projects in this programme	1	2	3	4	5
Open-Endedness					
There are opportunities to pursue our own interests in this programme	1	2	3	4	5
Environment interaction					
Students who are generally silent in the classroom can be more outgoing during the field experience	1	2	3	4	5

Because this study looked at general class trends, class forms not personal forms were used for all questionnaires. Both the wording of the questions and specific directions given to respondents while administering the questionnaire made it clear to respondents that responses were based on class forms. At the beginning of the semester, students completed the questionnaire based on their actual classroom-based experience, prior to entering the programme. In order to provide as much consistency as possible (because students were in several different classrooms prior to beginning the programme), students were asked to base their responses for the "actual" classroom-based form on their Science classroom experience from the previous semester. Once the students had completed their five-month semesters, they completed a questionnaire based on their "actual" experience in the field-based programme. Again, class forms were used. Students also completed a form based on their preferred learning environment both at the beginning and the end of their field-based programme. This was an attempt to determine

if the students' perception of a preferred learning environment changed after completing the programmes.

3.5 Qualitative Interviews

The most important aspect of this research study is the qualitative interviews conducted with the students in the programmes. Semi-structured interviews were used. These allowed students to elaborate on a variety of perceptions expressed in the survey instruments. Through analysing their responses, trends were identified that could be compared with the quantitative data from the questionnaires.

Towards the end of the students' term in the programme, semi-structured group interviews were conducted with students from each of the programmes. Interview group sizes ranged from 7 – 20 students. Several interview questions were developed after looking for trends in the quantitative data from the first set of questionnaires. In an attempt to provide a richer understanding of the issues addressed in the questionnaire, one question was developed for each of the seven scales used. To these seven questions, five more general questions were added. These questions were included to initiate further discussion.

Table 3-2: Interview Questions for this study

Student Cohesion
Tell me how students in this programme get along or work together?
Integration
What do you think about the way the curriculum is organized in this programme?
Involvement
What differences or similarities have there been between how you have learned in this programme and how you have learned in a typical classroom?
Teacher Support
How do the teachers in this programme work with the students?
Cooperation
What role does cooperation play in this programme? Is it different than in a typical classroom?
Open-Endedness
How much control/say do you have in how you complete your work assignments?
Environment Interaction
Tell me about the role of expeditions and field-work in this programme?
General

General
1. What aspects of this programme have been most positive?
2. If you were going to set up a similar programme to this one, what are the most important aspects to include? What would you set up differently?
3. Currently, students chose to go into this programme, how do you think students would do if they had to participate in the programme as part of their regular schooling?
4. How has being in this programme changed your ideas and opinions about environmental issues / environmental education?
5. How has being in this programme changed your ideas about learning?

Due to time constraints it was not possible to use any individual interviews. Interviews were conducted with small groups of students with group sizes ranging from 7 to 20. Interviews were conducted as a relaxed group discussion. The researcher posed a question to the whole group and any student could respond first (either by raising their hand or by jumping right in with their response). As students had responses to offer, the conversation continued. Once the conversation began to pause, the researcher would ask specifically to hear from any students who had not yet had an opportunity to share their ideas. This free-flowing discussion format allowed students to both expand and challenge each other's comments. I believe the interaction between students during the interviews provided a richer description of their perceptions of their learning environments. Individual interviews may have given the researcher the opportunity to

explore in depth specific student responses; however, the opportunity for students to expand and challenge the ideas of their peers was an important part of the interview process. If time had permitted, it would have been beneficial to conduct some individual interviews along with the group interviews. Unfortunately, individual interviews were not possible.

The interviews were tape recorded and later transcribed. The responses from the transcribed interviews were coded, summarised, paraphrased and analysed. Trends noted in the interview responses were compared with quantitative data collected to identify any correlation and/or discrepancy.

4. RESULTS

4.1 Overview

Chapter four provides details about both the quantitative and qualitative results from this study. Statistical information considering the validity and reliability of the quantitative instrument are provided. Quantitative results from all four administered questionnaires are provided followed by a summary of the responses from the qualitative interviews.

4.2 Validation of the Questionnaire

In order to validate the questionnaire, data from the completed questionnaires was recorded and mean scores calculated and an initial item/factor analysis was completed. Based on the information from this analysis eventually four items were eliminated from the instrument. Considering the results of a Cronbach Alpha ($p<.05$) test, reliability was accepted for the scales of Student Cohesion, Integration, Involvement, Teacher Interaction, Co-operation and Open-endedness. However, after items were eliminated from the scale of Environment Interaction, a Cronbach Alpha test suggested that the results from this scale were unreliable as a quantitative comparison. Low reliability for the Environment Interaction scale may have been due, in part, to translation difficulties with the questions. At the time of questionnaire development the Environment Interaction scale came from an instrument that had been validated in its original Hebrew

but had not yet been tested and validated in English. Item/factor results are summarised in Table 4-1.

Correlation between individual items in each scale was calculated using the SPSS® computer application. (SPSS® is a computer application that can perform a variety of statistical processes.) As noted, four items were eliminated due to low reliability. Three of the four items that were eliminated were from the "environment interaction" scale that was originally taken from the SOLEI. Due to the low reliability of this scale the data from the scale were removed. All four items with low reliability that were discarded were negatively worded items. With the four items eliminated, the questionnaire results were then analysed for validity and reliability using SPSS® to complete the following statistical tests: Factor analysis, Cronbach Alpha and Discriminant Validity (mean correlation of a scale with other scales). The results of these tests can be found in Tables 4-1 and 4-2. There were a total of 45 questionnaires completed in February regarding the classroom-based learning environment. In June there were 34 questionnaires completed (There was lower student participation in June due to student absence.) The means were calculated and graphed. The means and graphs were analysed and trends were identified.

To determine discriminant validity of the scales mean scores for each scale were correlated with mean score of the combined remaining scales. Values from this test were close to 0.4 indicating that the scales on the questionnaire measured distinct though somewhat overlapping aspects of the learning environment in the sample population. These data are displayed as Table 4-2.

