

**Assessment and Evaluation Practices in Outdoor, Experiential,
Environmentally-Focused Integrated and Interdisciplinary Programs**

Christopher Dube

A thesis submitted in partial fulfillment of the requirements for the degree of
Master of Education in the Faculty of Education
Lakehead University
Thunder Bay, Ontario
August 2009
© Christopher Dube

Acknowledgements

As with any endeavour in life, this thesis is a result of the dedication and support from a variety of people. I would like to take this opportunity to thank the Rainy River District School Board, the staff at Atikokan High School especially Mike Krassey, and Peter Burton, and John Burton at Grey Highlands Secondary High School. Thanks to all my instructors over the course of my studies. Special thanks to Connie Russell, Bob Jickling, and Philip Allingham, who have dedicated countless hours of their time and inspired and enlightened me countless times. Finally, thanks to my friends and family for your love and support.

Abstract

Two integrated/interdisciplinary programs were used as qualitative case studies of assessment and evaluation practices in outdoor, experiential, environmentally-focused integrated and interdisciplinary programs. Data were collected from program instructors by conducting informal conversational interviews and administering a questionnaire with both open- and closed-form questions. Results indicate that, while there is some learning that occurs in the classroom, the emphasis is placed on applying learnt concepts to novel situations outside of the walls of the classroom. Assessments are frequent and continuous, and come from a variety of sources. Methods of assessment are typically performance-based, and students are encouraged to experiment and work with each other in creative ways to overcome various physical and mental obstacles. As a result of the diverse and varied learning that occurs within these programs, assessment techniques have been designed to include locally developed assessment criteria and program-specific expectations. While these programs have abided by the Ministry's mandated assessment categories, the inclusion of locally developed assessment criteria and program-specific expectations has allowed these programs to model and value educational objectives beyond those typically associated with the cognitive domain. Each program has created an appropriate, locally developed assessment framework that works for a specific program. In both cases, the assessment frameworks have included expanded versions of the affective and psychomotor domains. Therefore, when learning goes beyond cognitive objectives, as it frequently does in these programs, there is a framework for assessing and thus *valuing* those educational components.

Table of Contents

Acknowledgements	ii
Abstract	iii
Table of Contents	iv
CHAPTER 1: SCOPE AND PURPOSE	1
Introduction	1
Research Question	1
Need and Significance	2
Limitations	3
CHAPTER 2: REVIEW OF THE LITERATURE	4
Environmental Education	4
Experiential Education	11
Outdoor Education	18
Interdisciplinary / Integrated Programs	21
Definitions	21
Interdisciplinary Programs	21
Integrated Programs	24
Assessment and Evaluation	28
A clarification of the terms: Assessment and evaluation	28
The purpose of assessment	29
How assessment is connected to learning	30
Assessment in Ontario and Bloom's Taxonomy	32
The three domains of Bloom's taxonomy	33
Traditional versus progressive instructional, learning and assessment paradigms	37
Traditional forms of assessment	38
Progressive forms of assessment	40
Alternative assessment	41
Authentic assessment	41
Performance assessment	43
History of assessment in integrated and interdisciplinary programs	45
CHAPTER 3: RESEARCH METHODS	55
Methodology	55
Methods	55

Setting and Background	56
ESP at Grey Highlands	56
Outers at Atikokan	58
Sample	59
Analysis	60
Ethical Considerations	61
CHAPTER 4: RESULTS	62
ESP	62
Description	62
Assessment and evaluation: Tasks, techniques, methods, and criteria	63
Outers	67
Description	67
Assessment and evaluation: Tasks, techniques, methods, and criteria	69
The goal of assessment and evaluation with respect to the program	73
CHAPTER 5: DISCUSSION AND CONCLUSION	75
Assessment and evaluation: Tasks, techniques, methods, and criteria	75
Conclusion	85
REFERENCES	88
Appendix A: Summary of the learning behaviours of the cognitive, affective, and psychomotor domain	98
Cognitive Domain	98
Affective Domain	99
Psychomotor Domain	100
Appendix B: Biology College 11 Portfolio Rubric	101
Appendix C: Assessment, Evaluation, and Reporting: Overview of Assessment Methods, Strategies and Tools	102
Appendix D: Questions for program instructors	103
Appendix E: Outers program evaluations (fall, winter, spring)	105
Appendix F: Outers reflective journal guidelines	108
Appendix G: ESP CGR 4MI Culminating Activity	109
Appendix H: ESP 2007 Newsletter	115
Appendix I: ESP rubrics	119

Appendix J: Letter of introduction

121

Appendix K: Consent form

122

Chapter 1: Scope and Purpose

Introduction

This study focuses on assessment practices in outdoor, experiential, environmentally focused integrated and interdisciplinary programs. In order to compile relevant data, I used two integrated/interdisciplinary programs as case studies: the interdisciplinary Outers program at Atikokan High School in Atikokan, Ontario; and the integrated Environmental Studies Program at Grey Highlands Secondary School in Flesherton, Ontario. Assessment and evaluation issues persist in modern education and there are numerous books and research papers relating to this subject; however, very little research has been performed on the assessment and evaluation practices of outdoor, experiential, environmentally–focused integrated and interdisciplinary programs. My hope is that this thesis will open a dialogue regarding diverse assessment and evaluation practices employed by various educational programs.

Research Question

The purpose of this investigation was to analyze the assessment practices used in outdoor, experiential, environmentally-focused integrated and interdisciplinary programs.

The study focuses on the following issues:

- How are the assessments of these programs carried out? What are the specific assessment techniques, methods, tasks, and criteria used? Do these programs use ideas from both traditional and progressive paradigms? One more than the other?
- How do the assessment strategies employed compare to the range of possibilities discussed in the literature?

- Are students evaluated to fit discipline-based expectations, or on the basis of integration?
- Because various courses are integrated does not mean that assessment styles are the same for each (i.e., some courses may assess using methods similar to that of a physical education class, that is, assessment based on effort and the improvement of self, whereas a course such as senior level science may more often compare the student's performance to the criteria implicit in specific government specifications, standards, and exemplars). Therefore, with this issue in mind, I ask, "what are the specific assessment and evaluation challenges (and opportunities) in integrated programs?"
- How are formative assessments and the final evaluation linked?

Need and Significance

As I was reading about integrated and experiential programs, I happened continually upon the same themes. These programs have provided positive, life-altering experiences to all types of students, communities, and educators (Horwood, 1994; Russell & Burton, 2000). Yet, despite their overwhelming benefits, there was also a call for help in a particular area: assessment and evaluation. There has been some work done in this field by Drake (1992), Horwood (1995), Kozolanka (1995), and Tal (2005), amongst others; however, the work has not been specific to environmentally-focused integrated and interdisciplinary programs.

This thesis is primarily concerned with the assessment and evaluation practices of integrated and interdisciplinary programs; however, as Birenbaum (2003) and Biggs (1999) point out, it is difficult to speak of assessment without considering theories of

instruction and learning. I have done so, but in an attempt to maintain the focus of this thesis, I have branched out only when I felt such digression was needed.

To reiterate, the major goals of this project are to compile information on assessment practices and to redistribute my findings to program instructors. Given that there has been so little research done on this topic, my thesis makes a contribution to this area. Furthermore, I believe that the results of this study will be of interest to current and prospective integrated educators, to people interested in the amalgamation of practical and theoretical aspects of assessment, and to people interested in holistic assessment paradigms.

Limitations

This study is limited, in part, by the requirements of the size and scope of a Master's thesis. The assessment tasks and methods that are analyzed are only from two Ontario programs; thus, there is a limited prospect for generalizability.

The study may also be limited by my personal biases about integrated and interdisciplinary programs. As a result of my experiences with these programs, and my readings of the literature, I have developed a positive opinion of these programs. I have made every attempt to ensure that data collection and analysis were not subject to my personal biases.

Chapter 2: Review of the Literature

In order to understand the full scope of this thesis, the reader should have some background knowledge on the following topics: environmental education, experiential education, outdoor education, integrated programs, assessment and evaluation, and assessment and evaluation in integrated programs. While there are indeed many connections between these topics, they each warrant their own descriptive category. The sections concerning environmental education, outdoor education and interdisciplinary and integrated studies describe international, Canadian and Ontario perspectives, and the sections concerning assessment, evaluation and experiential education draw upon ideas from across Western educational thought.

Environmental Education

In order to describe the idea of environmental education, it is crucial to develop first a working definition of environmental education and understand its meaning for educators, students, and society in general. It is difficult to illustrate the concept of environmental education without branching out into the general goals of education and epistemological and pedagogical practices. Nonetheless, I will maintain my focus on environmental education.

Environmental education is a complex, multi-faceted discipline that does not have one simple governing philosophy or definition. The field and ideas that govern the field are constantly evolving to adapt to the geo-political and social climate. Russell, Bell, and Fawcett (2000) note that environmental education in Canada has been largely influenced by an individual provinces' or territories' educational traditions, as well as its geography and culture. Although contesting ideologies, philosophies, paradigms, goals, and

objectives exist within the field, on the whole, environmental education focuses on a few main ideas.

In cooperation with the U.N. Environment Programme (UNEP), the world's first intergovernmental conference on environmental education was organized by the United Nations Education, Scientific, and Cultural Organization (UNESCO). The Tbilisi Conference (UNESCO-UNEP, 1978, pp. 26-27) recommended the adoption of certain criteria to help develop environmental education at the national, regional, and global levels while simultaneously outlining the endorsed goals, objectives, and guiding principles for environmental education. UNESCO (1978) describes environmental education as a learning process that increases people's knowledge and awareness about the environment and associated environmental challenges. Further, it believes the goal of environmental education is "to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones" (UNESCO, 1975, p. 3). As a result of this conference, many environmental educators, including Raffan (1990), have suggested that the principal goal of environmental education should be to produce environmentally responsible and active citizens.

Thus, in order to increase environmental awareness and encourage the responsible behaviours outlined, Wals and van der Leij (1997) believe "that environmental education should be a learning process with four dimensions that seeks to enable participants to construct, transform, critique, and emancipate their world in an existential way" (p. 7). They see it as a "participatory process that can lead to educational change. Educational

change can contribute to the improvement of relationships between people, and between people and their environment" (p. 10). Furthermore, they believe "good environmental education also enhances a critical stance towards the world and towards oneself by promoting discourse, debate and reflection" (p. 11). Various aspects of their philosophy correspond with those of other environmental education theorists such as Russell (1997), Naess and Jickling (2000); they, like UNESCO (1978), state that environmental education can enhance critical thinking, problem-solving, and effective decision-making skills, and teaches individuals to weigh various sides of an environmental issue to make informed and responsible decisions. UNESCO has advocated for environmental education that does not promote a particular viewpoint or course of action (1978), whereas others wrestle with the idea of education being totally value-free (Naess & Jickling, 2000). Whether delivered with a behaviouristic or non-behaviouristic emphasis (Wals & van der Leij, 1997), or through a code of ethics (Jickling, 2005a; Yambert & Donow, 1986), environmental education appears to be aimed at increasing awareness of environmental issues and encouraging responsible behaviour while providing a forum for students to think about environmental issues (Gigliotti, 1990; Taylor, 1996).

In the traditional educational paradigm, the emphasis of a behaviourist model of environmental education has included rationalistic methods of teaching. This approach can be described as teaching methods that elicit a state of prediction and control over human behavior thereby shaping human behaviour (Marcinkowski, 1993; Robottom & Hart, 1993; 1995). Such methods include the "early US linear model" (Kollmuss & Agyeman, 2002, p. 242), in which it is assumed that an increase in environmental knowledge will directly translate into an increase in environmental action. However,

studies have revealed that such an increase in knowledge does not have the desired effect (Kollmuss & Agyeman, 2002). An analysis of the gap between attitude and behaviour reveals a discrepancy between direct and indirect experiences, or in other words, the authenticity of the learning experience (Rajecki, 1982). The degree of correlation between attitude and behaviour has been attributed, at least in part, to the method in which the student has acquired the knowledge: knowledge transmission in school versus first-hand experience in nature (Kollmuss & Agyeman, 2002).

Other models blend behaviouristic and non-behaviouristic approaches to environmental education. These include the practice of using the environment as a medium for discourse and learning and "as an instrument to modify behaviour" (Wals & van der Leij, 1997, p. 10). Lieberman and Hoody (1998) describe the concept of using the Environment as an Integrating Context for learning (EIC) as "a framework for education: a framework for interdisciplinary, collaborative, student-centered, hands-on, and engaged learning" (p. 3). They state that

EIC-based learning is not primarily focused on learning about the environment, nor is it limited to developing environmental awareness. It is about using a school and its surroundings and community as a framework within which students can construct their own learning, guided by teachers and administrators using proven educational practices. EIC programs typically employ the environment as a comprehensive focus and framework for learning in all areas: general and disciplinary knowledge; thinking and problem-solving skills; basic life skills, such as cooperation and interpersonal communications; and, last but not least, understanding and appreciation of one's relationship to the environment – community and natural surroundings. (p. 3)

Contrary to rationalist models of education, non-behaviouristic educative theorists such as Jickling (1992) believe that the goal of education is the optimal development of people, with an emphasis on autonomy and critical thinking. Furthermore, as Wals and van der Leij (1997) maintain, "since values cannot be [and should not be] ethically and

pedagogically imposed, [the goal of] environmental education is to provide situations in which all participants feel free to discuss and make explicit their values" (p. 11).

In recent years, there has been growing interest in the concept of sustainable development, which has often been incorporated within the framework of environmental education. As Sauvé (1996) notes, "sustainable development has become associated with environmental education to promote development models based on the wise use of resources, with concerns for equity and durability" (p. 8-9). Non-governmental organizations (NGOs) at the Rio Conference proposed a commitment to a process of educational transformation aimed at involving ourselves, our communities, and nations in creating equitable and sustainable societies (Earth Council 1993; UNCED, 1992). UNESCO (1995) has indicated that the educational process, including environmental education, should be reoriented to teach for sustainable development, although that goal's legitimacy has been hotly contested (e.g., Jickling, 1992). For instance, Jickling argues that "education is concerned with enabling people to think for themselves. Education 'for' sustainable development...or education 'for' anything else is inconsistent with this criterion" (p. 8).

Within these discussions of what constitutes environmental education, there exists "essential disagreements on 'the' goals and objectives of environmental education" (Wals & van der Leij, 1997, p. 9). Since formal and consistently agreed upon guidelines and principles for environmental education do not exist, many traditionalists interpret the ambiguity of the discipline, as well as its resistance to conform to the assessment practices valued by the current system, as a weakness, and dismiss it on such grounds (Horwood, 2002, Russell, Bell & Fawcett, 2000). Furthermore, such ambiguity within the

discipline concerning pedagogical practices is also a matter of debate and confusion for those who are interested in these (environmentally focused integrated) programs and professionals alike. Sauv  (1996) proposes that "these disagreements represent different positions as to what environmental education is to expose learners and what the results should be" (cited in Wal & van der Leij, 1997, p. 9). Basically, the concept of environmental education is a representation of different world views concerning appropriate human-environment relations (Russell, Bell & Fawcett, 2000) and the appropriate roles of both science and education in society.

In a more recent paper titled "Currents in environmental education: Mapping a complex and evolving pedagogical field," Sauv  (2005) discusses the different world views of this ever-evolving field. She uses the term "current" to signify "a general way of envisioning and practicing environmental education" (p. 12). She describes each current as comprising "a plurality and diversity of propositions [rather than] a monolithic category" (p. 12). For instance, "a single proposition (an approach, a model, a strategy, a program, an activity, etc.) may be associated with two or three different currents, according to the angle from which it is analyzed" (p. 12). Finally, Sauv  notes that "each current presents a set of specific characteristics which differentiates it from others; however, this does not imply that the various currents are mutually exclusive in every respect" (p. 12). Table 1 provides a list of all fifteen of Sauv 's currents of environmental education.

Among those Currents with a Longer Tradition in Environmental Education	Among those Currents more Recently Emerged in Environmental Education
1. Naturalistic 2. Conservationist/Resourcist 3. Problem-Solving 4. Systemic 5. Scientific 6. Humanist/Mesological 7. Value-centered	8. Holistic 9. Bioregionalist 10. Praxic 11. Socially Critical 12. Feminist 13. Ethnographic 14. Eco-education 15. Sustainable Development/ Sustainability

Table 1. Fifteen Currents in Environmental Education (Sauvé, 2005).

While this list may seem to be in-depth and comprehensive, Sauvé maintains that

further analysis remains to be pursued in an ongoing mapping of this field. Nonetheless, this proposed systemization, while neither exhaustive nor intended as a perfect categorization, may be useful in that it highlights the diversity or range of variation in pedagogical propositions in environmental education and thereby contributes to "celebrating" the richness of this field. (p.31)

As can be deduced from the above sections concerning the environmental education literature, environmental education primarily focuses on the question of *what* to teach/assess as opposed to the question of *how* to teach/assess. Discussions concerning learning and assessment in environmental education are still relatively rare (Rickinson, 2001; Dillon, 2003; Tal 2005). Therefore, taking the above arguments into account, finding the appropriate approach to implementing environmental education within the classroom is cause for concern. UNESCO-UNEP (1978), Russell, Bell, and Fawcett (2000), González (2002), Horwood (2002), and Foladori (2005) propose that, since many of the ideas that comprise environmental education are complex, multi-faceted, and multidisciplinary, the appropriate approach to environmental education within the curriculum should be interdisciplinary rather than disciplinary. Yet, in "A Report on an

Ontario Secondary School Integrated Environmental Studies Program," Russell and Burton (2000) note that

it is still unusual to find environmental education infused into all secondary school subjects or integrated so that the curriculum is organized not around subjects but interconnected issues and themes. More commonly, environmental education, if it occurs at all, is offered as an isolated elective course (often in science or geography) or as an extracurricular activity, and its existence in school is frequently due to the efforts of one or two committed teachers. (p. 287)

In light of the eclectic definitions and ideas proposed, the term "environmental education" has become much more than a field of study in the traditional sense. It has come to embody a whole ideology; an ideology of respect for students, teachers, learning, and the environment in which we all co-exist (Naess & Jickling, 2000; Russell & Burton, 2000). It embodies many different "currents" and philosophies (Sauvé, 2005) used to breakdown social and economic barriers while providing a holistic and inclusive learning atmosphere (Naess & Jickling, 2000; Russell, Bell & Fawcett, 2000; Russell & Burton, 2000).

Experiential Education

It is perhaps Merleau-Ponty who has most thoroughly explored our misconceptions of [hu]man-in-world and elaborated the most detailed alternative. Central to his work is the notion of experience as a means of understanding. "The world is not what I think, but what I live through," he says. It is a mistake to regard the individual as a separate body passively receiving sensory impressions of an external world. "Our bodily experience of movement is not a particular case of knowledge; it provides us with a way of access to the world and the object, with a "praktognosia" [kinesthetic background—a non-cognitive, non-verbal knowledge composed of signals the body receives all the time], which has to be recognized as original and perhaps as primary. My body has its world, or understands its world, without having to make use of my "symbolic" or "objectifying function." And what we discover through the study of motility is a new meaning of the word "meaning." (Evernden, 1985, p. 43)

One of the hallmarks of progressive education is the belief that students should become more actively involved in the learning process as compared with their passive

role in traditional education. In traditional education, the teacher acts as a transmitter of knowledge and information between past generations and future generations (Dewey, 1938), so that assessments are typically exercises that focus mostly on factual recall (Wiggins, 1990). The belief is that, for the optimal transmission of knowledge to occur, a space must be created that minimizes distractions, allowing the students to focus on one thing only: the transmitter of that knowledge. In the traditional classroom, the teacher is the centre of attention, bearer of knowledge, and provider of grades. A classic example of a traditional form of learning would be reading about creek-side ecosystems from a textbook, or writing notes about ecosystems from "the board" and the teacher reinforcing the acquisition of knowledge through discussion questions (homework questions). In contrast, progressive forms of learning might involve having students go to a creek and learn through observing and interacting with the surrounding environment. The main pedagogical difference is that the teacher who takes the students to the creek to learn as opposed to remaining in the classroom values direct experience just as much or more highly than abstract knowledge (Neill, 2004).

Hahn's expression to "impel students into experience" (Wilson, 1981, p. 17) is the guiding principle of Outward Bound and the philosophy of other related experiential learning programs. This central idea of the Outward Bound philosophy acknowledges that students learn by doing, and that, as educators, we are negligent if we teach them only by transmitting the "right way."

Authors such as Evernden (1985) have pointed out that experiential learning dates back beyond recorded history – that it is in fact "original" or "primary" – and remains pervasive in current society, whether formalized by educational institutions or occurring

informally in day-to-day life. In this sense, experiential learning is not an alternative approach, but the most traditional and fundamental method of human learning. Ironically, the current perception of experiential education as "new" or "progressive" is not as a result of developments in experiential learning; rather, it can be attributed to the historical normalization of traditional teaching as the mainstream educational methodology (Neill, 2004).

Experiential learning and experiential education have become integral components of progressive educative philosophy. In his book *Experience and Education*, Dewey (1938) notes that "basing education upon personal experience may mean more multiplied and more intimate contacts between the mature [teacher, nature] and the immature [student, human] than ever existed in the traditional school, and consequently more, rather than less, guidance by others [community, teachers, the more-than-human world]" (p. 21). However, he cautions that "the belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative" (p. 25). He duly notes that traditional classrooms constituted a place of experiences "largely of the wrong kind" (p. 26). Therefore, as teachers we must be conscious of the power and possibility of experience and realize that some experiences may be un-educative or mis-educative; "experience and education cannot be directly equated to each other" (p. 25). Dewey maintains that "it is not enough to insist upon the necessity of experience, nor even of activity in experience. Everything depends on the *quality* of the experience which is had." He maintains that "the quality of any experience has two aspects. There is an immediate aspect of agreeableness or disagreeableness, and there is its influence upon later experiences" (p. 27). Likewise, the phenomenologist

Laing (1967) cautions: "Our behaviour is a function of our experience. We act accordingly to the way we see things. If our experience is destroyed, our behaviour will be destructive. If our experience is destroyed, we have lost our own selves" (p. 24).

In Ontario, experiential education has been widely implemented across a range of topics and mediums such as design and technology courses, co-operative education programs, apprenticeships, internships, work-study programs, outdoor education, service learning, and group-based learning projects (Kozolanka, 1995). Many educational ventures are experiential, but are not commonly referred to as such, for instance, excursions, physical education, manual arts, and drama. However, keeping with the theme of this paper, this section will only be concerned with experience as a major component of integrated and interdisciplinary environmental education programs and Outward Bound type programs.

In Canadian integrated environmental education programs, Russell, Bell, and Fawcett (2000) note that,

experiential learning is emphasized so classes are usually conducted in the communities and natural areas adjacent to the school. Such integrated programs are lauded for promoting critical aspects of environmental education: grounding learning in authentic, real world experiences; demonstrating links between areas; fostering student responsibility; increasing student-teacher contact; and improving relations among students. (p. 200)

Horwood (1994; 1995) describes experiential education as students' learning from making sense of their own direct experiences. He suggests that the teacher could perhaps select and arrange the conditions through which the experiences may be had; nevertheless, it is the students who actually have their experiences and are expected to learn from thinking and feeling about what happened.

Similarly, theorists such as Lieberman and Hoody (1998) believe that teachers and students can use the outdoors, or environment, as a means to engage students in experiential education. They describe the concept of using the environment as an integrating context for learning (EIC) as "a framework for education: a framework for interdisciplinary, collaborative, student-centered, hands-on, and engaged learning" (p. 3). Canadian integrated environmentally focused programs have readily adopted this pedagogical approach (Comishin, Dymont, Potter & Russell, 2004; Horwood, 1994; Russell & Burton, 2000).

Although experiential learning is considered significant and enduring in the educational practices just discussed, Jickling (in press) still wonders, "why does it seem marginalized?" He proposes a few reasons. First, there has been a historical valorization of objectivity and a subsequent demeaning of subjectivity as a cause of dominant cultural influences. Second, we privilege particular aspects of cognitive learning, but devalue other forms of learning as falling into the less prestigious category of affective learning; yet, as Barrow and Wood (1982) contend, "there *are* uses of the word 'understanding' where the notations of feeling, emotion, attitude, empathy, etc., are involved" (p. 55). Lastly, many dominant attitudes in education neglect those aspects of learning and understanding that they cannot give an account of or measure (Jickling, in press).

Bloom and his team (1964), who coined the term "affective domain," note that

the original intent of a course or an educational program becomes worn down to that which can be explicitly evaluated for grading purposes and that which can be taught easily through verbal material (lectures, discussion, reading materials, etc.). ... Examinations may include a great range of types of cognitive objectives, and teachers and examiners have little hesitation in giving a student a grade of A or F on the basis of [their] performance on these cognitive achievement examinations. In contrast, teachers and examiners do not regard it as appropriate to grade

students with respect to their interests, attitude, or character development. pp.16-17)

Bloom and his team note that a schism exists between acknowledging affective behaviours, and their ability to be incorporated into an assessment model. They believe that the amalgamation can only be achieved if

[learning behaviours] [are] defined clearly; learning experiences to help the student develop in the desired direction must be provided; and there must be some systematic method for appraising the extent to which students grow in desired ways. (p. 23)

Jickling (in press) disagrees and concludes, "it is not possible to effectively evaluate everything that is important; so let's just get over it" (p. 8). What Jickling is implying here is that learning behaviours or experiences "outside" of the cognitive domain cannot be evaluated through an assessment framework that focuses only on cognitive functions. Hence, our assessments may not be looking at what we want (or believe) them to be. While this may be an issue related to assessment validity, it also raises questions concerning the reverence of cognitive functions in our assessment methodology, and underlying Cartesian reductionism within the dominant social paradigm.

Experiential education, provided through outdoor, environmentally focused integrated and interdisciplinary programs can provide situations and spaces needed for "holistic" learning experiences—experiences that amalgamate the cognitive, psychomotor, and the affective domains. For example, on a canoe trip in the wilderness, students may accrue knowledge in the form of first-aid and emergency procedures or compass/map reading; major components of the psychomotor domain include activities and skills needed to perform activities, such as paddling; while the affective domain takes into account feelings, emotions, attitudes, and empathy, but also includes self-concept, self-

confidence, trust, and leadership skills (Horwood, 1995; Jickling, in press). Experiential programs place an immense amount of significance on the nature of participants' subjective experiences, whether they are positive or negative.

Experiential education in outdoor integrated programs allows teachers and students to experience the world outside of the confinement of the classroom. The ontological shift from learning *in a place* to learning *as a part of a place* is central to the experiential learning process, what Curthoys (2007) describes as the transition from observer to thoughtful participant. Taking into account both the situated view of learning (discussed in the section regarding assessment of integrated programs) by Lave and Wenger (1991) and Curthoys' ontological transition, we should recognize that creating the appropriate "space" for experiential learning is crucial to the learning experience.

Moreover, it has been suggested by some philosophers such as Cheney and Weston (1999) and Jickling (2005b) that, if given the appropriate spaces for learning experiences, we can begin to cultivate an etiquette, a way in which to "carry ourselves" *as part* of this world. For instance,

Aldo Leopold (1949/1970) once said, "we can be ethical only in relation to something we can see feel, understand, love, or otherwise have faith in" (p. 251). If we ignore these kinds of emotional understandings, and the kinds of experiential learning that can nourish them, we do so at our own peril...I do maintain that experiential-emotional understanding adds flesh and life to the bones so often polished smooth and white by analytical thought. In the interest of epistemological breadth, I am trying to create more "space" for experiential learning and all of the knowing and understanding that accrues in this way. (Jickling, 2005b, p. 7)

Cheney, Weston, Leopold, and Jickling all believe that experiential education and the "spaces" that it provides is a means to a greater understanding of our relationship with the more-than-human world. In the next section on outdoor education, I shall discuss how educators can use the outdoors to create the "space" for experiential learning to occur.

Outdoor Education

There are many unique characteristics of Canadian outdoor education. The geography, climate, history, Native culture, and Canada's influences and differences from the United States are some of the main aspects which differentiate Canadian outdoor education from other similar programs from around the globe (Potter & Henderson, 2004). Furthermore, it is common in Canada to integrate curricular aspects of environment and adventure education when one is delivering an outdoor education program (Potter & Henderson, 2004). In addition to providing the context for curricular integration, outdoor education creates the "space" (Jickling, 2005b; Weston, 1992) for experiential educational learning to occur. Kozolanka (1995) highlights the fact that "learning by doing is considered to be a hallmark of outdoor education at its best" (p. 28). Yet Horwood (1994) points out that "outdoor education is a marginal component of education in many mainstream schools." He observes that "teaching (and learning) outdoors is confined to an occasional fieldtrip in natural sciences or for recreational purposes" (p. 6).

Canadian outdoor educators tend to integrate various content areas (Comishin, Dymont, Potter & Russell, 2004; Horwood, 1994; 1995; Potter & Henderson, 2004; Russell, Bell & Fawcett, 2000; Russell & Burton, 2000). Potter and Henderson (2004) associate the quintessential Canadian outdoor educator with a sense of grandness:

These educators are storytellers working experientially within the story, re-experiencing the travel modes, visiting in an authentic way a particular site or event of the land. They are skilled in the ways of remote travel and camping, often with one foot in the past, very much aware of values of traditional methods, and one foot in the present. A credo for a Canadian outdoor adventure educator might be not to rely on books, but to go there (Hume, 1989). Canadian outdoor educators strive to move their students from the imagined wild and pristine

"North" to the experienced "North," where moose, beaver, wind blown white pine, rustic cabin and loon are real, not cultural icons on coffee mugs. (p.76)

Although Potter and Henderson (2004) describe the typical outdoor/adventure educator as a modern-day voyageur, outdoor education is not limited to a select group of educators in the rustic and desolate "great white north." They claim that it is for all, and is all around us; small patches of wilderness on the school grounds, or even on a soccer field. Outdoor education is not trying to access the inaccessible; rather, it is trying to make the environment more accessible to the community. The result is a challenge to traditional paradigms and pedagogical practices. Indeed, outdoor education comes in many forms. This multiplicity is outlined well in the comprehensive work of Lieberman and Hoody (1998), who describe the concept of using the Environment as an Integrating Context for learning (EIC) as "a framework for education: a framework for interdisciplinary, collaborative, student-centered, hands-on, and engaged learning" (p. 3).

One of the aspects of outdoor education which is held in high esteem by many is the ontological shift that occurs when learning is moved out of the confinement of the classroom to the outdoors (Curthoys, 2007; Jardine, 1998; Jickling, 2005b; Naess, 1998; Weston 1994; 2004). In "Birding Lessons and the Teachings of Cicadas" Jardine (1998), describes his experience in nature as a break from the "archaic, often literal minded narrows of academic work and the forms of speaking and writing and research that it allows" (p. 97). Feeling a part of nature allows him a period of transition in which normal limits to thought, self-understanding, and behaviour are relaxed. He is then able to enter into a state of hyper-reflection. In this state he is able to unlearn and subsequently reorient his perception of relation with respect to his surroundings to one of mutuality and

interdependence. Curthoys (2007) describes a similar feeling in terms of a sense of deep participation in a place where she moves from observer to thoughtful participant.

Transformation from a busy to a mindful state of being moves us away from an abstract, voiceless experience of nature—nature as a mere backdrop for our activities—towards a more thoughtful engagement with a more distinct landscape community. (p. 75)

Students can discover a personal approach to relating *with* place through sights, sounds, smells, textures, and rhythms. The aspiration of outdoor education is to take students beyond the urban environment to 'belong' to the natural world (Potter & Henderson, 2004).

It is interesting to note that my understanding of how outdoor education functions is partially from an environmental ethics standpoint. In his paper "Ethics research in environmental education," Jickling (2005b) notes that ethics as a process will produce tentative results that involves experimentation and uncertainty.

In an interesting elaboration Weston argues that our challenge is not to systemize environmental values, but rather create the 'space' for environmental values to evolve (1992). By space he is speaking about the social, psychological and phenomenological preconditions that are needed to enable this evolutionary process. He is also speaking about the conceptual, experiential and physical freedom to move and think. Here Weston is concerned that individuals and groups *can* actually begin to create or co-evolve new values through everyday practices. (p. 23)

In my version of outdoor education, creating this "space" is a central ideal to a multi-faceted, interdisciplinary, integrated approach to education. Further, it is important that the view of "nature as home" as opposed as "nature as machine" or "nature as challenge arena" be emphasized. As Potter and Henderson (2004) note, traditional perspectives may still dominate adventure education, but not by definition. Instilling a care for and a

feeling of belonging to the space as place is a strong rationale for inclusion of outdoor education within the broader curriculum.

Interdisciplinary / Integrated Programs

There are different ways to find out who you are and what your path in life is, but any way must provide some sort of integration of experiences into a unity that is the person in his or her community. (Art Solomon cited in Horwood, 2002, p. 4)

Definitions

In the following section I clarify the definitions of key terms used throughout this section of the paper. In the document *The Ontario Curriculum, Grades 9 to 12:*

Interdisciplinary Studies, the Ontario Ministry of Education (2000a) describes three main approaches to interdisciplinary studies. A "multidisciplinary approach" is one in which "the subject or disciplines are connected through a theme, issue, problem, or research question" (p. 4); and the "interdisciplinary approach" is one in which "a theme, issue, problem, or research question defines the approach taken and directs the attempt to seek a synthesis across subject/discipline boundaries" (p. 4); the "transdisciplinary approach" involves "real life contexts direct learning that go beyond particular subject or disciplines" (p. 4).

Henderson, Mehta, and Arnott (1996) define integrated programs as a grouping of four or five subjects together to make a "package." Horwood (1995) argues that the six central features of these integrated curricular packages are experiential learning, whole process, authenticity, challenge, responsibility, and community.

Interdisciplinary Programs

The Ontario Ministry of Education (2000a) document *The Ontario Curriculum, Grades 9 to 12: Interdisciplinary Studies* notes that the complexity of modern day society

has given rise to a world which is increasingly interconnected and interdependent. Students, educators, and society are becoming increasingly aware of the multidisciplinary, dynamic nature of knowledge and the limitations of traditional singular-disciplinary epistemological views and pedagogical practices to solve multidisciplinary problems. Central to the interdisciplinary theme is acknowledging the transferability of knowledge and skills which connect static disciplines. For instance, the creation of a global communication network has simplified our ability to communicate and collaborate with each other and, as a result, is actively transforming the nature of work, education, and learning. The Ontario Ministry of Education (2000a) has observed that "students today face an unprecedented range of social, scientific, economic, cultural, environmental, political, and technological issues" (p. 3). Thus, in order to prepare students to succeed in such a world, interdisciplinary skills related to research process, information management, collaboration, critical and creative thinking, and technological applications must be incorporated within the learning experience (Ontario Ministry of Education, 2000a).

The development of interdisciplinary programs is a reaction to static traditional mainstream education (Ontario Ministry of Education, 2000a). Interdisciplinary programs provide students with the opportunity to learn "new methods and forms of analysis, interpretation, synthesis, and evolution that will allow them to build on skills acquired through the core curriculum" (Ontario Ministry of Education, 2000a, p. 4). Students in interdisciplinary studies courses

continuously apply the concepts, methods, and language of more than one discipline to explore topics, develop skills, and solve problems. These courses are intended to reflect the linkages and interdependencies among subjects, disciplines, and courses and their attendant concepts, skills, and applications, and are more

than the sum of the disciplines included. In an unpredictable and changing world, interdisciplinary study encourages students to choose new areas for personal study and to become independent, life-long learners who have learned not only how to learn but also how to assess and value their own thinking, imagination, and ingenuity in decision-making situations. (Ontario Ministry of Education, 2000a, p. 5)

The Ontario Ministry of Education (2000a) document *The Ontario Curriculum, Grades 9 to 12: Interdisciplinary Studies* has outlined the following objectives for students in interdisciplinary programs, stating that students

- build on and interconnect, in an innovative way, concepts and skills from diverse disciplines;
- develop the ability to analyse and evaluate complex information from a wide range of print, media, electronic, and human resources;
- learn to plan and work both independently and collaboratively;
- are able to apply established and new technologies appropriately and effectively;
- use inquiry and research methods from diverse disciplines to identify problems and to research solutions beyond the scope of a single discipline;
- develop the ability to view issues from multiple perspectives to challenge their assumptions and deepen their understanding;
- use higher-level critical- and creative-thinking skills to synthesize methodologies and insights from a variety of disciplines and to implement innovative solutions;
- apply interdisciplinary skills and knowledge to new contexts, real-world tasks, and on-the job situations and thus develop a rich understanding of existing and potential personal and career opportunities;
- use interdisciplinary activities to stimulate, monitor, regulate, and evaluate their thinking processes and thus learn how to learn. (p. 5)

Interdisciplinary studies courses "reinforce students' general skills in a wide range of academic and applied contexts" (Ontario Ministry of Education, 2000a, p. 5). These programs appeal to students with "diverse abilities, interests, and learning styles, ranging from those who may need assistance in meeting diploma requirements to those enrolled in specialized programs of study such as technology or the arts" (p. 5). They are beneficial to students who are preparing to enter the workplace, as well as those who are planning to study at college or university.

Interdisciplinary studies courses seem to be more authentic than traditional courses in that they focus on real-life contexts and situations, and thus tend to be highly motivating. Students use "real world" knowledge and skills through working and interacting on meaningful projects, which are often linked to the community (Ontario Ministry of Education, 2000a). Furthermore, they also provide opportunities for students to explore issues and problems that interest them from a variety of perspectives. For instance, cooperative education courses can easily be incorporated into interdisciplinary studies courses to help students make connections between school and life outside of school (Ontario Ministry of Education, 2000a).

Integrated Programs

It is interesting to note that Horwood's (1995) description of the six central features of integrated curricula (experiential learning, whole process, authenticity, challenge, responsibility, and community) are mirrored in the Ontario Ministry of Education curriculum document on interdisciplinary programs (2000a). Much of what this document says concerning interdisciplinary programs is as a result of what Horwood calls "the persistence of a good idea" (2002, p. 4). He believes curricular integration perseveres "partly as a reaction against the isolation of academic disciplines" (p. 4). He insists that educators primarily adopt curricular integration because "disciplines are useful as a means of organizing knowledge and methods of inquiry...but taken alone, they do little to help [students] learn identity and purpose" (p. 4). Interestingly, although the Ministry of Education has adopted the integrative approach Horwood claims that its publications still "subtly assert the hegemony of the disciplines by calling such courses 'interdisciplinary'" (p. 4).

Miller, Cassie, and Drake (1990) have noted limitations regarding traditional educational methodology:

One of the main problems facing both educators and Western society in general is fragmentation. The results of this fragmentation of life have taken such forms as acid rain and other pollutions which have occurred because we have separated our economic activity from the environment in which this activity takes places. In schools fragmentation reveals itself, particularly at the intermediate and secondary levels, when we focus on individual subjects without attempting to show the interconnectedness among subjects. The problem, then, is that students often are confronted with long lists of facts or skills that are isolated both from each other and, more importantly, from a pattern or context that would connect and give meaning to the information. Integrated studies is a vehicle for addressing the problem of fragmentation. (p. 1)

Miller, Cassie, and Drake (1990) argue that the term "integrated studies" implies a holistic approach to learning, instruction, and to curriculum since both terms, "integrated" and "holistic," imply the notion of connectedness.

In *The Holistic Curriculum*, Miller (1988) elaborates on the meaning of "holistic education":

The focus of holistic education is on relationships – the relationship between linear thinking and intuition, the relationship between mind and body, the relationship between various domains of knowledge, the relationship between the individual and community and the relationship between self and Self. In the holistic curriculum the student examines these relationships so that he/she gains both an awareness of them and the skills necessary to transform the relationships where it is appropriate. (p. 3)

The relationships described by Miller are holistic in that they move beyond various dualisms that have arisen as a result of Cartesian reductionism. Miller's desire to move away from such a restrictive framework is apparent when he describes the evolution of educational "positions." He names the three positions (transmission, transaction, and transformation), then uses them to analyze and describe the range of views about curriculum and instruction. He links each position to various philosophical,

psychological, and social contexts. The transmission position holds that the function of the curriculum is to transmit facts, skills, and values to students. The student tends to be considered a passive receptor of knowledge. The transaction position identifies the individual as rational and capable of problem solving. Lastly, the transformation position encompasses three specific orientations: skills that promote personal and social transformation; a vision of social change that leads to harmony with the environment rather than control over the environment; and the attribution of a spiritual dimension to the environment. Miller believes that in a holistic curriculum these three positions can be juxtaposed and amalgamated to offer a multifaceted approach to learning.

I return now to Horwood's "good idea" proposition, namely that there is a seeming realization within a core group of educators who revere integrated programs that a certain amount of compromise is required to keep this "good idea" afloat (2002). He believes that the persistence of outdoor integrated programs is in part due to the

unequalled opportunity to teach the same group of students for prolonged periods of time in outdoor settings while [remaining] within the conventional framework of [the] curriculum. (Horwood, 1995, p. 18)

Furthermore, these programs can provide a uniquely Canadian perspective on education.

Potter and Henderson (2004) note that

integration of environmental education/field interpretation subject matter (biology, geography, astronomy) as well as the special opportunities for Canadian heritage skill development (history, geography, literature, anthropology, Native studies) is common in the Canadian context. (p. 78)

Additionally, adopting the integrative (learning) approach mimics the way in which knowledge, skills, and attitudes may be applied in the real world. The traditional educational paradigm's lack of authenticity has not fostered the kind of understanding, creativity, and social interest that is desired of society (Drake, 2002).

Barrett (2002), who was involved in the production of the Ontario Ministry of Education curriculum document on interdisciplinary programs (2000a), notes the following challenges associated with creating a five-credit outdoor and environmental package to fit the Ministry's requirements:

The greatest difficulty was adhering to the ministry's need for coherent units that meet curricular expectations while remaining true to the reality that, in a fully integrated interdisciplinary package, learning refuses to move forward in a strictly linear fashion or to be bound by static curricular units. The resulting package outline required merging a vision of holistic curricular integration with specific expectations from the five different courses, then identifying general areas of focus into which curricular expectations could be clustered....The trends include communication, collaboration and conflict resolution, research and analysis, critical reflection, creative expression, active living, and environmental responsibility. (p. 5)

Again, the hegemony of the curriculum document is apparent. Rather than allowing each school to run its program based on its own educational merit, the Ministry has created specific "stands" which has forced programs to "modify" their programs in order to fit the Ministry's requirements.

Since this thesis is concerned with assessment in integrated programs, a fundamental feature worth exploring is the relationship between the Ministry's curricular expectations and each program's objectives. In many cases, curriculum documents were written and published long after these programs had begun. From this perspective, assessment associated with these programs will fall into one of two categories:

1. Assessments will fit into the curricular objectives and assessment framework outlined and thus will easily "measured" or;
2. There will be tasks, objectives and criteria that have been developed that will not conform to the objectives or assessment framework provided. These tasks will be

revered based on their atypical educational merit and, as a result, they cannot or are not, directly measured or measurable.

Assessment and Evaluation

Assessment and evaluation are broad subjects that encompass many interrelated topics. In order to maintain the focus of this section, I have broken the subject into manageable pieces. The first section provides a descriptive analysis of what assessment and evaluation are, their purpose, and their connection to learning. I then follow with a comparative analysis of assessment and evaluation practices in Ontario through the lens of Bloom's taxonomy. From there I look at the differences and similarities between traditional and progressive assessment paradigms, and I conclude by providing a brief synopsis on the history of integrated and interdisciplinary programs.

A clarification of the terms: Assessment and evaluation

Wiggins (1998) describes assessment as a "clinical (quantifiable) look at performance, its characteristics, its strengths and weaknesses" (p. 192), and Stiggins (2005) defines assessment as "the process of gathering evidence of student learning to inform instructional decisions" (p. 5). The term "assessment," therefore, can be understood to represent the practice of gathering information on student learning "to make inferences about students that support useful decisions in educational contexts" (Duschl & Gitomer, 1997, p. 39).

Assessments used to gather information regarding student learning can occur during different intervals within the learning process. Consequently, the process of learning can be broken down into three main segments: before, during and after. Assessments employed at these various stages of learning are labeled diagnostic,

formative, and summative respectively. Diagnostic assessments are used to assess prior knowledge of subject material in order to locate where the students are conceptually. These methods are used to determine if there are any preconceived notions or prior knowledge with regards to the material to be taught. Formative assessment occurs while learning is taking place; the information gathered is used to form and guide instructional practice. A summative assessment, meanwhile, takes place after the completion of the learning task (Dori, 2003b; Tamir, 1998). The information gathered by such an assessment may or may not be used for grading purposes. Frequently, it is the basis for a final mark in a unit or course.

An evaluation adds further judgment to an assessment. An evaluation takes into account the student's assessed performance, and judges it as acceptable or unacceptable in light of institutional (provincial) standards. The information attained through an evaluation is used to grade the student's overall performance (Wiggins, 1998). In Ontario secondary schools, the value assigned is in the form of a percentage grade (Ontario Ministry of Education, 2000b).

The purpose of assessment

In *Student-Involved Assessment for Learning*, Stiggins (2005) outlines the purpose of assessments. He believes that

assessments must do far more for us than merely help us grade and rank students. They must help us accurately diagnose student needs, track and enhance student growth towards standards, motivate students to strive for academic excellence, and verify student mastery of required standards. (p. 15)

This concept complements research from Wiggins (1989; 1990; 1998) and Davis (2003), who state that the purpose of assessment is to support the needs of learners, and that learning is not possible without thoughtful use of assessment information by learners and

teachers alike. Simply stated, assessment can and should be used as a tool for learning (Dochy & McDowell, 1997). These concepts are by no means novel; as Davis (2003) implies, they are expansions and augmentations of past research. Such research includes Dewey's (1933) "learning loop," Lewin's (1952) "reflective spiral," Schön's (1983) "reflective practitioner," Senge's (1990) "reflective feedback," Treagust's (2001) "embedded assessment," and Wiggins' (1993) "feedback loop." Instruction, learning, and assessment are inextricably related, and their alignment has always been crucial for achieving the goals of education no matter what the goals are (Biggs, 1999).

How assessment is connected to learning

In order to refine further the concept of assessment it is important to briefly summarize what is meant by learning. Cameron, Tate, MacNaughton, and Politano (1998) believe that learning occurs when students are

thinking, problem-solving, constructing, transforming, investigating, creating, analyzing, making choices, organizing, deciding, explaining, talking and communicating, sharing, representing, predicting, interpreting, assessing, reflecting, taking responsibility, exploring, asking, answering, recording, gaining new knowledge, and applying that knowledge to new situations. (p. 6)

This list is by no means exhaustive. When considered holistically, these forms of learning comprise various educational paradigms, including traditional forms of learning such as empirical-analytic (positivist) (Cunningham & Fitzgerald, 1996; Freire, 1972; Guba, 1990; Olson & Bruner, 1997, Wiggins, 1990) and the centred view of learning (Kozolanka, 1995). Additionally, such learning encompasses progressive learning paradigms, including constructivism (Driver et al, 1994; Mathews, 1998; Marzano et al, 1993; Piaget, 1967; Shepard, 1989; von Glasersfeld, 1995; Vygotsky, 1978), the de-centered view of learning (Kozolanka, 1995), problem-based learning (Delisle, 1997;

Gallagher, 1995; Torp & Sage, 1998), project-based learning (Cheung, Hattie, Bucat, & Douglas, 1996; Solomon, 1993; Dori, 2003b), the situated view of learning (Lave & Wegner, 1991), and metacognitive learning strategies (Bransford & Vye, 1989; Ellis & Worthington, 1994; Palincsar & Brown, 1984; Rosenshine, 1997, 2002; Rubin & Norman, 1992; Scardamalia et al., 1984; Schoenfeld, 1983, 1985, 1991). If learning occurs in a holistic fashion, then effective assessment too, should be holistic. By this statement I mean that the assessment methods practiced by the educator should complement the student's specific learning behaviours in order to reinforce learning (Wiggins, 1990). As a result, assessment will provide information indicative of the student's ability that is both valid (the ability of a test to measure what it purports to measure) and reliable (the level of consistency of the test over time, or the ability of the test to obtain the same score from the same student at different times) (Davis, 2003; Dewey, 1938; Marzano et al, 1993; Wiggins, 1998).

Stiggins (2005) briefly summarizes the method used in the formation of effective assessment. The steps below are used as a guideline:

- Identify the achievement targets (goals, objectives, expectations, standards) that you expect your students to hit. These must be the focus of your assessment exercises [task] and scoring procedures [criteria].
- Select proper assessment methods that accurately reflect your achievement expectations.
- Assemble high-quality assessment exercises [tasks] into an array (a sample) that spans the full range of your expectations and thus leads you to confident conclusions about student achievement.
- Anticipate and eliminate all sources of bias that creep into your assessments.
- Communicate assessment results in a timely and understandable manner into the hands of their intended user(s).

Stiggins' guidelines for developing effective assessment allow the educator to create specific "high quality assessment exercises" that complement the desired learning outcomes of the student. When applied properly, these exercises can be consistent with the teachings implicit in Bloom's taxonomy (1956; 1964) and Gardner's theory of multiple intelligences (2001).

Assessment in Ontario and Bloom's Taxonomy

In Ontario, the Ministry of Education (2000b) has implemented an "achievement chart" based on Bloom's taxonomy of the cognitive domain (a brief outline of the cognitive domain taxonomy is located in the Appendix A). The achievement chart

provides a reference point for all assessment practice and a framework within which to assess and evaluate student achievement. Each chart is organized into four broad categories of knowledge and skills: Knowledge/Understanding, Thinking/Inquiry, Communication, and Application/Making Connections. (The names of the categories differ slightly from one discipline to another, reflecting differences in the nature of the disciplines.) The achievement chart also describes the levels of achievement of the curriculum expectations within each category. The descriptions associated with each level serve as a guide for gathering assessment information and enable teachers to make consistent judgments about the quality of student work and to provide clear and specific feedback to students and parents. The achievement chart provides a standard province-wide method for teachers to use in assessing and evaluating their students' achievement. (p. 14)

In order to assess and evaluate student performance properly, the achievement chart has been transformed into an assessment tool called a "rubric." I have attached a typical project rubric in Appendix B for those not familiar with Ontario's current standard of assessment. The learning objectives outlined by the Ministry's achievement chart are labeled along the left-hand side, and plotted against the learning objectives are the "levels of achievement" (Ministry of Education, 2000b). Each achievement level has a summary description to assist the educator in assigning the appropriate level of achievement for the

assessment or evaluation. Known as "descriptors," these are the characteristics of learning behaviours associated with specific levels of performance for specific criteria (Mueller, 2006). Table 2 is a reproduction of the Ministry of Education's (2000b) summary description of achievement in each percentage grade range and corresponding level of achievement.