Table 4-1: Item/Factor Analysis (n=45)

Scale (Row) Item (Column)	Student Cohesion	Involvement	Integration	Teacher Interaction	Co-operation	Open-endedness
1	.6109					
2	.6685					
3	.6844					
4	.6237					
5	.6400					
6	.7271					
7	.5553					
8		.8004				
9		.6764				
10		.7992				
11		.7237				
12		.6627				
13		.7210				
14		.7950				
15			.8062			
16			.7826			
17			.6739			
18			.6445			
19			.7911			
20			.6534			
21			.7447			
22			.6172			
23				.6147		
24				.3754		
25				.4944		
26				.5883		
27				.6551		
28				.6036		
29				.7070		
30				.7100		
31					.6189	
32					.5658	
33					.5753	
34					.7681	
35					.7711	
36					.7720	
37					.6646	
38					.7127	
39						.4645
40						.8249
41						.6752
42						.6713
43						.5997
44						Deleted
45						.6828

Table 4-2: Reliability and Discriminant Validity Scores for Questionnaire Scales

Scale	Cronbach Alpha	Discriminant Validity
Student Cohesion	.6443	.3363
Involvement	.7398	.2697
Integration	.7142	.4778
Teacher Interaction	.6784	.3618
Co-operation	.6811	.4702
Open-endedness	.6531	.2443
Environment Interaction	.5062	.3228

(n=45)

4.3 Summary of Questionnaire Responses (Quantitative Data)

The **Learning Environment Questionnaire** (an actual and preferred form) was administered to students in both groups in February on the first day of their programmes. The responses in February reflected their experience in classroom-based learning environments. The same questionnaire (both actual and preferred form) was administered to the same students in June, near the end of their programmes. The responses in June should therefore reflect their experiences in the field-based learning environments of the two programmes.

Comparisons of the results from February and from June indicate that the actual learning environment created during the experiential, environmental education programmes more closely matched the preferred learning environments indicated by the students. The February responses (reflecting a classroom-based learning environment) showed a larger gap between students preferred learning environment and their perceptions of their actual learning environments. Responses to the questionnaires

administered in February (the beginning) of the research semester were based on students' prior experiences in classroom-based learning environments. Because students in one of the programmes were in different schools during the previous semester, responses were based on perceptions of several different learning environments. To allow for as much consistency as possible, all students were asked to base their responses on a Science classroom drawn from their experience the previous semester. Students were then asked to complete one questionnaire based on their actual learning environment. They were also asked to complete the same questionnaire a second time based on their preferred learning environment.

Responses to the questionnaires administered in June of the research semester were based on the students' experiences in the field-based education programmes. The responses to the June questionnaire therefore only represent two different learning environments. Students were asked to complete the questionnaire based on their actual learning environment experienced in the programmes being reviewed. They were also again asked to complete the same questionnaire a second time based on their preferred learning environment in that setting.

The mean responses data from the February administration for each scale of the preferred questionnaire were consistently higher than the responses for the actual questionnaire. The gaps between the preferred and actual responses ranged from 1.23 (for Teacher Interaction) to 0.55 (for Integration). This indicates that students' prior experiences of actual learning environments did not meet the expectations of their preferred learning environment in the classroom setting. These data are represented in Figure 4-1.

Figure 4-1 Classroom-based Comparison (February Data) (n=45)
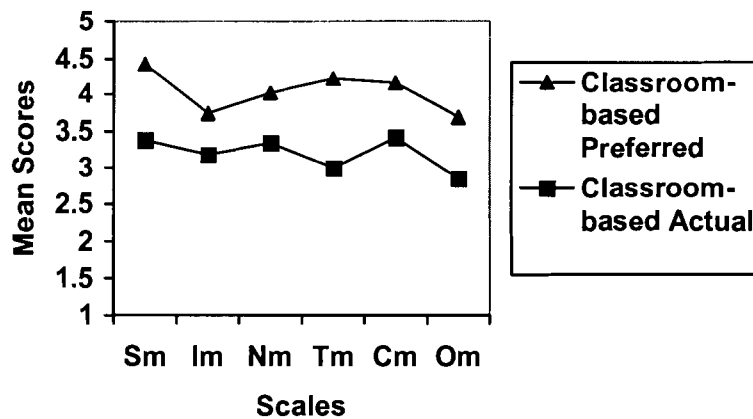
The mean responses based on the June data for each scale of the preferred questionnaire were very similar to the responses for the actual questionnaire. The gaps between the preferred and actual responses ranged from only 0.4 (for Teacher Interaction) to 0.05 (for Open-Endedness). Students' response for their preferred Teacher Interaction was 0.4 points higher than their response for the actual environment. All other mean responses for their actual learning environment were within 0.2 points of their responses for their preferred environments. This indicates that students' actual learning environment in the field-based, integrated programmes was close to or met their expectations of their preferred learning environment. These data are represented in Figure 4-2.

Figure 4-2: Field-based Comparison (June Data) (n=34)
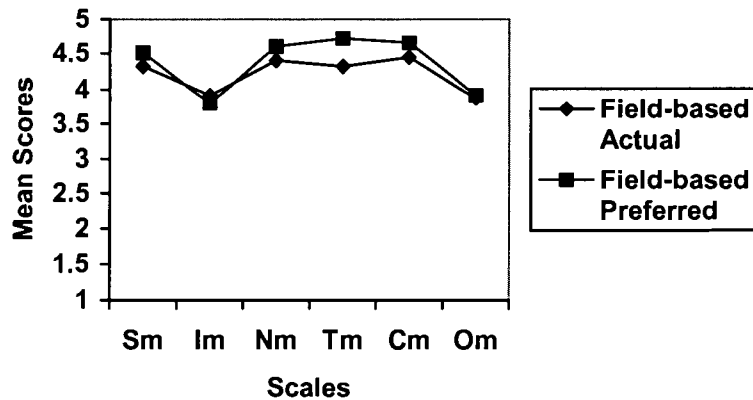
Five of the six scales of the questionnaire (Student Cohesion, Involvement,

Teacher Interaction, Cooperation and Open-Endedness) showed increases of more than

1.0 between the students' February and June responses based on their actual learning

environment. The remaining scale (Integration) still showed an increase in students'

responses based on their actual learning environments. The increase was from 3.18 in

February to 3.92 in June, a difference of 0.74. The mean scores for all the scales from all

the questionnaires are shown in Table 4-3.