Percentage Achievement	Grade Range Level Summary	Description
80–100%	Level 4	A very high to outstanding level of achievement. Achievement is <i>above</i> the provincial standard.
70–79%	Level 3	A high level of achievement. Achievement is <i>at</i> the provincial level.
60–69%	Level 2	A moderate level of achievement. Achievement is <i>below, but approaching</i> , the provincial standard.
50–59%	Level 1	A passable level of achievement. Achievement is <i>below</i> the provincial standard.
Below 50%	N/A	Insufficient achievement of curriculum expectations. A credit will not be granted.

Table 2: Summary description of achievement in each percentage grade range and corresponding level of achievement (Ontario Ministry of Education, 2000b).

Using the achievement chart is considered consistent with good teaching practices in Ontario. To encourage and assist educators with developing appropriate and high quality assessments, the Kawartha Pine Ridge District School Board (1999) released a document entitled "A Resource for Assessment, Evaluation and Reporting." The document provides an overview of assessment methods, strategies, and tools that are appropriate to learning tasks that suit the specific categories of the achievement chart (Appendix C).

The three domains of Bloom's taxonomy

Bloom's taxonomy (1956; 1964) was created to assist educators in developing "objectives that could be included in their curriculum" (p. 2). The specified objectives are

intended to lead to "easier to plan learning experiences and prepar[ation of] evaluation devices" (p. 2). Additionally, these could provide a tool that could be used by educators to determine the emphasis, or lack of emphasis, given to certain learning behaviours (Bloom & Krathwohl, 1956). Krathwohl and Bloom believe that most of the objectives stated by teachers, as well as those found in the literature, could be placed rather easily into one of three major domains or classifications (these domains are described in detail in Appendix A). Below is a brief synopsis of the three domains of learning from Krathwohl, Bloom, and Masia's (1964) taxonomy:

Cognitive: Objectives which emphasize remembering or reproducing something which has presumably been learned, as well as objectives which involve the solving of some intellectual task for which the individual has to determine the essential problem and then reorder given material or combine it with ideas, methods, or procedures previously learned. Cognitive objectives vary from simple recall of material learned to highly creative and original ways of combining and synthesizing new ideas and materials. We found the largest proportion of educational objectives fell into this domain.

Affective: Objectives which emphasize a feeling tone, an emotion, or a degree of acceptance or rejection. Affective objectives vary from simple attention to selected phenomena to complex but internally consistent qualities of character and conscience. We found a large number of such objectives in the literature expressed as interests, attitudes, appreciations, values, and emotional sets or biases.

Psychomotor: Objectives which emphasize some muscular or motor skill, some manipulation of material and objects, or some act which requires a neuromuscular coordination. We found few such objectives in the literature. When found, they were most frequently related to hand writing and speech and to physical education, trade and technical courses. (pp. 6-7)

Many philosophical and practical questions and concerns were raised during the formation of Blooms' Taxonomy. Below are three brief quotes, taken from Krathwohl, Bloom, and Masia's (1964) that outline foreseen predicaments concerning the taxonomy:

One of the first problems raised in our discussions was whether or not educational objectives could be classified. It was pointed out that we were

attempting to classify phenomena which could not be observed or manipulated in the same concrete form as the phenomena of such fields as the physical and biological sciences, where taxonomies of a very high order have already been developed. Nevertheless, it was a view of the group that educational objectives stated in behavioural form have their counterparts in the behaviour of individuals. Such behaviour can be observed and described, and these descriptive statements can be classified. (p. 5)

There was some concern expressed in the early meetings that the availability of the taxonomy might tend to abort the thinking and planning of teachers with regard to curriculum, particularly if teachers merely selected what they believed to be desirable objectives from the list provided in the taxonomy. (p. 5)

Some fear was expressed that the taxonomy might lead to fragmentation and atomization of educational purposes such that the parts and pieces finally placed in the classification might be very different from the more complete objective with which one started. (pp. 5-6)

Bloom's team thus were able to foresee some of the issues that could arise from their classification of learning behaviours into a taxonomy.

What they didn't predict, however, was that their faith in Cartesian reductionism as a means of condensing learning experiences and behaviours into rationalized abstractions has resulted in fundamental oversights in modern day instructional, learning, and assessment practices. As Evernden (1985) and Jickling (in press) remark, Descartes' failings have been amply discussed, yet the perseverance of Cartesian thinking has been "remarkably resilient" (Jickling, in press, p. 10). As suggested by Krathwohl, Bloom, and Masia's (1964), Bloom's taxonomy artificially simplifies, separates, and categorizes learning behaviours in an attempt to simplify and quantify the task of evaluating student's learning. Once the taxonomy is used as a tool in this way, it encourages the teacher's perspectives on teaching and learning to coincide with the taxonomy's compartmentalized and simplified view of learning behaviours. Because the teacher's perspective may be altered to fit into the taxonomy tool, his or her teaching and evaluating practices may

change accordingly, perpetuating the use of a reduced concept of learning behaviours. Cheney and Weston (1999) call this perpetuation of a simplified teaching and evaluating system a "self-validating reductionism" (p. 126). While they actually use this term to critique a different issue, the concept of a self-validating, or self-perpetuating educational framework can be applied to this case:

There is, in particular, a kind of self-fulfilling prophesy in which one of the effects of the "prophesy" is to reduce someone or something in the world—to make that person or thing less than they or it are or could be, to diminish some part of the world's richness and depth and promise—and in which this reduction in turn feeds back not only to justify the original prophesy but also to perpetuate it. (p. 126)

It may be argued that Bloom's taxonomy perpetuates a reduced concept of teaching and learning, and therefore fails to guide teaching or assessment in a holistic way, or to harness the full richness of the learning process and interconnectedness of all learning behaviours and thinking processes.

Currently in Ontario we are developing our assessment tasks using the achievement categories as the foundation of our assessments, and it is common practice for teachers to begin planning "with the end in mind," also known as "reverse" or "backwards" planning (Wiggins & McTighe, 1999). This is by no means an ineffective way of planning outstanding learning and assessment tasks, but beginning with an over-simplified educational framework such as the achievement categories may limit the breadth of learning experiences and assessments tasks. For example, as described above, Stiggins (2005) advocates planning with student achievement goals in mind. Although Stiggins' approach allows teachers to plan effectively to achieve their desired outcomes, it does not prompt the teacher to question whether or not those outcomes, that is, the Ontario government's achievement categories, effectively cover the breadth of the

learning experience. In the words of Horwood: "the evaluation tail still wags the curriculum dog" (1995, p.17).

If we are to use the achievement chart—based on only one of three of Bloom’s taxonomies—as a foundation to build our curriculum and assessment tasks, we would find that the achievement categories would only cover a small range of the actual learning experience. In fact, when comparing the categories implemented by the Ministry (Appendix B) to those outlined by Bloom (Appendix A), the Ministry’s learning objective’s covers only a reduced, augmented version of Bloom’s cognitive domain. The inclusion of Bloom’s affective and psychomotor domains would aid in the formation of a truly holistic assessment paradigm. Thus, the impact of Cartesian reductionism and of self-validating reductionism on our educational practices is very real indeed.

Traditional versus progressive instructional, learning and assessment paradigms

In the context of education, "traditional" (conventional) and "progressive" are broad terms which comprise a wide range of instructional, learning, and assessment paradigms. Keeping with current classifications, I have separated the paradigms into these two main categories, traditional and progressive, for comparative purposes. The comparative table derived from Mueller (2006) provides a snapshot of the main differences between the two paradigms.

Traditional	Progressive
Selecting a Response	Performing a Task
Contrived	Real-life
Recall/Recognition	Construction/Application
Teacher-centered	Student-centered
Indirect Evidence of Learning	Direct Evidence of Learning

Table 3: A comparison of traditional and progressive pedagogy

Others, such as Hohn (2008), have attempted to characterize the various facets of progressive education; however as he notes “any two educators may describe themselves as sympathetic to this tradition [but] may well see it differently, or at least disagree about which features are the most important” (p. 1).

From my perspective, the transition from a traditional to a progressive pedagogical approach implies a move to a more "hands-on, minds-on" attitude to education. Furthermore, keeping in mind the effects of Cartesian reductionism on education, I believe a goal of the progressive paradigm is to move away from the traditional instructional, learning, and assessment frameworks which revere cognitive functions and view the cognitive, affective, and psychomotor domains as separate entities. The progressive paradigm attempts to embody an instructional, learning, and assessment framework which is "holistic" (Kozolanka, 1995)—a true incorporation of the entire learning spectrum which has been reduced into the taxonomy of learning objectives. However, because instruction, learning, and assessment are inextricably linked, and as a consequence of the reliance of our assessments on cognitive functions, implementing truly holistic assessment criteria may be more difficult than it seems. In the following sections, I attempt to outline the differences and similarities between traditional and progressive assessment methods.

Traditional forms of assessment

Traditional forms of assessment include conventional tests. Wiggins (1990; 1998) describes conventional tests as usually limited to paper-and-pencil tests, in which questions have one correct answer and which typically only ask the student to select or write correct responses, irrespective of reasons. He describes conventional tests as those

which emulate drills which assess static and too-often arbitrarily discrete or simplistic elements of those activities. Consequently, they tend to reveal only whether the student can recognize and recall what was learned out of context. Conventional selected-response test formats (e.g., multiple choice, true/false, matching) standardize objective "items" and, hence, have one right answer for each; as a result, they are quite narrow in their focus. Furthermore, they typically provide a snapshot or a "one moment in time" picture of learning. Wiggins maintains that

traditional assessment...relies on indirect or proxy 'items'—efficient, simplistic substitutes from which we think valid inferences can be made about the student's performance at those valued challenges. (1990, p. 1)

Moreover, because the conditions of such tests are often highly controlled, there is rarely an adequate opportunity to plan, revise, and substantiate responses. The student completes the work within inflexible time limits, and has restricted access to resources and limited opportunities to make revisions, even when there are open-ended questions (Marzano, Pickering, McTighe, 1993; Wiggins, 1990).

If traditional assessments are so limited, then why have they persevered? Mueller (2006) provides his answers this question using a four-step historical breakdown:

1. A school's mission is to develop productive citizens.
2. To be a productive citizen an individual must possess a certain body of knowledge and skills.
3. Therefore, schools must teach this body of knowledge and skills.
4. To determine if it is successful, the school must then test students to see if they have acquired that knowledge and those skills.

From this perspective, the easiest, fastest, most efficient, direct way of assessing knowledge and skills would be a testing format that would value the re-transmission of knowledge above the construction of, or the reflection on, that knowledge as valuable and legitimate.

Although this form of assessment may have certain uses, it is generally incapable of revealing in any comprehensive way the cognitive, affective, and behavioural outcomes of student learning (Tal, 2005; Wiggins, 1990). Furthermore, traditional forms of assessment sacrifice authenticity, since they differ markedly from the ways in which people apply knowledge outside school. As Wiggins (1989) states, these tests neither assess what we value nor provide useful feedback about how to teach and how to learn. They achieve a limited form of validity by merely matching items to the curriculum content. Traditional tests, by requiring complete secrecy for their validity, make it difficult for teachers and students to rehearse and gain the confidence that comes from knowing their performance obligations (Wiggins, 1989). Despite these limitations, results of such one-time measures are frequently used to make significant decisions, such as whether a student should be admitted to or excluded from special programs and what final grade a student will receive in a class (Marzano et al, 1993; Wiggins, 1990).

Progressive forms of assessment

There are several labels that have been used to describe subsets of progressive assessment methods; these forms of assessment include "alternative assessment," "authentic assessment," and "performance assessment."

Alternative assessment

The term "alternate assessment" applies to any and all assessments that differ from the multiple-choice, timed, one-shot approaches that characterize most standardized and many classroom assessments (Marzano et al, 1993, Wiggins, 1989; 1990). For instance, Nevo (1995) states that "in alternative assessment, students are evaluated on the basis of their active performance in using knowledge in a creative way to solve worthy problems. The problems have to be real problems" (p. 94). Wiggins (1989; 1990) uses it as an encompassing term that includes authentic forms of assessment; the term has also been used to describe performance assessment.

Dori (2003a) and Treagust, Jacobowitz, Gallagher, and Parker (2001) assert that embedded assessment is commonly used in conjunction with alternative assessment. Dori (2003a) writes that "embedded assessment refers to an ongoing process that emphasizes integration of assessment into instructional practices" (p.90). This again is an expansion of the practices outlined by Biggs (1999), Davis (2003), and Wiggins (1989; 1990; 1998) and others concerning the relationship between instruction, learning and assessment.

Authentic assessment

The term "authentic assessment" conveys the idea that assessments should engage students in applying knowledge and skills to "worthy intellectual tasks" (Wiggins, 1990, p.1) in the same way they are used in the "real world" outside school (Wiggins 1989; 1990). Wiggins (1990) describes authentic tasks as those which "commonly involve 'ill-structured' challenges and roles that help students rehearse and prepare for the complex ambiguities of adult and professional life" (p. 2). The tasks are structured in a fashion that allows for learner diversity, originality, and individuality; the tasks thus, provide multiple answers to a question. Their choices are based on the wide range of answers that could

possibly be generated; consequently, it is necessary that the method of assessment and the criteria assessed fit the context of learning, and reflect the diversity of responses expected.

Taking into account this definition, authentic forms of assessment are closely tied to constructivist theories of learning and epistemology. Authentic assessments achieve validity and reliability by emphasizing and standardizing the appropriate criteria for scoring such varied products. When a teacher is constructing authentic forms of assessment, test validity should depend in part upon whether the test simulates real-world tests of ability (Wiggins, 1990).

Authentic assessments are enabling and forward-looking, not just reflective of prior teaching. They focus on whether the student can craft polished, thorough, and justifiable answers, performances, or products. They do so by mirroring the priorities and challenges found in the best instructional activities, including conducting research; writing, revising and discussing papers; providing an engaging oral analysis of a recent political event; and collaborating with others on a debate. Wiggins (1990) asks:

Do we want to evaluate student problem-posing and problem-solving in mathematics? Experimental research in science? Speaking, listening, and facilitating a discussion? Doing document-based historical inquiry? Thoroughly revising a piece of imaginative writing until it "works" for the reader? Then let our assessment be built out of such exemplary intellectual challenges. (p. 1)

To assess properly the knowledge, skills, and attitudes that are presented by outdoor, experiential, environmentally focused integrated and interdisciplinary programs, one must initially implement an appropriate assessment framework. As a result, I assume that most of these programs have adopted authentic forms assessment that reflect the

cognitive, affective, and psychomotor components of learning. This aspect of the assessment required is discussed in the latter part of this section.

Performance assessment

Performance assessment is a broad term, encompassing many of the characteristics of both authentic assessment and alternate assessment (Marzano et al, 1993; Mitchell, 1992). The term "performance assessment" has been used to refer to

a variety of tasks and situations in which students are given opportunities to demonstrate their understanding and to thoughtfully apply knowledge, skills and habits of mind in a variety of contexts. These assessments often occur over time and result in a tangible product or observable performance. They encourage self-evaluation and revision, requiring judgment to score, reveal degrees of proficiency based on established criteria, and make public the scoring criteria. They sometimes involve students working with others. (Marzano et al, 1993, p.12)

Again, we can see that performance assessment incorporates authentic forms of assessment crafted specifically for authentic problems. However, before I continue, it is extremely important for the reader to recognize that the definition of performance assessment that Marzano et al provided above is slightly different from the way I have been using the term "assessment." Notice how they have incorporated the task *and* the assessment under the single heading of "performance assessment." It is important that we understand and are able to differentiate between the learning/performance task—what Stiggins (2005) has called the assessment exercise—and the assessment criteria used to assess or evaluate that task.

The similarities between performance, authentic, and alternative assessment become further apparent when we combine Lewin and Shoemaker's (1998), Gronlund's (1998), and Nevo's (1995) characteristics of performance tasks:

1. Students have some choice in the selection of the task.

2. The tasks are more complex, less structured, typically non-routine and multi-faceted with no obvious solutions. The task encourages originality and thinking skills and may have multiple solutions which require both the elaboration of core knowledge content and specific processes.
3. Due to the difficulty of designing tasks, the comprehensive nature of the tasks, and the increased time needed to evaluate the results, greater time is required for assessment.
4. A greater use of judgment is required when scoring due to the complexity of tasks, originality of responses, and in some cases the variety of possible solutions.
5. The task is designed largely for an audience larger than the teacher. They are designed to emulate real world tasks and situations.
6. The task is carefully crafted to measure what it purports to measure.

Performance assessment is a commonly used method to assess and evaluate performance tasks such as project-based learning (Cheung, Hattie, Bucat, & Douglas, 1996; Dori, 2003b), and problem-based learning (Delisle, 1997; Gallagher, 1995; Torp & Sage, 1998). These performance tasks are touted as innovative instructional/learning methods in that they involve both theoretical and practical learning theories aimed at helping students cope with complex, real-world problems (Keiny, 1994; McDonald & Czerniac, 1994). In problem and project-based learning, students pose questions to authentic problems, gather data and information, interpret findings, and use evidence to draw conclusions. This pedagogical method is flexible in that it can be applied to individuals, groups, or the whole class. The interdisciplinary nature of project-based learning enhances higher-order thinking skills, including data analysis, problem-solving,

decision-making, and value judgment (Dori, 2003b). Active student participation in the project execution process encourages the development of original opinions and standpoints, awareness of system complexity, and encourages students to explore the consequences of their own values (Zoller, 1991). Project-related tasks tend to be collaborative and open-ended, and tend to generate problems with answers that are often not predetermined (Blumenfeld, Marx, Soloway & Krajcik, 1996).

From the above description, it becomes immediately apparent that project and problem-based learning tasks resemble case studies and have the potential to be holistic in nature. They can apply the three learning domains – cognitive, affective, and psychomotor. However, again, the problem that many educators (Horwood, 1995) are noticing is that the assessment criteria employed to assess or evaluate these assessment tasks tend to focus on/or value the cognitive domain, and neglect the affective and psychomotor domains.

In the next section, I turn my attention to assessment and evaluation, specifically in integrated and interdisciplinary programs. I have compiled literature that is both theoretical and empirical in order to present the full range of theories and philosophies that govern the area.

History of assessment in integrated and interdisciplinary programs

It should be noted that commenting on every assessment exercise (task) that may possibly be generated is beyond the scope of this review. Nevertheless, this thesis is concerned with the assessment methods and practices of integrated programs and the subsequent evaluation dilemma. Yet much of the literature on experiential environmental outdoor integrated and interdisciplinary programs does not speak in great detail about the

assessment methods employed (Horwood, 1995; Kozolanka, 1995); hence, this study. For instance, Tal (2005) notes that

the fact that alternative assessment is highly related to learning theories might explain the relatively limited discourse about the assessment in the [environmental education] literature. The literature...is more concerned with conceptual knowledge and political barriers to implementing [environmental education]. (p. 577)

In "The Influence of Outdoor Education on Curriculum Integration: A Case Study," Horwood (1994) states that one of the major difficulties facing existing integrative studies is conducting customary evaluations of student work within the structure of an integrated program. He questions whether to evaluate students to fit discipline-based expectations, or to evaluate on the basis of integration (Horwood, 2002). In an educational system in which grades are the only outcome of education that counts, he believes it is critical that models of assessment be accessible to assist current and prospective integrated educators. He further notes that

one of the thorniest problems in multi-credit packages is grading and evaluating. All of the teachers I've spoken to were dissatisfied in some way with the need to supply marks as a final summary of student learning when so much more was learned than could possibly be reflected in a two-digit number. The evaluation tail still wags the curriculum dog and experienced teachers have found hundreds of tricks to evade the problem and still live with their consciences. It would be nice, though, if we could get this serious problem out in the open. Let's hear about ways that people have found to accurately and fairly assess and report the richness of students learning and experience. (Horwood, 1995, pp. 17-18)

Likewise, during their tour of a number of integrated programs, Hood and MacMillan (2002)

perceived an enormous amount of reinventing of the wheel. From lesson plans to course outlines and administrative paper work, planning trip routes and transportation, to making creative summative evaluation activities, program teachers have been doing the same thing separately. In fact many of them have little idea of who else is out there and whether they are doing the same things. (p. 19)

Studies and reviews of integrated/interdisciplinary programs do make reference to the progressive ideologies of the program instructors (Horwood, 2002; Tal, 2005). The progressive ideologies adopted by the program instructors result in a realization that the wide scope of learning that takes place in experiential and environmentally focused integrated and interdisciplinary programs

requires a suitable assessment program that reflects the various aspects, modes and settings in which learning occurs. Such an assessment program should address students' outcomes of inquiry learning and critical thinking, their developing awareness of environmental issues, actual involvement in the environment and performances in class as well as outdoors. (Tal, 2005, p. 576)

Many traditional forms of assessment utilized in schools are not appropriate for assessing the kinds of learning that are occurring within these programs. As Kozolanka (1995) notes, among

the students in the program I studied, their perceived engagement or lack of engagement was a multifaceted phenomena which did not respond well to traditional behavioural attempts at evaluation...[since] it represents a common dilemma found in integrated programs – that finding ways of evaluating students without falling into the trap of using methods which may not be appropriate to the nature of these programs. (p. 29)

Therefore, as Kozolanka (1995) asserts, finding appropriate assessment and evaluation schemes for integrated and interdisciplinary programs would see movement away from traditional behaviouristic models of assessment.

Kozolanka believes that "one's view of knowledge will determine how one attempts to evaluate it" (p. 30), and describes a centred versus decentred approach. He contends that "if we hold a centered perspective, where knowledge is mostly perceived to be information and the fulfillment of established social roles, then one will be content with evaluation that seeks to measure such capacities" (p. 30). In the de-centred approach

"the emphasis is on the ability of a student to 'get along' and contribute to the group" (p. 30).

Kozolanka believes that both of these perspectives are inconsistent. He maintains that "designs which encourage only complacency are troubling in school contexts such as integrated programming and outdoor education because these programs in many ways promote individual variation and development within community" (p. 30). To amalgamate these two competing perspectives, Lave and Wegner (1991) argue for what is known as the situated view. The situated view of learning outlined by Lave and Wegner (1991) maintains that "learning, thinking, and knowing are relations among people in activity in, with, and arising from socially and culturally structured world" (p. 51). In the situated view of learning, learning and understanding are understood to be more "holistic". Lave and Wegner elaborate on this concept:

Participation is always based on situated negotiation and renegotiation of meaning of the world. This implies that understanding and experience are in constant interaction—indeed, are mutually constitutive. The notion of participation thus dissolves dichotomies between cerebral and embodied activity, between contemplation and involvement, between abstraction and experience; persons, actions, and the world are implicated in all thought, speech, knowing, and learning. (pp. 51-52)

As implied by the above quote, it is important to acknowledge the implications of these assumptions within our pedagogical practices.

Kozolanka (1995) proposes three broad characteristics of student assessment and evaluation for integrated programs that reflect the situated point of view; these characteristics can be used to form the foundation for more specific assessment criteria to be built on.

1. Evaluations should be locally grown whenever possible—that they be developed out of local needs. In other words, evaluation might be more sympathetic to program design.
2. Whatever means are developed should be perceived as intrinsically worthwhile activities in themselves; otherwise, there is danger into the trap of providing recipes for complacency that tend to be meaningless and exploitive.
3. Evaluations of students should center around an examination of the nature of student participation and membership in broad contexts – such as the community in which they might be working or and studying. In this instance we might ask that students account for their engagement as it relates to others in the program...[they should] evaluate themselves as individuals and each other as members of a learning community...this can be expanded to include an examination of the underlying assumptions that comprise the social relations in which the students are involved. (p. 31)

These basic characteristics can be built upon in order to include more complex and multi-faceted learning objectives. For instance, Tal (2005) asserts that

various settings and teaching methods should be employed. These include classroom based and outdoor learning, project-based learning, using multiple resources, learning about socio-scientific controversies and involving the broader community....This wide scope of learning requires a suitable assessment program that reflects the various aspects, modes and settings in which learning occurs. Such an assessment program should address students' outcomes of inquiry learning and critical thinking, their developing awareness of environmental issues, actual involvement in the environment and performances in class as well as outdoors. (pp. 575-576)

In order to assess and evaluate these outcomes, there have been a number of suggestions for assessment frameworks, models and criteria. Jacobs (1989) proposes that teachers structure their questions around Bloom's taxonomy of the cognitive domain (knowledge, comprehension, application, analysis, synthesis, evaluation). Others, such as Lazear (1991), offer different teaching strategies that are based on multiple intelligences defined by Gardner (verbal linguistic, logical mathematical, visual spatial, body kinesthetic, musical, interpersonal, intrapersonal, and naturalistic). Building upon both Jacobs and Lazear, Kovalik (1991) offers a curriculum planning matrix that has Bloom's

taxonomy on one axis and multiple intelligences on the other. Other models challenge educators to consider alternative ways to design teaching strategies. For instance, Clark (1986) offers an integrated learning model that considers cognitive, affective, physical and intuitive domains—ideas which mimic those used in project and problem-based learning described previously. Finally, Miller (1988) has created a holistic curriculum that acts to link body/mind, logical/intuitive thinking, self/environment, and self/self, although he hasn't expanded his ideas into assessment practices.

In "Developing an integrated curriculum using the story model" Drake (1992), describes assessment as "a dynamic process involving individuals and groups reflecting upon the meaning that their learning experiences have had upon their lives," (p. 58). She believes that assessment in integrated programs should be

intricately related to the learning outcomes; reflect the image of the learner as an individual who is capable, self-reliant, self-motivated life-long learner who values learning as an empowering activity; and a shared responsibility between the teacher and the student. (p. 58)

She notes that we as educators

[know] how to assess acquisitions of certain facts and skills...[The integrated] curriculum [is] intended to engage the student at a personal level and increase the ability to make interconnections and the willingness to collaborate...to become aware of the implicit values inherent in the "content" [and] to facilitate student self-direction and ability to manage change. (p. 58)

Finally, she argues that "assessors [should] look beyond the traditional expectations and ask 'what is it that we really wish to assess?' "(p. 58). The following table provided by Drake contains suggestions of specific assessment criteria for learning outcomes.

Criteria	Indicators
1. Personal engagement	Does the student: <ul style="list-style-type: none"> • initiate activities? • show excitement during learning? • make personal comparisons? • go beyond classroom contexts to extend personal inquiry? • encourage involvement with others? • contribute to group discussion? • show evidence of reflection?
2. Ability to make connections	Does the student: <ul style="list-style-type: none"> • connect cause/effect relationships (for example, past to present or present to future stories)? • identify how focus (for example car) can be extended to the theme (for example, technology)? • make connections among personal, cultural and global stories? • connect ideas among disciplines by giving supportive arguments from various disciplines? • involve himself/herself in relaxation and visualization activities?
3. Change management	Does the student: <ul style="list-style-type: none"> • show a tolerance for ambiguity during the change process? • manage change in a positive way? • encourage others the make change? • express the intention to change? • take positive risks? • recognize his/her progress towards positive change?
4. Self-direction	Does the student: <ul style="list-style-type: none"> • generate questions/foci for inquiry? • form intentions to act? • make plans? • seek assistance and resources as necessary? • persevere through ambiguous situations? • use reflections to redirect and improve the learning process?
5. Willingness to Collaborate	Does the student: <ul style="list-style-type: none"> • develop a collective story? • share individual learning with others? • "piggy back" ideas in a group? • negotiate to arrive at shared meaning? • demonstrate individual accountability?
6. Awareness of Values in Story [Learning]	Does the student: <ul style="list-style-type: none"> • recognize his/her personal story? • recognize the cultural/global story? • recognize how the cultural/global story shapes his/her personal story? • extract values from stories? • recognize implicit/explicit values? • act on positive values? (pp. 59-60)

Table 4: Suggestions of specific assessment criteria for learning outcomes in integrated and interdisciplinary programs from Drake (1992).

In order to assess these learning outcomes, Drake stresses the use of performance-based assessments rather than reliance on paper and pencil tests to evaluate student learning. She notes that most of these learning outcomes are qualitative by nature rather than quantitative, and that they emphasize the importance of continual feedback to the student on his or her performance. Inextricably linked to qualitative assessment measures is the use of observation as the key method of assessing student performance. "We find out more by observing students in progress than perhaps any other way" (p. 60), she remarks. Tied to observational assessments is the use of rating scales, checklists, rubrics, and participation charts as tools for recording students' behaviours, levels of achievement, and progress. Drake suggests that the qualitative data which are observed could be recorded in a teacher's journal. Notes concerning behaviour, performance, attitudes, etc., can be maintained and, over time, could be used for both formative and summative evaluations.

The practice of journaling can be used by both teacher and student alike. Teachers can model by writing and then sharing their journals; however, Drake notes that students usually need guidance in reflecting and finding their own voices. She outlines the following criteria to be employed when a teacher is evaluating journal entries:

Has the student:

- included a variety of personal responses?
- shown growth in positive attitudes over a period of time?
- formulated questions from [his/her] experiences?
- reflected on other's opinions, [his/her] own emotions?
- expressed a relationship between past and present learning?
- gone below the surface to ask "so what?" "now what?"
- evaluated his/her learning through the process of journal writing? (p. 61)

Other methods of assessment she recommends are portfolios, graphic representations, and independent study projects. A portfolio is "a continuous file that provides a comprehensive summary of a student's accomplishments (for example, samples of work in various stages from first draft to completion, self-selected "best" work, and written reflections) (p. 61). Graphic representations include concept maps, mind maps, and summary diagrams. Independent study projects determined by the student's interest "can offer a rich source of data for assessment of higher order skills such as organization, synthesis and interpretation" (Drake, 1992, p. 62). Another qualitative assessment measure is based on teacher-student conferences and interviews, which can provide opportunities for the teacher and the student to collaboratively review performance, share their expectations and evaluations of the learning experiences in order to establish future goals mutually (Drake, 1992).

Collaborating with students to review performance and to share assessment and evaluation expectations can lead to the development of peer and self-evaluation procedures. As Drake notes, "the skills for peer and self-evaluation take a long period of time to establish but they assist the student in seeing the role of evaluation as a tool for positive growth" (p. 61). Involving students in peer and self-evaluation by assessing group work processes rather than a product can be used as a first step in students' learning (Drake, 1992). As the student shows readiness and comfort with the assessment methods, the transition from the large group evaluation to self-evaluation is possible. As Drake notes,

a key issue here is the students' ability to understand and develop criteria for their peer and self-evaluation. Students need to be involved systematically in developing criteria. Much of this depends on the readiness of the class and the individual for this step. Criteria must be explicit for all students but should be

developed collaboratively. This process enables students to "step back" and look at their own development and growth with a responsible view. (p. 61)

Additionally, in keeping with good assessment practices, there should be time put aside to discuss and reflect on the learning experience. Post-experiential self-, group, and peer-to-peer reflection is a crucial component of perpetuating cognitive and affective development (Jones & Brader-Araje, 2002). I now turn to the details of my study that build on the literature reviewed here.

Chapter 3: Research Methods

Methodology

This study focuses on assessment practices in two outdoor, experiential, environmentally-focused integrated and interdisciplinary programs. I conducted two case studies: the interdisciplinary Outers program at Atikokan High School in Atikokan, Ontario, and the integrated Environmental Studies Program (ESP) at Grey Highlands Secondary School in Flesherton, Ontario. The Outers program in Atikokan is an interdisciplinary program, while the ESP at Grey Highlands is an integrated environmental studies program.

A qualitative methodology has been chosen as an appropriate means of obtaining data relevant to determining assessment practices in outdoor, experiential, environmentally-focused integrated and interdisciplinary programs. According to Bogdan and Taylor (1975), "qualitative methodologies refer to research procedures which produce descriptive data: people's own written or spoken works and observable behavior" (p. 4). Further, given my desire for rich detail rather than broad generalizations, qualitative research is most appropriate, in particular a case study approach (Bogden & Bicklen, 2003).

Methods

The data for this study were collected using two methods. First, I interviewed the instructors who are responsible for running the program. I chose to use an open-ended interview in the form of a casual conversation: "The purpose of open-ended interviewing is not to put things in someone's mind...but to access the perspective of the person being interviewed" (Patton, 1990, p. 278). This has also been called an informal conversational

interview. In such an interview," questions emerge from the immediate context and are asked in the natural course of things; there is no predetermination of question topic or wording" (Patton, 1990, pp. 288-289). Notes from these conversations were taken Verbatim.

From the informal conversational interviews I laid the foundation for my academic interests while gaining an appreciation for the general working of the programs. The interview was immediately followed by the admission of a questionnaire composed of both open- and closed-form questions that are intended to gather information pertaining to specific assessment practices. Open-form questionnaires lead to "a free response in the respondent's own words...the respondents reveal their frame of reference and possibly their reasons for their responses" (Best & Kahn, 2006, p. 314). Nevertheless, there is some information, such as assessment and evaluation documents, and information pertaining to course codes, that are best collected using a closed-form format, so I used this format as well.

Final follow-up phone interviews were conducted in order to obtain further information and/or clarifications. These follow-up interviews were also informal conversational interviews. I have included a list of the written interview questions which guided me in Appendix D.

Setting and Background

ESP at Grey Highlands

Grey Highlands Secondary School's (GHSS) four-credit integrated Environmental Studies Program (ESP), which began in 1993, is located in Flesherton, Ontario, 150 km NW of Toronto. It was created and continues to be taught by John Burton. The

surrounding community consists of approximately 2500 people, with about 900 attending the high school. Most students are bused from the rural community that surrounds the school. Resultantly, there is little opportunity for after-school extra-curricular activities. The program was created in response to this reality; otherwise, these types of experiences would not be available.

The integrated nature of the ESP combines traditional academic methods with hands-on, practical outdoor skills. The students spend approximately 75% of their school day immersed in the local outdoors settings outside of the classroom. John believes that “the natural learning setting provided through the ESP promotes the students' sense of responsibility to themselves, their classmates, and the environment”. Furthermore, such a pedagogical approach allows for the application of theoretical concepts to different learning activities. These activities include winter and summer camping; cross-country skiing; snowshoeing; tree planting; First Aid and CPR training; hiking and trail maintenance on the Bruce Trail; rock climbing; and a two-week canoe trip to Temagami. These structured learning activities allow the students to learn about topics such as forestry, water quality, leadership, navigation, group dynamics, cooking, and ecology (Idone, 2005).

The organization of the integrated program keeps the same group of students together with John and one other teacher throughout the semester (Russell & Burton, 2000). Generally, the program runs for one semester, but, when demand goes up, the program is also offered in both terms.

Outers at Atikokan

The Outers program, located at Atikokan High School (AHS) in Atikokan, Ontario, is currently being taught by Mike Krassey. Atikokan, the canoeing capital of Canada, is a rural mining and forestry community nestled on the boarder of Quetico Provincial Park. Located approximately 250 km west of Thunder Bay, Atikokan has a population of about 3400, with a school population of approximately 250. The majority of students live in town, minutes away from the school property.

The Outers program, based on Outward Bound philosophies, began in 1965. Originally a locally developed, traditional program, it has recently been re-formatted as an interdisciplinary program. The program combines strands from many different courses in the Ontario curriculum. This one-credit course takes place outside class-time, during lunches, after school, and on weekends. About 95 % of the time is spent outdoors, with minimal time spent indoors preparing, organizing, reflecting, and debriefing.

While Outers was founded on the principles of Outward Bound, it has since evolved in light of over 40 years of experience and thought (Gannon, 2003). "Outers was not developed to be an instructional course about the finer points of wilderness survival and camping, but rather uses the wilderness as a medium to deliver its curriculum aimed at personal growth and the development of skills" (Gannon, 2003, p. 56). This pedagogical approach allows for the application of theoretical concepts to different learning activities. These activities include winter and summer camping; snowshoeing; construction of snow-shelters; First Aid and CPR training; and a 12-day canoe trip through Quetico Provincial Park. These activities allow the students to learn about concepts such as leadership, navigation, group dynamics, cooking, and environmental awareness (Gannon, 2003).

Gannon (2003) believes that "the essence of the Outers program is not physical toughness per se. However, stamina, self-control, and perseverance are necessities" (p. 52). Due to the complex nature of the Outers program, a number of specific expectations have been identified. They fall under the following general headings: self-awareness and personal growth; expedition: planning and environmental awareness; and community involvement. The specific expectations of the program provide an avenue to develop teamwork skills, self-reliance, prudence, service, confidence, initiative, grace under pressure, leadership skills, and outdoor survival skills (Gannon, 2003).

The organization of the Outers program allows for the same group of students to remain together; however, depending on the size of the class, it can be split into multiple brigades. The brigades are usually unisex, relatively small (7–10 people), and supervised by the two teachers as well as other staff members who volunteer to supervise.

Sample

I deliberately selected the program instructors(s) as my sample participants. Best and Kahn (2006) write that

purposeful sampling is often used in quantitative research studies. In case studies... the participants are often selected because they are typical or particularly interesting. Purposeful sampling allows the researcher to select those participants who will provide the richest information, those who are the most interesting, and those who manifest the characteristics of most interest to the researcher. (p. 19)

I have chosen these two participants, Mike Krassey from AHS and John Burton Flesherton, because they are primarily responsible for the programs and have been for some time. Mike has been running the Outers program, which has existed for over forty years, for four years, while John has been running the ESP for nineteen years. These

educators obviously have a rich knowledge of how their program functions, and the instructional, learning, assessment and evaluation practices.

Analysis

I used a blend of three analysis strategies: unique case orientation, inductive analysis and creative synthesis, and holistic perspective (Best & Kahn, 2006) to analyse my data. In a unique case orientation

each case is unique and must be treated accordingly. The researcher's background and perspective on the case also adds to the unique quality of the data...as a result, what the reader will know about the case depends on the data collected and the perspective of the researcher. In order to do a complete, high quality case study, the researcher needs to describe the case in complete depth and detail, both holistically and in context. (p. 252)

Using inductive analysis has allowed me "to explore the data without [forming] prior hypotheses[;]...it [has allowed me] to discover reality without having to fit it into a preconceived theoretical perspective" (p. 252). The holistic perspective has allowed me to analyse the phenomenon under study "as a complex system that is more than the sum of its parts" (p. 250). It has also allowed me to focus on "complex interdependencies and system dynamics that cannot meaningfully be reduced to a few discrete variables and linear cause and effect relationships" (p. 250).

From my conversational interviews with Mike and John I made notes concerning various facets of the program ranging from teaching philosophies to assessment and evaluation strategies. I recorded this data in various formats depending on its relevance to my thesis. Some information was in point form and some was recorded as verbatim quotes. From the questionnaire I received various documents pertaining to multiple facets of the program including assessment documents such as rubrics. From my preliminary conversations with the Mike and John I was able to form the major themes prior to

receiving the responses to my questionnaire. Thus most of the coding was done ahead of time. For instance, Appendix I contains the “Behaviour Rubric” provided by John. This document assesses affective components of learning. From my discussions with both Mike and John, they had both indicated that assessing above and beyond the criteria mandated by the Ontario Ministry of Education was common-place. Thus, even before I had received any documents pertaining to my questionnaire I was able to foresee that my thesis would include a component dedicated to the affective domain.

Ethical Considerations

I obtained informed written consent from all participants in this research study. The introductory cover letter and consent form can be found in Appendices G and H. These documents fully explained my role as a researcher, as well as the nature of the fieldwork to all participants. The participants understand that there were no risks involved in this study. Participation in this study was completely voluntary, and participants had the right to withdraw at any time. I did not ask for anonymity or confidentiality as the two programs are fairly well known and the teachers wanted to share their knowledge and information about their program publicly. All data collection from this study will, in accordance with ethical guidelines of Lakehead University, be stored for five years at Lakehead.

Chapter 4: Results

ESP

Description

The Environmental Studies Program at Grey Highlands Secondary School offers senior students a unique opportunity to enhance their academic learning by moving beyond the traditional classroom and incorporating regular field trip learning experiences into the curriculum. The overall philosophy behind this program is this: “I hear and I forget, I see and I remember, I do and I understand” (Appendices G and H). Students have an opportunity to develop an understanding of how natural and human systems interact by taking part in clean-up and stewardship projects in the local community, orchestrating activity days for local elementary school students, and by participating in various wilderness excursions. During these excursions, students have an opportunity to practice skills developed throughout the course and to further their knowledge and appreciation of natural systems. The ESP course operates from the premise that students learn best when they are engaged in a variety of ways of learning.

The ESP has recently been reformatted as “A Specialist High Skills Major” (SHSM), a new program implemented by the Ontario Ministry of Education. A SHSM is a type of Ministry-approved specialized education program that allows students to focus on knowledge and skills that are of particular importance in certain economic sectors, and to obtain certifications recognized in those sectors, as they work toward meeting the requirements for an Ontario Secondary School Diploma (OSSD).

The ESP is made up of a Coop and the three courses listed below in one semester. Each of these courses qualify towards the requirements for the Environmental High Skills Major: CGR4M/E: Environmental and Resource Management; PAD 4O: Outdoor and Physical Education; CGF 3M or CGT 3E: Geography; SNC 3M/E: Environmental Sciences.

Assessment and evaluation: Tasks, techniques, methods, and criteria

Course assessment has been divided into two major parts as mandated by the Ontario Ministry of Education. Course work is worth 70% of the student's final grade while the culminating task is worth 30% (Ontario Ministry of Education, 2000b). In order to satisfy ministry requirements, ESP employs the Ministry assessment categories: Knowledge and Understanding, Thinking and Inquiry, Communication, and Application. In addition, John has created locally developed assessment criteria to complement locally developed learning tasks specific to the ESP. The locally developed assessment criteria are used in addition to the assessment categories provided by the Ministry of Education to assess knowledge, skills, and attitudes that might otherwise be overlooked.

To assess desired educational objectives, the "Assignment Rubric" (Appendix I) uses Ministry-derived criteria: Knowledge and Understanding, Thinking and Inquiry, Application, and Communication; furthermore, John has added two ESP specific assessment categories, Work Habits and Presentation, to assist in assessing the full scope of learning occurring. The final grade is based on continuous assessment and evaluation conducted throughout the course in addition to the culminating activity. Marks are reflections of both the most consistent and most recent performances. The following two rubrics have been taken and modified from the originals (Appendix I) to illustrate the

blending between mandated Ministry assessment criteria and locally developed assessment criteria.

Category	Level 4	Level 3	Level 2	Level 1
Communication	<ul style="list-style-type: none"> -communicates with a high level of effectiveness -assignment contains no spelling or grammatical errors -assignment complete with additional information -work very neatly handwritten or typed -assignment very organized 	<ul style="list-style-type: none"> -communicates effectively -assignment contains very few spelling or grammatical errors -assignment complete -assignment neatly hand written or typed -assignment organized 	<ul style="list-style-type: none"> -communicates with some effectiveness -assignment contains some spelling/grammatical errors -assignment almost complete -assignment handwritten or typed -assignment shows some organization 	<ul style="list-style-type: none"> -communicates with limited effectiveness -assignment contains many spelling/grammatical errors -assignment incomplete -assignment handwritten or typed poorly -assignment poorly organized
Knowledge and Understanding	<ul style="list-style-type: none"> -demonstrates thorough knowledge and understanding of facts and concepts -consistently uses terminology appropriately -demonstrates considerable depth and understanding of subject matter 	<ul style="list-style-type: none"> -demonstrates knowledge and understanding of facts and concepts - uses terminology appropriately -demonstrates depth and understanding of subject matter 	<ul style="list-style-type: none"> -demonstrates some knowledge and understanding of facts and concepts -sometimes uses terminology appropriately -demonstrates some depth and understanding of subject matter 	<ul style="list-style-type: none"> -demonstrates little knowledge and understanding of facts and concepts -sometimes uses terminology appropriately -demonstrates some depth and understanding of subject matter
Thinking and Inquiry	<ul style="list-style-type: none"> -demonstrates an in depth analysis of subject matter -clearly identifies key points and concerns in considerable detail -includes additional resources to enhance overall understanding -includes excessive references 	<ul style="list-style-type: none"> -demonstrates an analysis of subject matter -identifies key points and concerns -includes references 	<ul style="list-style-type: none"> -demonstrates some analysis of subject matter -identifies some key points and concerns -includes some references 	<ul style="list-style-type: none"> -demonstrates little analysis of subject matter -identifies a few key points and concerns -includes no references
Application	<ul style="list-style-type: none"> -able to make many connections between assignment subject matter and the real world -identifies several short and long term impacts in detail 	<ul style="list-style-type: none"> -able to make connections between assignment subject matter and the real world -identifies short and long term impacts in detail 	<ul style="list-style-type: none"> -able to make some connections between assignment subject matter and the real world -identifies some short and long term impacts in detail 	<ul style="list-style-type: none"> -does not make any connections between assignment subject matter and the real world -no short and long term impacts identified
Work Habits	<ul style="list-style-type: none"> -assignment is handed in early -always uses class time effectively 	<ul style="list-style-type: none"> -assignment is handed in by specified date -usually uses classroom time effectively 	<ul style="list-style-type: none"> -assignment is handed in one day late -sometimes uses classroom time effectively 	<ul style="list-style-type: none"> -assignment is handed in late by more than one day -rarely uses classroom time effectively
Presentation (Public speaking skills: clarity of voice, eye contact, comfort level)	<ul style="list-style-type: none"> -provides a comprehensive summary of their topic -does not rely on notes -engages class through their presentation -able to answer all questions -demonstrates a complete understanding of the topic -excellent public speaking skills 	<ul style="list-style-type: none"> -provides a good summary of their topic -uses notes occasionally -often engages class in presentation -able to answer most questions -demonstrates an understanding of the topic -good public speaking skills 	<ul style="list-style-type: none"> -provides some summary of their topic -uses notes frequently -sometimes engages class in presentation -answers some questions -demonstrates some understanding of the topic -fair public speaking skills 	<ul style="list-style-type: none"> -provides a limited summary of their topic -reads from notes -does not engage class in presentation -unable to answer all questions -demonstrates little understanding of the topic -poor public speaking skills

Table 5: Modified version of Assignment Rubric.

The second rubric labeled "Behaviour Rubric" (below) has been taken and modified from Appendix I. The "Behavioural Rubric" as employed by John assesses behaviours normally associated with the affective domain. This explicit document illustrates the importance John places on these attributes. The assessment categories (Attitude, Leadership, Respect, Commitment, and Effort) are not categories that would directly, or

indirectly, be assessed by mainstream programs in Ontario. These assessment categories have been developed in response to locally developed learning and assessment tasks.

	Level 1	Level 2	Level 3	Level 4
Attitude positive attitude peer interaction follows instructions	a)rarely has a positive attitude towards the class (pessimistic) b)rarely takes part in activities c)rarely interacts positively with peers(anti-social) d)rarely able to follow instructions	a)attitude towards the class varies from day to day b)sometimes takes part in activities c)sometimes interacts positively with peers (semi-social) d)sometimes able to follow instructions	a)usually has a positive attitude b)usually takes part in activities c)usually interacts positively with peers (sociable) d)usually able to follow instructions	a)consistently has a positive attitude and motivates others (optimistic) b)consistently takes part in activities (enthusiastic) c)consistently interacts positively with peers (very-sociable) d)consistently able to follow instructions
Leadership gets along with peers shows initiative encourages others selfish/not selfish	a)rarely gets along with group and b)demonstrates no leadership (appears not to care about the group) c)rarely shows initiative rarely encourages peers (motivates others) d)rarely puts the needs of others or the group first (selfish)	a)sometimes gets along with group but demonstrates limited leadership b)sometimes shows initiative c)sometimes encourages peers (motivates others) d)sometimes puts the needs of others or the group first (semi-selfish)	a)usually gets along with group and helps lead b)usually shows initiative c)usually encourages peers (motivates others) d)usually puts the needs of others of the group first (not selfish)	a)consistently gets along with group and helps lead b)consistently shows initiative c)consistently encourages peers (motivates others) d)consistently puts the needs of others or the group first (not-selfish)
Respect shows regard to others shows respect for others	a)shows no regard for the feelings, rights, or perspective of others b)rarely shows respect in both verbal and non-verbal communication (tone of voice, body language, very disrespectful) c)always needs to be encouraged to show respect	a)shows little regard for the feelings, rights, or perspectives of others b)sometimes shows respect in both verbal and non-verbal communication (tone of voice, body language, somewhat disrespectful) c)sometimes needs to be encouraged to show respect	a)usually shows regard for the feelings, rights and perspectives of others b)usually shows respect in both verbal and non-verbal communication (tone of voice, body language) c)rarely needs to be encouraged to show respect	a) consistently shows a high regard for the feelings, rights, perspectives of others b)consistently shows respect in both verbal and non-verbal communication (tone of voice, body language) c)never needs to be encouraged to show respect
Commitment shows initiative focused work completed on time attendance participation	a)shows little or no initiative to improve fitness level b)rarely pays attention in class c)assignments are rarely handed in on time d)attendance is inconsistent (has missed several days) e)rarely active in class activities and discussions	a)shows some initiative to improve fitness b)sometimes pays attention in class c)assignments sometimes handed in on time d)attendance is somewhat consistent (has missed on a few days) e)sometimes active in class activities and discussion	a)usually shows initiative to improve fitness levels b)usually pays attention in class c)assignments are always handed in on time d)attendance is consistent (has only missed one or part of one day) e)active in all class activities and discussions	a)shows outstanding dedication and initiative to improve fitness level b)consistently pays attention in class c)assignments are handed in early d)attendance is consistent (has missed no days) e)extremely active in all class activities and discussions
Effort cooperation task completion helping others quality of work	a)no attempt to cooperate or participate b)rarely attempts to complete tasks c)rarely helps others even when asked d)quality of work is poor	a)little attempt to cooperate or participate b)sometimes attempts to complete tasks c)occasionally helps others when asked d)quality of work varies	a)actively cooperates and participates b)always completes required tasks c)usually helps others when needed without being asked d)quality of work always meets expectations	a)consistently cooperates and participates as well as taking on leadership roles b)exceeds expectations of required tasks c)consistently helps others without being asked d)quality of work always exceeds expectations

Table 6: Modified version of Behavioural Rubric.