Table 4-3: Comparison of Mean Scores (February and June Data) (n=45)

Questionnaire	Student Cohesion	Integration	Involvement	Teacher Interaction	Cooperation	Open-Endedness
February Actual	3.38	3.18	3.34	3.00	3.42	2.86
February Preferred	4.49	3.73	4.02	4.20	4.16	3.84
June Actual	4.40	3.92	4.40	4.33	4.45	3.99
June Preferred	4.60	3.80	4.60	4.73	4.65	4.17

4.4 Summary of Interview Responses (Qualitative Data)

Once the February questionnaires were tabulated and analysed, interview questions were developed to correspond to each of the scales on the questionnaire. The interview questions were designed to gain a richer understanding of the students' perceptions of the identified components of the learning environment. Students participated in group interviews near the end of their 5 month field-based programmes. Interviews were audio taped, transcribed and analysed.

The following is a summary of qualitative interview data ("K" represents the researcher's comments and questions. "Q#" and "R#" are codes to represent individual respondents):

1. What aspects of the programme have been most positive?

The relationships established during the semester were seen to be a very positive aspect of the programmes. Students indicated that they got to know each other very well. They reported seeing each other at their best and their worst.

> Q3: "you got to see more sides of everyone"
>
> Q4: "ya, you got to know everyone"
>
> Q5: "you got to see everyone at his or her worst"

There was also agreement that, because of the programme, students got to know people that they otherwise wouldn't have spent any time with.

> R4: "also what's good about it is that people in the programme are from all over the city, so it's not just...you know... so you're friends with people from everywhere"

Students also commented on the richness & depth of the friendships made in the programme

2. **Tell me how students in the programme get along or work together**

Students agreed that basically everybody got along. They related that to knowing each other so well. Several students mentioned "having" to get along because they were together so much and also had to completely rely on each other.

> Q1: "we're pretty tight"
>
> Q2: "well, you kind of have to get along because we're stuck with each other"
>
> Q3: "we don't have a choice… we're not forced to but we all get along we do have a choice but we get along"
>
> Q5: "plus you're really stuck with each other for so long on trips that you have to get along"

There seemed to be some disagreement about what happened when students didn't get along. Some claimed to avoid or ignore the other person. Some claimed that they actually sat down, discussed it and resolved it. All students agreed that there weren't any lingering unresolved issues.

> "Q6: ya, you just stay away from the person here and try to avoid them as much as possible or sometimes the group will discuss it and you actually talk about it."
>
> K: "you actually talk about it and resolve it"
>
> Q6: "ya, (? Something indecipherable)"
>
> K: "and you wouldn't have done that in a typical classroom"
>
> Q6: "No"

They all seemed to feel that students got along better in the programme than in a classroom-based environment. A few students referred to the lack of "performance" for

the group. They felt that students were able to be themselves without having to present a "cool image". They also indicated that even if they tried to, they wouldn't be able to present the "cool image" for the extended length of time they were together.

> R2: "ya, there's not a lot of holding back anymore and people ya just don't hold back anything now"

> R3: "I think people are really helpful and everyone is so comfortable with everyone, it's not really an issue, you don't have to put on a show for this person"

> R4: "you can totally be yourself around every single person here"

3. What role does cooperation play in the programme? Is it different than in a typical classroom?

Students saw the need to co-operate in pretty much all that they did. They recognised that the consequences for not co-operating were potentially very serious (including death and starvation!).

> K: "what role does co-operation play in the programme?"

> Q1: "you have to co-operate or you die"

> (several students in agreement)

> Q3: "ya, when someone's holding you onto a rock wall and you're like "I hate you"... (lots of laughter)

> Q4: "it will kill ya if you don't co-operate"

> R1: "we have to co-operate all the time"

> R2: "not only that, it's just different, you're outside and you need to co-operate or else you, you've got your tent group and you need to co-operate with them to get your meals cooked"

Several students commented that although they were often asked to co-operate in a classroom-based environment, they often didn't really have to co-operate. They could simply divide up the tasks and do their own thing. Several students commented that even

though they really "had" to co-operate in the programme, they also "wanted" to co-operate. One student commented that in just 80 minutes every other day, you could pretend to get along and co-operate but you didn't really have to. When you were on expedition 24 hours a day for 7 days, you really had to get along and work together or it would be an unpleasant trip for everyone.

> R3: "in academics they tell you to co-operate but you don't really have to, you can just separate your project and each do your own thing"

> R4: "it's just like 79 minutes every other day but in the programme, it's like 7 days, 24 hours"

> K: "it sounds like some of the consequences for not co-operating are a bit more serious"

> R5: "it's like everyone wants to co-operate"

4. How do the teachers in the programme work with the students?

All students referred to the different way that the teachers in the programme treated them compared to a teacher in a classroom-based environment. They saw themselves to be on more equal terms with the teachers in the programme. All students commented that they called their teachers by their first names. The students also agreed that the teachers gave the students more freedom, more responsibility and more respect than they had experienced in their classroom-based environments.

> Q5: "ya, like they don't hold your hand and be like..."

> Q6: "they give you the responsibility"

> Q7: "you manage your own schedule, they just tell you what you have to do and it's up to you to do it"

> Q8: "yes, they have to trust you so much"

> Q9: "they give it to you right from the start"

> Q10: "and you earn their trust too"

Time spent with the teachers was also commented on. During the programme, students had several opportunities to see their teachers for 24 hours a day for several days in a row. Students felt that they could "really" talk to their teachers. They felt it was a personal conversation, not just academic student to teacher.

> Q11: "you respect them a lot more than a regular classroom teacher"
>
> K: "why do you think that is? – the difference in respect"
>
> Q12: "well, because we're with them a lot"
>
> Q13: "I think that they treat us with a lot more respect"
>
> Q14: "they treat us like equals"
>
> Q15: "we call them by their first names not Mr. or Mrs., that would suck, you're falling off a cliff and yelling Mr…"
>
> R1: "They're a lot closer to you"
>
> R2: "we spend a lot more time with them, we're with them for seven days"
>
> R3: "we're on a first name basis with them and when we're out in the wilderness they just turn into a kid, like they try to, they just become like total, like they still have the ultimate responsibility but they try to make us be the leaders and they just come along"
>
> R4: "you can have a conversation, it's really easy to talk to them and they don't talk to us like we're kids, they talk to us like we're their friends"

5. **What differences or similarities have there been between how you have learned in the programme and how you have learned in a classroom-based learning environment?**

Students all referred to the relevance of what they had learned "outside" and in a hands-on way in the field-based programmes. Students in one programme in particular didn't recognise their work as academic or related to anything that might be taught in the classroom because it was done outdoors, yet the actual end product assignments were similar to assignments that might have been given in the classroom.