The methods used to assess the locally developed learning tasks include response journal, question and answer (oral), observation, performance task, and exhibition/demonstration. The following table, modified from the document "ESP CGR 4MI Culminating Activity" (Appendix G), outlines the methods of assessment employed with examples.

Method of Assessment	Example	Type of Assessment
Writing Tasks	Journal Writing	Formative and Summative
Question and Answer	Paper and Pencil tests	Formative and Summative
Observation	Observing communication skills, attitude, leadership skills and no trace camping etiquette	Formative and Summative
Performance Task	Student presentations outlining how non-governmental organizations have been instrumental in preserving forest in the Temagami region. This follows a day hike in the area.	Formative and Summative
Exhibition/Demonstration	Students guide the class for one full day by using navigation techniques developed in class. Students are responsible for communicating the route and important locations along the way to the rest of their group.	Formative and Summative

Table 7: Method of assessment used in ESP with examples.

The final culminating activity, worth 30% of the student's final mark, is a 12-day canoe trip that allows students to demonstrate their knowledge, skills, and "philosophical shift" accrued over the course of the semester.

The final grade is derived from course work worth 70% and the culminating task worth 30%. It is important to note that the examples outlined in Table 7 are not a comprehensive list of all activities that are assessed throughout the semester. There are a variety of activities each given a specific weight towards the final mark. The weight of each is left to the instructor's discretion.

Outers

Description

Outers is a one-credit course offered as an interdisciplinary credit. Historically, it was offered as a locally developed course, but it has recently been reformatted as an interdisciplinary course to circumvent the laborious renewal process that locally developed courses must undergo (Krassey, personal comment, 2008). Now reformatted as an interdisciplinary program, the program employs these strands: Theory and Foundation, Process and Methods of Research, Implementation, Evaluation, Impacts and Consequences (Ontario Ministry of Education, 2000b). The specific expectations assessed through these strands are viewed through the lens of Leadership: Leadership Styles, Leadership Skills, Teamwork Skills (PLF4C: Recreation and Fitness Leadership), Living Skills: Conflict Resolution, Decision Making, Social Skills (PPZ30: Health for Life); Stress Management, Decision Making, Social Skills (PPL30: Healthy Active Living Education) Fitness and Well Being: Injury Prevention & First Aid (PLF4C: Recreation and Fitness Leadership), and Additional Outers Specific Strands.

It is not common practice to include additional strands; however, the complex nature of the Outers program demands it. A number of specific expectations identified within these 'Outers' strands could possibly be assessed within the Interdisciplinary strands, but for clarity purposes they are included in separate strands. (Gannon, 2003, p. 58-59)

The table below outlines the three additional Outers stands with descriptors. The descriptors form the basis for Outers' locally developed assessment criteria.

Additional Outers Specific Stand	Descriptors
Self-Awareness and Personal Growth	<ul style="list-style-type: none"> -demonstrate a better understanding and appreciation of their own physical and mental limitations -improve self-esteem through the successful completion of specific tasks they become responsible for within their brigade -become more self-reliant as a result of being accountable for their own/brigade decisions and accepting the consequences which result -develop and improve initiative from experiences through Outers, particularly from those experiences on their three day Solo -develop "grace under pressure" - a natural metamorphosis resulting from a better understanding of self-limitations and increased self-confidence -increase maturity level as a result of being responsible and accountable for oneself, the brigade, and all of the decisions/actions taken -apply common sense and experience in decision-making -develop and promote an attitude of prudence -develop and demonstrate an ability to recognise and support when peers are in need of assistance (demonstrate empathy, not just sympathy)
Expedition: Planning and Environmental Awareness	<ul style="list-style-type: none"> -effectively communicate information about the action plan to all members and parents -evaluation the effectiveness of the action plan and make improvements where and when required -organize and coordinate the management of all equipment necessary for completion of each expedition (includes equipment necessary for completion of each expedition (includes equipment care, storage, repair) -develop an awareness and respect for the environment -demonstrate an understanding of the need for the preservation of wilderness parks -show respect for other users of wilderness parks -demonstrate and apply the skills necessary to minimize their impact on the wilderness parks areas (e.g. use of biodegradable soaps, clean camps, bury waste, no noise pollution), etc. -demonstrate the ability to use a compass effectively to navigate through a wide variety of terrain and environmental conditions (e.g. lake travel, bush traverses, deep snow, varying topography, river systems, light and dark), etc. -develop a respect for the potential power and force certain weather systems can have on an individual's well-being -understand and apply strategies to overcome/work through extreme weather conditions (e.g. high winds while travelling in canoes, snowshoeing in frigid temperatures), etc.
Community Involvement	<ul style="list-style-type: none"> -complete 30 hours of approved community service in student's Outers year -demonstrate an understanding of the benefits community involvement brings to others and self -develop an appreciation for other "volunteers" from the community -cultivate a feeling of pride in one's community and a feeling of belonging

Table 8: Additional Outers Specific Strands taken and modified from Gannon (2003)

In addition to specific strands, Outers also has a unique philosophy regarding the role of the student and teacher in the program. Understanding these roles is paramount in forming an understanding of the goals of assessment and evaluation within the program.

Gannon (2003)¹, in his study of these programs, notes that

¹ Gannon's (2003) "A resource for administrators of experiential outdoor education programs" was recommended to me by Mike Krassey as a rich source of information concerning specific details of the Outers program. Gannon, a former instructor of the Outers program, compiled this document in part to legitimize Outers in the current educational climate. It was a critical resource that was used in the transition from a

At the core of the Outers program is the idea that students are expected to make decisions and be accountable for the consequences of these decisions. Within clearly defined safety guidelines, students are encouraged to take initiative, introduce new techniques, and attempt to innovate ideas that at times may break with conventional practices. This is seen through Bill Peruniak's (former AHS Principal and Outers founder) 'Maxims', which state that 'a third rate original solution is worth more than a first-rate hand-me-down.' A wrong decision is not deemed as a failure or shameful, but is an experience and is one of our strongest learning points. Students must be allowed to make mistakes; paddling into the wrong bay or portaging into the wrong lake ingrains a far more lasting impression on the importance of navigation and compass use than staff simply correcting the students before they have had the chance to err. (p. 49)

Assessment and evaluation: Tasks, techniques, methods, and criteria

Course assessment has been divided into two major parts as mandated by the Ontario Ministry of Education. As with ESP, course work is worth 70% of the student's final grade while the culminating task is worth 30% (Ontario Ministry of Education, 2000b). Outers employs the Ministry assessment categories (Knowledge and Understanding, Thinking and Inquiry, Communication, and Application) to satisfy Ministry requirements. Furthermore, Outers utilizes locally developed assessment criteria to complement locally developed assessment and learning tasks specific to Outers. The locally developed assessment criteria are used in addition to the assessment categories provided by the Ministry of Education to assess knowledge, skills, and attitudes that would otherwise be overlooked. The final evaluation is based on continuous assessment conducted throughout the course. Marks are reflections of both the most consistent and most recent performance. The table below illustrates how Outers has harmonized its learning tasks with the Ministry-mandated assessment categories.

locally developed program to an interdisciplinary program. This document continues to form the foundation of the current program.

Assessment Categories	Assessment or Learning Task
<i>Application</i>	-Fall program (four expeditions) -Winter program (five expeditions) -Spring trip (12-day expedition)
<i>Knowledge/Understanding</i>	-Survival swim -T-rescue -First Aid -Safety -Winter survival/safety -Planning/preparation -Map & compass -Equipment care and repair
<i>Communication</i>	-Evaluation meeting before, during and after each trip -Written evaluation at the end of each program -Written evaluation of the solo experience -Year end written evaluation of program -Reflective Journal
<i>Thinking/Inquiry</i>	-Prudent individual & group decision making under stress -Safety -Teamwork -Setting limits
<i>Rich Assessment Task (Culminating activity): 12-Day Spring Trip Expedition (30%)</i>	-Written evaluation -12-day spring trip -Solo experience -Equipment care and return

Table 9: The Ministry mandated assessment categories employed by Outers.

In addition to the assessment categories and tasks outlined above, in order to assess properly the Outers specific strands, a pseudo-Bloom's taxonomy has been implemented as a framework with which to categorize specific learning objectives.

Domain	Assessment Criteria
<i>Physical [psychomotor] domain</i>	-increased strength -cardiovascular fitness -muscular endurance -well-being
<i>Cognitive domain</i>	-knowledge cultivated through the experience itself -safety skills -activity skills
<i>Affective domain</i>	-self-concept (self-confidence, self image, self-enhancement, self-reliance, self-discipline, stress management (challenge), respect for environment, self-esteem, spiritual (meaning, value and purpose of life), emotional (victory, shame, anger, joy, pain, defeat, humility, joy of movement and sense of adventure) -leadership (teamwork, initiative, social skills, compassion, interdependence, problem-solving (decisions, choices, mistakes), service, virtue development, responsibility, kindness and justice

Table 10: Outers derived assessment criteria in response to the Outers specific strands (adapted from Gannon, 2003).

In order to comply with Ministry assessment standards, Outers has integrated its objectives and affective virtues described in the Outers specific strands with the Ministry assessment categories. The rubric below, "Outers Double Overnight Canoe Trip Rubric," is one example of the amalgamation of these two assessment philosophies.

Category	Level 1	Level 2	Level 3	Level 4
Application	The Student:			
Orienteering	-rarely participates in the navigational duties required	-sometimes participates in the navigational duties required	-regularly participates in the navigational duties required	-always participates in the navigational duties required
Paddling	-performs paddling strokes and skills with limited competence	performs paddling strokes and skills with moderate competence	performs paddling strokes and skills with considerable competence	performs paddling strokes and skills with high degree of competence
Portaging	-rarely carries the canoe and struggles with equipment	-sometimes will carry the canoe and shows moderate competence moving with equipment	-regularly carries the canoe and demonstrates considerable competence moving with equipment	-regularly carries the canoe and demonstrates a high degree of competence moving with equipment
Leadership skills	-demonstrates limited leadership skills	-demonstrates moderate leadership skills	-demonstrates effective leadership skills	-demonstrates highly effective leadership skills
Safe use of procedures and equipment	-uses procedures and equipment safely and correctly only with supervision	-uses procedures and equipment safely and correctly with some supervision	-uses procedures and equipment safely and correctly	-demonstrates and promotes the safe and correct use of procedures and equipment
Personal Physical Fitness	-demonstrates a limited level of physical fitness	-demonstrates a moderate level of physical fitness	-demonstrates a considerable level of physical fitness	-demonstrates a high level of physical fitness
Brigade Camp	-completes required tasks (firewood, cooking, dishes, shelters) only when directed to do so	-completes required tasks (firewood, cooking, dishes, shelters) with some supervision	-completes required tasks (firewood, cooking, dishes, shelters)	-identifies and completes required tasks (firewood, cooking, dishes, shelters) without supervision
Communication	The Student:			
Planning & Preparation	-rarely participates in brigade planning meetings	-sometimes participates in brigade planning meetings	-regularly participates in brigade planning meetings	-always participates in brigade planning meetings
Brigade Unity	-rarely contributes to brigade discussions	-sometimes contributes to brigade discussions	-regularly contributes to brigade discussions	-always contributes to brigade discussions
Thinking/Inquiry	The Student:			
Thinking Skills	-rarely considers how various factors work together to contribute to a successful trip (proper meals, sleep, brigade unity)	-sometimes considers how various factors work together to contribute to a successful trip (proper meals, sleep, brigade unity)	-regularly considers how various factors work together to contribute to a successful trip (proper meals, sleep, brigade unity)	-always considers how various factors work together to contribute to a successful trip (proper meals, sleep, brigade unity)
Problem solving	-shows a limited ability to solve problems that occur frequently (damaged equipment, navigation, dilemmas, injury, blown down trees, large waves)	-shows a moderate ability to solve problems that occur frequently (damaged equipment, navigation, dilemmas, injury, blown down trees, large waves)	-shows a considerable ability to solve problems that occur frequently (damaged equipment, navigation, dilemmas, injury, blown down trees, large waves)	-shows an excellent ability to solve problems that occur frequently (damaged equipment, navigation, dilemmas, injury, blown down trees, large waves)

Table 11: Outers Double Overnight Canoe Trip Rubric.

The "Outers Double Overnight Canoe Trip Rubric" assesses behaviours normally associated with the both the psychomotor and affective domain. This document explicitly demonstrates the value that Outers has placed on these attributes. Further, while the assessment categories Application, Communication, and Thinking and Inquiry are assessment categories provided by the Ministry of Education, the sub-headings for these assessment categories such as "Leadership Skills" and "Planning and Preparation" are locally developed assessment criteria derived to assess locally developed assessment and learning tasks. Using an open-ended assessment framework such as a rubric allows these programs to assess a wide range of objectives and attributes while still allowing for diversity and experimentation within the student's answer or performance.

The methods used to assess learning tasks include response journal, question and answer (oral), observation, performance task, and exhibition/demonstration. The following table outlines the methods of assessment employed with examples.

Method of Assessment	Example	Type of Assessment
Writing Tasks	Journal Writing	Formative and Summative
Question and Answer	Safety and First Aid Training	Formative and Summative
Observation	Observing communication skills, attitude, leadership skills and no trace camping etiquette	Formative and Summative
Performance Task	Planning, preparing, and cooking meals. Demonstrating proper paddling techniques.	Formative and Summative
Exhibition/Demonstration	The execution of a well planned trip demonstrating safety, prudence, and leadership.	Formative and Summative

Table 12: Method of assessment used in Outers with examples.

I have also included four additional documents to illustrate the assessment tasks, techniques, methods, and criteria used to assess and evaluate the Outers program. The

fall, winter, and spring evaluations are located in Appendix E. These documents are used as prompts for the students when they are reflecting on their performance in the past season of Outers. These reflections are recorded in the Outers' journal (see Appendix F for guidelines). The use of the journal in Outers is presented in further detail in the discussion section.

The goal of assessment and evaluation with respect to the program

In a conversation, Mike mentioned that the final evaluation for Outers was one of the most contentious issues facing the program. Interestingly, the Outers' program philosophy, which includes the formation of Outers specific strands, a pseudo-Bloom's taxonomy, and various other rich assessment tasks, demonstrates a high level of commitment to assessment and evaluation. One would think, then, that, with such varied and multiple assessments formulating a final grade would not be that difficult. Yet, this one issue – determining the final grade – still causes problems. This ideological challenge is best outlined by Gannon (2003):

Outers is not without evaluation, but has been without grades for [over 40 years]. This was and continues to be an ideological challenge for the Ministry of Education when developing guidelines. Outers has always operated on a pass/fail basis. Successful completion of this difficult program and the testimony of its participants transcends a formal grade. The value and the benefits of this program are very much individual. The goal is not to compare, but to allow a student to look within to determine his/her own strength; the measure is against him/herself. Each student who completes the curriculum of Safety, Service and Expedition and honours the Outers contract has succeeded. For this reason the Outers program has withstood the MET's (Ministry of Education and Training) pressure to allocate grades to individuals as this is contrary to the very philosophy of the program. (p. 15)

Providing a two-digit numerical grade to represent the hardships endured and successes achieved throughout the year is antithetical to the Outers' philosophy. In the following

section, I discuss the schism between the Ministry of Education's mandated assessment practices and the assessment philosophies of the Outers and ESP programs.

Chapter 5: Discussion and Conclusion

In the traditional classroom, the degree of responsibility given to students is often minimal. Students are responsible only in the sense that they are expected to complete tasks assigned by the teacher in the way the teacher has indicated. They are solo learners and performers responsive only to one adult, and are infrequently responsible to other students (Sarason, 1990). The opposite is true for the Outers and ESP frameworks. The objectives of these programs include exposing the students to real-world problems and “learning-by-doing” activities, enabling students to reflect on their own learning by means of a journal, encouraging critical thinking, and fostering collaborative learning and social interactions among students, instructors, parents, and community. In these frameworks, assessments and evaluations are incorporated in a manner that constitutes a natural extension of the learning process. This philosophy of assessment is, in part, possible due to the development and implementation of locally developed, holistic assessment tasks and criteria.

In the following section, I present the assessment frameworks used by Outers and ESP, and compare them to the interdisciplinary assessment frameworks previously discussed in the literature review. After this comparative analysis, I discuss various assessment and evaluation challenges and opportunities that face these programs.

Assessment and evaluation: Tasks, techniques, methods, and criteria

In the section concerning assessment and evaluation in interdisciplinary and integrated programs, Kozolanka (1995) describes three characteristics that he believes should comprise student evaluations for integrated programs. He believes that evaluations should be locally grown whenever possible, that whatever means of assessment which are

developed should be perceived as intrinsically worthwhile, and that evaluations of students should centre around an examination of the nature of student participation and membership in broad contexts – such as the community in which they might be working or studying. In the program he studied, the students'

perceived engagement or lack of engagement was a multifaceted phenomena which did not respond well to traditional behavioural attempts at evaluation...it represents a common dilemma found in integrated programs – that finding ways of evaluating students without falling into the trap of using methods which may not be appropriate to the nature of these programs. (p. 29)

Rather than preaching conformity to dogmatic objectives, Kozolanka's approach places the onus on the instructor and the student to construct assessment that is situationally significant and intrinsically worthwhile.

Likewise, both Outers and ESP have adopted philosophies of assessment and evaluation very similar to that proposed by Kozolanka. Although both Outers and the ESP have conformed to Ministry curriculum and assessment guidelines, given that they are operating within the Ontario secondary school system, the additional assessment tasks, techniques, methods, and criteria which they have developed remain true to each program's philosophy. Multiple examples from each program illustrate the use of locally developed and intrinsically worthwhile assessment. For instance, Outers has developed Outers specific stands (Table 8), and the ESP uses rubrics that assess affective attributes (Appendix I).

Drake's (1992) model of assessment stresses the use of performance-based assessments rather than reliance on paper and pencil tests to evaluate student learning. She notes that most learning outcomes are qualitative by nature rather than quantitative and that continual feedback to students is critical for their growth. Inextricably linked to

qualitative assessment measures is the use of observation as the key method of assessing student performance. "We find out more by observing students in progress than perhaps any other way" (p. 60). Tied to observational assessments is the use of rating scales, checklists, rubrics, and participation charts as tools for recording students' behaviours, levels of achievement, and progress. Drake suggests that the qualitative data that are observed could be recorded in a teacher's journal. Notes concerning behaviour, performance, and attitudes could be maintained and, over time, could be used for both formative and summative evaluations.

Outers and ESP both rely heavily on observation for the assessment and evaluation of their learning and assessment tasks. For example, it is common practice during Outers expeditions to gather at multiple times to go over daily plans, review safety concerns, specific expectations, and allow for staff and student feedback. These ongoing, non-formal, formative assessments are extremely beneficial as they provide students with immediate input regarding their performance (Krassey, personal comment, 2008; Gannon, 2003). Further, following every expedition, a formal evaluation meeting is conducted with the trip leader. These meetings allow each brigade to discuss and assess various aspects of their trip. The meetings are guided by a prepared agenda which includes the following components: Planning and Preparation, Navigation, Travel, Safety/Prudence, Brigade Unity, and a category labelled "Other." Emphasis is put on "what works," "what does not work," and "suggestions for improvement." Brigades are encouraged to learn not only from their own experiences, but also from the experiences of others (Krassey, personal comment, 2008; Gannon, 2003).

One particular assessment method that is used for both formative and summative purposes is the journal. Both Outers and ESP use the journal as a forum for reflection. In a discussion with the researcher, Mike, indicated that the journal was not assigned a specific grade per se, but was read, commented on, and used *as a part* of the evaluative process. The primary purpose of these journals is to provide students with an opportunity for reflection and personal growth. In this case, the journal is used as an instrument for the assessment of affective growth (Appendix F). Students are encouraged to reflect on issues ranging from conflicts and overcoming challenges to funny or interesting occurrences. Although it is written, there is no grading given to spelling, grammar, or other "cognitive" functions. As Gannon (2003) attests,

many students may not be able to articulate their 'solo experience', and the impact may not be realized immediately; it may take years. However, the purifying effects of solitude have been recognised throughout the ages by many different cultures, as part of puberty rites, religious training and meditation. (p. 53)

Valuing affective growth as much, or in some instances more, than cognitive growth is a common thread linking these programs.

This reverence towards affective attributes may also be observed through the analysis of activities and rubrics from the ESP. From my discussions with John and from a detailed review of the descriptions of activities outlined in the document "ESP CGR 4MI Culminating Activity" (Appendix G), it was possible to grasp implicit philosophies valued by this program. To illustrate, the following quote has been taken from John's description of one activity.

Through their experience, students were encouraged to *develop an appreciation* for the natural world and through this appreciation develop a sense of *responsibility* and *stewardship*. Through their *actions* students promoted a leave no trace camp *etiquette* whereby the areas that we visited were left in the same or

better a state than when we arrived...through campsite and portage clean ups, students *became active stewards* of this natural area. (italics added)

In addition to the description of activities, assessment documents such as "The Behavioural Rubric" (Appendix I) explicitly promotes the philosophical transition described in the quote above. To summarize briefly, the rubric takes into account the attitude of the students towards the program, the environment (natural surrounding), other students, and themselves. Revered behaviours include those such as leadership (taking on leadership roles), peer interaction (including helping others in class activities), initiative, respect, justice (rights of others), attendance, completing work on time, and participating in class activities.

As was discussed in the literature review, Bloom's taxonomy of the affective domain deals almost exclusively with the level of acceptance or integration of a given philosophy, or value, as one's own. Along Bloom's affective continuum, the student begins with an "interest" which then progresses to "worth, relevance" and concludes with "act, influence, display, solve and practice" (Krathwohl, Bloom & Masia, 1964).

Although John may not use exactly the same language as Bloom, the transition from deeming something "worthy" to "acting" on something is comparable to "shows no regard for the feelings, rights, or perspective of others" to "consistently shows a high regard for the feelings, rights, perspectives of others."

Indeed, all three of Bloom's taxonomical domains can be identified in John's description of his culminating activities (Appendix G), yet what can also be observed are activities that employ assessment criteria that transcend Bloom's taxonomy (Appendix I). While cognitive functions are still revered, there is a sense that moving beyond the cognitive domain is also critical in one's educational journey. Students are encouraged to

become critically aware of the role that their knowledge *and* actions play in their philosophical development. For instance, "as a function of the way that information was delivered throughout the semester, the culminating 12-day canoe trip allowed students to demonstrate their knowledge and philosophical shift"; also, "students demonstrated an increased self-confidence and self-awareness as well as a sense of community with their peers"; further, "students were encouraged to develop new practices that were environmentally sound and inform their groups about their thoughts." This underlying philosophy creates a culture of learning founded on ethical, moral, and character development.

I have outlined affective objectives that both Outers and ESP use for their locally developed assessment criteria. These include the following constructs:

- **self-concept:** self-confidence, self image, self-enhancement, self-reliance, self-discipline, stress management [challenge], respect for the environment, self-esteem, spirituality [meaning, value and purpose of life], emotional [victory, shame, anger, joy, pain, defeat, humility, joy of movement, and sense of adventure];
- **leadership:** teamwork, initiative, social skills, compassion, interdependence, problem-solving [decisions, choices, mistakes], service, motivation, self/non-selfish;
- **virtue development:** responsibility, kindness, justice;
- **attitude:** optimism, enthusiasm, sociability, follows instructions;
- **commitment:** initiative, focused, completion of work on time, attendance, participation;

- **effort:** cooperation, task completion, helping others, quality of work.

As indicated by the curriculum document concerning interdisciplinary programs (Ontario Ministry of Education, 2000b), it is imperative for students to explore a variety of topics, develop skills, and solve problems to prepare for a changing world. Mike's and John's inclusion and subsequent assessment of the above attributes, which have been grouped together under the heading of "affective attributes" or "affective objectives," provides the foundation for moral and character development that is crucial to being ethical and successful. Assessing beyond the cognitive domain allows students to become aware of the relationship between their attitudes and abilities and success. Consequently, valuing and assessing affective growth may encourage students to choose new areas for personal study and to become independent, life-long learners who have learned not only how to learn but also how to assess and value their own thinking, imagination, perseverance and ingenuity in decision-making situations.

Interdisciplinary and integrated programs are intended to reflect the linkages and interdependencies among subjects, disciplines, and courses and their attendant concepts, skills, and applications (Ontario Ministry of Education, 2000b). Both Outers and ESP use locally developed assessment criteria and locally developed assessment and learning tasks that go beyond the cognitive domain as a means to unite the various interdisciplinary strands. While Ministry assessment categories are still employed, subject-specific assessments categories and indicators have also been adopted to assess individual subject-specific knowledge, skills, and attributes. This synthesis can be seen in examples such as the ESP Assignment Rubric (Appendix I) and the Outers Double Overnight Canoe Trip Rubric (Table 11). While each strand from each course integrated

can be observed in some fashion in the learning and assessment tasks, overall and specific objectives are never assessed in isolation. Each strand integrated is part of a complex weave that makes up the specific locally developed interdisciplinary or integrated program.

Assessment and Evaluation: Opportunities and Challenges

When I concluded my review of the authentic assessment literature, I hypothesized that in order to properly assess the knowledge, skills, and attitudes that are presented by outdoor, experiential, environmentally-focused integrated and interdisciplinary programs an appropriate assessment framework would have to be employed. I hypothesized that most integrated and interdisciplinary programs would have adopted varying forms of authentic assessment to reflect the cognitive, affective, and psychomotor components of learning. Interestingly, this is what indeed I found, but not in the way I imagined. When I was analysing the explicit assessment documents, tasks and criteria outlined by the Outers and ESP program, it became apparent that they had adopted a pseudo-authentic assessment style to conform to Ministry guidelines while simultaneously remaining true to the goals of each program.

Both Outers and ESP have implemented pedagogical and epistemological processes that have allowed for the incorporation of objectives that include, and go beyond, those historically associated with the cognitive, psychomotor and affective domains outlined by Bloom (1956). Appropriately, they have implemented locally developed assessment frameworks in order to assess these locally developed objectives. Because of local modifications and unique educational philosophies, a range of opportunities and challenges have presented themselves.

The biggest challenge described by both ESP and Outers was conforming to dogmatic Ministry requirements contained in both the curriculum documents and assessment documents. As previously mentioned, both Outers and the ESP have recently restructured their programs to conform to new government initiatives, so that Outers is now an interdisciplinary program and the ESP is now a High Skills Major. As can be seen in these cases, the curriculum document is a post-course fabrication; consequently, issues relating to conformity are expected (Burton, personal comment, 2009; Krassey, personal comment, 2008). Not surprisingly, as a result of the locally developed objectives that transcend Ministry requirements, both programs are experiencing difficulties conforming to the Ministry's Assessment document. In Bloom, Madaus, and Hastings' (1981) "Evaluation to improve learning," they observed that "when teachers disregard affective outcomes in the evaluation process, they are apt to disregard them unintentionally in the instructional process" (p. 300). Although Outers "uses" Ministry's guidelines for assessment, the fact that its instructors have taken the time to typify the "true" objectives into an aggrandized version of Bloom's taxonomy speaks volumes to the nature of the breadth and depth of learning occurring as well as the value they place on affective objectives. I employ the term "uses" here loosely because it is fairly obvious that using an assessment framework with Knowledge/Understanding, Thinking/Inquiry, Communication, and Application as the sole measures for learning goes directly against the Outers philosophy.

Through the continued use of traditional assessment criteria, the Ontario Ministry of Education is perpetuating Cartesian thinking prevalent in modern epistemology and pedagogy. Conforming to reduced assessment criteria, derived from a limited

interpretation of Bloom's taxonomy of the cognitive domain, is one of the greatest assessment challenges these programs face. For instance, the link between assessment and the final evaluation in Ontario is a two-digit numerical grade supplied as a final summary of student learning. In the case of Outers, this obligation to represent learning in a reduced format goes directly against its philosophy. Mike does not believe that the link between formative and summative assessments performed throughout the year and the two-digit numerical final grade is an adequate representation of the hardships endured throughout the year (Krassey, personal comment, 2008).

The limiting nature of the curriculum and assessment documents, intended to be helpful resources for educators, is actually impeding and devaluing the objectives of these programs. No wonder programs such as Outers and ESP have trouble fitting into the mainstream assessment framework when a huge component of the program focuses on affective and psychomotor components that fall outside the Ministry's assessment categories. Even though these programs have to "pigeon hole" (Krassey, personal comment, 2008) their assessment with the Ministry's categories to some extent, both Outers and ESP have each created an appropriate, locally developed assessment framework that includes expanded versions of the affective and psychomotor domains. Therefore, when learning goes beyond cognitive objectives, as it frequently does in these programs, there is a framework for assessing and thus *valuing* those educational components. In the current educative framework perpetuated by epistemic reduction, it is difficult for educators to revere and cultivate diverse knowledge, skills, and attitudes critical to meet an unknown future while ascribing to a reduced, compartmentalized interpretation of learning.

Conclusion

The purpose of this investigation was to analyze the assessment practices used in outdoor, experiential, environmentally focused integrated and interdisciplinary programs. The topic questions that were of interest included the following: the specific assessment techniques, methods, tasks and criteria employed; whether a reverence towards traditional and progressive assessment paradigms existed; the comparison of assessment methods to those discussed in the literature; whether evaluations fit discipline-based expectations or the basis of integration; specific assessment and evaluation challenges and opportunities; and the link between formative assessments and the final evaluation. In order to compile relevant data, I used two integrated/interdisciplinary programs as case studies: the interdisciplinary Outers program at Atikokan High School in Atikokan, Ontario, and the integrated Environmental Studies Program (ESP) at Grey Highlands Secondary School in Flesherton, Ontario.

In the outdoor, experiential, environmentally-focused interdisciplinary/integrated programs studied, Outers and ESP, learning takes place in a variety of settings. Some learning occurs in the classroom; however, emphasis is placed on applying learnt concepts to novel situations outside of the walls of the classroom. Assessments are frequent and continuous, and come from a variety of sources. Methods of assessment are typically performance-based, and students are encouraged to experiment and work with each other in creative ways to overcome various physical and mental obstacles. As a result of the diverse and varied learning that occurs within these programs, assessment techniques such as rubrics have been designed to include locally developed assessment criteria and program-specific expectations.

While Outers and ESP have abided by the Ministry's mandated assessment categories, the inclusion of locally developed assessment criteria and program-specific expectations has allowed for these programs to model and value educational objectives beyond those typically associated with the cognitive domain. Instructors have created an appropriate, locally developed assessment framework that works for each specific locally developed interdisciplinary/integrated program. In both cases, the assessment frameworks have included expanded versions of the affective and psychomotor domains. Therefore, when learning goes beyond cognitive objectives, as it frequently does in these programs, there is a framework for assessing and thus *valuing* those educational components. This has been a philosophical challenge for these programs, but it has also provided an opportunity to allow students to reflect and values objectives and attributes outside of the cognitive domain.

“There is a central paradox in schooling that I assume is paramount to such programs. Educators must consider whether they are bent on preserving the status quo or challenging it for change” (Bob Henderson, personal comment, 2009). Following the lead from Outers and ESP, I believe that the next step for the modern progressive assessment paradigm is an expansion on educational objectives specially relating to the affective domain. This expansion will provide the foundation for the development of an assessment framework that will assist educators in appreciating and valuing the full breath and depth of learning occurring in experiential-type programs. I feel that there is potential for the expansion of both the affective and psychomotor domains; however, the greater potential lies with the former. For instance, affective objectives which have potential for expansion are self-concept, leadership, virtue development, attitude, commitment, and effort. I

believe that the expansion of our current assessment framework will assist educators in formulating the following:

- holistic, valid assessment frameworks;
- assessment to match curricular objectives;
- assessment to match student growth;
- character-based assessment paradigms.

Furthermore, I foresee the potential for transferability to other areas where assessment and evaluation frameworks fall short of desired curricular objectives, for instance, in physical education. Participating in outdoor and experiential education is physically active by nature; however, like outdoor and experiential education, participation in sport goes beyond the physical realm. It also includes healthy, active living through the development of social and personal attributes. Thus, I believe that through the analysis and expansion of our current assessment framework there is the potential to influence the fundamental values of our assessments in the modern educative framework. I believe that this paradigm shift will not only increase the effectiveness of our teaching practices, but will also improve the mental, physical, and social well being of our students.

References

- Barrett, M. J. (2002). Interdisciplinary studies curriculum update. *Pathways: Ontario Journal of Outdoor Education*, 14 (4), 5.
- Best, J. W., & Kahn, J. V. (2006). *Research in education (10th ed.)*. Boston, MA: Pearson.
- Biggs, J. (1999). *Teaching for quality learning at university*. Buckingham, UK: The Society for Research into Higher Education & Open University Press.
- Birenbaum, M., & Dochy, F. J. R. C. (1996). *Alternatives in assessment of achievements: Learning processes and prior knowledge*. Boston, MA: Kluwer.
- Bloom, B. S., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals, by a committee of college and university examiners. Handbook I: Cognitive domain*. New York: Longmans, Green.
- Bloom, B.S., Madaus, G.F., Hastings, J.T. (1981). *Evaluation to improve learning*. New York: McGraw-Hill.
- Blumenfeld, P. C., Marx, R. W., Soloway, E., & Krajcik, J. (1996). Learning with peers: From small group cooperation to collaborative communities. *Educational Researcher*, 25(8), 37-40.
- Bogdan, R. C., & Biklen, S. K. (2003). *Qualitative research in education*. Boston, MA: Allyn and Bacon.
- Bogdan, R. C. & Taylor S. J. (1975) *Introduction to qualitative research methods: A phenomenological approach to the social sciences*. New York: Wiley.
- Bransford, J. D., & Vye, N.J. (1989). A perspective on cognitive research and its implications for instruction. In L.B. Resnick & L.E. Klopfer (Eds.), *Towards the thinking curriculum: Current cognitive research* (pp. 173–205). Alexandria, VA: Association for Supervision and Curriculum Development.
- Cameron, C., Tate, B., Macnaughton, D., & Politano, C. (1998). *Recognition without rewards*. Winnipeg: Peguis.
- Cheney, J. & Weston, A. (1999). Environmental ethics as environmental etiquette: Towards an ethics-based epistemology. *Environmental Ethics*, 21(2), 115-134.
- Cheung, D., Hattie, J., Bucat, R., & Douglas, G. (1996). Measuring the degree of implementation of school-based assessment schemes for practical science. *Research in Science Education*, 26(4), 375-389.

- Chapman, A. (1999). Bloom's taxonomy—learning domains. Retrieved March 7, 2008, from Businessballs.com Web site:
<http://www.businessballs.com/bloomstaxonomyoflearningdomains.htm>
- Clark, B. (1986). *Optimizing learning*. Columbus, OH: Merrill.
- Comishin, K., Dymont, J. E., Potter, T. G. & Russell, C. L. (2004). The development and implementation of outdoor-based secondary school integrated programs. *Applied Environmental Education and Communications*, 3, 47-53.
- Cunningham, J. W., & Fitzgerald, J. (1996). Epistemology and reading. *Reading Research Quarterly*, 31(1), 36-60.
- Curthoys, L.P. (2007). Finding a place of one's own: Reflections on teaching in and with place. *Canadian Journal of Environmental Education*, 12, 68-79.
- Dave, R. H. (1975). Psychomotor levels. In R. J. Armstrong (Ed.), *Developing and writing behavioural objectives*. Tuscon, AZ: Educational Innovators Press.
- Delisle, R. (1997). *How to use problem-based learning in the classroom*. Virginia: Association for Supervision and Curriculum Development.
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Lexington, MA: Heath.
- Dewey, J. (1938). *Experience and education*. New York: Kappa Delta Pi.
- Dillon, J. (2003). On learners and learning in environmental education: Missing theories, ignored communities. *Environmental Education Research*, 9(2), 215–226.
- Dori, Y. J. (2003a). From nationwide standardized testing to school-based alternative embedded assessment in Israel: Students' performance in the "Matriculation 2000" Project. *Journal of Research in Science Teaching*, 40(1), 34-52.
- Dori, Y. J. (2003b). A framework for project-based assessment in science education. In M. Segers, F. Dochy & E. Cascallar (Eds.), *Optimising new modes of assessment: In search of qualities and standards*. Dordrecht, The Netherlands: Kluwer.
- Dori, Y. J., & Tal, R. T. (2000). Formal and informal collaborative projects: Engaging in industry with environmental awareness. *Science Education*, 84(1), 1-19.
- Drake, S. (1992). *Developing an integrated curriculum using the story model*. Toronto: The Ontario Institute for Studies in Education.

- Drake, S. (2002). The international reemergence of integrated curriculum: Can environmental educators lead the way? *Pathways: Ontario Journal of Outdoor Education*, 14(4), 20.
- Driver, R., Asoco, H., Leach, J., Mortimer, E. & Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher*, 23, 5-12.
- Duschl, R. A. & Gitomer, D.H. (1997) Strategies and challenges to changing the focus of assessment and instruction in science classrooms. *Educational Assessment*, 4, 37-73.
- Ellis, E.S. & Worthington, L.A. (1994). *Research synthesis of effective teaching principles and the design for quality tools for educators* (Tech. Rep. No.5). Eugene OR: University of Oregon, National Center to Improve the Tools of Educators.
- Evernden, N. (1985). *The natural alien*. Toronto: University of Toronto Press.
- Foladori, G. (2005). A methodological proposal for environmental education. *Canadian Journal of Environmental Education*, 10, 125-140.
- Freire, P. (1972). *Pedagogy of the oppressed*. (M. Bergman Ramos trans.) Harmondsworth, UK: Penguin.
- Gallagher, S. (1995). Implementing problem-based learning in science classrooms. *School Science and Mathematics*, 95(3), 136-146.
- Gannon, D. P. (2003). *A resource for administrators of experiential outdoor education programs*. Unpublished M.Ed. thesis, Faculty of Education, Lakehead University, Thunder Bay, Canada.
- Gardner, H. (2000). *Intelligence reframed: Multiple intelligences for the 21st Century*. New York: Basic.
- Gigliotti, L.M. (1990). Environmental education: What went wrong? What can be done? *Journal of Environmental Education*, 22(1), 9-12.
- Glaser, B.G. & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- González G.E. (2002). *Otra lectura a la historia de la educación ambiental en América Latina y el Caribe* [Another reading of the history of environmental education in Latin America and the Caribe]. Universidad Pedagógica Nacional. Accessed on 4 May 2004 at <http://interbilingue.ajusco.upn.mx/modules.php?name=News&file=article&sid=51>.

- Gronlund, N.E. (1998). *Assessment of student achievement*. Boston: Allyn and Bacon.
- Guba, E.G. (1990). *The paradigm dialogue*. Thousand Oaks, CA: Sage.
- Heimlich, J. E. (1999). Knowing what works: Trends in educational assessment. *EEducator*, Spring, 52-55.
- Heimlich, J. E., Braus, J., Olivolo, B., McKeown-Ice, R., & Barringer-Smith, L. (2004). Environmental education and preservice teacher preparation: A national study. *Journal of Environmental Education*, 35(2), 17–21.
- Henderson, B., Mehta, S., & Arnott, T. (1996). *Inventory of integrated curriculum programmes employing outdoor experiential education at the secondary school level in Ontario*. Toronto: Council of Outdoor Educators of Ontario.
- Hood, L. & MacMillan, J. (2002). Liz and Julie's excellent adventure: Exploring the diversity of interdisciplinary programs in Ontario. *Pathways: Ontario Journal of Outdoor Education*, 14(4), 17-19.
- Horwood, B. (1994). The influence of outdoor education on curriculum integration: A case study. *Pathways: Ontario Journal of Outdoor Education*, 14(4), 6-12.
- Horwood, B. (1995). Energy and knowledge: The story of integrated curriculum packages. *Pathways: Ontario Journal of Outdoor Education*, 7(4), 14-18.
- Horwood, B. (2002). The persistence of a good idea. *Pathways: Ontario Journal of Outdoor Education*, 14(4), 4.
- Idone, S. (2005). *Parent, teacher and administrator perceptions of the benefits and costs to students participating in an integrated program*. Unpublished M.Ed. thesis, Faculty of Education, Lakehead University, Thunder Bay, Ontario.
- Jacobs, H. H. (1989). *Interdisciplinary curriculum: Design and implementation*. Alexandria, Va.: Association for Supervision and Curriculum Development.
- Jardine, D. W. (1998). Birding lesson and the teachings of cicadas. *Canadian Journal of Environmental Education*, 3, 92-99.
- Jickling, B. (1992). Why I don't want my children to be educated for sustainable development. *Journal of Environmental Education*, 23(4), 5-8.
- Jickling, B. (2005a). "The wolf must not be made a fool of": Reflections on education, ethics, and epistemology. In P. Tripp & L. Muzzin (Eds.), *Teaching as activism: Equity meets environmentalism*. McGill-Queen's University Press.

- Jickling, B. (2005b). Ethics research in environmental education. *South African Journal of Environmental Education*, 22, 20-34.
- Jickling, B. (In press). Sitting on an old grey stone: Meditations on emotional understanding. In M. McKenzie, H. Bai, P. Hart & B. Jickling (Eds.), *Fields of green: Restorying culture, environment, and education*. Cresskill, NJ: Hampton.
- Jones, G.M., Brader-Araje, L. (2002). The impact of constructivism on education: Language, discourse, and meaning. *American Communication Journal*, 5(3). Retrieved on April 7, 2008, at: <http://acjournal.org/holdings/vol5/iss3/special/jones.htm>
- Kawartha Pine Ridge District School Board (1999). *A resource for assessment, evaluation and reporting*. Toronto: Government of Ontario.
- Keiny, S. (1994). Teachers' professional development as a process of conceptual change. In I. Carlgren, G. Handal & S. Vaage (Eds.), *Teachers' minds and actions: Research on teachers' thinking and practice* (pp. 232-246). London: Falmer.
- Kohn, A. (2008). Progressive Education. *Independent School*. Retrieved June 17th 2009 at <http://www.alfiekohn.org/articles.htm#null>.
- Kollmuss, A. & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239 – 260.
- Kovalik, S. (1991). *Teachers make the difference: With integrated thematic instruction*. Oak Creek, AZ: Book for Educators.
- Kozolanka, K. (1995). Engagement, evaluation and integrated programmes. *Pathways: Ontario Journal of Outdoor Education*, 7(7), 28-32.
- Krathwohl, D. R., Bloom, B. S. & Masia, B. B.(1964). *Taxonomy of educational objectives: The classification of educational goals. Handbook II: Affective domain*. New York: David McKay.
- Laing, R.D. (1967). *The politics of experience*. Harmondsworth: Penguin.
- Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lazear, D. (1991). *Seven ways of knowing: Teaching for the multiple intelligences*. Pallantine, Ill.: Skylight.
- Lejk, M. & Wyvill, M. (2002). Peer assessment of contribution to group projects: Students' attitudes to holistic and category-based approaches, *Assessment & Evaluation in Higher Education*, 27, 569-577.

- Leopold, A. (1949). *Sand County Almanac*. Oxford, UK: University Press.
- Lieberman, G. A. & Hoody, L. L. (1998). *Closing the achievement gap: Using the environment for as an integrating context for learning*. San Diego, CA: State Education and Environmental Roundtable. Retrieved April 19, 2007 at <http://www.seer.org/pages/research/execsum.htm>
- Lewin, K. (1952). Group decision and social change. In G. E. Swanson, T. M. Newcomb, & F. E. Hartley (Eds.), *Readings in social psychology*. New York: Holt.
- Lewin, L. & Shoemaker, B. J. (1998). *Great performances; Creating classroom-based assessment tasks*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Marcinkowski, T. (1993). A Contextual Review of the 'Quantitative Paradigm' in EE Research. In Marzek R. (Ed.). *Alternative paradigm in environmental education research*. Troy: NAAEE.
- Marzano, R. J., Pickering, D., McTighe, J. (1993). *Assessing student outcomes: Performance assessment using the dimensions of learning model*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Mathews, M. (1998). *Constructivism in science education*. Dordrecht, The Netherlands: Kluwer.
- McDonald, J., & Czerniac, C. (1994). Developing interdisciplinary units: Strategies and examples. *School Science and Mathematics*, 94 (1), 5-10.
- Miller, J., Cassie, J., & Drake, S. (1990). *Holistic learning*. Toronto: Ontario Institute for Studies in Education Press.
- Miller, J. P. (1988). *The holistic curriculum*. Toronto: Ontario Institute for Studies in Education Press.
- Mitchell, R. (1992). *Testing for learning: How new approaches to evaluation can improve American schools*. New York: The Free Press.
- Mueller, J. (2006). What is authentic assessment? Retrieved March 8, 2008, from Authentic assessment toolbox Web site: <http://jonathan.mueller.faculty.noctrl.edu/toolbox/whatisit.htm>
- Naess, A. (1998). Self-realization: An ecological approach to being in the world. In D. Van De Veer & C. Pierce (Eds.), *The environmental ethics and policy book*. Belmont, CA: Wadsworth.

- Naess, A., & Jickling, B. (2000). Deep ecology and education: A conversation with Arne Naess. *Canadian Journal of Environmental Education*, 5, 48-62.
- Neill, J. (2004). Outdoor education research and evaluation center. Retrieved March 25, 2008, from What is Experiential Education? Web site: <http://wilderdom.com/experiential/ExperientialWhatIs.html>
- Nevo, D. (1995). *School-based evaluation: A dialogue for school improvement*. Oxford, UK: Elsevier Science Ltd, Pergamon.
- Olson, D. R., & Bruner, J. S. (1997). Folk psychology and folk pedagogy. In D. R. Olson & N. Torrance (Eds.), *Handbook of education and human development*. London: Blackwell.
- Ontario Ministry of Education (2000a). *The Ontario Curriculum, Grades 9 to 12: Interdisciplinary Studies*. Queen's Printer for Ontario.
- Ontario Ministry of Education (2000b). *The Ontario Curriculum, Grades 9 to 12: Program Planning and Assessment*. Queen's Printer for Ontario.
- Ontario Ministry of Education (2004). *Guide to locally developed courses, Grades 9 to 12: Development and approval procedures*. Queen's Printer for Ontario.
- Ontario Ministry of Education (2005). *The Ontario Curriculum, Grades 11 and 12: Canadian and World Studies*. Queen's Printer for Ontario.
- Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 2, 117-175.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Thousand Oaks, CA: Sage.
- Piaget, J. (1967). *Biologie et connaissance* [Biology and knowledge]. Paris: Gallimard.
- Potter, T. G., & Henderson, B. (2004). Canadian outdoor adventure education: Hear the challenge, learn the lessons. *Journal of Adventure Education & Outdoor Learning*, 4(1), 69 - 87
- Raffan, J. (1990). The failed curriculum. *Journal of Experiential Education*, 13(3), 47-49.
- Rajecki, D.W. (1982). *Attitudes: Themes and advances*. Sunderland, MA, Sinauer.
- Rickinson, M. (2001). Learners and learning in environmental education: A critical review of the evidence. *Environmental Education Research*, 7, 207-317.
- Robottom, I., & Hart, P. (1995). Behaviorist EE Research: Environmentalism as individualism. *Journal of Environmental Education*. 26(2), 5-9.

- Robottom, I., & Hart, P. (1993). *Research in environmental education: Engaging the debate*. Geelong, Victoria: Deakin University Press.
- Rosenshine, B. (1997). The case for explicit, teacher-led, cognitive strategy instruction. In J.W. Lloyd, E.J. Kameaunui, & D. Chard (Eds.), *Issues in educating students with disabilities*. Mahwah, NJ: Lawrence Erlbaum.
- Russell, C. L. (1997). Approaches to environmental education: Towards a transformative perspective. *Holistic Education Review*, (10)1, 34-40.
- Russell, C. L., Bell A. C., & Fawcett, L. (2000). Navigating the waters of Canadian environmental education. In T. Goldstein & D. Selby (Eds.), *Weaving connections: Educating for peace, educational, and social justice*. Toronto, ON: Sumach Press.
- Russell, C.L. & Burton, J. (2000) A report on an Ontario secondary school integrated environmental studies program. *Canadian Journal of Environmental Education*, 5, 287-304.
- Sarason, S. (1990). *The predictable failure of educational reform*. San Francisco: Jossey-Bass.
- Sauvé, L. (1999) Environmental education: Between modernity and postmodernity: searching for an integrated educational framework. *Canadian Journal of Environmental Education*, 4, 9-35.
- Sauvé, L. (2005). Currents in environmental education: Mapping a complex and evolving pedagogical field. *Canadian Journal of Environmental Education*, 10, 11-37.
- Scardamalia, M., Bereiter, C. & Steinbach, R. (1984). Teachability of reflective processes in written composition. *Cognitive Science*, 8, 173-190.
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.
- Shepard, L.A. (1989). Why we need better assessments. *Educational Leadership*, 46(7), 4-9.
- Stiggins, R. J. (2005). *Student-involved assessment for learning*. NJ: Pearson Prentice Hall.
- Tal, T., Dori, Y. J. & Lazarowitz, R. (2000). A project-based alternative assessment system. *Studies in Educational Evaluation*, 26, 171-191.

- Tal, T. (2005). Implementing multiple assessment modes in an interdisciplinary environmental education course. *Environmental Education Research*, 11(5), 575-601.
- Tamir, P. (1998). Assessment and evaluation in science education: Opportunities to learn and outcomes. In B. J. Fraser & K. G. Tobin (Eds.), *International handbook of science education*. Boston, MA: Kluwer.
- Taylor, D.E. (1996). Making multicultural environmental education a reality. *Race, Poverty, and the Environment*, 6(2/3), 3-6.
- Torp, L. & Sage, S. (1998). *Problems as possibilities*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Treagust, D.F., Jacobowitz, R. Gallagher, J. L. & Parker, J. (2001). Using assessment as a guide in teaching for understanding: A case study of a middle school science class learning about sound. *Science Education*, 85(2), 137-157.
- Treaty on Environmental Education for Sustainable Societies and Global Responsibility (1992). *Non-Governmental Organizations Alternative Treaty*. Global Forum, Rio de Janeiro, June 1-5, 1992.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (1975) *Belgrade charter*. Accessed 27 January 2008 at http://portal.unesco.org/education/en/ev.php-URL_ID=33037&URL_DO=DO_TOPIC&URL_SECTION=201.html
- United Nations Educational, Scientific and Cultural Organization — United Nations Environment Programme (UNESCO-UNEP) (1978). *Final report: Intergovernmental conference on environmental education*, Tbilisi (USSR), 14-26 Oct., 1977. Paris: UNESCO-UNEP.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (1995). *Interregional workshop on re-orienting environmental education for sustainable development*, June, 26-30. Athens: UNESCO.
- United Nations Conference on Environment and Development (UNCED). (1992). *Agenda 21: Program of Action for Sustainable Development: Rio Declaration on Environment and Development*, United Nation Conference on Environment and Development, 3-14 June. Rio de Janeiro, Brazil. New York: United Nations.
- von Glasersfeld, E. (1995). *Radical constructivism: A way of knowing and learning*. Washington, DC: Falmer.