K: "in terms of what I've seen of your project work in there though, actually a lot of that looks fairly academic, they look like assignments that you'd have in a typical classroom"

Q5: "that stuff wasn't classroom work, it was like tracking animals, and…"

Q6: "it was all done outside"

Q7: "ya, you had to go out and actually do it"

R1: "we get to actually learn, like we get to go outside and actually see how the waves work as opposed to getting a book and talking about how the waves work we get to watch the waves do it"

R2: "they make a conscious effort to make everything different, like they'll be telling us that we don't want you to memorise this, we want you to really use this and they don't have us reading books"

R3: "and a lot of the stuff we can do and we know how it works, and we've seen it happen instead of just like we know how it works and we can explain it but we don't really how it works"

All students felt that they had learned much more in the programme than they ever would in a classroom-based environment. Many students also commented on how much more they thought they would remember from what they had learned in the programme.

6. What do you think about the way the curriculum is organized in the programme?

Students felt the hands-on, experiential nature of the curriculum delivery in their programmes was much better than learning that typically happens out of books in many classrooms.

Q2: "it was way better"

Q3: "it's more fun"

Q4: "it's way more hands-on"

Q5: "you might actually remember it"

Q6: "like you might get to go surfing after, but like when we went out to the gulf islands you're not looking at a book looking at a crab, you're actually holding the crab and you're breaking his arms off and eating him and stuff"

R4: "you learn more when you actually do it yourself then when you read about them"

R5: "and you remember 90% more if you've done it"

R5: "and if you've had to deal with the consequences of not learning the knot or whatever then you just...like you have to be able to tie the tarp and actually keep it up when you walk away"

7. **How much control/say do you have in how you complete your work assignments?**

It seems as though both programmes have well established assignments to meet

provincial curriculum requirements. Students felt that they were given clear guidelines

and structure to complete assignment work but teachers were flexible to allow for

personal student interpretations or variations. Students did not feel constricted by

assignment requirements but also did not feel that assignments were vague or frustrating.

Q1: "you just have the outline but the assignments are pretty open-ended, like I know for certain in photography they just basically said give us your best shots"

Q2: "they had categories we had to follow"

Q3: "ya, but didn't say it had to be a certain way"

R1: "they tell you what assignment you have to do but sometimes you get to pick the topics"

R2: "it's still school so it can't be way out on a limb"

R6: "(we have) more control (than in a typical classroom), they just want you find a way to convey this message, we just have to show that you understood"

8. **Tell me about the role of expeditions and fieldwork in the programme?**

Trips were seen as very positive and the highlight of the programme. Trips were

identified as an opportunity to learn many things (academic content) but also implement

and practice leadership skills. Being on trips (24/7) allowed for significant personal

relationships to develop. All students agreed that the expeditions were a vital part of the

programme.

> Q2: "you learn better so you actually remember stuff"

> Q3: "you go places that you would never normally go and do new things"

> Q4: "I have tried more new things in the last 6 months than I have in 15 years"

> R1: "we get a lot of experience with leading people, like you can't just tell people to do things, you have to tell them why they need to do it, like out on the hiking trip when we had to stop and it wasn't just what you were feeling it was what the group was feeling, so you kind of had to get a group consensus instead of just what you think"

> R2: "they make you responsible"

9. How has being in the programme changed your ideas and opinions about environmental issues / environmental education?

Students agreed that they were interested in environmental issues before but by

the completion of the programme they had more of an appreciation for the natural

environment. Several students also commented that they know a lot more about

environmental issues now. They have details that they didn't have before. One student

commented that before entering the programme they knew the headlines and having

completing the programme, they now know the details about the headlines.

> Q6: "I appreciate it more now than I did"

> Q8: "now we know more about it"

> R4: "we also got to see the other side like the industries also and not just the environmentalists so you got see it all, like ok we've got to stop logging but then there's no jobs so you've got to find a median, find something that works for everybody"

> R5: "it's kind of stuff we cared about before but now we actually know about it"

R6: "it's like it before it was like a headline and now we know the article, we know the information about the headline"

Several students did testify to changes in personal environmental behaviours like recycling and not littering anymore.

R1: "I think we're a lot more aware now, we know so much more about them now and we know how we can kind of try to fix them and how we can try to help"

R2: "I feel guilty for littering now"

Students: ya, me too, me too

R3: "I know I feel so guilty now every time I throw something in the garbage, I think could we recycle this"

10. How has being in the programme changed your ideas about learning?

Students all agreed that an active, hands-on method was much better for learning things than learning from a book. Some students also commented that being in the programme allowed them to learn much more about themselves and other students than would be possible in a classroom-based environment.

Q2: "working like hands-on is a lot better"

Q3: "ya, learning doesn't suck"

Q1: "I think I learned more in six months than I have in 10 years of school, like actually learned it"

Q2: "I think that's a huge thing – you learn more about yourself and others than in typical school"

R2: "like if you do something then you're not going to forget it"

11. Currently, students choose to go into the programme, how do you think students would do if they had to participate in the programme as part of their regular schooling?

Students felt that the programme couldn't run (at least not in the manner in which it was run) if students were put into the programme randomly. They felt that if all

students had to go through this type of programme that the programme would have to be "watered down". They were also worried about students dying! The students were adamant that the programmes should be left as optional programmes.

> Q3: "it wouldn't be the same, it would be kind of watered down because lots of people wouldn't want to be there"

> Q4: "the trust issue is huge, it's hard, like if you're going to put everyone through, not everyone is going to go through do everything that you trust them to do, like they might not be able to do something that they just HAVE to be able to do."

> Q6: "you couldn't have everyone go through, you'd have kids dying and stuff'"

12. If you were going to set up a similar programme, what are the most important aspects to include, what would you set up differently?

Basically students would want to see the programme set up just the way it was run for them, including having the same teachers running the programme. One student would recommend not having journals but he did admit that was probably a personal thing and it might be good for other students. Students were not convinced that anyone else could set up a programme similar to the one that they had just been through because the new teachers wouldn't have the experience that their teachers had.

> Q7: "I don't think it would be the same without (the teachers), it wouldn't be the same"

> Q8: "but it's just that they've been doing it for 20 years, so they have it so down pat"

> Q10: "ya, but they (new teachers) could have their own ideas"

> Q11: "but I think that it would just evolve in a totally different way and it would be a totally different programme, if they tried to recreate this programme it would just be like a rip off and it would just suck"

5. DISCUSSION AND CONCLUSION

5.1 Discussion and Conclusion

The data from this study indicate that students were much more positive about the learning environments perceived in the experiential programmes than they were with the learning environments created through their classroom-based programmes.

Interviews with the students confirmed that the students felt that there were qualitative differences in the learning environment created in the field-based programme compared to the learning environments created in classroom-based programmes. These differences were both structural and pedagogical.

Students were grouped together in one cohort for an entire semester, which is uncommon in secondary school classroom-based programmes. Students also interacted intensively with only a few core teachers (who worked in a team), again a situation that is uncommon in secondary classroom-based programmes. These structural components of the programmes allowed for very different interactions to occur among students and between students and teachers. Student interviews showed that these rich interactions were very important aspects of their learning environment. Students indicated a strong sense of belonging to and acceptance by their learning community.

Another structural component of the field-based programmes was the integration of several curricular areas. It is typical in secondary classroom-based programmes to

have curriculum delivered by a different teacher for each discipline area. It is uncommon for teachers in that structural situation to plan and work together to allow for relevant integration between curricular areas. In the field-based programmes, because curriculum for all disciplines was delivered by a small number of teachers who planned and worked together, curriculum from all disciplines was presented in a connected, integrated way. Student interviews indicated that this structure helped to make curricular learning be more relevant and applicable.

The pedagogical philosophies of co-operation, student involvement and the open-endedness of curriculum in the field-based programmes were also significant aspects of the learning environments in the view of the students. The role of co-operation and the relevance of "hands-on" learning activities were frequently mentioned during the student interviews. One student's comment about the need for "real" co-operation in the field-based programme was quite telling. When asked to compare the role of co-operation in the field-based programme and the role it played in a classroom-based programme, the student explained that in a classroom-based programme, in just 80 minutes every other day, you could just "pretend" to co-operate. He said, "you can just divide up the tasks and everybody does their own thing, you don't really have to do it together"; however, in the field-based programme the group of students had to work together to get things done and if the group didn't co-operate someone could die (student view paraphrased).

Throughout the student interviews the students also emphasised the importance of relevant, "real" learning. Comments like "I learned more in 5 months than I have in 10 years of school" and "I know that I will remember the stuff I've learned way more because I actually got to see it and do it – it was important" were common. It is

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interesting to note that although many of the assignments students completed in the field-based programmes looked similar to the assignments that could be completed in a classroom-based programme, the students did not recognise any similarity because of the activities they completed in order to produce the final products.

Russell and Barton found similar perspectives in their research about a similarly structured programme in Ontario. Their findings were also similar to the findings of Liebermann and Hoody (1998).

> "...namely that the programs:
> - ground learning in authentic, "real world" experience,
> - demonstrate links between subject areas,
> - foster responsibility, collaboration, and a sense of community,
> - increase and enhance student-teacher contact, and
> - improve relations between students" (in Russell & Burton, 2000, pp.289 – 290).

The student interviews reported in these studies offered perspectives that support the same conclusions as the programmes studied for this report.

Students stated that the expeditions were a very critical part of the field-based programme and the expeditions certainly contributed to the development of the positive learning environment created in the field-based programmes. Students were asked if the programme was required for all grade 10 or 11 students and not an optional programme, did they believe that all students would benefit as much as they had. All students were in agreement that there would be great problems if the programme were required for all students. They were concerned about the safety of all students from a physical point of view. Some students were also concerned that if students didn't choose to be in the programme that there might be more conflicts between students in the programme. With this in mind, promoting the widespread implementation of similar programmes would

likely be problematic. Therefore the role of expeditions in the field-based programmes has few implications for evaluating how these findings could influence how education is delivered to the general student population; however the structural and pedagogical aspects that seem to help make these learning environments so positive and effective can be considered for the general student population. Students in classroom-based programmes could be grouped into cohort groups, designed to interact with a minimal number of teachers. With teacher commitment, curriculum could be integrated between disciplines. Student learning activities could also be designed to be "hands-on" and relevant. Although backcountry expeditions are probably impractical to be widely implemented, local community-based experiences could be incorporated into classroom-based programmes to allow for more "real" applications of learning. All these things could be implemented in a large-scale manner.

Russell and Barton drew the following conclusions from their research:

> The students in this case study had opportunities to learn experientially about and with their natural and social communities which, by their own reckoning, led them to hone interpersonal skills and grow personally. Interestingly, while the students did mention their increased knowledge about and commitment to environmental issues, what they most wanted to relate to us at the end of the program was their excitement at learning by doing, their interpersonal skills development, and their personal growth (Russell and Barton, 2000, p. 301).

The same conclusions can be applied to this research study. Although the environmental aspects of the programme were important to the students, it was the sense of community and the relevant nature of the active, hands-on learning that made the programme such a life influencing experience for them.

Through implementation of cohort grouping, team teaching and community-based field experience, educators would be better equipped to help students develop an understanding of the importance of their dependence with other people and with the environment. Assuming that our ability to survive as a human race, within the environmental and social limits of our world, requires a paradigm shift from a fierce belief in independence, we must begin by altering our mainstream learning environment. The evidence from this study leads the researcher to conclude that arranging secondary students into cohort groups to work with a limited number of teachers who plan and teach as a team, and approach curriculum through an interdisciplinary, active-learning approach, is an excellent way to begin this paradigm shift. These structural and pedagogical changes should be able to be implemented without excessive costs.

5.2 Limitations

While the conclusions of this study provide significant structural and pedagogical changes to consider, the conclusions must be viewed within the limitations of the study. A larger sample size would have provided statistically significant data from the quantitative questionnaire research. Including more than two programmes in the study could have increased the sample size. Increasing student participation from the two programmes used in the study would also have increased the sample size. After having direct parent contact with one programme, student participation was close to 100%. Direct parent contact with the second programme was not possible. Parents from the other programme received information through the mail along with a letter of permission.

There was limited return of these permission documents, leading to limited student participation from the second programme.

The second limitation is more difficult to resolve. Both programmes used in this study require students to apply to the programme. The application process acts as a form of self-selection. If students have chosen to take part in the programme, they are more likely to have a preferred learning environment that is close to the actual environment created during the programme. Because the actual learning environment automatically blends with students' preferred environment; students are likely to be more favourable in their opinions and ideas about the programme than a truly random sample of students; however that would require programmes that are mandatory for students not voluntary.

5.3 Further Research

This study presents several opportunities for further research. For example a similar study could be completed using a larger sample size. More programmes could be included with a determination to have 100% participation from all students. A similar study to this one could be undertaken to include programme alumni as participants in the research. Interviews with alumni of the programme would allow the researcher to explore some of the long-term implications of participation in an educational programme structured as an interdisciplinary cohort.

Research studies could be designed using learning environment instruments to explore student perceptions of other innovative educational programmes that are structured to create a cohort of students working with a small team of teachers, who plan

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and work together to deliver their curriculum in an interdisciplinary way. Research studies could also be designed to include two groupings of students, one group in an interdisciplinary, cohort group programme and one group in a conventional classroom-based programme. The conclusions from such a study could be important in determining the possibility of widespread implementation of the suggested structural and pedagogical changes.

Finally the blending of learning environment instruments with qualitative research methodologies has been very useful in this study. Combining learning environment instruments with qualitative research may provide an effective research methodology for the field of environmental education. The combination addresses the challenge of the grass-roots nature of many environmental education programmes. Due to small sample sizes, learning environment instruments alone would lack the statistical significance required for valid conclusions; however, when combined with qualitative methods, valid conclusions for a specific study can be drawn. Further, learning environment instruments could provide a link between research studies done with very different programmes. That link may help researchers draw more generalised conclusions about education in the field.

6. APPENDICES

Appendix A: Classroom-based Actual Form

Code:_____   Date:_____

Remember you are describing your ACTUAL classroom	Almost Never	Seldom	Sometimes	Often	Very Often
Student Cohesion					
1. Students in this class get along well as a group	1	2	3	4	5
2. Students have little chance to get to know each other in this class	1	2	3	4	5
3. Members of this class help one another	1	2	3	4	5
4. Students in this class get to know each other well	1	2	3	4	5
5. Students are able to depend on each other for help during this class	1	2	3	4	5
6. It takes a long time to get to know everybody by his or her name in this class	1	2	3	4	5
7. Students work cooperatively in this class	1	2	3	4	5
Integration					
8. What we do in our regular classroom learning is unrelated to our field experience	1	2	3	4	5
9. What we are learning in one subject area is not related to what we are learning in our other subject areas.	1	2	3	4	5
10. Our academic learning is integrated with our field experience	1	2	3	4	5
11. We use the theory from our academic learning during our field experiences	1	2	3	4	5
12. The topics covered in our academic learning are quite different from topics dealt with in our field experiences	1	2	3	4	5
13. What we do during our field experience helps us understand the theory covered in our academic sessions	1	2	3	4	5
14. Our field experiences and classroom work are unrelated	1	2	3	4	5
Involvement					
15. Students discuss ideas in this class	1	2	3	4	5
16. Students offer opinions during class discussions	1	2	3	4	5
17. The teacher asks students questions during learning times	1	2	3	4	5
18. Students ideas and suggestions are used during learning times	1	2	3	4	5
19. Students ask the teacher questions during learning times	1	2	3	4	5
20. Students explain their ideas to other students	1	2	3	4	5
21. Students discuss how to go about solving problems or completing project work	1	2	3	4	5
22. Students talk to each other about how to solve problems or complete project work	1	2	3	4	5
Teacher Support					
23. The teacher takes a personal interest in students in this class	1	2	3	4	5
24. The teacher goes out of his or her way to help students	1	2	3	4	5
25. The teacher considers students' feelings	1	2	3	4	5
26. The teacher helps students when they have trouble with their work	1	2	3	4	5
27. The teacher talks with students	1	2	3	4	5
28. The teacher is interested in students' problems	1	2	3	4	5
29. The teacher moves about the class to talk with students	1	2	3	4	5
30. The teacher's questions help students to understand	1	2	3	4	5

Remember you are describing your ACTUAL classroom	Almost Never	Seldom	Sometimes	Often	Very Often

Cooperation

31. Students cooperate with each other when doing assignments	1	2	3	4	5
32. Students share books and resources with other students doing similar assignments	1	2	3	4	5
33. When students work in groups in this class, there is teamwork	1	2	3	4	5
34. Students work with each other on projects in this class	1	2	3	4	5
35. Students learn from each other in this class	1	2	3	4	5
36. Students work with each other in this class	1	2	3	4	5
37. Students cooperate on class activities	1	2	3	4	5
38. Students work with me to achieve class goals	1	2	3	4	5

Open-Endedness

39. There are opportunities to pursue our own interests in this class	1	2	3	4	5
40. In this class, students are required to design their own learning projects	1	2	3	4	5
41. Students do different activities to complete the same project work	1	2	3	4	5
42. Students are allowed to go beyond the regular assigned work and complete some	1	2	3	4	5
experimentation or project learning on their own	1	2	3	4	5
43. During our field work, students complete different projects	1	2	3	4	5
44. The teacher decides the best way for me to complete project work	1	2	3	4	5
45. Each student decides the best way for him or her to complete his or her own project					
work	1	2	3	4	5

Environment Interaction

46. Students discuss their learning assignments with each other during the field					
experience	1	2	3	4	5
47. Students who are generally silent in the classroom can be more outgoing during the					
field experience	1	2	3	4	5
48. Students are able to express themselves freely during field experience	1	2	3	4	5
49. Students do not put much efforts into learning activities during the field experience	1	2	3	4	5
50. Students engage in social activities rather than learning activities during the field					
experience	1	2	3	4	5
51. A great deal of the field experience involves listening to the explanation of the field					
leader	1	2	3	4	5
52. Students spend time during the field experience being involved in investigation of					
field phenomena	1	2	3	4	5

Please add any additional comments you would like to make.

_____

_____

Appendix B: Classroom-based Preferred Form

Code:_____   Date:_____

Remember you are describing your PREFERRED classroom	Almost Never	Seldom	Sometimes	Often	Very Often
Student Cohesion					
1. Students in this class get along well as a group	1	2	3	4	5
2. Students have little chance to get to know each other in this class	1	2	3	4	5
3. Members of this class help one another	1	2	3	4	5
4. Students in this class get to know each other well	1	2	3	4	5
5. Students are able to depend on each other for help during this class	1	2	3	4	5
6. It takes a long time to get to know everybody by his or her name in this class	1	2	3	4	5
7. Students work cooperatively in this class	1	2	3	4	5
Integration					
8. What we do in our regular classroom learning is unrelated to our field experience	1	2	3	4	5
9. What we are learning in one subject area is not related to what we are learning in our other subject areas.	1	2	3	4	5
10. Our academic learning is integrated with our field experience	1	2	3	4	5
11. We use the theory from our academic learning during our field experiences	1	2	3	4	5
12. The topics covered in our academic learning are quite different from topics dealt with in our field experiences	1	2	3	4	5
13. What we do during our field experience helps us understand the theory covered in our academic sessions	1	2	3	4	5
14. Our field experiences and classroom work are unrelated	1	2	3	4	5
Involvement					
15. Students discuss ideas in this class	1	2	3	4	5
16. Students offer opinions during class discussions	1	2	3	4	5
17. The teacher asks students questions during learning times	1	2	3	4	5
18. Students ideas and suggestions are used during learning times	1	2	3	4	5
19. Students ask the teacher questions during learning times	1	2	3	4	5
20. Students explain their ideas to other students	1	2	3	4	5
21. Students discuss how to go about solving problems or completing project work	1	2	3	4	5
22. Students talk to each other about how to solve problems or complete project work	1	2	3	4	5
Teacher Support					
23. The teacher takes a personal interest in students in this class	1	2	3	4	5
24. The teacher goes out of his or her way to help students	1	2	3	4	5
25. The teacher considers students' feelings	1	2	3	4	5
26. The teacher helps students when they have trouble with their work	1	2	3	4	5
27. The teacher talks with students	1	2	3	4	5
28. The teacher is interested in students' problems	1	2	3	4	5
29. The teacher moves about the class to talk with students	1	2	3	4	5
30. The teacher's questions help students to understand	1	2	3	4	5

Remember you are describing your PREFERRED classroom	Almost Never	Seldom	Sometimes	Often	Very Often

Cooperation

31. Students cooperate with each other when doing assignments   1 2 3 4 5
32. Students share books and resources with other students doing similar assignments   1 2 3 4 5
33. When students work in groups in this class, there is teamwork   1 2 3 4 5
34. Students work with each other on projects in this class   1 2 3 4 5
35. Students learn from each other in this class   1 2 3 4 5
36. Students work with each other in this class   1 2 3 4 5
37. Students cooperate on class activities   1 2 3 4 5
38. Students work with me to achieve class goals   1 2 3 4 5

Open-Endedness

39. There are opportunities to pursue our own interests in this class   1 2 3 4 5
40. In this class, students are required to design their own learning projects   1 2 3 4 5
41. Students do different activities to complete the same project work   1 2 3 4 5
42. Students are allowed to go beyond the regular assigned work and complete some experimentation or project learning on their own   1 2 3 4 5
43. During our field work, students complete different projects   1 2 3 4 5
44. The teacher decides the best way for me to complete project work   1 2 3 4 5
45. Each student decides the best way for him or her to complete his or her own project work   1 2 3 4 5

Environment Interaction

46. Students discuss their learning assignments with each other during the field experience   1 2 3 4 5
47. Students who are generally silent in the classroom can be more outgoing during the field experience   1 2 3 4 5
48. Students are able to express themselves freely during field experience   1 2 3 4 5
49. Students do not put much efforts into learning activities during the field experience   1 2 3 4 5
50. Students engage in social activities rather than learning activities during the field experience   1 2 3 4 5
51. A great deal of the field experience involves listening to the explanation of the field leader   1 2 3 4 5
52. Students spend time during the field experience being involved in investigation of field phenomena   1 2 3 4 5

Please add any additional comments you would like to make.

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_____

_____

_____

Appendix C: Field-based Actual Form

Code:_____   Date:_____

Remember you are describing your ACTUAL programme	Almost Never	Seldom	Sometimes	Often	Very Often
Student Cohesion					
1. Students in this programme get along well as a group	1	2	3	4	5
2. Students have little chance to get to know each other in this programme	1	2	3	4	5
3. Members of this programme help one another	1	2	3	4	5
4. Students in this programme get to know each other well	1	2	3	4	5
5. Students are able to depend on each other for help during this programme	1	2	3	4	5
6. It takes a long time to get to know everybody by his or her name in this programme	1	2	3	4	5
7. Students work cooperatively in this programme	1	2	3	4	5
Integration					
8. What we do in our regular classroom learning is unrelated to our field experience	1	2	3	4	5
9. What we are learning in one subject area is not related to what we are learning in our other subject areas.	1	2	3	4	5
10. Our academic learning is integrated with our field experience	1	2	3	4	5
11. We use the theory from our academic learning during our field experiences	1	2	3	4	5
12. The topics covered in our academic learning are quite different from topics dealt with in our field experiences	1	2	3	4	5
13. What we do during our field experience helps us understand the theory covered in our academic sessions	1	2	3	4	5
14. Our field experiences and classroom work are unrelated	1	2	3	4	5
Involvement					
15. Students discuss ideas in this programme	1	2	3	4	5
16. Students offer opinions during class discussions	1	2	3	4	5
17. The teacher asks students questions during learning times	1	2	3	4	5
18. Students ideas and suggestions are used during learning times	1	2	3	4	5
19. Students ask the teacher questions during learning times	1	2	3	4	5
20. Students explain their ideas to other students	1	2	3	4	5
21. Students discuss how to go about solving problems or completing project work	1	2	3	4	5
22. Students talk to each other about how to solve problems or complete project work	1	2	3	4	5
Teacher Support					
23. The teacher takes a personal interest in students in this programme	1	2	3	4	5
24. The teacher goes out of his or her way to help students	1	2	3	4	5
25. The teacher considers students' feelings	1	2	3	4	5
26. The teacher helps students when they have trouble with their work	1	2	3	4	5
27. The teacher talks with students	1	2	3	4	5
28. The teacher is interested in students' problems	1	2	3	4	5
29. The teacher moves about the class to talk with students	1	2	3	4	5
30. The teacher's questions help students to understand	1	2	3	4	5

Remember you are describing your ACTUAL programme	Almost Never	Seldom	Sometimes	Often	Very Often

Cooperation
31. Students cooperate with each other when doing assignments	1	2	3	4	5
32. Students share books and resources with other students doing similar assignments	1	2	3	4	5
33. When students work in groups in this programme, there is teamwork	1	2	3	4	5
34. Students work with each other on projects in this programme	1	2	3	4	5
35. Students learn from each other in this programme	1	2	3	4	5
36. Students work with each other in this programme	1	2	3	4	5
37. Students cooperate on class activities	1	2	3	4	5
38. Students work with me to achieve class goals	1	2	3	4	5

Open-Endedness
39. There are opportunities to pursue our own interests in this programme	1	2	3	4	5
40. In this programme, students are required to design their own learning projects	1	2	3	4	5
41. Students do different activities to complete the same project work	1	2	3	4	5
42. Students are allowed to go beyond the regular assigned work and complete some experimentation or project learning on their own	1	2	3	4	5
43. During our field work, students complete different projects	1	2	3	4	5
44. The teacher decides the best way for me to complete project work	1	2	3	4	5
45. Each student decides the best way for him or her to complete his or her own project work	1	2	3	4	5

Environment Interaction
46. Students discuss their learning assignments with each other during the field experience	1	2	3	4	5
47. Students who are generally silent in the classroom can be more outgoing during the field experience	1	2	3	4	5
48. Students are able to express themselves freely during field experience	1	2	3	4	5
49. Students do not put much efforts into learning activities during the field experience	1	2	3	4	5
50. Students engage in social activities rather than learning activities during the field experience	1	2	3	4	5
51. A great deal of the field experience involves listening to the explanation of the field leader	1	2	3	4	5
52. Students spend time during the field experience being involved in investigation of field phenomena	1	2	3	4	5

Please add any additional comments you would like to make.

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Appendix D: Field-based Preferred Form

Code:_____   Date:_____

Remember you are describing your PREFERRED programme	Almost Never	Seldom	Sometimes	Often	Very Often
Student Cohesion					
1. Students in this programme get along well as a group	1	2	3	4	5
2. Students have little chance to get to know each other in this programme	1	2	3	4	5
3. Members of this programme help one another	1	2	3	4	5
4. Students in this programme get to know each other well	1	2	3	4	5
5. Students are able to depend on each other for help during this programme	1	2	3	4	5
6. It takes a long time to get to know everybody by his or her name in this programme	1	2	3	4	5
7. Students work cooperatively in this programme	1	2	3	4	5
Integration					
8. What we do in our regular classroom learning is unrelated to our field experience	1	2	3	4	5
9. What we are learning in one subject area is not related to what we are learning in our other subject areas.	1	2	3	4	5
10. Our academic learning is integrated with our field experience	1	2	3	4	5
11. We use the theory from our academic learning during our field experiences	1	2	3	4	5
12. The topics covered in our academic learning are quite different from topics dealt with in our field experiences	1	2	3	4	5
13. What we do during our field experience helps us understand the theory covered in our academic sessions	1	2	3	4	5
14. Our field experiences and classroom work are unrelated	1	2	3	4	5
Involvement					
15. Students discuss ideas in this programme	1	2	3	4	5
16. Students offer opinions during class discussions	1	2	3	4	5
17. The teacher asks students questions during learning times	1	2	3	4	5
18. Students ideas and suggestions are used during learning times	1	2	3	4	5
19. Students ask the teacher questions during learning times	1	2	3	4	5
20. Students explain their ideas to other students	1	2	3	4	5
21. Students discuss how to go about solving problems or completing project work	1	2	3	4	5
22. Students talk to each other about how to solve problems or complete project work	1	2	3	4	5
Teacher Support					
23. The teacher takes a personal interest in students in this programme	1	2	3	4	5
24. The teacher goes out of his or her way to help students	1	2	3	4	5
25. The teacher considers students' feelings	1	2	3	4	5
26. The teacher helps students when they have trouble with their work	1	2	3	4	5
27. The teacher talks with students	1	2	3	4	5
28. The teacher is interested in students' problems	1	2	3	4	5
29. The teacher moves about the class to talk with students	1	2	3	4	5
30. The teacher's questions help students to understand	1	2	3	4	5

Remember you are describing your PREFERRED programme	Almost Never	Seldom	Sometimes	Often	Very Often

Cooperation

	Almost Never	Seldom	Sometimes	Often	Very Often
31. Students cooperate with each other when doing assignments	1	2	3	4	5
32. Students share books and resources with other students doing similar assignments	1	2	3	4	5
33. When students work in groups in this programme, there is teamwork	1	2	3	4	5
34. Students work with each other on projects in this programme	1	2	3	4	5
35. Students learn from each other in this programme	1	2	3	4	5
36. Students work with each other in this programme	1	2	3	4	5
37. Students cooperate on class activities	1	2	3	4	5
38. Students work with me to achieve class goals	1	2	3	4	5

Open-Endedness

	Almost Never	Seldom	Sometimes	Often	Very Often
39. There are opportunities to pursue our own interests in this programme	1	2	3	4	5
40. In this programme, students are required to design their own learning projects	1	2	3	4	5
41. Students do different activities to complete the same project work	1	2	3	4	5
42. Students are allowed to go beyond the regular assigned work and complete some experimentation or project learning on their own	1	2	3	4	5
43. During our field work, students complete different projects	1	2	3	4	5
44. The teacher decides the best way for me to complete project work	1	2	3	4	5
45. Each student decides the best way for him or her to complete his or her own project work	1	2	3	4	5

Environment Interaction

	Almost Never	Seldom	Sometimes	Often	Very Often
46. Students discuss their learning assignments with each other during the field experience	1	2	3	4	5
47. Students who are generally silent in the classroom can be more outgoing during the field experience	1	2	3	4	5
48. Students are able to express themselves freely during field experience	1	2	3	4	5
49. Students do not put much efforts into learning activities during the field experience	1	2	3	4	5
50. Students engage in social activities rather than learning activities during the field experience	1	2	3	4	5
51. A great deal of the field experience involves listening to the explanation of the field leader	1	2	3	4	5
52. Students spend time during the field experience being involved in investigation of field phenomena	1	2	3	4	5

Please add any additional comments you would like to make.

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