- Vygotsky, L. S. (1978). Tool and symbol in child development. In M. Cole, V. John-Steiner, S. Scribner & E. Souberman (Eds.), *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wals, A.E.J., & van der Leij, T. (1997). Alternatives to national standards for environmental education: Process-based quality assessment. *Canadian Journal of Environmental Education*, 2, 7-27.
- Weston, A. (1992). Before environmental ethics. *Environmental Ethics*, 14(4), 321-338.
- Weston, A. (1994). *Back to earth: Tomorrow's environmentalism*. Philadelphia: Temple U. P.
- Weston, A. (2004). What if teaching went wild? *Canadian Journal of Environmental Education*, 9, 31-46.
- Wiggins, G. (1989). Teaching to the (authentic) task. *Educational Leadership*, 46(7), 41-47.
- Wiggins, G. (1990). The case for authentic assessment. *Practical Assessment, Research & Evaluation*, 2(2). Retrieved April 15, 2007 from <http://PAREonline.net/getvn.asp?v=2&n=2>
- Wiggins, G. (1993). *Assessing student performance: Exploring the purpose and limits of testing*. San Francisco: Jossey-Bass.
- Wiggins, G. (1998). *Educative assessment*. San Francisco: Jossey-Bass.
- Wiggins, G. & McTighe J. (1999). *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Wilson, R. (1981). *Inside Outward Bound: The success story of the international wilderness school*. Vancouver, BC: Douglas & McIntyre.
- Yambert, P. A. & Donow, C. F. (1986). Are we ready for ecological commandments? *Journal of Environmental Education*, 17(4), 13-16.
- Zoller, U. (1991). Problem solving and the "problem solving paradox" in decision making-oriented environmental education. In S. Keiny & U. Zoller (Eds.), *Conceptual issues in environmental education*. New York: Peter Lang.

Appendix A: Summary of the learning behaviours of the cognitive, affective, and psychomotor domain

Cognitive Domain

The following table examines the cognitive domain by listing behavior descriptions for each stage, examples of activities, demonstrations, and evidence of learning, and last, key words or verbs that describe that stage.

Category or Level	Behavioural Descriptions	Examples of Activity to be trained, or demonstration and evidence to be measured	Key words - verbs which describe the activity to be trained or measured at each level
Knowledge	recall or recognize information	multiple-choice test, recount facts or statistics, recall a process, rules, definitions; quote law or procedure	arrange, define, describe, label, list, memorize, recognize, relate, reproduce, select, state
Comprehension	understand meaning, re-state data in one's own words, interpret, extrapolate, translate	explain or interpret meaning from a given scenario or statement, suggest treatment, reaction or solution to given problem, create examples or metaphors	explain, reiterate, reword, critique, classify, summarize, illustrate, translate, review, report, discuss, re-write, estimate, interpret, theorize, paraphrase, reference, example
Application	use or apply knowledge, put theory into practice, use knowledge in response to real circumstances	put a theory into practical effect, demonstrate, solve a problem, manage an activity	use, apply, discover, manage, execute, solve, produce, implement, construct, change, prepare, conduct, perform, react, respond, role-play
Analysis	interpret elements, organizational principles, structure, construction, internal relationships; quality, reliability of individual components	identify constituent parts and functions of a process or concept, or de-construct a methodology or process, making qualitative assessment of elements, relationships, values and effects; measure requirements or needs	analyze, break down, catalogue, compare, quantify, measure, test, examine, experiment, relate, graph, diagram, plot, extrapolate, value, divide
Synthesis (create/build)	develop new unique structures, systems, models, approaches, ideas; creative thinking, operations	writing skills, organization of ideas and statements, ability to tell a personal experience effectively, propose ways of testing hypothesizes, make mathematical discoveries and generalizations	develop, plan, build, create, design, organize, revise, formulate, propose, establish, assemble, integrate, re-arrange, modify
Evaluation	assess effectiveness of whole concepts, in relation to values, outputs, efficacy, viability; critical thinking, strategic comparison and review; judgment relating to external criteria	ability to indicate logically fallacies in arguments, ability to assess general probability in accuracy, ability to compare major theories, generalizations and facts.	review, justify, assess, present a case for, defend, report on, investigate, direct, appraise, argue, project-manage

The cognitive domain's behavior descriptions for each stage, examples of activities, demonstrations, and evidence of learning, and last, key words or verbs that describe that stage (Bloom & Krathwohl, 1956; Chapman, 1999).

Affective Domain

The following table examines the affective domain by listing behavior descriptions for each stage, examples of activities, demonstrations, and evidence of learning, and last, key words or verbs that describe that stage.

Category or level	Behaviour descriptions	Examples of experience, or demonstration and evidence to be measured	'key words' (verbs which describe the activity to be trained or measured at each level)
Receive	open to experience, willing to hear	listen to teacher or trainer, take interest in session or learning experience, take notes, turn up, make time for learning experience, participate passively	ask, listen, focus, attend, take part, discuss, acknowledge, hear, be open to, retain, follow, concentrate, read, do, feel
Respond	react and participate actively	participate actively in group discussion, active participation in activity, interest in outcomes, enthusiasm for action, question and probe ideas, suggest interpretation	react, respond, seek clarification, interpret, clarify, provide other references and examples, contribute, question, present, cite, become animated or excited, help team, write, perform
Value	attach values and express personal opinions	decide worth and relevance of ideas, experiences; accept or commit to particular stance or action	argue, challenge, debate, refute, confront, justify, persuade, criticize,
Organize or Conceptualize values	reconcile internal conflicts; develop value system	qualify and quantify personal views, state personal position and reasons, state beliefs	build, develop, formulate, defend, modify, relate, prioritize, reconcile, contrast, arrange, compare
Internalize or characterize values	adopt belief system and philosophy	self-reliant; behave consistently with personal value set	act, display, influence, solve, practice,

The affective domain's behavior descriptions for each stage, examples of activities, demonstrations, and evidence of learning, and last, key words or verbs that describe that stage (Krathwohl, Bloom & Masia 1964; Chapman, 1999).

Psychomotor Domain

Dave's (1975) taxonomy is the most commonly used to describe the psychomotor domain. The following table examines Dave's psychomotor domain by listing behavior descriptions for each stage, examples of activities, demonstrations, and evidence of learning, and last, key words or verbs that describe that stage.

Category or level	Behaviour Description	Examples of activities, demonstrations, and evidence of learning	Action Verbs
Imitation	Copy action of another	Watch teacher or trainer and repeat action, process, or activity	Copy, follow, replicate, repeat, adhere, observe, identify, mimic, try, reenact, and imitate
Manipulation	Reproduce activity from instructions	Carry out task from written or verbal instructions	Re-create, build, perform, execute, and implement
Precision	Execute skill reliably, independent of help	Perform a task or activity with expertise and to high quality without assistance or instruction; able to demonstrate an activity to other learners	Demonstrate, complete, show, perfect, calibrate, control, and practice
Articulation	Adapt and integrate expertise to satisfy a non-standard objective	Relate and combine associated activities to develop methods to meet varying, novel requirements	Construct, solve, combine, coordinate, integrate, adapt, develop, formulate, modify, master, improve, and teach
Naturalization	Automated, unconscious mastery of activity and related skills at strategic level	Define aim, approach, and strategy for use of activities to meet strategic need	Design, specify, manage, invent, and project-manage

The psychomotor domain's behavior descriptions for each stage, examples of activities, demonstrations, and evidence of learning, and last, key words or verbs that describe that stage (Dave, 1975; Chapman, 1999).

Appendix B: Biology College 11 Portfolio Rubric

The following is a typical project rubric. The learning objectives outlined by the Ontario Ministry of Education achievement chart are labeled along the left-hand side, and plotted against the learning objectives are the "levels of achievement" (Ministry of Education, 2000b).

Category/Criteria	50-59 % Level 1	60-69 % Level 2	70-79 % Level 3	80-100% Level 4
Knowledge/ Understanding The student Demonstrates an understanding of the concepts Demonstrates an understanding of the relationships between the concepts presented and biological systems.	The student Demonstrates limited understanding of concepts Demonstrates limited understanding of the relationships between the concepts presented and biological systems.	The student Demonstrates some understanding of concepts Demonstrates some understanding of the relationships between the concepts presented and biological systems.	The student Demonstrates considerable understanding of concepts Demonstrates considerable understanding of the relationships between the concepts presented and biological systems.	The student Demonstrates thorough understanding of concepts Demonstrates thorough understanding of the relationships between the concepts presented and biological systems.
Inquiry Applies scientific knowledge with respect to the major portfolio components Analysis of major portfolio components is indicative of self-reflection	Applies scientific knowledge with limited competence Analysis of major portfolio components is indicative of limited self-reflection	Applies scientific knowledge with moderate competence Analysis of major portfolio components is indicative of moderate self-reflection	Applies scientific knowledge with considerable competence Analysis of major portfolio components is indicative of considerable self-reflection	Applies scientific knowledge with a high degree of competence Analysis of major portfolio components is indicative of a high degree of self-reflection
Communication The student Uses report format (i.e. Appendices, illustrative documents) Communicates information and ideas (i.e., Does your reflective essay go beyond surface statements and demonstrate that you have examined not only the "what" but the "how" and the "why" of your learning?) Uses appropriate vocabulary, SI units, and numeric, symbolic, and linguistic modes of representation Uses information technology (computer)	The student Uses report format with limited effectiveness Communicates information and ideas with limited clarity and precision Uses scientific terminology with limited accuracy and effectiveness Uses technology with limited appropriateness and effectiveness	The student Uses report format with moderate effectiveness Communicates information and ideas with moderate clarity and precision Uses scientific terminology with moderate accuracy and effectiveness Uses technology with moderate appropriateness and effectiveness	The student Uses report format with considerable effectiveness Communicates information and ideas with considerable clarity and precision Uses scientific terminology with considerable accuracy and effectiveness Uses technology with considerable appropriateness and effectiveness	The student Uses report format with high degree effectiveness Communicates information and ideas with high degree of clarity and precision Uses scientific terminology with high degree of accuracy and effectiveness Uses technology with high degree of appropriateness and effectiveness
Making Connections Discusses all units covered including key concepts Shows an understanding of the connections between science, technology, society and the environment Does your portfolio demonstrate growth	The student Discusses one unit, or limited coverage of units and key concepts Shows limited understanding of connections Shows limited growth	The student Discusses two units, or some coverage of units and key concepts Shows some understanding of connections Shows some growth	The student Discusses three units, or considerable coverage of units and key concepts Shows considerable understanding of connections Shows considerable growth	The student Discusses all units, and thorough coverage of units and key concepts Shows thorough understanding of connections Shows substantial growth

Appendix C: Assessment, Evaluation, and Reporting: Overview of Assessment Methods, Strategies and Tools

The document provides an overview of assessment methods, strategies and tools that are appropriate to learning tasks that suit the specific categories of the achievement chart.

Categories	Paper and Pencil	Performance Assessment	Personal Communication
Knowledge / Understanding	<ul style="list-style-type: none"> quiz test - multiple choice, T/F, matching (selection based methods), fill in blanks, short answers, organizers (webs) and visuals (table) examination <p>Best choice for focusing on mastery of basics of knowledge</p>	<ul style="list-style-type: none"> examinations - open ended questions, essays organizers - concept maps, webs, flowcharts visuals - tables, graphs, illustrations journals <p>Perhaps not the preferred method but can determine student's understanding of relationships between concepts</p>	<ul style="list-style-type: none"> in-class question and answer in-class discussions student-teacher conferencing oral "test" or "examination" <p>Can ask probing questions and allows for evaluation of depth of understanding but may be time consuming</p>
Thinking/ Inquiry	<ul style="list-style-type: none"> open ended questions - test, examinations organizers (webs) and visuals (tables) <p>Allows for Assessing basic critical/creative thinking skills, inquiry skills; allows for written description of problem solving solutions</p>	<ul style="list-style-type: none"> essays, articles, editorials, poems, research papers, lab reports plays debates, videotapes, oral presentations, creation of products <p>Allows for teacher evaluation of complex critical/creative and inquiry skills</p>	<ul style="list-style-type: none"> in-class question and answer in-class discussions student-teacher conferencing oral examination <p>Allows for more in-depth questioning; encourages students to explain their reasoning</p>
Application	<p>open-ended questions allowing for knowledge to be applied to a new situation/problem</p>	<ul style="list-style-type: none"> essays, articles, editorials, poems, research papers, lab reports plays, debates, videotapes, oral presentations, creation of products <p>Preferred method for authentic or simulated real world performance</p>	<ul style="list-style-type: none"> interviews, student-teacher conferencing <p>Not the preferred method to get at "authentic" and "outside the school" contexts</p>
Communication	<ul style="list-style-type: none"> open-ended questions - tests, examinations, essays organizers (webs) and visuals (tables) <p>Allows for clarity of thought and expression in written form</p>	<ul style="list-style-type: none"> essays, articles, editorials, poems, research papers, lab reports plays, debates, videotapes, oral presentations, creation of products <p>Many of the performance tasks allow for communication in all forms -written, oral, and visual</p>	<ul style="list-style-type: none"> in-class questions and answers, discussions, and student-teacher conferencing <p>Allows for expression of thought and communicating ideas verbally.</p>

Source: Kawartha Pine Ride DSB.

Appendix D: Questions for program instructors

Thank you for taking the time to be part of my thesis research. Please do not feel like you need to write a huge essay for me. You can jot down a couple things in point form or even let the specific assessment tasks speak for themselves. If I have questions, I can always get in touch at a later time.

- What are the course codes from last year's and this year's program?
- What are the assessment tasks, techniques, methods and criteria that you use?
These could be projects, lab reports, quizzes, or anything at all really.
 - What are your scoring criteria for these projects — i.e., rubrics, check sheets, etc.
 - If some of the assessments that you provide are context-specific, a quick note would be greatly appreciated — i.e., this is the culminating project for the 12 day trip? etc.
- Are students evaluated to fit discipline-based expectations or on the basis of integration?
 - How have you separated or do you separate the individual course from each other? Or do the courses "blend together?" How do you structure your assessments to conform to your layout?
- I am looking for how you've conformed to the latest scoring criteria (Knowledge/Understanding; Thinking/Inquiry; Communication; Application).
How have you used it to assess across disciplines?
- Because various courses are integrated does not mean that assessment styles are the same for each (i.e. some courses may assess using methods similar to that of a

physical education class, that is, assessment based on effort and the improvement of self, whereas a course such as a senior level science may compare the student's performance to that of specific government specifications, standards, and exemplars). Therefore, with this in mind, what are the specific assessment and evaluation challenges (and opportunities) in your program?

- How have you incorporated things like leadership, engagement (or lack there of), self-direction, collaboration, self-actualization, etc., into your assessment? How have you fit these goals—or any goals of this nature—into your assessment?
- How are formative assessments and the final evaluation linked? What is the mark breakdown? Do the students receive a mark for each course or one for all four courses?

Anything else I've missed? From someone on the outside looking in I can only imagine the creative ways you've played with assessment over time.

I cannot thank you enough for taking the time to help me out with this. Please don't hesitate to contact me anytime.

Chris Dube, MEd student, Faculty of Education, Lakehead University
Telephone: 807-345-6064
Email: cdube@lakeheadu.ca

Appendix E: Outers program evaluations (fall, winter, spring)

Outers Fall Program Evaluation

Answer the following questions on a separate sheet. Be as direct and personal as you feel you need to be to answer the questions honestly. Your answers will be held in confidence.

This must be completed and submitted to Mr. Krassey by Friday of this week (Oct. 12th). There will be a box in the office – please return sealed envelope to your brigade leader.

*make sure your name is on your evaluation.

1. Do you feel you lived up to the terms of your contract?
2. As a member of a brigade, how do you feel you contributed to the smooth functioning of your brigade?
3. How did members of your brigade get along with each other? Do the members of your brigade show respect for one another?.
4. a) Did you feel that the leadership in your brigade was adequate? Give examples.
b) Did you feel that your brigade responded properly to your brigade leader? Give examples.
5. How would you compare the “social harmony” of your brigade with that of the other brigades you observed?
6. What was the most valuable lesson that you learned on the fall trips? Why?
7. So far, in what ways has the experience of Outers changed you as a person?
8. Could staff have assisted you more in preparation for, or completion, of a trip(s)? Give details.
9. Of the four fall trips, which did you enjoy: a) The most? b) The least?Why?
10. Do you feel that you are now adequately prepared to go on a 12 day spring trip, or are there still things you and your brigade need to learn?
11. Evaluate the safety practices used in Outers. Were they adequate? Did you feel there is room for improvements and/or changes?

Outers Winter Program Evaluation

Answer the following questions on a separate sheet. Be as direct and personal as you feel you need to be to answer the questions honestly. Your answers will be held in confidence.

1. Did you contribute to the smooth functioning of your brigade or were your actions self-centered? (For both of the above explain how you did this and why.)
2. Comment on the roles of others in your brigade and how effective they were.
3. What do you feel was the main purpose of the winter trips? Was this goal attained?
4. Comment on what you learned during the winter trips that may prove to be useful in the future.
5. What was the most disturbing incident (for you personally) that happened during the winter program?
6. Did your brigade operate differently during the winter program? Why?
7. Is your brigade prepared to operate as an effective unit on a 12-day spring trip? Explain.
8. If you missed a trip this winter:
 - a. How do you feel about this?
 - b. How do you feel this affected your brigade and Outers as a whole?
9. If you could change the winter program operation, what would you change and why?
10. If you have anything which you would like to express about Outers, please use this opportunity to do so.

Outers Spring Program Evaluation

Answer the following questions on a separate sheet. Be as direct and personal as you feel you need to be to answer the questions honestly. Your answers will be held in confidence.

This is your last official duty as an AHS Outer. Answer all questions on a separate sheet of paper. Be honest. Hand your work into the AHS Main Office by June 26th.

1. How did your brigade function on the Spring Trip? How does this compare to the fall and winter trips?
2. Describe and evaluate your contribution to the brigade. Did your role change during the course of the year?
3. What was your:
 - a. Most valuable experience?
 - b. Least valuable experience?
4. Describe Solo:
 - a. What was the best part of Solo?
 - b. What was the worst part of Solo?
 - c. What did you learn from this experience?
5. Food:
 - a. What was the best buy?
 - b. How much \$ did your brigade spend?
 - c. What foods worked well and were enjoyed by your brigade?
6. Do you feel that you have lived up to and honoured the Outers Contract you signed in September?
7. Are you interested in becoming an ex-Outer? Why?
8. Was your brigade dissolved or added to during the course of the year? How do you feel about this? How did you and the people around you cope with the change?
9. Feel free to comment on any other aspect of the program.

N.B.:If you wish to participate as an ex-Outer next year, you must hand in a written evaluation by the deadline this year.

Congratulations! Have a great summer!

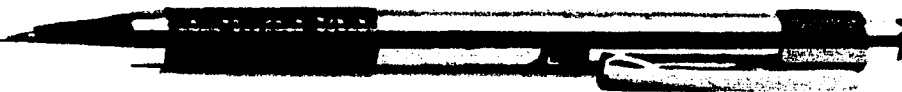
Appendix F: Outers reflective journal guidelines

Outers Reflective Journal Guidelines

Suggestions:

1. **Write after every trip** while the events are still fresh in your mind.
If not, jot down ideas/words/names/notes that you could write about.
2. The **format** is up to you:
 - trip by trip
 - story based
 - words and doodling
3. Write about what is happening to **YOU** as a brigade member.
How you felt about things, what you learned, what you need to do.
4. Write about **CONFLICTS** and **CHALLENGES**.
Tell the story of why it occurred and how it was resolved (or not).
5. Write about **weird, unexpected, or funny** things that happened. Tell the story.
6. Talk about what happened to you or your brigade :
 - portaging
 - paddling
 - camping
 - cooking
 - communication
 - team work
7. **DO NOT focus the entire entry on WHERE** you went.
This really does not matter unless it adds what happened to you or your brigade.
8. End of season evaluation questions need to be answered as if the reader does not know what you were asked – not in point form or fragments.

Remember that this is a significant part of Outers, just like any other. Don't let it slide!!



Appendix G: ESP CGR 4MI Culminating Activity

Environmental Studies Program – Spring 2008 CGR 4MI Culminating Activity

The Environmental Studies Program at Grey Highlands Secondary School is designed around students taking an active role in their local environment. Throughout the semester students have been involved in clean up and stewardship projects in the local community, activity days for local elementary school students, and developing an understanding of how natural and human systems interact. As a summative exercise the students participate in a twelve day wilderness canoe trip in Temagami, ON. Throughout the trip students have an opportunity to practice their skills developed throughout the course and to further their knowledge and appreciation of natural systems. This document is intended to outline the learning expectations that were addressed through this wilderness experience and clearly demonstrate how students were provided with the opportunity to meet these expectations. The ESP course operates from the premise that “students learn best when they are engaged in a variety of ways of learning” (p.21, Ministry of Education, 2005). In addition, “students develop a better understanding of various aspects of Canadian and world studies when they experience them at first hand” (p.21, Ministry of Education, 2005) and thus as a function of the teaching strategies employed should be provided with a method of assessment congruent with their learning. For organizational purposes, the document will follow through the five strands outlined for The Environment and Resource Management course (CGR4M).

This course investigates the complexity and fragility of ecosystems and pressures human activities place on them. Students will examine ecological processes, the principles of sustainability, and strategies for resource management, with a focus on the challenges of environmental degradation and resource depletion. Students will use geotechnologies and skills of geographic inquiry to explain and evaluate various approaches to achieving a more sustainable relationship between people and their environment. (p.103, Ministry of Education, 2005)

1. Geographic Foundations: Space and Systems

Overall Expectations:

- Analyse how the earth’s major components – the lithosphere, atmosphere, hydrosphere, and biosphere – interact and are interdependent;
- Analyse how the distribution of ecosystems has been and continues to be influenced by natural conditions

Specific Expectations:

- Describe selected relationships among the earth’s diverse natural systems (e.g., climate, soils, vegetation, wildlife);
- Describe the variety, complexity, and evolutionary characteristics (e.g., primary and secondary succession) of selected ecosystems;
- Analyse how various factors contribute to the fragility and/resilience of selected ecosystems;

- Illustrate how a combination of biotic and abiotic factors and processes produces a selected ecosystem (e.g., grassland, forest, desert, wetland).

Culminating Activity:

- Students were provided with the opportunity to travel through a wilderness area and study the unique relationship between the earth's major systems. As an example, students studied firsthand the relationship between the soil types and the vegetation present (coniferous forests, wetlands, and rock outcrops). From this standpoint, students were able to make further links to other systems and observe the types of animals present and how the relationships were complex and interdependent.
- Students were exposed to a variety of ecosystems including mature and immature systems. Students were able to study the similarities and differences between old growth forests and new growth forests after the area had been logged in the early 1900's. Differences in forest canopy, density, and diversity of flora and fauna present were observations that were studied and discussed.
- Students were able to experience the impact of human activity within the wilderness area. Campsites, trails, and recreational camps and lodges all demonstrated the fragility of the ecosystem present. In some cases, students were able to see how a region was able to rebound back to its original state pre-disturbance (example include the Lady Evelyn Hotel site that burned down in 1907, and the impact that dams have had on the shoreline ecosystems of both Lake Temagami and Lady Evelyn Lakes).
- Students were encouraged through discussion to outline the factors that produce a variety of ecosystems throughout their journey. They were provided with the opportunity to travel through many ecosystems including wetlands, mature and immature forests, as well as lake and river systems.

Methods of Assessment:

- Response Journal
- Question and Answer (Oral)
- Observation
- Performance Task
- Exhibition/Demonstration

2. Human-Environment Interactions

Overall Expectations:

- Explain the significant short-term and long-term effects of human activity on the natural environment;

- Analyse and evaluate the interrelationships among the environment, the economy, and society;
- Analyse patterns of resource availability and use.

Specific Expectations:

- Identify differences in the perceptions of nature and the views on environmental preservation of selected individuals and groups (e.g., indigenous people, corporations, government, recreationists);
- Analyse ways in which human activities alter the natural environment (e.g., clear-cutting, pipeline construction, reforestation, wetland restoration);
- Explain how various factors and processes determine the spatial distribution and short-term and long-term availability of a selected resource
- Illustrate how human systems (e.g., land use, transportation networks, beliefs) and natural systems interact within the local ecosystem;

Culminating Activity:

- Students were able to observe firsthand the effects of logging and water resources control on the natural environment. Discussion was encouraged around the concepts of “wilderness” and “nature” and what these terms mean. In small discussion groups students were to brainstorm the short-term and long-term effects that both logging and water resources control have had on the natural environment.
- Through mini-presentations students were to outline the historical context of the Temagami area with a focus on the development of resources such as logging, mining, and fishing and their links to environmental, economic and societal value. The concept of skyline logging was introduced as a balance between economic and societal value by local management groups.
- Various small discussions were conducted to highlight how the resource rich area was used based on its proximity to markets and the economic value of some of the products (forest and mineral products). Examples were provided for a number of areas within the park including the Wolf Lake region that may be drained for silver exploration.

Methods of Assessment:

- Response Journal
- Question and Answer (Oral)
- Observation
- Performance Task
- Exhibition/Demonstration

3. Global Connections

Overall Expectations:

- Analyse environmental and resource management issues and explain their global implications;

Specific Expectations:

- Analyse and assess selected viewpoints regarding a sustainability or resource management issue.

Culminating Activity:

- Students presented each other with challenging topics on resource management issues. They were allowed the opportunity to discuss the challenges that we as Canadians face while managing the environment and how these transfer to other nations. From a historical standpoint the Temagami area was heavily logged in the late 1800's and early 1900's while Canada was establishing itself creating a link to other developing nations and their resource abuse.

4. Understanding and Managing Change

Overall Expectations:

- Explain the purpose of environmental laws and regulations at the local, provincial, and national levels and evaluate their effectiveness over time;
- Evaluate a variety of approaches to resolving environmental and resource management concerns on a local, regional, and national scale.

Specific Expectations:

- Describe the rights and responsibilities of individuals with respect to protecting the environment for future generations;
- Analyse the environmental-protection activities of non-governmental organizations (e.g., the Sierra Club, Greenpeace, the World Wildlife Fund);
- Explain ways in which we can improve our protection of natural systems while continuing to meet human needs (e.g., through organic food production, wetland restoration)

Culminating Activity:

- Through their experience, students were encouraged to develop an appreciation for the natural world and through this appreciation develop a sense of responsibility and stewardship. Through their actions and students promoted a leave no trace camp etiquette whereby the areas that we visited were left in the same or better a state than when we arrived. Students were encouraged to develop new practices that were environmentally sound and inform their groups about

their thoughts. Through campsite and portage clean ups, students became active stewards of this natural area.

- Through mini-presentations students outlined how non-governmental organizations have been instrumental in preserving much of the forests surrounding the lakes in the Temagami area. This included a full day hike up Maple Mountain which was once slated to become a ski resort but public pressure persuaded the provincial government to turn down the proposal.

Methods of Assessment:

- Response Journal
- Question and Answer (Oral)
- Observation
- Performance Task
- Exhibition/Demonstration

5. Methods of Geographic Inquiry and Communication

Overall Expectations:

- Use the methods and tools of geographic inquiry to locate, gather, evaluate, and organize information about environmental and resource management issues and concerns;
- Analyse and interpret data gathered through research and investigation, using a variety of methods and geotechnologies;
- Communicate the results of inquiries, using appropriate terms and concepts and a variety of forms and techniques.

Specific Expectations:

- Gather geographic information, using a variety of geographic tools and technologies (e.g., maps, remote-sensing imagery, aerial photographs, satellite images, geographic information systems [GIS]);
- Communicate the results of geographic inquiries, for different audiences and purposes, using a variety of forms (e.g., oral and written reports, debates, multimedia presentations, essays) and including geographic visual supports, both conventional (e.g., photographs, sketches, charts, graphs, models, organizers, diagrams, maps) and geotechnological (e.g., computer-generated maps and graphs, aerial photographs, satellite images).

Culminating Activity:

- Students were responsible for guiding the class for one full day by using navigation techniques developed in class. These include the use of maps and compass while outlining various areas along the way that are important ecosystems or sites of interest.

- Students were responsible for communicating the route and important locations along the way to the rest of their group. Often students conducted their mini-presentation in conjunction with their leader day and were responsible for communicating other information of interest using a variety of methods.

Methods of Assessment:

- Response Journal
- Question and Answer (Oral)
- Observation
- Performance Task
- Exhibition/Demonstration

Overall Culminating Activity Justification:

As a function of the way that information was delivered throughout the semester, the culminating 12-day canoe trip allowed students to demonstrate their knowledge and philosophical shift. Students demonstrated an increased self-confidence and self-awareness as well as a sense of community with their peers. The knowledge and practical experience that these students gained outside of The Environment and Resource Management course included many practical skills including certification GPS, Standard First Aid and CPR (including AED certification), Ontario Recreational Canoeing and Kayak Association Level 1 Canoe Tripping, Pleasure Craft Operator, and leave no trace camping skills.

Appendix H: ESP 2007 Newsletter

Dear Parent:

This newsletter is intended to provide information to the parents of students who have opted to take the Environmental Studies Program next semester. This program offers senior students a unique opportunity to enhance their academic learning by moving beyond the traditional classroom and incorporating regular field trip learning experiences into the curriculum. The overall philosophy behind this program is:

*“I hear and I forget,
I see and I remember,
I do and I understand.”*

Students will be provided with opportunities to explore and understand our complex and dynamic world by experiencing it first hand. Students are exposed to a wide variety of outdoor recreational activities that allow them to develop confidence in their own personal skills. Students are also provided with opportunities to develop skills in teaching by instructing elementary students ranging from Junior Kindergarten to Grade 8 in an out-of-doors setting.

Day Field Trips:

Students enrolled in this program will participate in a large number of field trips that are designed to enhance classroom learning. Field trips occur during most weeks throughout the semester. To facilitate this, parents must sign a “blanket” field trip permission form that allows your son or daughter to participate in all local field trips.

Students will be given a calendar with the dates of all field trips at the beginning of the course. Students are required to keep their calendars up-to-date as other trips are confirmed in an effort to minimize conflicts and to keep parents informed. Students will normally be back at school in time for after school buses.

Overnight Field Trips:

A total of 4 overnight field trips have been planned during the length of the program. Whenever an overnight field trip is planned, a separate permission form will be sent home for parental approval. Only one field trip involves being away from home over a weekend. *(no other overnight weekend trips are scheduled during the semester).*

1. Winter Camping Trip:

Our first overnight field trip involves winter camping. This is a 2-day field trip that includes 1 night sleeping outside in snow shelters that the students will learn to build. The trip takes place at the Highlands Nordic Cross-country Ski Centre near Duntroon. It has been tentatively scheduled for February 15th and 16th. More information about this trip will be provided at the beginning of the course.

2. 24-hour Experience: Our second overnight field trip is a 24-hour experience involving the students hiking throughout the day and night in the Kolapore area. This field trip will occur sometime in April. More details will be provided closer to the date of the trip.

3. Cyprus Lake Trip:

Our third overnight field trip is a 4-day camping trip to Bruce Peninsula National Park at Cyprus Lake. It has been scheduled for May 15th to May 18th. The main goal of this trip is to prepare students for the 12-day canoe trip to Temagami in June.

4. Temagami Canoe Trip:

Our final overnight field trip is the annual year-end canoe trip to Temagami. We are scheduled to depart GHSS at 7:30 am on Monday June 4th and return to the school on the afternoon of Friday June 15th. More information on this trip will be provided closer to the departure date.

ESP Activity Fee:

The overall cost of this program is \$500 per student. The course fee is used to pay for busing, food, equipment rentals, instructor fees, pool rentals, and tuition for First Aid and CPR courses.

Students are required to pay their first \$100 installment by Friday, January 26th, 2007. The first \$100 installment will serve as a course reservation deposit. Those students who do not pay the first installment by this deadline will be asked to change their timetable for 2nd Semester. **Students must pay the remaining \$400 balance by Friday, March 9th, 2007.**

Personal Equipment:

Students are expected to provide their own basic equipment for the majority of the activities they will be participating in throughout the semester. A comprehensive equipment list will be provided prior to all overnight field trips. Much of the equipment necessary for the canoe trip is provided such as canoes and tents. It is strongly recommended that each student have access to the following items:

- back pack (35 to 50 Litres in size)
- winter boots, hiking boots
- coat, hat, mitts
- sleeping bag (at least -7 C)
- rain jacket and pants
- whistle

Supervision and Instruction:

The Environmental Studies Program is fortunate to have 2 teachers involved in the program, Mr. Burton and Ms Davey. In addition, a variety of other instructors and chaperones are also involved in the program throughout the semester.

Mr. Burton has taught the program since he started in January of 1993. He has teaching certification in Science and Geography, a Master's degree in Sedimentary Geology, is currently certified as a Level III Canoe Tripping Instructor with the Ontario Recreational Canoeing Association, has certification as a lifeguard (NLS), Wilderness First Aid, Standard First Aid, and CPR. Mr. Burton is also a licensed school bus driver and drives the school bus on all field trips to reduce costs for students. He has extensive wilderness experience having guided hiking and canoeing trips throughout many areas of Northern Ontario, Alberta, British Columbia, the Yukon, and Baffin Island. He has over 25 years of canoe tripping experience to date. In addition, he also instructed white water canoeing and kayaking in the Banff area for 4 years and guided numerous white water rafting trips in British Columbia while instructing for Outward Bound. To date, Mr. Burton has guided the ESP classes on 16 major canoe trips in the past in the Algonquin, Killarney, and Temagami areas.

Ms Davey has been teaching for 15 years and is qualified to teach Physical Education and Mathematics. Over her teaching career, she has coached volleyball, hockey, basketball, and soccer teams. She has participated in, for a number of years, outdoor activities such as hiking, canoe tripping, cross-country skiing, downhill skiing, snowshoeing, running, and bike touring. Ms Davey also plays on a number of competitive teams like hockey, soccer, and volleyball.

Chaperones:

A limited number of Chaperones normally accompany the ESP class on field trips, including the Cyprus Lake camping trip and the canoe trip to Temagami. Normally, a Chaperone is any person over the age of 19 who has either successfully graduated from this program or who has prior wilderness experience.

ESP Equipment:

The course has a wide variety of outdoor equipment which it has been able to acquire over the past 16 years through the fundraising efforts of previous ESP classes. Some of the equipment currently available to the students in this program include: canoes, paddles, backpacks, tents, sleeping bags, water filters, PFD's, camping stoves, lanterns, orienteering compasses, and a food dehydrator. If any parents have any surplus camping equipment that might be useful to the program, please consider donating it to the class.

Swim Test:

Each student is required to participate in and successfully complete a swimming test as a prerequisite to going on the canoe trip to Temagami. The purpose of the swimming test is to determine the swimming ability of each student. The swimming test involves evaluating the following swimming skills:

- swim 2 lengths of the pool wearing normal clothing to simulate swimming during an accidental tipping of a canoe
- swim 8 lengths of the pool (200 metres) in swim suit or shorts; students must demonstrate reasonable swimming proficiency and endurance
- treading water for 5 minutes without touching the sides or the bottom
- being able to demonstrate putting a PFD on in the water and then swimming 2 lengths wearing that PFD
- locate and retrieve an object from a depth of at least 1 metre of water
- successfully perform a rescue in the water from the side of the pool

Successful completion of this swimming test is a prerequisite to going on the canoe trip.

If any student refuses to participate in the swim test, he or she will not be permitted to accompany the class on the canoe trip.

All students, regardless of their swimming ability, must wear a PFD at all times while swimming or in a canoe. Swimming will be supervised by qualified lifeguards during the canoe trip. The swimming test will take place at the Hanover Regional Aquatic Centre in April.

Attendance:

It is mandatory that students attend all classes in this program throughout the semester. Any planned absences must be discussed with the teachers beforehand. In the event of an unforeseen absence, students are required to phone the school before 9:00 am. Unexplained absences will count as a “skipped day” and will result in the loss of future field trip privileges. The ESP attendance policy will be strictly enforced and will be explained in complete detail to students at the beginning of the course. **Messages can be left at this phone number 24 hours a day: 519-924-2721 Ext. 650.**

Medical Information:

Although a medical is not required for this program, it should be understood that this program is physically demanding. Students participate in a large number of rigorous physical activities, often in remote wilderness areas. Students should be in good physical condition and the teachers must be made aware of any medical problems that might interfere with the student’s physical performance in this program.

The medical questionnaire attached to this newsletter should be completed by a parent and must be returned as soon as possible. Please provide all information that is requested on this form, particularly the questions dealing with activity restrictions, known medical problems, allergies, and medication requirements. A summary medical form is also provided and must also be completed ASAP.

If your son/daughter has any known allergies to food (peanuts) and/or to insects (bee stings), please ensure that the teachers are made aware of this and that your son or daughter always carries with them the appropriate allergy kit as prescribed by their doctor. Other emergency information requested on this form such as a person to contact in the event of an emergency is extremely important. If there are any medical conditions that you would like to discuss in more detail, please contact the teachers directly. This emergency information will be carried by the teachers on all field trips. Please ensure all information is correct as this will be the only information we will carry with us on field trips pertaining to each student.

Alcohol:

Students participating in ESP fieldtrips are not permitted at any time to have alcohol in their possession or be under the influence of alcohol. It is the policy of the Bluewater District School Board that all students must adhere to the following standard:

“Bluewater District School Board students are not to use, possess, or be under the influence of alcoholic beverages on Board Property or on Board sponsored out-of-school experiences.”

Any student caught with, or under the influence of alcohol on an ESP fieldtrip will be in violation of the Board Policy and will be dealt with according to the School Code of Conduct Policy.

Smoking:

Students are not permitted to smoke while participating in any and all ESP fieldtrips, including overnight trips. It is the policy of the Bluewater District School Board that all students must adhere to the following standard with regard to smoking;

“Bluewater District School Board students are not to use tobacco or tobacco products (including chewing tobacco) on Board Property or on Board sponsored out-of-school experiences.”

Any student caught smoking on an ESP fieldtrip will be in violation of the Board Policy and will be dealt with according to the School Code of Conduct Policy.

Illegal Substances:

Students participating in ESP fieldtrips are not permitted at any time to have any illegal substances in their possession or be under the influence of an illegal substance. It is the policy of the Bluewater District School Board that all students must adhere to the following standard:

“Bluewater District School Board students are not to use, possess, or be under the influence of illegal substances on Board Property or on Board sponsored out-of-school experiences.”

Any student caught with, or under the influence of an illegal substance while on an ESP fieldtrip will be in violation of the Board Policy and will be dealt with according to the School Code of Conduct Policy.

ESP Website:

The ESP program has a website containing a wide variety of information pertaining to this course. Students and parents are encouraged to log on and learn more about the program. It contains a photo yearbook with pictures from each of the previous ESP classes, publications written on the program, and assignments. It is hoped that photos from this year’s class will be added to the website as they become available throughout the semester. The ESP website address is as follows:

www.bwdsb.on.ca/esp

The Duke of Edinburgh Award:

All students enrolled in ESP are also automatically enrolled in The Duke of Edinburgh Award at the Bronze Level. This internationally recognized award is a self-development program available to young people around the globe that provides opportunities to participate in a wide variety of activities including educational and skill training, physical activities, an adventurous journey, and community service. Its objective is to challenge young people between the ages of 14 and 25 to reach for their best. There are three levels of the Award, Bronze, Silver, and Gold. Upon successful completion of each award level, students receive a certificate awarded on behalf of The Duke of Edinburgh, Prince Phillip, to mark their achievement.

If you have any questions concerning any of the information provided in this newsletter, please contact the school.

Appendix I: ESP rubrics

Assignment Rubric

Name: _____

Category	Level 4	Level 3	Level 2	Level 1
Communication	<ul style="list-style-type: none"> -communicates with a high level of effectiveness -assignment contains no spelling or grammatical errors -assignment complete with additional information -work very neatly handwritten or typed -assignment very organised 	<ul style="list-style-type: none"> -communicates effectively -assignment contains very few spelling or grammatical errors -assignment complete -assignment neatly handwritten or typed -assignment organised 	<ul style="list-style-type: none"> -communicates with some effectiveness -assignment contains some spelling/grammatical errors -assignment almost complete -assignment handwritten or typed -assignment shows some organisation 	<ul style="list-style-type: none"> -communicates with limited effectiveness -assignment contains many spelling/grammatical errors -assignment incomplete -assignment handwritten or typed poorly -assignment poorly organised
Knowledge and Understanding	<ul style="list-style-type: none"> -demonstrates thorough knowledge and understanding of facts and concepts -consistently uses terminology appropriately -demonstrates considerable depth and understanding of subject matter 	<ul style="list-style-type: none"> -demonstrates knowledge and understanding of facts and concepts -uses terminology appropriately -demonstrates depth and understanding of subject matter 	<ul style="list-style-type: none"> -demonstrates some knowledge and understanding of facts and concepts -sometimes uses terminology appropriately -demonstrates some depth and understanding of subject matter 	<ul style="list-style-type: none"> -demonstrates little knowledge and understanding of facts and concepts -does not use terminology appropriately -demonstrates little depth and understanding of subject matter
Thinking and Inquiry	<ul style="list-style-type: none"> -demonstrates an in-depth analysis of subject matter -clearly identifies key points and concerns in considerable detail -includes additional resources to enhance overall understanding -includes extensive references 	<ul style="list-style-type: none"> -demonstrates an analysis of subject matter -identifies key points and concerns -includes references 	<ul style="list-style-type: none"> -demonstrates some analysis of subject matter -identifies some key points and concerns -includes some references 	<ul style="list-style-type: none"> -demonstrates little analysis of subject matter -identifies a few key points and concerns -includes no references
Application	<ul style="list-style-type: none"> -able to make many connections between assignment subject matter and the real world -identifies several short and long term impacts in detail 	<ul style="list-style-type: none"> -able to make connections between assignment subject matter and the real world -identifies short and long term impacts 	<ul style="list-style-type: none"> -able to make some connections between assignment subject matter and the real world -identifies some short and long term impacts 	<ul style="list-style-type: none"> -does not make any connections between assignment subject matter and the real world -no short and long term impacts identified
Work Habits	<ul style="list-style-type: none"> -assignment is handed in early -always uses class time effectively 	<ul style="list-style-type: none"> -assignment is handed in by specified due date -usually uses classroom time effectively 	<ul style="list-style-type: none"> -assignment is handed in one day late -sometimes uses classroom time effectively 	<ul style="list-style-type: none"> -assignment is handed in late by more than 1 day -rarely uses classroom time effectively
Presentation (Public speaking skills: clarity of voice, eye contact, comfort level)	<ul style="list-style-type: none"> -provides a comprehensive summary of their topic -does not rely on notes -engages class throughout their presentation -able to answer all questions -demonstrates a complete understanding of the topic -excellent public speaking skills 	<ul style="list-style-type: none"> -provides a good summary of their topic -uses notes occasionally -often engages class in presentation -able to answer most questions -demonstrates an understanding of the topic -good public speaking skills 	<ul style="list-style-type: none"> -provides some summary of their topic -uses notes frequently -sometimes engages class in presentation -answers some questions -demonstrates some understanding of the topic -fair public speaking skills 	<ul style="list-style-type: none"> -provides a limited summary of their topic -reads from notes -does not engage class in presentation -unable to answer questions -demonstrates little understanding of the topic -poor public speaking skills

Comments:

Mark: _____

ESP Student Evaluation

	Level 1	Level 2	Level 3	Level 4
<p>Attitude</p> <p>-positive attitude -peer interaction -follows instructions</p>	<p>a) rarely has a positive attitude toward the class (pessimistic) b) rarely takes part in activities c) rarely interacts positively with peers (anti-social) d) rarely able to follow instructions</p>	<p>a) attitude toward the class varies from day to day b) sometimes takes part in activities c) sometimes interacts positively with peers (semi-social) d) sometimes able to follow instructions</p>	<p>a) usually has a positive attitude b) usually takes part in activities c) usually interacts positively with peers (social) d) usually able to follow instructions</p>	<p>a) consistently has a positive attitude and motivates others (optimistic) b) consistently takes part in activities (enthusiastic) c) consistently interacts positively with peers (very-social) d) consistently able to follow instructions</p>
<p>Leadership</p> <p>-gets along with peers -shows initiative -encourages others -selfish/not selfish</p>	<p>a) rarely gets along with group and demonstrates no leadership (appears to not care about the group) b) rarely shows initiative c) rarely encourages peers (motivates others) d) rarely puts the needs of others or the group first (selfish)</p>	<p>a) sometimes gets along with group but demonstrates limited leadership b) sometimes shows initiative c) sometimes encourages peers (motivates others) d) sometimes puts the needs of others or the group first (semi-selfish)</p>	<p>a) usually gets along with group and helps lead b) usually shows initiative c) usually encourages peers (motivates others) d) usually puts the needs of others or the group first (not-selfish)</p>	<p>a) consistently gets along with group and helps lead b) consistently shows initiative c) consistently encourages peers (motivates others) d) consistently puts the needs of others or the group first (not-selfish)</p>
<p>Respect</p> <p>-shows regard for others -shows respect for others</p>	<p>a) shows no regard for the feelings, rights, or perspectives of others b) rarely shows respect in both verbal and non-verbal communication (tone of voice, body language, very disrespectful) c) always needs to be encouraged to show respect</p>	<p>a) shows little regard for the feelings, rights, or perspectives of others b) sometimes shows respect in both verbal and non-verbal communication (tone of voice, body language, somewhat disrespectful) c) sometimes needs to be encouraged to show respect</p>	<p>a) usually shows regard for the feelings, rights, or perspectives of others b) usually shows respect in both verbal and non-verbal communication (tone of voice, body language) c) rarely needs to be encouraged to show respect</p>	<p>a) consistently shows a high regard for the feelings, rights perspectives of others b) consistently shows respect in both verbal and non-verbal communication (tone of voice, body language) c) never needs to be encouraged to show respect</p>
<p>Commitment</p> <p>-shows initiative -focused -work completed on time -attendance -participation</p>	<p>a) shows little or no initiative to improve fitness level b) rarely pays attention in class c) assignments are rarely handed in on time d) attendance is inconsistent (has missed several days) e) rarely active in class activities and discussions</p>	<p>a) shows some initiative to improve fitness b) sometimes pays attention in class c) assignments sometimes handed in on time d) attendance is somewhat consistent (has missed only a few days) e) sometimes active in class activities and discussions</p>	<p>a) usually shows initiative to improve fitness level b) usually pays attention in class c) assignments are always handed in on time d) attendance is consistent (has only missed one or part of one day) e) active in all class activities and discussions</p>	<p>a) shows outstanding dedication and initiative to improve fitness level b) consistently pays attention in class c) assignments are handed in early d) attendance is consistent (has missed no days) e) extremely active in all class activities and discussions</p>
<p>Effort</p> <p>-cooperation -task completion -helping others -quality of work</p>	<p>a) no attempt to cooperate or participate b) rarely attempts to complete tasks c) rarely helps others even when asked d) quality of work is poor</p>	<p>a) little attempt to cooperate or participate b) sometimes attempts to complete tasks c) occasionally helps others when asked d) quality of work varies</p>	<p>a) actively cooperates and participates b) always completes required tasks c) usually helps others when needed without being asked d) quality of work always meets expectations</p>	<p>a) consistently cooperates and participates as well as taking on leadership roles b) exceeds expectations of required tasks c) consistently helps others without being asked d) quality of work always exceeds expectations</p>

Self
 Peer
 Teacher
 Name: _____
 Date: _____
 Overall Mark: _____

Comments: _____

Appendix J: Letter of introduction

Dear Participant:

My name is Chris Dube and I am a Master's student in the Faculty of Education at Lakehead University. I am conducting a study on assessment strategies employed by teachers of secondary school integrated programs in partial fulfillment of my Master's in Education (MEd) degree.

You will be invited to participate in a short preliminary interview and fill out a questionnaire that will take you approximately 30-60 minutes to complete. You may be contacted for a shorter follow-up interview, should I need clarification.

You should be aware of the following ethical considerations:

- There are no risks to participating in this study.
- All data generated from the study, including tapes and transcripts, will be stored at Lakehead University for five years.
- Your participation in this study is voluntary and you have the right to withdraw at any time.
- You may choose not to answer any question asked during the interview.
- Due to the nature of the study, your name will be included as part of the final write up. By participating in this study you waive your right to anonymity and confidentiality.
- The findings of this project will be made available to you upon completion of the project.

I would like to thank you in advance for your participation. Should you require additional information, please do not hesitate to contact me or my faculty supervisor, Dr. Connie Russell, at the email addresses or telephone numbers listed below.

Sincerely,

Chris Dube, MEd student, Faculty of Education, Lakehead University
Telephone: 807-683-5773
Email: cdube@lakeheadu.ca

Connie Russell, PhD
Faculty of Education, Lakehead University
phone: (807) 343-8049; fax: (807) 344-6807
email: crussell@lakeheadu.ca

Lakehead University Research Ethics Board (807) 343-8283

Appendix K: Consent form

I, _____, agree to participate in a study conducted by Chris Dube on **Assessment and Evaluation Practices in Outdoor, Experiential, Environmentally Focused Integrated and Interdisciplinary Programs**. The purpose of this study has been explained to me. I understand the following:

1. My participation is voluntary and I have the right to withdraw from this study at any time.
2. You may choose not to answer any question asked during the interview.
3. There is no apparent risk to my participation in this study.
4. I waive my right to anonymity and confidentiality.
5. All data generated from this project will be stored at Lakehead University for five years.
6. I will receive a summary of the study results, upon request, following its completion.

Signature of Participant

Date

Signature of Witness

Date

Please provide your address (or email address) here to receive a summary of the study results: