EFFECTS OF FIELD TRIPS ON ALTERNATIVE STUDENTS’ KNOWLEDGE, SKILLS, ATTITUDES, AND RELATIONSHIPS

By

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Effects of Field Trips on Alternative Students

Abstract

The purpose of this project was to understand how curriculum-connected experiential outdoor science programs can affect alternative school students’ knowledge, skills, and attitudes towards learning. Field trips represent an underused and potentially significant avenue for alternative schools to further support students both academically and psychologically. By using observations, discussion and one-on-one interviews, a qualitative analysis of participants’ knowledge, skills, attitudes, and social engagement was conducted. After a series of five curriculum-connected field trips, participating students from an alternative school in British Columbia presented enriched understanding and knowledge of curriculum content, improved observation and communication skills, stronger relationships, and increased positive attitudes towards learning. Results suggest that curriculum-connected field trips provide positive hands-on experiences from which students can build understanding, develop skills, and cultivate positive learning relationships. This research may be used in the development and design of future programs for alternative students aimed at further supporting student achievement and success.

**Keywords:** alternative students, alternative education, outdoor education, curriculum-connected field trips, field trips.
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Foreword

We don’t look at a calla lily and say that it has “petal deficit disorder.” (Armstrong, 2012, p. 12)

To help situate the research reported in this thesis to my life, I have decided to write this foreword to tie my own personal history to authors I have cited and the research that I conducted.

Since childhood, I have felt a sense of peace and place when in the outdoors. Without walls to confine me and with a never ending potpourri of unique, interesting, and alive things, my mind always had something to focus on—even if it was for short brief moments. My mother would put me outside whenever I was too rambunctious to be inside when I was literally climbing up the walls. Instead of being a nuisance indoors, I became an accomplished explorer, tree climber, fort builder, and game warden of the backyard. Rather than labelling me as rambunctious or as having an attention deficit, my mother simply did what she found worked best—she put me outdoors!

Throughout elementary, middle, and high schools, I could always be found outside. During the school year, I was enrolled in Scouts where, on any given weekend, I was either camping or planning the next camping trip. In the summers, I lived in the tree in our backyard. I lived suspended in the tree—in a hammock. Not just overnight—but for the entire summer. Even during high school summers when I worked at the local pool, I lived in the tree: I have an obvious affinity towards the outdoors.

When I entered university, I was still predominantly found outdoors, so not much had changed—except perhaps my social circle. Not knowing exactly what I wanted to be or what degree would be most beneficial, I chose courses that sounded interesting and took me outside. Wildlife biology, ecology, limnology, animal behaviour, marine biology and fine arts were the
courses that all spoke my language as I had spent so much time informally learning from and in nature. Although this approach may have been random and unguided, in the end, it not only proved to be an accurate path that provided me with a solid background of information about things I was interested in but also gave me practical skills to use when pursuing a career after university!

Now, fast-forward to the end of the second Master of Arts in Environmental Education and Communication (MAEEC) residency when thesis ideas were erupting from our cohort like popcorn from a kettle. Immediately prior to taking our separate paths for the year, a wonderful young woman from Student Accessibility Services reminded our class that help was available if we found sections of the journey particularly treacherous. She spoke of how theses come with a certain amount of “bum time”; how, for some (the movers and the shakers), this can be especially difficult; and how assistance could be provided. Feeling particularly anxious about the thought of extensive “bum time,” I agreed to undergo some tests to see what challenges I might face and what tools would be especially useful to me. As with any process, however, it was a long one with a diagnosis months away, so I quickly moved on and proceeded with beginning my “original thesis.”

As karma would have it, that original thesis was really based on justifying a decision I had made years before with regards to a career path. After 4 months of grinding away and trying to work with that thesis premise, I was getting nowhere. I then decided it was time to cut my losses and move on. It was a moment of freedom similar to when you finally decide to pull yourself out of your warm sleeping bag, step outside into the cold night air, and pee after contemplating the resolve of your bladder for the last half hour. My problem was that I didn’t have a warm welcoming sleeping bag to return to and that I was emotionally drained having “peed away” all I had tried to do so far.
So in December of 2013, 5 months gone and without a thesis subject, my diagnosis from Student Accessibility Services came in. I use the term diagnosis lightly as, in this case, my condition is not a serious illness and, truthfully, I always subconsciously knew it was there. It now just had an official name. I have attention deficit hyperactivity disorder, or ADHD. As you can imagine, I was pretty anxious after hearing this new revelation. I worried about losing time by not picking the right thesis subject and about how this was going to affect my career and completion of my MAEEC program. This resulted in my talking to every, and any, person who would listen to me about my personal crisis.

Thank goodness I had a conversation about my love for the outdoors and my newly discovered (yet always present) ADHD with an alternative education teacher. This conversation connected the seemingly unconnected dots in my life and led to my thesis research; my thesis was born!

To my amazement and delight, I discovered that a new alternative school for students who have been more or less removed from regular classes due to behavioural or psychological reasons, had just opened up in the city I live in. This school was running on minimal staff, with a full roster of just over 50 students who find traditional classroom learning exceptionally challenging. My love and exceptional knowledge of nature, my own recently discovered learning disability (I only say recently discovered because my continuous outdoor lifestyle allowed me to cope with and excel academically), and my need for a research idea melded into a fantastically wonderfully conveniently located and researchable research question: How does a curriculum-connected experiential outdoor science program affect alternative school students’ knowledge, skills, and attitudes towards learning?
Chapter 1: Overview

Nature is good for you. Time spent in nature and even viewing nature (Kaplan, 2001) has been shown to have benefits for child development and general human well-being. The benefits have also been highlighted by authors and educators such as Louv (2005) and Van Matre (1979). The beneficial effects can range from increased sense of well-being (Kaplan, 1995; Mayer, Frantz, Bruehlman-Senecal & Dolliver, 2009) and restored cognitive functioning (Berman, Jonides, & Caplan, 2008; Kaplan, 1995; Taylor & Kuo, 2009) to increased physical and mental health (McCurdy, Winterbottom, Mehta, & Roberts, 2010). These benefits have been the focus of many nature-based therapeutic programs that utilize the restorative effects of natural environments. Such programs range in style from meditation retreats for those specifically seeking these beneficial effects to intense wilderness adventure interventions for troubled youth.

Outdoor and experiential education also utilizes the positive effects of natural environments as a means to explore learning and to give students hands-on experience (Adkins & Simmons, 2002). Outdoor programs specifically targeting at-risk children and youth have resulted in “significant improvements in peer relations, group cohesion and self-esteem” (Fox & Avramadis, 2003, p. 278) as well as “promot[ing] well-being and mitigat[ing] the impact of risk factors [that at-risk children] face” (Ungar, Dumond, & McDonald, 2005, p. 336). Such programs are wonderful; however, their duration may not be sufficient to have lasting effects (Bruyere, 2002).

Through this research, I sought to specifically address the ways in which the benefits of nature could be utilized when working with “alternative school,” or at-risk, students—not as a means of short term intervention but as a potential avenue to support student development and long-term success. This research sought to understand how a curriculum-connected experiential
outdoor science program could affect alternative school students’ knowledge, skills, and attitudes towards learning. By understanding the effects of such programs, educators may be better situated to integrate them into the alternative curriculum. Again, my research questions is as follows: How does a curriculum-connected experiential outdoor science program affect alternative school students’ knowledge, skills, and attitudes towards learning?

In order to understand how a curriculum-connected experiential outdoor science program could affect alternative school students, I had to first create such a program. I set out to review existing literature that outlined the benefits associated with time spent in nature generally (Berman et al., 2008; Kaplan, 1995; Mayer et al., 2009; Taylor & Kuo, 2009), the benefits to youth engaged in outdoor programs (Fox & Avramadis, 2003; McCurdy et al., 2010; Ungar, 2005), and the concept of experiential learning (Adkins & Simmons, 2002). These components were then incorporated into the design and development of a field trip program tied to the existing British Columbia Ministry of Education curriculum in a way that provided unique learning opportunities that addressed specific alternative students’ needs. The programs were also designed to bring students together in a learning environment that naturally promoted increased well-being and the creation of positive relationships (Mirrahimi, Tawil, Abdullah, Surrat, & Usman, 2011).

The effects of the field trips on students’ knowledge, skills, and attitudes were assessed through the collection of descriptive qualitative data: observations of and discussions with students and teachers throughout the duration of the program, and a series of interviews following the completion of the program. The results of this research indicate that field trips can be successfully utilized to teach curriculum content and to provide the positive benefits
associated with spending time in nature. All student and teacher names presented are pseudonyms.

**Background**

In reviewing existing programs and literature relating to nature-based programming and at-risk youth, at-risk youth benefited from nature-based activities emotionally, physically, and socially (Fox & Avramadis, 2003; Rosol, 2000; Russell, 2003), and these benefits were observed to aid students in “being more receptive to learning opportunities” (Ungar et al., 2005, p. 331). I found it challenging, however, to find research regarding the regular use of school field trips (i.e., regularly scheduled field trips: once a month, every second week, etc.) despite the similarity between field trips, nature activities, and nature-based therapeutic programs, which are accepted as beneficial for children and adults.

In discussions with teachers during this research, and past encounters in my career as an environmental educator, I understand that justifying the use of class time is a significant limiting factor in the implementation of school-based field trips. Teachers feel pressured to fit as much academic learning into each day as possible, and thus field trips were not used as regularly as they would like due to perceived opinions of parents and administration. Maynard and Waters (2007) indicated that teachers were hesitant to integrate outdoor learning, which is often viewed as outdoor play, into their schedule as it “was seen as having little to do with what teachers saw as their primary role: ‘teaching’ curriculum content” (p. 262). The commonly held belief of parents and teachers, that most academic learning occurs only within a classroom, further complicates this lack of information that supports the regular use of field trips.
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Limited Use of Outdoors

Despite the known academic benefits of experiential learning and wellness benefits of time spent in nature as listed above, the use of field trips and outdoor classes in both traditional schools and alternative programs appears to be minimal. Learning in schools is often restricted to classrooms as teachers may be too busy to organize properly designed outdoor activities that address the curricular learning objectives. Teachers may potentially feel inadequately trained to lead outdoor learning programs in terms of safety and nature knowledge, or they don’t know how to connect learning objectives to available locations. Even Mr. Bradley, an enthusiastic supporter of this research, shared his concern that “students are not getting as much time in other coursework” if they are participating in field trips (personal communication, June 10, 2014). Mr. Bradley’s comment suggested that educators may not readily recognize the learning connections and potential benefits of field trips and only see field trips as enjoyable activities with little academic application, which does not justify using up class time (Bruyere, 2002; Maynard & Waters, 2007). This research, therefore, is aimed to reflect Sharp’s (as cited in Adkins & Simmons, 2002) belief: “That which can best be taught inside the schoolrooms should there be taught, and that which can best learned through experience dealing directly with native materials and life situations outside the school should there be learned” (p. 2).

Alternative Schools

Alternative schools and programs are specifically designed to provide alternatives to traditional education methods. Many high schools have separate distinct “alternative” classes for students who find the traditional classroom teaching style challenging. Students may be placed in such alternative classes as a result of their behaviour (aggression, violence, trouble with authority, etc.) or psychological conditions that make regular class setups difficult, such as
anxiety or depression (British Columbia [BC] Ministry of Education, 2009). Alternative schools were created to provide “programs that meet the special requirements of students who may be unable to adjust to the requirements of regular schools” (Smith et al., 2008, p. 7); however, focus is often on fixing the student rather than adapting the educational environment to meet student needs, which often intensifies the challenges (Gregg, 1999).

When initially created, the purpose of the alternative approach was to design individually styled learning for each student to best accomplish his or her academic goals. Although individualized learning plans provide specific learning schedules unique to each student, the individualized approach can make it challenging to keep the combined group atmosphere diverse and engaging. Teachers are responsible for multiple students, each learning different subjects for the others throughout the year; therefore, planning class activities that meet the prescribed learning outcomes for so many different students can be quite challenging, if not impossible. Because of the dramatic differences in the composition of students in any given classroom, learning is evaluated from isolated individualized tasks such as self-directed reading and assignments. The individualized nature of the learning environmental consequently limits engagement in topic discussions with other students, restricts hands-on learning, and hampers experiential understanding.

The method of “read-write-repeat-evaluate” is the only approach I have encountered in my own schooling as well as in conducting this research. This approach simplifies the evaluation process as the right answers are easy to determine as correct or not, which is convenient for school wide evaluation of learning; however, I feel that the benefits of this method are limited to students with strong reading and writing skills, and does not account for students with are weak in these areas. As a result, students who are placed or participate in alternative programs may
face challenges with the read-write-repeat method and may be further marginalized as a result of being labelled and separated from “normal” students (Gregg, 1999). Although the intention of the alternative program is to customize learning to meet student needs, the actual follow-through and resulting outcomes are often the opposite.

Throughout much of the literature reviewed for this research, the terms youth-at-risk, at-risk-youth, or alternative students are used to describe students who are facing learning-related challenges similar to my student participants. For the purposes of this research, the terms alternative students and alternative program will be utilized as they emphasize the alternative approach to learning and avoids wording that would imply viewing these students through a deficit lens (Loutzenheiser, 2002).

Need to Create a Unique Program

The ultimate goal of this research was to understand how field trips can support alternative student learning by developing a field trip program that is curriculum-connected and that marries the perceived benefits of nature, outdoor programs, and experiential learning. To answer my research question and to properly evaluate the effectiveness of routine field trips, I first needed to see if similar programs existed, how they were designed, and if they could be integrated into this research. Although local environmental education organizations offered field trip programs and activities, such programs generally had limited connections to prescribed learning outcomes, and staff often lacked the training and context to effectively address alternative students’ needs. The cost of such programs, especially if multiple excursions were involved, could also be a significant hurdle in justifying and integrating field trips on a regular basis.
Ultimately, I needed to design and develop a program specific to the purposes of this research that fit into the existing curriculum and that met the needs of the participating school. As each of the participating students was working on different components of the curriculum, creating the program required assessing the grades 7 to 10 BC science curriculum. I placed emphasis on Science 10 as this course, that many of the participating students were enrolled in or would be taking shortly, is a prerequisite for graduation. Further details regarding program development will be discussed in Chapter 3.

**Study Limitations and Delimitations**

This study was conducted with a small number of alternative students from one British Columbia (BC) municipality; therefore, the findings may not be applicable to all alternative students within BC or beyond. Additionally, discussions with students throughout the school year and responses collected from student and teacher interviews may not represent the opinions, challenges, or unique needs of other alternative students or teachers. Furthermore, the relationships developed between myself and the participants were unique to this group of students and, given the importance of positive relationships on student attitudes and engagement (Henderson, 2013; Sadowski, 2013; Warshof & Rappaport, 2013), these relationships likely affected the results in a way that may not be replicated in similar studies.

Student participation with the field trip program, all related activities and interviews were voluntary. It is possible that those students who self-selected to participate had established positive views of field trips, whereas students who actively chose to not participate may have had pre-existing neutral or negative opinions of the use of field trips. This may have caused self-selection sample bias within the research; however, due to the design of the research and nature of the participants, this was unavoidable.
Curriculum-connected field trips described in this thesis were specifically developed and delivered as a component of the research and required a significant amount of financing, planning, and coordination. This suggests that resources may be a limiting factor for teachers wishing to execute similar programs. Without grant funding from the Habitat Conservation Trust Foundation the program would have been much different and therefore the results may have changed.

A strike of all teachers had begun on the third day of interviews, which made further engagement unfeasible. Further data collection, in the form of a final group discussion, was intended; however, with just over a week remaining in the school year, it was unrealistic to expect additional data collection would be possible. Regardless of this, I am confident the data collected sufficiently represent the experiences of the participants.
Chapter 2: Literature Review

The lives of youth are complex and full of challenges, and youth must carefully navigate between being a child and being an adult in a world that lacks significant roles for teens (Rosol, 2000; Ungar et al., 2005). All youth are subjected to relentless demands on their academic, social, and emotional abilities; however, many alternative students also struggle with psychological or behavioural issues symptomatic of difficult life circumstances. Alternative youth are those youth who have been “marginalized, for example as a result of abuse, sexual exploitation, substance abuse, bullying, discrimination, mental health problems or street involvement” (Smith et al., 2008, p. 7). They are often observed to behave reactively in normal situations as their flight-or-fight response is constantly on high alert as a result of being exposed to trauma or loss (Warshof & Rappaport, 2013). Such factors influence the ability of these students to succeed in regular school settings and can often lead to students becoming disengaged with school and learning (Smith et al., 2008).

Mental Health Issues

A research study conducted by Smith et al. (2008) was aimed at understanding the challenges faced by alternative youth and showed that “the most common problems that health professionals told [alternative youth] they had were difficulties with anger (22%), depression (21%), ADHD [attention deficit hyperactivity disorder] (18%), a learning disability (14%), and addictions (13%)” (p. 29). This is reflective of similar research that showed, “Six percent of adolescents 14–18 years old have been diagnosed with depressive disorders [and] 14% of adolescents categorized their stress as extreme” (McCurdy et al., 2010, p. 107). Mental health issues can heavily influence students’ self-confidence, social interactions, and ability to learn and
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are often treated with medication—most predominantly for symptoms of attention deficit hyperactivity disorder (ADHD; McCurdy et al., 2010).

**Attitudes Towards Learning**

Student attitudes towards learning can significantly affect rates of retention and enrolment as indicated by Lovelace and Brickman (2013), who suggested that “in some courses, students’ attitudes may provide a better predictor of success than quantitative ability” (p. 606). Positive attitudes towards learning, however, can be challenging to maintain given alternative students’ predispositions to viewing themselves through the deficit lens (Gregg, 1999; Jacobson, 2013). Jacobson (2013) further highlighted this challenge when he stated: “Students are less motivated by their own ability than by what they believe to be true about themselves” (p. 41). Too often alternative programs focus on the negative issues that students face, such as ADHD and behavioural issues, rather than creating positive environments that foster the development of students’ existing strengths (Armstrong, 2012); the focus on negative issues makes it challenging for students to maintain positive attitudes towards learning. Alternative programs that have high levels of school connectedness and positive student–teacher relationships, however, have shown that students “liked school considerably more, and skipped school considerably less” (Smith et al., 2008, p. 9).

**Other Challenges**

Alternative youth also face many other challenges beyond their own mental health issues and attitudes towards learning. Unstable housing situations can significantly affect a student’s ability to attend classes regularly and may “lead them to fall behind academically and subsequently become disengaged from school” (Smith et al., 2008, p. 15). Additional barriers to succeeding in school may also include factors such as poverty, hunger, transportation, abuse or
sexual exploitation (or both), substance abuse, or criminal involvement. Pregnancy plays a significant factor affecting approximately 9% of youth who have become disengaged from school, and “young mothers wanting to continue their education are often forced to stay home because many day-care centres do not accept infants, or the youth cannot afford the fees” (Smith et al., 2008, p. 19). Employment can also cause students to disengage from school: “The more hours they worked, the less likely it was that they would be attending school” (Smith et al., 2008, p. 26). Smith et al. (2008) found that just under a third of youth in alternative students surveyed reported working, and more than half of those working were working more than 20 hours per week.

**Alternative Programs**

Despite the myriad of challenges these youth face, many show “great determination to continue their education” (Smith et al., 2008). Alternative programs and schools are built specifically to address the special requirements of these types of students; these programs and schools provide an alternative approach to traditional classroom learning, flexible schedules, and specialized supportive staff (Smith et al., 2008). Henderson (2013) found that “positive school climate contributes significantly to academic success, especially for struggling students in urban schools” (p. 26). Students who receive supportive instruction believe in their own ability to achieve and can find relevance in the learning material are better situated to succeed (Henderson, 2013; Loutzenheiser, 2002; Klem & Connell, 2004; Smith et al., 2008).

A feeling of boredom in school or a belief that learning material has no relevance to their lives has been shown to account for two-thirds of youth who reported becoming disengaged with school (Smith et al., 2008). Students who experience supportive teacher relationships are three times more likely to report engagement (Klem & Connell, 2004). Additionally, Klem and
Connell (2004) noted, “Engaged students pay more attention, look more interested, are more persistent in the face of challenges than disengaged students” (p. 270). Engagement with natural environments has been recognised to affect students’ abilities and social development by providing a “significant means of developing relationships between students and teachers, creating renewed energy and excitement for students ability” (Ballantyne & Packer, as cited in Mirrahimi et al., 2011, p. 393).

**Nature and Outdoor Programs**

Lately it has become the norm for children and youth to be indoors, often in front of a screen (Ergler, Kearns, & Witten, 2012; McCurdy et al., 2010), which significantly affects the ways they are able to receive and interpret new information. Supervised indoor activities and screen time has become more and more the norm, whereas spending time outdoors has become infrequent (Ergler et al., 2012; Taylor & Kuo, 2006) despite the American Association of Pediatrics recommendation “that children spend as much time outdoors as possible” (McCurdy et al., 2010, p. 107).

Current research has suggested that nature-based and outdoor programs have the potential to help reduce the symptoms of stress, anxiety, and ADHD (Mayer et al., 2009; Taylor & Kuo, 2009; Taylor, Kuo, & Sullivan, 2001) and to increase self-esteem and socialization (Fox & Avramidis, 2003; Ungar et al., 2005; Weinstein, Przybylski, & Ryan, 2009). Such programs have also been shown to improve cognitive functioning and attention abilities (Berman et al., 2008; Taylor & Kuo, 2009) and to reinforce feelings of well-being (McCurdy et al., 2010; Mirrahimi et al., 2011; Ungar et al., 2005). It is logical, therefore, to suggest that such programs may significantly benefit alternative students who struggle with such challenges.
Experiences in natural environments have been shown to mitigate stress (Kaplan, 1995) with high levels of nature exposure linked to lower levels of stress in children (McCurdy et al., 2010). Development of self-confidence and risk management skills have been associated with children’s experience and physical risk taking in outdoor environments (Maynard & Waters, 2007). Children who play in natural landscapes, such as forests, have shown enhanced motor skills, balance and coordination, and overall, they appear healthier (Maynard & Waters, 2007).

**Cognitive benefits of exposure to nature.** Exposure to nature has been linked to improved cognitive functioning (Berman et al., 2008; Kaplan, 1995) as well as increased impulse control (Taylor & Kuo, 2009). Taylor and Kuo (2009) found that “gently absorbing settings draw involuntary attention, providing a respite from more effortful, deliberately directed modes of attention” (p. 406), which are often associated with reading, writing, or problem solving. Their research identified that a nature walk had the potential to reduce the symptoms of ADHD in children to roughly an equal effect of ADHD medication (Taylor & Kuo, 2009). They had also found an interesting correlation between the increased tree cover and decreased severity of ADHD symptoms (Taylor, Kuo, & Sullivan, 2001). For students with ADHD, nature experiences may be a useful treatment and could possibly replace medication completely (McCurdy et al., 2010; Taylor & Kuo, 2006; Taylor & Kuo, 2009; Taylor et al., 2001). While Berman et al. (2008) had found that “simple and brief interactions with nature can produce marked increases in cognitive control” (p. 1211). Experiences as simple as spending a short period of time in nature have been shown to “improve attention, positive emotional well-being, and develop an increased ability to reflect on a life problem” (McCurdy et al., 2010, p. 110).

**Social benefits of exposure to nature.** Nature-based and outdoor programs have the potential to positively affect how youth perceive themselves and others, which can create
opportunities to develop positive relationships and to build community. Outdoor “play” can help students increase independence and further develop social relationships, a sense of self, and self-confidence through negotiating risks, inquiring about the unknown, and by perceiving the environment independently—even more so when not under strict supervision (Ergler et al., 2012). Ungar, Dumond, and McDonald (2005) suggested, “Immersion in nature makes us aware of not only our relationships with the natural environment, but also our relationships with each other” (p. 321). This increased awareness of relationships can be a valuable asset for students in alternative programs where the part-time, flexible, self-directed schedules make it challenging to develop a sense of connection (Smith et al., 2008).

Learning in natural environments has been linked to increased “sharing, communication, team working, self-awareness, self-confidence, self-regulation, self-discipline, improved problem solving in classroom, inspiration towards learning, [and] social skills” (Mirrahimi et al., 2011, p. 395). As students and teachers learn together in new outdoor environments, they can build shared experiences and engage with each other differently than they would in a classroom setting (Maynard & Waters, 2007). Social workers have indicated that participants in outdoor programs gradually become more open to sharing and are willing to undertake new learning experiences (Ungar et al., 2005). Weinstein, Przybylski, and Ryan (2009) suggested, “To the extent that our links with nature are disrupted, we may also lose some connection with each other” (p. 1328), indicating that as we engage with nature, we can also create stronger relationships. This may also be a significant way to spark students’ interest in learning and to develop or strengthen student and teacher relationships (Mirrahimi et al., 2011). Caring, healthy, and supportive relationships have been shown to be a significant contributing factor of student success (Henderson, 2013; Klem & Connell, 2004; Sadowski, 2013; Smith et al., 2008; Warshof & Rappaport; 2013); these
relationships can be powerful leverage points to assist students in overcoming challenges (Henderson, 2013).

**Experiential Learning**

The informal nature of an outdoor learning experience is also well suited to students “who typically do not thrive in formal situations” (Bruyere, 2002, p. 211) and provides a relaxed setting, a change of pace, and different perspectives. Research by Caulkins (2010) suggested that “experiential education activities used by alternative schools can generate meaningful, and perhaps more importantly, long-lasting impacts in the lives of ‘at-risk’ youth” (p. 272). Experiential learning, specifically nature-based hands-on learning, can create the space for curiosity, self-directed learning and development of individual strengths—components that are often limited in a traditional classroom settings (Armstrong, 2012). Outdoor programming provides an informal avenue preferred by youth (Bruyere, 2002) that can be utilised for exploring material and supporting academic success as well as promoting additional social and emotional benefits. By venturing outdoors, teachers and students can explore the world as it is and construct knowledge, skills, and values from direct experiences (Association for Experiential Education, as cited in Adkins & Simmons, 2002, p. 5)

**Existing Outdoor and Wilderness Programs**

The majority of research that pertained to outdoor programs for alternative youth reflected two distinct types of programs: either singular short experiences such as day trips or overnight camping excursions, and expedition-style wilderness and adventure programs (Bruyere 2002; Russell, 2003). These programs generally focus on the positive effects of nature and wilderness on youth behaviour and include the following:
• increased self-esteem and self-confidence (Bruyere, 2002; Fox & Avramidis, 2003; Taylor & Kuo, 2006; Ungar et al., 2005);
• increased social behaviour (Bruyere, 2002; Fox & Avramidis, 2003; Taylor & Kuo, 2006);
• reduced negative behaviours (Fox & Avramidis, 2003; Taylor & Kuo, 2006); and
• potential therapeutic application (Rosol, 2000; Russell, 2003).

While outdoor programs are certainly not a singular solution to the problems that face alternative youth, each students’ experiences may aid in supporting student success and well-being (Fox & Avramidis, 2003).

Students’ who have participated in wilderness or adventure programs have been shown to have developed a “more positive sense of self” (Autry, 2001, p. 301) and improved interpersonal and decisions-making skills (Taylor & Kuo, 2006). Therapeutic practitioners have noticed that after participating in wilderness experiences, participants are more open to counselling and learning opportunities (Ungar et al., 2005). Such programs have also been shown to “foster secure attachments with staff and other participants that are less hierarchical, more caring, and based on natural consequences that avoid issues of power discipline and control” (Ungar et al., 2005, p 331).

Clearly, wilderness and outdoor programs can have positive effects for alternative students; however, these programs are challenging to integrate into students’ lives and are often implemented as intervention measures rather than preventative strategies. Additionally, Soh and Meerah (2013) noted, “Most of the non-formal education programs are based on the needs of the respective agencies” (p. 5) which may, or may not, overlap with the special needs of the student participants. Although outdoor alternative intervention programs readily highlight the immediate
effects observed in participants, many fail to provide any assessment of long-term effects 
(Bruyere, 2002). An assessment of such outdoor programs by Bruyere (2002) revealed that the positive effects of such programs were noted to fade considerably after students leave the program, which suggests that limited integration into students’ academic lives and the isolated one-time-event essence of such programs hampered any lasting long-term effects (Fox & Avramidis, 2003). To combat the fading effects of single experiences, Bruyere (2002) suggested that “programs that are long term and provide regular and frequent contact are more likely to be successful” (p. 211).

**Integrated Field Trip Programs**

Although similar to outdoor programs, curriculum-connected field trips have been shown to affect students’ over the long term (Benton, 2013). Participants in curriculum-connected field trips, however, have been observed to have “retained environmental and ecological content” (Farmer, Knapp, & Benton, 2007, p. 40) and have shown a “perceived increase in proenvironmental attitudes” (p. 40). Research conducted by Caulkins (2010) involved weekly outdoor programs that had been integrated into the existing curriculum. Caulkins observed that use of such curriculum-connected programs with alternative students had long-term effects, including alleviated emotional and physical problems, as well as the development of healthy relationships and community building. Field trips can also provide opportunities for students to connect with the outside world and develop their own interests, which creates relevancy between their own lives and their learning (Knapp, 2000).

Learning science can be difficult and students’ predisposition to learning about science may influence their attitudes towards science (Lovelace & Brickman, 2013). Soh and Meerah (2013) found that when students experienced exciting and novel learning situations they were
likely to be enthused about learning, and that the “integration of formal and informal setting can be used in order to increase the students awareness towards science” (p. 5). Knapp (2000) also recognized a connection between positive experiences and the novelty of field trips and noted that even though students may not have retained specific information long-term, they remained positive about the experience and desired to learn more.

Chapter Summary

The benefits provided by time spent in nature are well known and the outdoor environment naturally provides a variety of unique learning opportunities that can be advantageous for alternative learners. Additionally, more time outdoors does not come with any additional risks, side effects, or social stigma (Taylor & Kuo, 2009). Obviously no one learning approach or one tactic in addressing the challenges that alternative youth face will work in all situations (Bruyere, 2002; Loutzenheiser, 2002). It is essential to conduct more research related to such programs to collect long-term data that can help us understand the impact of such programs (Farmer et al., 2007; Fox & Avramidis, 2003). By adapting programs to focus on student strengths, provide unique learning experiences, and provide opportunities in which students and teacher can build positive relationships, we can further support and encourage alternative students to succeed.

The following chapter will explore the methods used in creating a unique field trip program and the methods utilized in assessment of the programs effects on participating students.
Chapter 3: Research Methods

Research for this project began by conducting a comprehensive investigation into existing resources that describe how outdoor education, field trips, and experiential learning effects students. Through my research efforts, I found ample information celebrating the positive attributes of time spent in nature and the way it affects children and youth, including reduced symptoms of certain conditions such as anxiety, depression, and ADHD as previously outlined in the literature review. Having recently reflected on how my own symptoms of ADHD were mitigated by my time spent in natural settings and studies, I was especially interested in the ways that experiential outdoor learning, when integrated into the curriculum, could affect students with similar challenges, specifically alternative students.

Throughout this research, I intended to achieve a greater understanding of how experiential outdoor learning, one form of which is field trips, could affect students’ knowledge, skills, and attitudes towards learning when delivered as a series of five trips over a period of four months. The following steps were taken when conducting this research:

- acquisition of sponsorship from a local alternative school;
- recruitment of staff and students;
- creation and delivery of a curriculum-connected science field trip program;
- development and conduct of student and supervisory staff interviews;
- qualitative analysis of 13 student and three supervisory staff interviews; and
- continuous observations and reflection of the program experiences.

Recruitment

An alternative school had recently opened in the Lower Mainland region of BC, and I approached the principal regarding the potential for their involvement in my research. The
principal and teachers were enthusiastic about the opportunity to be involved as well as to have the obvious bonus of regular curriculum-connected field trips to add to their class schedules. I intended that this program would expand awareness of learning opportunities outside of the classroom and would generate opportunities for students to engage in positive learning experiences. At that time, I was buoyed by being able to work with a school that housed students who were having difficulty within the regular school system and who had chosen or had been enrolled in an alternative program.

Although I had administrative and staff acceptance, I wanted to ensure that the students would be open to the idea of participating in the research as I felt it was essential to build a respectful relationship with them early on. Aziz and Said (2012) summarized the importance of this concept when they stated:

- It is important to do research with children rather than on children . . . the research has to be children-centred, which reflects upon special consideration on the groups being studied, ensuring children’s participation in research by working with them to select methods that are appropriate to both the research aims and to the context in which they live. (p. 210)

To accomplish this, I made sure to make myself present and available in the school early on and engage with students whenever I stopped by. During an afternoon class, I presented my proposed research idea and methods and held a discussion session with both the students and their teachers. During this session, I was able to address questions, gather ideas, and get to know some of the students individually. By involving the students in the initial planning and development of this research I believe that students were compelled to contribute, that they felt
their individual involvement was valued, and that they understood their responsibilities as active research participants.

**Participants.** The participants consisted of students and staff of the small alternative school, which consisted of four teachers, four support staff, and three classes with a total population of 53 students. Ongoing placement of students took place throughout the research, and thus an average number has been used. The school was located in an urban setting within a municipality of approximately 37,000 people in the Lower Mainland region of BC (Statistics Canada, 2014). The facility was an old elementary school and was shared by the school and other educational users, including a seniors’ health and wellness group and an English as a Second Language program. Twenty-three students, three teachers, and three support staff participated in at least one field trip over the period of the research; of these participants, thirteen students and all three teachers contributed to the research interviews.

**Invitations and Consent**

Invitation letters were distributed to the student body following the discussion session, and all students were invited to participate (see Appendix A). The invitation letters outlined incentives for students to participate in the research, including the opportunity to attend a series of regularly scheduled curriculum-connected field trips, to experience non-classroom learning, to visit a variety of local areas, and to potentially gain credit towards their science courses (depending on their level of engagement with the material). This latter incentive was directly under the aegis of the staff, who would be the arbiters of the credits gained. A prerequisite to participate in the field trips was that students must agree to participate in the data collection at the end of the each field trip as well as a final feedback survey accompanied by a personal or
group interview. The fifth and final field trip, which was to Stanley Park and the Vancouver Aquarium, was scheduled to follow the interview sessions as additional incentive to participate.

Parental consent letters were also distributed with the invitation letters (see Appendix B); however, as the school required their own separate permission form, initial return of research consent forms was poor. To ensure an acceptable participant base, I chose to allow students who did not have research consent forms to participate in the field trips and continued to distribute consent forms throughout the school year. Consent forms were also required for participating teachers (see Appendix C). All data used in this research have been collected from only those students and teachers for whom consent was confirmed. Some students were old enough to provide their own consent to join in the research.

Field Trip Program

Purpose. Given that the purpose of the research was to determine how field trips affected students’ knowledge of delivered content, skills relating to natural science, and attitudes towards learning, it was critical that the field trips be designed according to the BC Science 10 curriculum and address the prescribed learning outcomes. Focus was given to delivering those prescribed learning outcomes from the distance learning worksheets that these alternative students use to complete their coursework (see Appendix D).

Scheduling. A series of five field trips were scheduled to take place every 4 weeks from March through June 2014. Each field trip was designed to incorporate a minimum of two prescribed learning outcomes from the BC curriculum, to function as both a stand-alone field trip experience, and to contribute to the sequentially built-upon concepts over the duration of the program. All program planning and coordination, other than scheduling dates with the school, was my responsibility and included the following: applying for funding, scheduling trips,
developing lesson plans, creating or purchasing materials, delivering each field trip, and evaluating the field trips. The first three trips as well as the last one were designed and delivered by myself, whereas the fourth field trip was delivered by the Freshwater Fisheries Society of BC. As mentioned previously, the fifth field trip was especially designed and scheduled to provide extra incentive for students to contribute to the interview sessions.

**Lesson Plan Creation.** To ensure that the field trip activities were adequately delivering the prescribed learning outcomes and that field trip experiences would be able to be examined in the research question, the instructional design method composed of analysis, design, develop, implement, evaluate (ADDIE; Mayfield, 2011) was implemented in the creation of each field trip lesson plan. This process utilized ongoing analysis of needs to evaluate program design and delivery so that adjustments could be made throughout the duration of the field trip program.

**Analysis of needs.** BC Science 10 curriculum prescribed learning outcomes and distance learning worksheets were analyzed to determine which concepts could be readily, and often more easily, taught in an outdoor learning environment. Particular focus was given to natural science concepts—such as ecosystem biology, energy transfer, and interconnections—as these concepts were readily applicable to outdoor learning settings. Simultaneously but separately, students were asked to provide information about how they “feel they learn best” through a simple survey outlining a variety of learning styles (see Appendix E). The survey structure and wording were based on survey questions often utilized by teachers and researchers to study students’ learning styles, similar to methods outlined by Willms, Friesen, and Milton (2009) and Lovelace and Brickman (2013).

Once the selected prescribed learning outcomes were identified, five themed field trips were outlined. Each trip was designed to have a central theme that was supported by the
activities and the associated prescribed learning outcomes. Information gathered from the student survey was incorporated into the design of each field trip to ensure activities represented student learning styles. The BC curriculum prescribed learning outcomes from Science 10 (Chapters 1 to 3 Life Science: Sustaining Earth’s Ecosystems) that had been chosen in consultation with participating teachers and the integration of the prescribed learning outcomes into each field trip can be seen in Appendix D. The selection of the locations used to teach specific prescribed learning outcomes was key to the field trip design (i.e., wetlands to teach about freshwater environments and energy flow through systems; the Great Blue Heron Reserve to teach about migration as an adaptation) as were types of activities that would address various learning styles (i.e., relay races, scavenger hunts, scripted interaction).

By involving the students in the initial steps of the research process, a more comprehensive analysis was possible as it included not only the points of view of the educators but also those of the students. This resulted in a greater sense of involvement and built a stronger working relationship with the participants that was carried forward during the research process. This relationship was essential to understand the variety of challenges alternative students face and ways in which the research results could apply to other alternative students.

Program Design. During the design phase, the following key questions were addressed:

• What will the students be expected to learn?
• How will they engage with the program?
• How should the experience be organized?
• How will successes and goals be evaluated?

These questions are based on work by McClaren (2012) and provided a structure that ensured the theme, learning outcomes, and subsequent activities were clear in each lesson plan.
During the classroom discussion, the majority of students indicated a preference towards activities that do not require sitting or reading. This was expected as the vast majority of schoolwork these students experience comes from completing workbooks. As a result, each field trip contained a variety of design components intended to broaden students’ awareness of different ways of learning. Design components included, but were not limited to, activities such as scavenger hunts, team relays, scripted interactions, ecosystem mapping, stream surveys, theatrical plays, fishing, and interpretive nature walks.

Writing was suggested to teachers as a follow-up activity as it could aid in the integration of the field trips with other course components and help students discover relevance between their experiences and academic work. This suggestion was made to “shift the emphasis from literary products to the process of observing, inventing, shaping, and refining” (Bennion & Olsen, 2002, p. 241) so that students could apply their field trip experiences beyond the science components. By exploring nature as a group, collecting information and discussing their experiences with others, the intention was that students would then further connect with integrated aspects of the curricula such as creative writing, current events, and social studies. I felt it was incredibly important to integrate as many different ways of learning as possible to allow students the opportunity to recognize that learning is a naturally occurring process of gathering and of making sense of information and that every experience is an opportunity to learn something new.

**Development of content.** Once the prescribed learning outcomes, the needs of these alternative students, and the structure of the program had been determined, the content and materials for the program were developed. Lesson plans were constructed using the key principles outlined in the design phase. Each of the five individual field trips had an easily
recognizable theme that connected with the overall program goal of integrating with the existing curriculum. Additional supporting pre-trip activities were utilized to complement the program themes and initiate discussion relating to the field trips. Each field trip was designed to be delivered in approximately 3 to 5 hours. This program length was chosen based upon my own experiences as an environmental educator as well as on the advice of Bennion and Olsen (2002), who maintain that “several short, relatively easy outdoor experiences, are better than one long, rigorous one” (p. 243). Although this length was relatively short in comparison to other experiential programs for alternative students, it reflected a regular school day for these students and was longer than many programs available from outside agencies, which are typically 1 to 2 hours.

**Implementation of lesson plans.** In total, five field trips were delivered on a monthly schedule from early March through to the end of June 2014. Each program consisted of a full-day field trip of 3 to 5 hours with teachers and students participating from each class. Resources, materials, and overall implementation of the programs were determined by myself and included resources provided by the school board (i.e., bus transportation). Three field trips included curriculum-connected lesson plans (see Appendices F, G, and H), one was led by Freshwater Fisheries Society interpreters, and the final trip was self-guided. Teaching staff and their teacher aides assisted in the delivery of pre-trip activities in the weeks leading up to the field trips. During field trips, teachers and support staff assisted in supervision of students while in the field, participated in activities, and provided lunches. As the programs were delivered, feedback from the participating staff and students was gathered through discussions and, to a lesser extent, through written feedback activities and was utilized to adjust the field trip design and delivery methods as needed.
As the field trip leader, I made a concerted effort to ensure that students felt comfortable so they would participate fully in the field trip activities. Care was taken in introducing each field trip and in setting the stage for the day’s activities by providing a brief outline of what to expect before arriving at our destination. At the beginning of each field trip, I reminded students and staff that everyone was there to learn from the experiences, each other, and from the environment. All questions were welcomed with enthusiasm, and students were encouraged to explore ideas through observation, experimentation, and discussion. I felt it was essential for students to understand that I was more interested in their curiosity and willingness to explore new ideas than I was in evaluating their existing knowledge. I introduced this idea at the beginning of each trip by explaining,

I do not expect you to already know the things that we will learn today. I didn’t know any of this before I learned it. There are things I can teach you and there are things that you can teach me. That is why we are here, to learn from each other. We never knew how to walk or talk when we were born, but look at us now. I want you to be open to new ideas, curious about things you don’t understand, and share with each other as that is how we learn together.

**Evaluation of success.** Evaluation components were integrated into each field trip, with the exception of the fifth trip, which was the culminating program activity. Teachers and students participated in feedback surveys and light discussion during the return bus rides as a means to gauge the effectiveness of the individual field trips and to collect information about their views on the success of each field trip. By involving the students and the staff, I was able to ensure a comprehensive view of the experience from both sides of the learning experience. By incorporating a feedback avenue into each trip, continuous incoming data were gathered during
the research process allowing for real-time adjustment to the overall program design. From these results, potential programming considerations and suggestions were generated that contributed to the development and delivery of field trips.

**Data Collection: A Qualitative Approach**

Answering the research question involved the use of qualitative data such as comments made in discussion, observed changes to behaviour, interview transcripts collected during and after the field trips, and notes made throughout the research. Observations, surveys, questions, and interactions were modelled to reflect research methods used by Hollway and Jefferson (2013); Willms, Friesen, and Milton (2009); Lovelace and Brickman (2013); and Knapp (2000). This information was gathered as a means to explore the personal effects of the field trip program on the students and teachers. Interviews with students and staff provided an incredible depth of information and was the focus of my analysis.

**Student interviews.** Shenton (2004) suggested that “establish[ing] a relationship of trust between the parties” is an important part in ensuring the credibility of qualitative research. Given the at-risk nature of the students I was working with and their limited trust of authority figures, I chose to conduct my interviews myself. I discovered that I had become genuinely engaged in the students’ lives over the period of 6 months preceding the interview sessions through field trips, class visits, and nonschool-related conversations. This engagement developed, most likely, because I had carefully built a relationship of confidence and trust. If an outside interviewer had conducted the interviews, the depth of participants’ responses may have be limited (i.e., not sharing personal experiences with an unfamiliar adult) and would, in my opinion, create significant bias and alter interview data considerably. Although a certain amount of bias is expected with the approach taken (i.e., participants limiting their negative feedback to spare my
feelings as the program leader), I am confident that this approach was best suited to the unique nature of the student participants.

Interviews took place at the school in a multipurpose room away from other students or teachers. A digital voice recorder was used to record the interview conversations, and this data were later transcribed for analysis. Interview questions were designed to be as neutral and open ended as possible with no leading questions (see Appendix I). The purpose of the question was to allow the interviewees as much freedom as possible in describing their answers to the questions.

I had formatted the interview questions to target specific research components (i.e., knowledge, skills, or attitudes) by simply asking participants to “tell me a story.” The interview script was designed based on the methods described in Hollway and Jefferson (2013) and was intended to provide balance between giving the interviewee direction while allowing freedom to associate with whatever they thought was the appropriate answer.

This approach also aimed to integrate Wengraf’s (2013) single question aimed at inducing narrative (SQUIN) approach, in which the interviewer facilitates the telling of a story without interruption or direction. Emphasis is placed on the “as is” nature of the narrative, and participants are reassured that their answers—and however the answers may present themselves—are exactly what is hoped for (Wengraf, 2013). Follow-up questions using the wording of the interviewee may be used to encourage further narrative and glean specific information; however, additional questions unrelated to the narrative are not permitted. Using this method, the narrative content is created solely by the participant, and any bias from the interviewer is minimized.

When clarification was requested by a participant, I made a concerted effort to stay within the directed questions without providing examples or influence. Given the age of some of
the student participants (12 and 13 years old), this approach was challenging as they were uncomfortable with the uncertain freedom associated with their answers. I quickly learned that concepts that had no clear right or wrong answer were very foreign to these students and, lacking precise answers, they chose to say nothing rather than be “wrong.” As a result, I began each interview with a description of the types of questions I was going to ask and specified that it was the student’s unique story that I was interested in. I continually emphasized that these questions had no correct or incorrect answers to these questions as outlined in the SQUIN approach (Wengraf, 2013).

Students were given the option of being interviewed as individuals or with a group of their peers. A total of 13 students participated in the interview process over a period of 3 days: eight students chose individual interviews whereas five students chose to participate in group interviews—one group of two and one group of three. These interviews were conducted in the days preceding the fifth and final field trip as a means to encourage participation from students wishing to attend. Interviews varied in length from 10 to 45 minutes, depending on the amount of detail students chose to provide in their answers. Further interviews were to be scheduled; however, a teacher strike was announced on the third day of interviews, which made coordinating further interviews impractical.

**Teacher interviews.** Teacher interviews were designed in much the same way as the student interviews (see Appendix J) and reflected Hollway and Jefferson’s (2013) model of open-ended, story-based questioning. Three teachers were interviewed—two classroom teachers and the school principal. As with the students, additional interviews were intended; however, the strike interfered with further teacher engagement. Despite this, I trust the collected data are
representative of the participants involved and the experiences described and, therefore constitutes reliable data for the purposes of this research.

**Quantitative data.** Initially, quantitative data were collected on each trip to try and track any measurable changes over the duration of the program (i.e., attendance, feeling towards learning surveys, etc.). Unfortunately, the majority of quantitative data collected were much less useful than intended and, as a result, were omitted from this research. The main contributing factor for this was the challenge faced when collecting continuous data from each student on each field trip as the number of student participants on each field trip varied from 11 to 24 over the course of the research, and each trip had a variety of different students. This made it difficult to track individual students as I had wished to do. Compounding this was the fact that students were unwaveringly aware that their participation in data collection activities was voluntary. Students often chose not to complete the activity at the end of each field trip. Their perception that the trip, and any work from the trip, was over when they got on the bus at the end of the field trip was fairly frustrating to me as both the researcher and trip leader; however, I respected their choice and in the end I think it helped build the relationship of mutual respect needed for the interview process to be effective.

**Notes and voice recordings.** Given my own unique learning challenges, specifically being aware of my limited auditory memory, I always had access to a notebook during discussions and interviews, while conducting research, and during delivery of programs. I could and did take note of any ideas, comments, words, or related bits of information that I felt were relevant to the research. During instances where writing accurate and detailed notes became a challenge, I employed the use of voice recording software on my cellular phone. Voice recordings from discussions regarding planning, methods, and the research results were recorded
Effects of Field Trips on Alternative Students throughout the research process and supplemented by my field notes. These recordings were later reviewed and used to write additional notes based on specific comments, ideas, and nuances in the conversations. Additionally, audio recordings from non-interview conversations were also reviewed during the analysis phase and contribute to both Chapters 4 and 5.

Data Analysis

Coding. The qualitative data gathered for this research consisted mainly of transcribed interviews supplemented by my own field notes, observations, and reflections. A series of codes were used when analyzing the interview transcripts to make themes more apparent and to compare comments between students. Table 1 outlines the coding system used in analysing the interview transcripts. As the research questions specifically referred to knowledge, skills, and attitudes, the codes K (knowledge), S (skills), and A (attitudes) were created to identify when a response provided a specific example of each. Repetition and similarities (Ryan & Bernard, 2003) between transcripts were observed with regards to participants stating facts (F) or using proper names (N) related to academic material covered; thus these two codes were also used as indicators of knowledge. In addition to these research-question-related codes, words suggesting emphasis of positive or negative experiences were coded as per Ryan and Bernard’s (2013) word co-occurrence technique to identify themes that the respondents gave importance through emphasis.

Codes were applied only to comments, terms, or experiences that students had described and that were not preceded in the question or conversation. For example, if Silverdale Wetlands was mentioned in part of the question and then the interviewee mentioned Silverdale Wetlands, it would not be coded as the student did not freely associate the reference with the questions.
whereas if the interviewer asked which trips the student had been on and the student responded with Silverdale Wetlands, that would be coded as SP, a specific reference to a place or activity.

Table 1

_Coding System for Student and Staff Interviews_

<table>
<thead>
<tr>
<th>Theme</th>
<th>Code</th>
<th>Description of code use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>K</td>
<td>When a student provides an example of something he or she learned such as understanding beaver behaviour, mating habits, abiotic factors.</td>
</tr>
<tr>
<td>Facts</td>
<td>F</td>
<td>When the student provides a fact about something.</td>
</tr>
<tr>
<td>Name</td>
<td>N</td>
<td>When the student correctly refers to something by name (beaver, great blue heron, rainbow trout). This was coded as knowledge as it represented something the students specifically remembered.</td>
</tr>
<tr>
<td>Specific Activities</td>
<td>SP</td>
<td>When a student references a specific activity or event that took place on the field trip. This was coded as knowledge as it represented something the students specifically remembered.</td>
</tr>
<tr>
<td>Skills</td>
<td>S</td>
<td>Whenever the student referenced their own skills such as discussing things with classmates, observing birds, listening for sounds, casting for fish (actions that can be improved with practice).</td>
</tr>
<tr>
<td>Attitude</td>
<td>A</td>
<td>When the student makes reference to a concept that has to do with how he or she feels about learning or how other students feel about learning. Examples include helping other students, enjoyment of the activity, socializing and discussing with others. (+) are often associated with attitude throughout the interviews.</td>
</tr>
<tr>
<td>Positive reference to experiences</td>
<td>+</td>
<td>This code was applied where the student specifically stated something positive about their experiences such as “That was fun,” “I loved it,” “Really cool,” “Super fun,” and “favourite.”</td>
</tr>
<tr>
<td>Negative reference to experiences</td>
<td>−</td>
<td>This code was applied where the students specifically referenced something negative about their experiences such as “Boring,” “hated it,” or “not fun.”</td>
</tr>
</tbody>
</table>
Teacher interview transcripts were coded using the same code format. Much of what teachers discussed, however, was specifically focussed towards an overall analysis of the field trip program, or directly addressed the research questions, and was not specifically coded. Analysis of the teacher interviews consisted mainly of comparing individual teacher responses for each interview question, compiling the results, and identifying repetitions and similarities (Ryan & Bernard, 2013).

**Themes.** As a result of the coding, trends and common themes became apparent throughout the 13 transcripts. Specific quotes representing a theme were identified and grouped together to be utilized in the development of Chapter 4. Themes were organized in accordance with how they fit within the research questions (i.e., knowledge, skills, and attitudes) as well as themes that arose that were unexpected or surprising.

**Researcher Influence**

In addition to evaluating teacher and student participation, it is important to account for any personal bias that I may have brought into the research. Unconscious feedback such as body language, verbal cues, and facial expressions may have affected how participants interpreted information I provided as well as information I may have been searching for. This may have altered the information I received back from them. Setting the stage of the programs, interviews, and group discussions as safe and comfortable places to share information without judgment was crucial for allowing participants to genuinely share their stories, experiences, and emotions.

As I was the sole researcher, I was responsible for all aspects of the research including the initial surveys, group discussions, program delivery, interviews, and the final analysis. It is important to recognize the influence I may have had on the data collected. Throughout the research process, I reflected on my own experiences and potential influences on the research
results in order to fully understand any biases that may have surfaced. I have made a conscious effort to address these ideas and will discuss them in Chapter 5.

**Credibility and Trustworthiness**

A number of techniques outlined by Shenton (2004) were utilized to ensure the credibility and trustworthiness of the research results. Upon approval of the research, I made a point of introducing myself to the staff and students who would be participating a full 3 months before the first field trip was to take place. Participants were invited to take part in a group discussion about the research and the upcoming field trips to brainstorm on ideas for activities, the methods I would be using, and what to expect during the research. This initiated the beginning of a relationship built on trust and respect with both teachers and students, as well as provided me a familiarity with the school culture so that I could adapt my methods accordingly.

Participation was completely voluntary throughout the duration of the research. Student participation was self-selected; those students wishing to not participate stayed at the school or did not attend on the days of field trips. This ensured the participant selection and sample group was not biased by the researcher. To encourage participation in the interviews, however, the final field trip was scheduled to take place after the interviews and was limited to only those students who volunteered to be interviewed. Students were provided the opportunity to participate in all other field trips regardless of their participation in the research components. Students were reminded of their voluntary involvement when submitting written activities, feedback, and participating in scheduled group, or one-on-one, discussions. Students who chose to withdraw from the research were not required to submit feedback activities or participate in interviews.
The interview questions and methods were an integration of Wengraf’s (2013) SQUIN line of questioning and suggestions made by Hollway and Jefferson (2013). During the interviews, participants were reassured that there were no “correct: answers to the interview questions, and that their unique responses were what was being sought. These methods were used to ensure data collected was reflective of the interviewee’s unique experiences and placed emphasis on things each interviewee felt worthy of emphasis.

Data was analyzed through triangulation by comparing and contrasting the data from researcher observations as well as teacher and student interviews transcripts. This also included ongoing reflective commentary and discussion between myself and my research supervisor. This ensured an outside academic perspective on all results, themes, and discussion topics.
Chapter 4: Results

This chapter presents the results of the interview sessions with student and teacher participants. Results have been organized in series to address the research question components of knowledge, skills, and attitudes towards learning. This chapter also includes additional results relating to classroom versus outdoor learning, social impacts of the field trips, and teachers justification of field trip usage.

Knowledge Gained

To address the concepts laid out in the research question, students were asked a series of questions during the interviews related to their knowledge of a subject in order to assess learning associated with participating in the field trips. Students described a variety of knowledge indicators ranging from being able to identify and name organisms, describing relationships between individual ideas, and showing an in-depth understanding of the material covered over the duration of the field trip program. All students interviewed were able to recall and briefly explain at least one thing learned over the course of the field trips, which indicated that they had gained some knowledge or understanding as a result of participating. Two students showed exceptional understanding with 14 knowledge indicators recorded in their interview transcripts, whereas the average was just over four indicators per transcript.

Two students also indicated that the field trips had supplemented information they already knew. This response was found with only two students who had previously completed the BC Science 10 course; however, these students also indicated that they had learned new material and had built a deeper understanding of the material as a result of participating.

The following is a combination of questions students were asked relating to the concept of knowledge, immediately followed by examples of relevant student responses from interview
sessions. Depending on the flow of the individual conversation, I asked participants the following questions:

The first question I’ll be asking has to do with what you know. There are lots of different ways of knowing things and lots of different things that we learned on the field trips. So this question is: can you please tell me a story about something you learned on your experiences on the field trips . . . So imagine you’ve come back from the field trip and you’re talking to one of the people who didn’t go on the field trip. Imagine telling them a story about what you’ve learned on the field trip . . . Can you tell me about something that you understand better, from your experiences or something that you learned that was like completely new?

Anthony responded by saying,

If I was talking to somebody, I would tell them about the creek. I’ll tell them that we were measuring water speeds and that was pretty interesting. We ended up measuring the size of the width and length of the creek. And then we ended up putting a ball in it and measuring how far the ball went and then capturing the speed of the water and how fast… I’d just say that it was fun. It was a really good learning experience for sure, because I’d never thought of doing that. I mean, normally you see creek and you just see a creek. You don’t think of how the creek moves you know, that kind of stuff.

Maggie’s response was:

I understand forests. I thought it was cool, like, trees are there, they’re just there ‘cause they’re there right? All like the seeds and stuff they don’t get to choose where they grow. I didn’t know . . . I never really thought about it. I thought it was cool that you could see, different trees, and different areas or in the same area, and how they grow off each other,
how it changes when a tree is next to a tree because one tree would be smaller than the other, because it’s shadowing. I thought it was cool because I didn’t know about that. It’s a lot more helpful to understand it when you see it, than when you’re just reading it because you’re like, “I don’t know what this is.” Lauren said,

I understand bird diversity better. I knew there were hummingbirds and seed-eating birds and animal-eating birds but just to really think more about the different kinds of beaks of the birds and how much of a difference like you look at them and they don’t look that different, like “they’re a grosbeak versus a finch.” But when you try and do something a little different yourself (in reference to the adaptation relay activity where students used different tools, representing animal adaptations, to collect food) you can really see how much harder it is and how much it really does select their food. They’re pretty like selected to one thing.

Ashley explained,

Well, I like the fish. I learn a lot about them because I knew most about but I didn’t know like their habitat, and how sensitive the habitat is it and how like we are affecting the habitat. Like pollution, like I don’t know, like even just like throwing like garbage on the road and then it goes in the drainage and lead to the ocean or a lake or something like that and then it affects the fish that are living in it. And we just pollute it all, like everything, and it’s pretty bad.

The response from Grace was as follows:

The way animals adapt to the surroundings and like, my favourite thing was the relationship between the squirrel and those mushroom things. How one would eat them
and then it gets all over the dust . . . get covered in the mushroom dust and then they glide, it falls and they replant to all of them. That was my favourite . . . I didn’t know most of these fishes even existed, so that was fun and all the different types of trees that I didn’t know. I thought it was like just a pine cone but there are a bunch of different types. It’s a lot more complicated than I thought it was.

Finally, Zach replied,

I remember when you taught us about the nurse stumps and what they do. I remember driving by with my parents the other day and they said, “Oh my gosh! People are just chopping down trees in plain sight.” I said, “No that’s not. The tree must’ve fallen down and now it’s nursing food and nutrients for other trees. It was just pretty much how a mother kind of takes care of their kids, they feed it, they make sure that it’s all healthy before kind of getting up.” It kind of reminded me of what a nurse stump does. But it gives nutrients . . . and tries to support it long as it can.

A word cloud analysis (using Worlde.org) made with responses to the question, “Please tell a story about something you learned,” showed the emphasis split between words specific to the information learned—fish, birds, heron, animals, squirrel, trees, habitat, and beavers—and descriptive words, such as different, cool, fun, interesting, and remember (see Figure 1). The presence of these two types of words suggests that the students did in fact learn about fish, habitat, and so on, and that the experience itself affected their ability to learn the information and to remember it.
These results mirror the trend found in the thematic coding of knowledge indicators (facts and names) and positive experiences, in which 8 of the 13 individual responses to the question provided positive and detailed descriptions of something they had learned as part of the field trips. Although it was expected that students would be able to recall some information from an experience, I found it interesting to observe the detail that students were able to recall about experiences from four or more months past. It is also interesting that the students’ responses were similar.

**Skills Learned or Practiced**

In addition to knowledge questions, students were asked to describe skills they had used, developed, or practiced during their participation in the field trips. Students referenced specific skills used during the field trips an average of 5 times during the interviews. The following table outlines the frequency that specific skills were mentioned during the student interviews.
Table 2

Specific Skill Frequency in Student Interviews

<table>
<thead>
<tr>
<th>Skills</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>improved observation skills</td>
<td>27</td>
</tr>
<tr>
<td>listening or hearing skills (listening for animals,</td>
<td>11</td>
</tr>
<tr>
<td>identifying bird calls, or listening more intently to</td>
<td></td>
</tr>
<tr>
<td>instructions or conversations with others)</td>
<td></td>
</tr>
<tr>
<td>Increased attention skills</td>
<td>7</td>
</tr>
<tr>
<td>hands-on learning</td>
<td>6</td>
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<tr>
<td>discussion and communication skills</td>
<td>5</td>
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The field trips were designed to provide learning opportunities that required students to use and develop new skills to understand what was going on around them; the significance of the hands-on approach is that the results indicate positive effects on students’ skills. The following is a combination of questions students were asked relating to the concept of skills, immediately followed by examples of relevant student responses from interview sessions.

Depending on the individual conversation, participants were asked the following questions:

So there are a lot of different skills that we use every day, like we know how to read and some people are good at reading and some people are better at reading . . . This next question has to do with skills . . . Skills are the way you do things or how you do certain things . . . Some skills we learn along the way and we developed . . . Imagine you’re putting together a resume and you list off the different things that you can do. So skills tend to be things you can practice, allowing you to do them better in the future. What kind of skills do you think that we would have worked on or even just learned for the first time? Can you describe how any of your skills have developed as a result of your experiences on the field trips?
In response to these questions, Anthony replied,

Skills that I worked on? I’d say, just being more social about wildlife. I mean, that may sound like a weird thing but I just really enjoyed just talking about it, discussing the small things that I never discussed before about the wildlife. Because at first it was mainly just wildlife, you know, tree, grass, going back to that, but I really opened up about discussing the science behind it and the beauty of nature.

Maggie answer was as follows:

I would be careful like, you have to be careful because you don’t want to ruin the habitat or anything, and you’ve got to be aware of your environment and what things are around you . . . and you need to notice things because, if you’re non-observant then you could crash into a beaver’s home or you could ruin their food supply . . . I’m a lot more interested in science now because it was so fun and it’s got me thinking about more ways I could do things, be more like environment-friendly and be more aware to my environment . . . I can also teach of the people like younger kids and be “oh what’s this” and then I could like show them, because in science it’s “oh read this.” I don’t know what it is when I read it, but now I can actually show them.

Lauren said,

I definitely have started gaining a skill in being able to determine what bird call goes with what bird. Like further than just “chickadee-dee.” That was definitely something that I wouldn’t have developed on my own without the field trip . . . Try to listen to different bird calls and you’re like, “No I’ve heard that that’s a starling,” and you’re like, “No that’s a red wing blackbird.” Sometimes you’re like, “Hey that’s a red wing blackbird right over there. Quick you have to see it or it doesn’t count.”
The following is Chris’s response:

I don’t really think there were many skills . . . probably when we went on the fishing trip. There’s a bit of a technique . . . I fish quite well with my dad and I know a fair amount of about fishing so some of the stuff was very basic and I kind of knew already, but it was still good to do a rerun of the basics and help other people if they were struggling with it. Some of the skills for that particular trip were kind of interesting . . . identifying fish and how old they are. It kind of helped me, especially for when I do go fishing and if I do end up catching something, I can identify it . . . the different features and colors and different things like the size of the mouth.

Grace responded by saying,

My observing skills, definitely. I know trees—there’s different types. I kind of pay attention more now. Because I, basically, never really thought about it and then when we learned about it was really cool. Like how much they do for us, like how much they give habitat to the animals and stuff. So now I pay attention more to that.

Daniel explained,

How to get out and learn stuff. Instead of learning stuff in class, learning it outside on a field trip doing stuff and actually seeing it all and experiencing it.

Zach answer was as follows:

How to look more closely at details and probably identify what items are or what specific things, for lack of better terms. What they are and what their role is in the ecosystem environments and their specific biology may be. Beforehand, I mean it was for me, I would always look at things but I wouldn’t really pay too much attention to it and I would always kind of, just look at the main overall item or the overall thing. Pass it onto,
ah don’t worry about it, it’s nothing. Now I look closer at items and try to see the finer
details and to see if there’s more behind what I really saw.

In the analysis of the word cloud composed of teacher responses to the question, “Have
you noticed a change in student skills?”, the teachers used words such as know, relate, different,
think, able, interact, example, outside, together, and awareness as possible indicators that the
field trips affected how the students do things (see Figure 2).

Figure 2. Word cloud analysis of teacher responses showing emphasis of what teachers reported
to have noticed as changes in student skills.

In using these words, teachers spoke to the cognitive and social skills that the students
developed as a result of the trips, rather than general skills such communicating, reading, or
observation. This is a powerful result as it indicates that the field trips not only provided an
avenue to experience learning differently, they also allowed for the development of new ways of
thinking and relating to the information students were learning, as well as how they related to
each other. In being able to observe these changes as they occur, teachers may be better able to
adapt teaching methods and change the ways in which they interact with students to approach
learning from the students’ newly developed perspectives.
Attitudes towards Learning Science and Nature

In addition to knowledge and skills questions, students were asked to describe their attitude towards learning, specifically learning about science and nature, and ways their feelings may have changed as a result of their participation in the field trips. The majority of students indicated an eagerness to continue participating in field trips and also highlighted an increased enjoyment of learning. Positive references to the field trip experiences were mentioned 71 times throughout the student transcripts. Students’ responses indicated that their overall attitude towards learning science had changed as they began to recognize that learning is not limited to books and assignments. For those who expressed that their attitudes towards learning had not changed at all, their main motivation was simply to finish school so they could get a job. The following is an amalgamation of questions students were asked that related to attitudes towards learning, immediately followed by examples of relevant responses from interview sessions.

Depending on the individual conversation, I asked participants the following questions:

The next question that I have has to do with attitudes towards learning. So there’s lots of different ways people can feel about learning even in any given day. So when you wake up in the morning and you have to go to school, you’re like, “Okay, how do I feel today about learning?” Can you please describe how you feel about learning about science and nature? . . . So in terms of how you feel about learning, have your feelings towards learning changed at all since going on the field trip? . . . Have you noticed at all that your feelings towards learning have changed since going on the field trips?

In response to these questions, Maggie replied,

Oh I used to really hate science. You couldn’t put me in front of a science textbook and I would not sit there. It is my least favorite subject along with math and I just didn’t
understand it and I couldn’t like wrap around my head around how Earth came to be and stuff like that. But now, I’m a lot more open to it, because, I know it’s not all text books, you can go on a walk and learn a bunch of things. I think it’s my attitude changed a lot, because of these field trips. It’s a lot more helpful.

Lauren said,

Well, I mean it’s definitely like a more interesting way to learn. I don’t know that my opinion has changed about learning because I’m kind of someone who thinks learning is pretty great. It’s just the fact that my brain can absorb so much stuff is like a wonder to me in itself.

The response from Andrew was as follows:

Well, I know you need an education to have a good future and good job. I’ve been doing more at school than at home so I kind of want to get it done. The field trips made it more interesting, I guess, because you got to be interactive and do stuff . . . rather than having to sit and asking and writing out . . . I’d rather have it both field trips and classroom learning because I did science ten at the beginning of the year. So it really helped me to understand the things that I learned before, it made me better.

Ashley explained,

I think science is one of my favorite subjects because it’s like so many different things in science, and it’s so complicated but so easy at the same time. So science in general is really cool and I like hands on learning with it. I think I have more positive attitude towards learning now because I feel like more positive instead of just “Ohh, we have to do work” I feel like I understand a lot of those words now. It seems like easier now.

Chris responded by saying,
I’m a pretty nature-driven guy. I like getting out there. Like me and my dad, we’re really into hunting, into taking hikes and, like I said, fishing and stuff like that. And if I have an opportunity to learn more about the outdoors and kind of just anything involved with it, of course I’m kind of excited about it because it’s good to know for me . . . I’m okay with learning about those things in the classroom. It’s not my best way to learn. I’m not a huge fan of how we learn in school. Just kind of sit down and they kind of just preach in to us. I kind of like more experiencing it, more hands on with it. Even just walking out and actually seeing it, it kind of feels better . . . No, my feelings towards learning have been about the same. I still feel that I enjoyed outdoor learning better, especially with science and stuff like that.

Zach’s answer was as follows:

Well, on the field trip I feel more all obligated to learn about the items around me.

Because I’m actually there and physically to see what’s going on and I can see nature how it actually is.

These responses indicated that, by participating in the field trips, the students felt that learning became easier. Students inferred that this was a result of several factors, such as increased level of interest, hands-on active learning, being in the situation as opposed to thinking about it theoretically (not in books), and a change of setting that in turn altered the expectation of learning (seeing, hearing, hands-on, obligation to learn). The field trips used activities that utilized new skills, other than reading and theoretical processing, which may have allowed students to experiment with different ways of learning. By becoming more aware of their own learning strengths and weaknesses, students may feel increased confidence about themselves as
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learners (Armstrong, 2012) and be better able to develop a more positive attitude towards learning.

Teachers also indicated that they saw a change in student attitudes and behaviour both in class and between classes. Teachers’ observations included students showing increased engagement with the learning material, increased social engagement, and increased commitment to actively participating in the field trip program. The following is an amalgamation of questions teachers were asked that related to student attitudes towards learning, immediately followed by examples of relevant responses from interview sessions.

Depending on the flow of conversation, teachers were asked the following questions: Can you describe the most notable change in student attitudes since participating in the field trip? ... What do you think was the most surprising outcome you’ve noticed as a result of the field trips? ... Can you describe how the field trips have affected the students’ attitudes towards learning?

Mrs. Thompson responded by saying,

I think the students are more open to their own learning and seeing that learning comes in a variety of ways. This kind of goes back to the preschool years when you do a lot of exploring and play. I feel that through the education system, as children grow up, that slowly decreases so it sort of reaches like a bell curve and it goes “We’re done all our learning and playing and now. You’re finished primary school and now you’re intermediate here you go, here’s paper work.” So I find that once kids come to our school they have lost that inquisitive mode of thinking and curiosity. Maybe they’ve had bad experiences with the school system or maybe not as many experiences with their own family to be able to go and explore and just develop that sense of understanding and
being. So I think the field trips have improved the kid’s sense of self and being part of the world. They can actually see how they are connected to the world and I think that’s something neat that you’ve brought to the students, that opportunity to be able to see more and feel like they’re part of something.

Mr. Karlson explained:

We have a lot of, generally speaking, disenfranchised learners . . . that they would come on their days off that they would go out of their way to go on a science field trip. Like, it’s not like we are going to play land where it’s fun, fun, fun. The trips were fun, but they knew they were going there to learn . . . It’s hard to get them here on the days even then they’re supposed to be here and yet they would come on additional days or come early for the field trips. I really think (their attendance) reflects a strong value that they placed on the experience of going on these field trips . . . They all came back with so much energy and enthusiasm and discussion about what they had done and what they had experienced. I thought that was all fantastic.

The response from Mr. Bradley is as follows:

When they were on the bus going to the field trip they would often have their earphones on, but generally, on the way back, they were either exchanging some of the sheets or they were talking to each other about what had happened. Kids talking about the curriculum. You know, typically they’re talking about what’s going on with their lives, parties, seeing, music, current events, but after the experiences, you can actually hear them talking about what’s going on in science.

These responses suggest that the teachers felt that field trips provided students with an opportunity to see themselves and to learn differently, as highlighted by the repetitive use of
“different,” which appears to have contributed to students’ increased positive attitude towards learning. Related benefits include students increased sense of self and recognizing themselves as part of something larger. This was definitely reflective of the systems content taught, which related to individual effects within an ecosystem. The teachers also noted that students were observed placing a strong value on the field trip experiences and putting effort into attending and participating.

Observations of students openly discussing what they had learned with other students, which was noted to be very unusual, may be attributed to students feeling increased confidence in their own skills as learners and communicators, as well as having increased curiosity and interest in the material being taught. These observations may suggest that student attitudes, skills, and knowledge may all be linked together: If students are provided an opportunity to develop new skills and engage in new ways of learning, they may present an increased interest in learning given that their new skills and new approach make them better able to learn. Likewise, if students are curious about a concept in a positive learning environment (has a positive attitude), they may seek to understand it further by using their existing skills.

**Classroom versus Field Trip Learning**

In addition to the main three questions regarding knowledge, skills, and attitudes, some students described field trip learning as different from learning in a classroom. When a student specifically described their observed difference, they were asked to elaborate by comparing the field trips to classroom experiences. Students described feelings of freedom, relaxation, and natural curiosity that were present during field trips and explained that these feelings were not attainable in a classroom setting. The following is a combination of the questions that were asked
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relating to this concept, immediately followed by examples of relevant responses from interview sessions.

Depending on how the conversation proceeded, I asked participants the following questions:

Can you explain how the experience would be different, learning about that in a classroom versus learning on the field trip? Now that you’ve been on the field trips, are there any things that changed, like how you know how to do things?

In response to these questions, Anthony indicated,

It really opened my eyes to seeing the small things in nature, you know, ‘cause you pointed out just looking at everything. More as just going in there instead of just seeing dead grass and water. It turned out to be, you know, animals, different types of grass, beavers, water insects, all that kind of stuff. That really just pointed out the abundancy among the animals and the wildlife that . . . that was nice getting to know that.

Maggie shared,

I thought it was really fun, because it’s like you’re out of the school, its nice weather, you’re not cooped up in the classroom all day, and you get to talk with people, you get to put your input, you’re not, constantly knocked down, by like people talking, like “Shhh! Be quiet” and talking in class when you’re trying to learn, and more easier to learn in vocal, and be hands on about stuff. So that’s we did like it was really fun and it felt good to like get away from school and all the stress and stuff and like it was just kind of a getaway, and we got to learn about science too which is a bonus.

Ashley explained,
Going on the field trips made it more funner to learn instead of just like sitting on the classroom and “do this and do that and this is how you do that.” It was like more hands on and more interactive so it’s like, it’s like a lot easier to pay attention because you’re not only like having fun, you were still learning and so like I don’t know, I like it like that.

Chris responded by saying,

I’m not a huge fan of how we learn in school. Just kind of sit down and they kind of just preach in to us. I kind of like more experiencing it, more hands on with it. Even just walking out and actually seeing it, it kind of feels better . . . I enjoyed outdoor learning better, especially with science and stuff like that.

Grace’s response was as follows:

I like outdoor learning better than in the classroom because you actually get to see what’s happening rather than just looking at it on a paper and I get to move around. I have ADHD [attention deficit hyperactivity disorder] so that helps.

Daniel answered by saying,

Instead of learning stuff in class, learning it outside on a field trip doing stuff and actually seeing it all and experiencing it. Like, when we go on field trips and stuff, it’s just funner doing them . . . when you go on a field trip than in a class doing it. You can actually go out and see everything about it and then, like, see all the cool stuff in science.

Zach replied:

It was iffy for me learning in a classroom, it was more unsettling because I didn’t know what I was learning. All I knew was I had to read it and answer the questions . . . But now that I went on the field tips I feel more mellow and laid back. I know now that regardless
of what I’m going to do, I know that I’m going to physically be there, see the items in my hand, do the actual activity. So I know I’m learning from the field trips. It sticks in your head . . . instead of just reading things.

Students’ responses clearly suggest a preference for learning outside of the classroom. Reasons for this preference—such as the ability to actually experience and see something as opposed to hearing and thinking about it, feeling more freedom to speak, being more hands-on, and enjoying the overall experience more than classroom learning—suggest that learning through experiences was a beneficial method of learning for these students. Ashley’s indication that it was “easier to pay attention because you’re not only like having fun, you were still learning” suggests that the field trip activities, when combined with the relaxed outdoor setting, made the overall experience of learning more enjoyable. This suggests that when students enjoy the learning activities, they may view learning overall as more enjoyable; this may aid in shifting student perceptions about what learning is as well as their own view of themselves as learners.

Creating the right learning environment. One of the most surprising things I recognized as a result of this research was the incredible difference that changing the setting for learning, both physically and mentally, can have on students and their behaviour. For the first five months of our time together, my interactions with the students had been purely field trip related, predominantly during delivery of the programs or when I stopped in to remind them of upcoming trips. During the interview process, I noticed certain students behaved differently than they had during the field trips. In hindsight, this should have been expected as I myself experience vast behavioural differences when in nature as compared to a formal office setting. In particular, one student, William, stood out as behaving dramatically different in the interview session as compared to his behaviour on the field trips.
Outside, William was enthusiastic about learning and about answering and asking questions, and he was engaged in all activities. In the interview setting, however, he continuously fidgeted, interrupted, and displayed threatening outbursts towards other students—behaviours that I learned were also commonly encountered in class. Both Mr. Karlson and Mr. Bradley commented that William’s behavioural and academic performance had been affected by the field trips. Mr. Karlson stated:

I think he is a success story for our alternative school program this year. . . . Certainly the field trips have contributed to his positive experience, and this is hopefully a big step for him back into the education system.

By creating a learning environment built on a foundation of physical exploration, active engagement, observation, and discussion, students like William are able to actively engage with learning material using their own previous experience and skills to understand concepts, as opposed to interpreting information from texts, computer programs, or workbooks. Field trips can create more opportunities for student engagement given the variety of teaching tactics required to address the hands-on nature of the outdoor environment.

**Social Effects of Experiential Learning**

In addition to attitudes towards learning, students were asked about how they felt the field trip experiences affected other students, specifically how the field trips may have affected the ways in which students interact with each other and teachers. The following is an amalgamation of questions students were asked relating to attitudes towards learning, immediately followed by examples of relevant responses from interview sessions.

Depending on how the conversation proceeded, participants were asked the following questions:
Have you noticed any changes in how you interact with other students? Or how other students interact with each other or teachers after the field trips? Can you describe any changes you’ve noticed on how you interact with other students or how students interact with each other or teachers?

The response from Lauren was as follows:

Yeah definitely, on field trips people are talking to each other more . . . Everyone I’ve talked to during the field trip were really into it. You know especially like when the cool things happen I can see people like “wow that’s cool.” Maybe if they don’t really love science I think learning about the herons and getting to see them is kind of cool for them and they’re suddenly interested in it. I can say it’s definitely helping like the social aspect, helping people talk to each other. After the field trip everyone’s talking about it: what their experience was and comparing it. Even the people who stayed behind want to hear about it too. I think everyone’s enjoyed them for sure.

Ashley responded by saying,

I think it brought, our going on field trips, brought us all closer because we talk a lot in the field trips, at appropriate times I mean, and we got to know each other better . . . instead of just judging everybody . . . we all became closer, all the students. And then the teachers . . . getting to know the teachers better and understanding them.

Chris explained,

I do kind of notice a difference from how the way teachers and students interact, especially the way students interact in school compared to if we’re out on a field, we’re not stuck in a classroom. It’s just they feel more creative, they feel more outgoing . . .
Mostly with how the students interact with each other and their enthusiasm... towards listening while you’re talking... they want to listen more.

The response from Grace was as follows:

We got to know each other a lot more, because we had to buddy up for fishing and stuff, so it’s kind of like a bonding thing and we all had a lot of bonding. And we all had a lot of fun and we all said we did.

Olivia shared,

I found that I ended up talking to people in other classes more than I usually would because I would just do my work normally, then have my breaks. But now during my breaks I actually like talk to people from other classes because I have went on the field trips with them and talk... just being in the same surrounding area... because you did put us in groups, and we’re all learning the same thing and not doing all independent work.

Many students noted an increase in the social atmosphere around field trips and added that fellow students were more welcoming to conversations and discussion about subject material. Students reported feeling more at ease around each other, less likely to judge each other, more enthusiastic towards listening to others, and more creative. The concept of creating new bonds and becoming closer with other students and teachers was also mentioned and suggests that the field trips played a facilitating role in creating, or redefining, relationships. Teachers also noted that the trips had a social impact on students, specifically an increase in positive social interaction between students, which indicates that the trips helped strengthen and build a sense of community within the school based on the students’ shared experiences.
Staff and teachers recognized the social effects of the field trips, specifically related to the increased sense of school community. Teachers highlighted the importance of shared experiences and the relaxed setting of field trips as factors that contributed to improved relationships between students and teachers. These results are significant in legitimizing the use of field trips with alternative students as positive interpersonal relationships are critical in supporting youth success. The following is an amalgamation of questions teachers were asked that related to the social impacts of field trips, immediately followed by examples of relevant responses from interview sessions.

Depending on how the conversation proceeded, teachers were asked the following questions:

Have you noticed any changes in how the students act, interact with each other? What have you found is the most surprising outcome you’ve noticed as a result of the field trips?

In response to these questions Mrs. Thompson replied,

I noticed, I can sense from my students that they are more approachable. That my own classroom students would be more willing to ask questions and not feel like they’re being looked down upon if they ask questions. I think they feel it’s okay to ask these questions and we’ll learn together type of deal. I’ve also noticed my neighbouring students in other classrooms just dropping by even just to say hello. That’s something you don’t always get every day from alternate education students and if they come by and say hello and want to know how your weekend was I think that’s pretty cool. Definitely a positive interaction amongst our student community.
The most surprising I would say is that the students seem to always get along. It’s built a lot of community in the school . . . The kids can look back at this experience, and they can talk about them. So they’ve created that and they feel sort of ownership of that. And when you talked to them about the field trip, their face sort of glows and like, “Yes! Yes! Why weren’t you there?” They’re complaining to the other kids about not being there which I find really interesting.

I found that really interesting for the students to sort of be mixed up in different groups because they didn’t always go straight to their own classroom peers. That they were able to mix up, and someone will take someone under their wing and they learned how to cooperate, show their strengths, and work together. I thought that was really powerful.

Mr. Karlson responded by saying,

Well, I think there’s definitely more of a comfort, more of a safe feeling, amongst the students here at the school. I think there are multiple factors, but certainly, staff going out with students and having a shared experience goes a long ways to bonding the students and the staff together. I think a shared experience is often a tremendous bonding agent. I think it’s an important opportunity to have these experiences together, and I think it’s made for a warmer, kinder, friendlier place amongst the students. Some of that would be just a factor of time now they’ve been together, the students and the staff, for almost 10 months now. But I really do believe in a shared bonding experience that you get from experiences, and I’m sure that contributed.

Finally, Mr. Bradley shared,

How they interact with each other—some of the kids take on leadership roles and not realize it. Where somebody might be acting silly, another kids is taking a leadership role,
and the kid who is being silly is now listening to the student who seemed to have a knowledge base. Sometimes kids pick up knowledge they didn’t intend to pick up and then they’re sharing that information with their friends. I would say it’s more of a positive interaction, kid-to-kid, than it is to kid-to-teacher.

The following words—*talk(ing), really, more, feel, definitely, enthusiasm, cool, everyone, interact, closer, helping*—were highlighted in a word cloud analysis of responses to the question, “Have you noticed any changes in how students interact with each other?” (see Figure 3).

*Figure 3. Word cloud analysis showing emphasis of what teachers reported as changes in student interactions.*

Responses indicate that the changes were positive (*cool, enthusiasm, helping*) and involved differences observed with regards to student *talk(ing), interact(ions), helping,* and *enthusiasm* which are traits associated with building positive relationships (Fox & Avramidis, 2003). The words *really, more,* and *definitely* indicate emphasis that respondents felt necessary to highlight the extent of the changes observed. *Interact, everyone,* and *closer* suggest that multiple students were involved, which is also an indication of building relationships. These
responses indicate that, as a result of the field trips, students interacted, talked, and engaged more with each other and teachers *(everyone, closer)* and all while exploring and learning new material.

**Legitimating the Use of Field Trips**

Previous research has supported the idea that wilderness adventure therapy and outdoor programs may be successful intervention strategies for alternative students; however, little research was available regarding ongoing integrated outdoor programs as part of regular scheduled classes. Perhaps this is the result of teachers being unable to justify using class time for activities not deemed academic. Having worked for educational organizations prior to my thesis research, I recognized that teachers continually face questions regarding their teaching choices; therefore, I incorporated their concern for justification into the final interview question. I wanted to understand how the teachers felt the field trips could be justified for use in alternative schools. The following are the responses from each of the three teachers interviewed.

I asked teachers the following question:

Imagine that you’ve been asked to explain the use of field trips to the school board. Can you describe how you would explain how the field trips have been used to teach curriculum components?

The response from Mrs. Thompson was as follows:

The students get to have first-hand learning and explore their own environment, and I feel like there’s no better way to learn it like in actual reality and making connections to our own science learning outcomes that we have. That it’s much more valuable for students to be able to see everything first hand and experience something happening in nature and
see those examples and be able to discuss them with their peers as well as with their instructors and by having those first-hand sort of the pictures, the visual.

I’ll never forget going out and walking with the kids and just having them pause and stop and just walk and be and listen. And ask questions a few minutes later just to tell me what they got from that. You can’t recreate that in the classroom. So I find those experiences do really enhance their learning, and I think that’s really the only way you can learn: by actually going out and experiencing things. So I would justify field trips for all of our students because I think that that’s how learning’s created, being out and exploring. That’s the best way for our kids to be able to learn.

Mr. Karlson replied by saying,

I’ve known science teachers that will say their whole course is “read these pages, answer these questions, read these pages, answer these questions” and then a lab once in a while. A lab is experiential in a way, but it’s still extremely artificial . . . So I think experiential learning makes the kids feel that they’re actually learning something as opposed to just checking up boxes and answering questions . . . They’re learning things as opposed to completing courses. I think experiential learning can be one of the ways that helps us to re-engage some of the learners that we are losing in our school system.

Mr. Bradley explained:

The field trips have been used to support curriculum, and that’s our job as teachers to follow the curriculum. With kids like these, it’s a different learning style, where often you don’t have a chance to interact with one another because you were doing packaged material. That is, you’re at a grade level/subject level and all of two people are doing the same thing at the same time. So this the field trips give you a chance to pull together and
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look at words that’ll apply to your grade level and the unit in whatever course your taking.

So it’s a little bit more work for you as a coordinator and for the teacher to dialogue and make sure you know, how does this fit to what course. Once you have determined that it’s now a learning style that goes beyond reading and writing, to one of hands on and doing. Some people would say you remember more, most people remember more, if they actually get to do something rather than watch somebody else do it or listen to somebody else talk about it.

Teachers were confident that the use of field trips was an effective alternative approach to teaching that was of great benefit for these students. The fact that students were learning experientially as part of the field trip was highlighted by all three teachers interviewed as the main influencing factor in the success of the programs, as it was something that simply could not be replicated in a classroom setting. Similarities between the hands-on aspect of field trips and labs were drawn; however, it was noted that “[labs are] still extremely artificial” whereas field trips allow students to “actually learn something as opposed to just checking boxes and answering questions” (Mr. Karlson). Field trips were identified as very valuable for students as a means to learn as suggested by Mrs. Thompson’s comment, “No better way to learn it like in actual reality.”

It is also important to note that all three teachers identified field trips as particularly beneficial for these alternative students in regards to increased engagement opportunities, both with the learning material as well as each other. This suggests that field trips affected the way students approached learning and may have played an important role in the development of positive relationships. Mr. Bradley’s comment—”With kids like these, it’s a different learning
style, where often you don’t have a chance to interact with one another because you were doing packaged material”—is reflective of the individualized learning taking place within the school that limits social interactions and discussions between students about the learning material. His previous comments about “kids talking about the curriculum” as a result of the field trips highlights the potential for field trips to promote healthy relationships while supplementing the curriculum.

Although Mr. Bradley noted that field trips require “a little bit more work, it’s worth it to go past the reading and writing so that the kids can be hands on,” he supported the extra effort required in planning and implementing such programs. Overall, teachers agreed that the field trips were beneficial to the students by providing an alternative learning approach, opportunities for developing new skills, and positive social interactions between students and teachers. This was beautifully summarized by Mrs. Thompson’s comment that the field trips were “valuable for students to be able to see everything first hand and experience something happening in nature and see those examples and be able to discuss them with their peers.”

Chapter Summary

In assessing the effects of the field trips on students’ knowledge and skills, it is clear to me that these two components are closely connected; thus, I think it is appropriate to suggest that students use their skills in gaining and interpreting knowledge. Anthony reflected, “Normally you see a creek and you just see a creek. You don’t think of how the creek moves.” This is an eloquent and simple example of the integration of observation and understanding. It was only by observing, interpreting, and reflecting that Anthony noticed his own perceptions had changed, which may influence how he observes and interprets information in the future. Anthony’s example is directly reflective of Kolb’s (1984) experiential learning model in which learners
experience something, reflect upon the experience to create meaning, develop an abstract conceptualization of what that information means, and use the experience as the basis for further exploring and experimenting.

Respondents had no negative comments about their field trip experiences. Two students did respond with “I don’t know” to some of the questions; however, these two students were admittedly shy about answering open-ended questions for what seemed to be a fear of answering incorrectly. Additionally, three students who participated in group interviews provided vague answers that could not be coded to the same extent of other students; however, these students seemed apprehensive about sharing further due to the group setting and would likely have provided more descriptive answers if interviewed one-on-one.

The interview results suggest that both students and teachers observed and experienced positive effects as a result of the field trips. Increased knowledge, development of skills, and positive attitudes towards learning support the use of field trips in teaching curriculum content. Increased social engagement and the creation of positive student and student–teacher relationships suggest that the effects of field trips may extend beyond the specific experience and individual participants. Student enjoyment of the field trip activities had an effect on their attitudes towards learning. The field trips also facilitated the development of positive relationships between students and teachers and provided an avenue for social and emotional support as well as academic support. The rich dialogue from students and teachers suggest that field trips can go beyond teaching the curriculum by connecting and supporting many facets of student achievement: knowledge, skills, attitudes, and relationships. These ideas will be further discussed in Chapter 5.
Chapter 5: Discussion and Conclusions

This last chapter discusses and interprets the results of the research and presents significant findings, including the effects of curriculum-connected field trips on students’ knowledge, skills, and attitudes as well as the unexpected information gained about the effects of those trips on student relationships. This discussion also centres these results in the existing research, and provides recommendations for further research.

Purpose

The purpose of this research was to understand the effects of field trips (i.e., curriculum-connected experiential learning outside of a classroom or school) on alternative students’ knowledge, skills, and attitudes related to learning about science and nature. A series of curriculum-connected field trips was provided for a group of alternative students and the qualitative effects of their participation was assessed. Over the duration of the research, it became apparent that knowledge, skills, and attitudes are intricately connected to the relationships students have with themselves, the learning materials, and with others within the school—both adults and peers. This research consisted of two significant components:

- the creation, delivery, and ongoing observation of the effects of five curriculum-connected experiential science field trips for alternative students; and
- a scripted interview session with participants that consisted of a series of questions relating to the main research objectives after the students had completed the field trips.

Discussion

When analyzing the information relating to knowledge and skills, I noticed it was apparent that the field trips had had a positive effect on student knowledge and skills.
Additionally, the subtle psychological components interwoven into students’ responses surprised me, and I believe it is important to recognize these aspects when discussing this research.

**Knowledge.** When initially asked to share a story about what they had learned, students appeared confused and unsure of the correct response despite being reminded that there were no correct responses. In hindsight, the question was likely perceived as similar to “what did you learn in school today,” which is often asked by parents and is generally answered with “nothing” or a faint-hearted shrug. Minimalistic responses such as this suggest students may feel uncomfortable or unable to gauge their own learning. Some may believe that they cannot learn, which may be a result of viewing themselves through a deficit lens (Gregg, 1999; Loutzenheiser, 2002).

During the interview with Andrew, the open nature of the questions obviously caused a great deal of anxiety, resulting in long periods of silence. I found this perplexing as Andrew had stated that “talking about it would get it done faster” despite having indicated a strong preference for multiple choice style questions “because there’s more of a chance of getting it right.” This is reflective of previous research showing student discomfort with ambiguous questions that lack one “right” response (Lovelace & Brickman, 2013). Andrew continued to provide brief and vague responses even with reassurance that I was genuinely interested in his unique responses and specifically highlighted that there were no incorrect responses. This further supports the idea that students like Andrew actively filter what they say in order to mitigate being perceived as not smart (Gregg, 1999; Jacobson, 2013).

This difficulty was not unique to Andrew and was observed with many of the student participants. To address this, a revised version of the question, as suggested by Wengraf (2013), was utilized as a follow up to the original question and asked students to imagine explaining
what they had learned to another student. The responses changed dramatically from an attitude of self-doubt to self-confidence. By changing the emphasis of the question to focus on what individuals had experienced rather than what the individual perceived they were meant to experience, students seemed to have greater confidence in the validity of their responses. This suggests that students may initially believe their experiences do not represent learning; however, when presented the opportunity for self-reflection, students began to recognize the extent of their understanding, which can help them to develop more positive attitudes towards their own learning processes. Students’ awareness of their own learning and development increases as a result of discussing and reflecting on their experiences.

**Curriculum content.** Given the introduction of the follow-up question to release students from the need to get it right, students were able to describe activities, discussions, and facts learned up to 3 months prior. Responses varied in depth and detail, and each student identified at least one specific activity and provided information and facts about the concepts learned, which indicated students had learned and understood the context of the information. I was able to observe that students had retained information and developed further understanding of the curriculum material, which indicates a positive relationship between field trips and potential academic achievement. This suggests and corroborates past research that well-planned field trips can successfully deliver curriculum content and positively contribute to students’ academic success (Caulkins, 2010).

**Skills.** Similar to the first set of questions related to knowledge, student responses to skills questions were vague; however, when skills were discussed in the context of abilities that may be listed on a resume or actions that could be practiced, the responses grew richer. Observational skills were most readily self-identified as having improved. Many students
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highlighted an awareness of their increased attention to detail, as described by Zach: “Now I look closer at items . . . and try to see the finer details, to see if there’s more behind what I really saw.” The field trips created unique skill development opportunities by providing students with hands-on experiences in settings where they were required to successfully interpret and navigate learning material using skills such as observation, attention to detail, and communication.

**Attitudes.** Properly planned curriculum-connected field trips reflect Armstrong’s (2012) concept of positive niche construction in which “advantageous environments minimize weaknesses and maximize strengths and thereby help students flourish in school” (p. 13). Field trips afford significant benefits to students like William by providing a range of learning styles that highlight individual strengths and enable the use of these strengths in navigating the learning material. In highlighting students strengths, learning opportunities become more enjoyable and students’ perceptions of themselves can become more positive (Armstrong, 2012). The natural world as a classroom has a myriad of benefits, not the least of which is spontaneity and a chance to interact with complex environments filled with variables that are always changing. They are truly a multiring circus with things to see, do, and try to understand in all directions. No two trips are ever the same and therein lies the opportunity for learning “magic” to occur in such positive outdoor niches.

**Engaging differently.** When students and teachers share experiences outside of the classroom setting, both parties interact with each other in new ways and take on new roles and responsibilities; this can lead to understanding their relationships with each other in a new light. Field trips can naturally aid in increasing the depth and complexity of relationships and in changing participant interactions through games, activities, and discussions. In the interviews, students repeatedly described interactions arising from group relay races, games, and activities,
which helped them to associate with learning concepts and to strengthen the interconnections. This reflects Fox and Avramidis’s (2003) suggestion that outdoor programs can achieve learning objectives while promoting social development. Students are able to redefine how they relate to other, often leading to closer bonds. Olivia indicated this by saying:

   I think the field trips brought us all closer . . . and we got to know each other better . . . instead of just judging everybody . . . we all became closer, all of the students. And getting to know the teachers better and understanding them.

Students will maintain status-quo relationships until outside influences, such as field trips, which require different engagement opportunities and push social boundaries. Both of these ancillary products are another benefit of field trips.

   I also observed that relationships between students and teachers had improved. Many students reflected positively about the change in interactions with teachers during the field trips, and Ashley indicated that I “look cooler” as a result. This comment suggests that field trips can positively influence student perceptions of teachers and adults as some of the classroom veneer of “the authority” is stripped away by the act of sharing experiences and learning new information together. Students were perceived as “more approachable” (Mrs. Thompson), whereas teachers were observed to be more relaxed, no longer the “big bad guy” (Lauren). Students voiced appreciation for the opportunity to be seen “working as independent young adults that are capable of making their own decisions” (Lauren), which can significantly support student achievement by affecting students’ self-perceptions and approaches to learning challenges. Overall, the shared experiences “made for a warmer, kinder, friendlier place amongst the students” (Mr. Karlson) indicating that positive relationships built on respect and trust were
developed during the field trips. These kinds of relationships are a significant asset in supporting student success (Calabrese, Hummel, & San Martin, 2007; Henderson, 2013; Sadowski, 2013).

**Transferance to nonparticipants.** Although it is natural for relationships and a sense of community to develop over time within a school setting, both teachers and students emphasized the role of field trips in accelerating the development of positive social relationships between students and between students and teachers as well as in the creation of a stronger school community as a whole. I was inspired to hear students comment on the effects of the field trips spreading beyond the day of activities and particularly to hear how other students, who did not participate in the research, were observed to be affected.

Students were also able to recognize an increase in their own interactions. The findings suggested that the effectiveness of field trips is not limited only to the direct participants as the social benefits of field trip experiences were observed by students sharing the experiences throughout the school community. Schools that employ integrated curriculum-connected field trips may experience the benefits twofold: benefits to participants as well as benefits that extend to the whole school community.

**Leverage of relationships.** Recognition of the role of relationships is a significant and powerful outcome of this research as relationships are considered to be one of the most powerful leverage points in helping students overcome challenges (Henderson, 2013). Too often, we see the common misconception that alternative students are “bad kids” that misbehave purposefully. It is forgotten that these students face a myriad of challenges every day that influence their behaviour and engagement and that often cause a continuous state of high alert that is reflected in fight-or-flight reactions to their immediate circumstances (Warshof & Rappaport, 2013). The following diagram highlights the fact that, although there are internal factors that determine a
youth’s outward behaviour, many external variables create the situation to which the youth is reacting (see Figure 4).

**Figure 4.** Internal and external factors potentially influencing youth behaviour and achievement.

*Note.* Adapted from “An ecological model of factors affecting resiliency,” by Embrace the Future: Resiliency Resource Centre. Copyright 2005 by Mental Health Foundation of Australia.

This diagram provides examples of what influences may affect the student, and it highlights the different levels of influence that affect youth behaviour. Those items closer to the centre of the circle depict strong influences, whereas those further from the centre indicate less
direct influence. It is important to note, however, that each level of influence affects the others. For example, the state of the economy may not appear to play a direct influence on the personal values of a youth, but it may affect the financial situation at home and money-related family stress and may be reflected in the quality of or perceived “in style” clothing the student may wear to school—all of which may affect student’s behaviour in certain situations such as deciding to take on a part time job.

In understanding the interconnected influences of a student life, educators may find insight into ways to better support learning and student success. The results of this research showed that field trips integrated with the curriculum not only seek to and are designed to teach the curriculum, they create opportunities for support (from other students and teachers) which involves students in new ways of learning and thinking which can increase confidence and well-being. Field trips may also provide a natural way to engage and make students aware of these different influences by getting them outside of their normal classrooms and out into the community.

I believe the emphasis that I placed on creating positive relationships—through the design of the lesson plans and the ways in which I interacted with the participants—played a significant role in the outcome of the field trips. As mentioned in Chapter 3, specific care was taken to ensure that participation was voluntary and that student opinions and decisions were respected. Additionally, each field trip was developed and designed in a way that created a “mellow” learning environment in which students and teachers could let their guard down. This laid the groundwork for successful, productive, mutually respectful relationships. Without these relationships, I believe the results of this research, with regard to social interactions, would have been dramatically different.
Effects of Field Trips on Alternative Students

Relationships that are developed and strengthened through field trips can play a significant role in the lives of youth. Recent literature on building resilience in youth has indicated that caring, healthy, and supportive relationships are the most important contributing factor of student success (Henderson, 2013; Sadowski, 2013; Warshof & Rappaport, 2013). The use of field trips as a means to increase student knowledge, develop skills, and to build healthy relationships is a well-rounded approach to improving self-confidence and to providing the critical support alternative students need to succeed.

**Recommendations for Future Research**

I suggest that future research seek to engage teachers in identifying ways to increase the use of field trips as a regular means of teaching curriculum and engaging students in experiential learning rather than use them only as special events—if they happen at all. Investigation of student and parent and/or guardian perceptions about the use of field trips would also be valuable for future research, as perceptions were a factor that contributed to the self-selection sample bias. Certainly further investigations could be conducted into ways that curriculum-connected field trips could be regularly inserted into classroom schedules—both in regular and especially in alternative programs. This would need some understanding of and suggestions for ways in which this could be effectively achieved with limited or repurposed resources.

**Conclusion**

When students view learning as “obligatory and extrinsic, it shares qualities with work” (Benton, 2013). Whereas when learning experiences are novel, fun and hands on, students reported finding the overall learning experience enjoyable. I liken the multifaceted approach taken in the field trips to creating a positive pressure environment where information is provided in so many different forms that knowledge and skills are developed naturally by means of
participation. I found this to be completely opposite to a reading- and writing-based learning environment in which students must interpret and select the important bits of information from confusing text and questions.

Although the read-write-repeat approach provides educators with a standardized teaching and, subsequently, grading strategies with easily identified right or wrong answers, it puts the onus on the student to tease out connections and to build a working understanding of the material. It is as if students are being presented the material that they are expected to learn without being taught the way to properly interpret or make meaning from it. During curriculum-connected field trips, the “how” of the learning is reinforced by the modelling of the leader and the excitement from the sensory inputs from the environment that demand participation and observation. Although many wonderful teachers do go the extra mile to help students learn how to learn, it can be challenging for students to master concepts on their own.

Experiential learning opportunities provide settings ripe with facts, concepts, and theories that can be viewed in context, and these opportunities can potentially create real understanding based on real experiences. Students may then be better able to build their own unique understanding of new material and find relevance to it within the context of their own lives. This is the strength of field trips.

Through this research, I have come to understand that it is critical to recognize that students’ perceived knowledge, skills, and attitudes are parts of an entwined and complex web of factors that influence their academic achievement. The components I set out to understand—knowledge, skills, and attitudes—are not separate from each other but rather nested within and overlapping with many other influential factors such as social dynamics, school community, student-teacher relationships, student self-perceptions, life circumstances, and societal
expectations (Calabrese et al., 2007; Klem & Connell, 2004; Loutzenheiser, 2002). The exact effects of a program or the individual factors that promote success of a student cannot be identified in isolation from other influences. Therefore, to be successful, initiatives promoting student success must employ a holistic approach that addresses the complexity of alternative students’ lives and that adapts any initiatives accordingly.

Finally, the results of the research indicate that curriculum-connected field trips do have overall positive effects on students enrolled in alternative school programs. The field experiences provided a comprehensive range of activities that accommodated each student’s unique learning challenges and played to their individual strengths. One of the clear conclusions from the research is that curriculum-connected field trips provide positive hands-on experiences from which students can build understanding, develop skills, and cultivate positive learning relationships with both peers and adults. These outcomes can significantly affect student engagement rates and assist in building a positive and thriving school community.
References


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Appendix A: Invitation to Participate

Invitation to Participate

Dear Parent/Guardian,

Re: Invitation to participate in a research project addressing the potential effects of outdoor science field trips on student knowledge, skills, and attitude.

My name is Krystal Pyke, I am a local graduate student who will be working with the Fraserview Learning Centre creating an outdoor, hands on program for the students this spring.

With students’ lives getting busier every day, it can be challenging to focus on learning even when in a classroom environment. I am pleased to invite all of the students of Fraserview Learning Centre to participate in “Get Out: A Curriculum-Connected Experiential Outdoor Science Program for Alternative School Students”, a research project that will support student learning and further our understanding of how hands-on outdoor science field trips can benefit students.

Your child’s participation will involve the opportunity to join in on five field trips with their class and potentially earn credit towards their science courses. Participating in the project requires the students to attend each field trip and complete feedback activities. It is also expected that participants join in on one scheduled group discussion or a one-on-one discussion with the student researcher.

- Feedback activities will involve either a short feedback survey (including multiple choice and short answer questions) or a written exercise exploring knowledge, skills, and attitudes that will take approximately 10-20 minutes of each field trip.
- Group discussions will consist of a series of questions exploring participants’ thoughts towards the field trip and activities and will take approximately 45 minutes to conduct (One on-one-discussions will take less than 20 minutes).

Participants under the age of 18 will require parental/guardian consent. There is no obligation to participate in this research project, nor are there any possible negative consequences if you choose not to participate. All participants are free to withdraw from the project at any time. Any personal information collected during the research process, such as personal opinions, will be treated with the utmost respect for the privacy and anonymity of the participant.

This research is being conducted by me, Krystal Pyke, as the thesis requirement for Royal Roads University’s Environmental Education and Communication program under the supervision of Brian Herlin | [Email Address] | I look forward to working with the teachers and students in the next few months. If you have questions about the nature of this research please feel free to contact me by email or telephone.

Thank you for considering this request; I look forward to hearing from you soon.

Respectfully yours,

Krystal Pyke
[Email Address]
[Telephone Number]
Appendix B: Letter of Agreement and Consent for Parents

Letter of Agreement and Consent

March 27, 2014

Dear Parent/Guardian,

My name is Krystal Pyke, I am a local graduate student who will be working with the Fraserview Learning Centre creating an outdoor, hands on program for the students this spring. This research project, Get Out: A Curriculum-Connected Experiential Outdoor Science Program for Alternative School Students, is part of the thesis requirement for the Master of Environmental Education and Communication program at Royal Roads University (RRU), in which I am enrolled.

This document constitutes an agreement for your student to participate in this research project. This research topic was inspired by my own experiences as a student who benefited greatly from outdoor programming throughout my teen years. A review of current research has shown that the benefits of outdoor education remain unclear. The objective of this project is to learn how a curriculum-connected, experiential (hands-on) outdoor science program can affect a student’s knowledge about the topics covered, skills relating to natural science, and attitudes towards learning. It promises to be a fascinating project with great value for future teaching of adolescents.

The research will involve the creation of five field trips designed specifically for participating students at Fraserview Learning Centre. All students at Fraserview Learning Centre have been invited to participate in this field trip program that will provide hands-on outdoor learning experiences and the opportunity to earn credit towards their Science 10 requirements. Full participation will include the student’s attendance on each field trip if possible, participation in all trip activities, contribution to group discussions, and feedback surveys.

The evaluation of the program’s effects will be carefully conducted by me and the Fraserview staff. As a participant, your student’s privacy, anonymity and confidentiality will be strictly safeguarded. Your student will be free to withdraw from the research program at any time without reason or consequence other than the need to fulfill their remaining Science 10 requirements in another way.

Group and one-on-one discussions will be recorded and transcribed into written files. Once transcribed, the audio file will be deleted. Any feedback, assignments, or activities will be kept secure and free from any identifying information such as the student’s name. Although all studies have some degree of risk, the potential of personal risk in this study has been kept to a minimum by ensuring that student feedback is free of identifying information.

The completed research will be submitted to Royal Roads University.


**Letter of Agreement and Consent**

I look forward to creating these custom programs for Fraserview Learning Centre and working with the teachers and students in the upcoming months. Please feel free to contact me with any questions you may have about this project.

Sincerely,

Krystal Pyke

[Email Address]
[Telephone Number]

By signing this letter, you give free and informed consent for your student to participate in this project.

Student Participant Name: (Please Print): _______________________________________

Signed: ____________________________ Date: ______________________________

Guardian Name: (Please Print): _______________________________________

Signed: ____________________________ Date: ______________________________

Researcher Name: (Please Print): _______________________________________

Signed: ____________________________ Date: ______________________________
Appendix C: Letter of Agreement and Consent for Staff

Letter of Agreement and Consent

March 27, 2014

Dear Fraserview Learning Centre staff,

I truly appreciate your participating in this research project. *Get Out: A Curriculum-Connected Experiential Outdoor Science Program for Alternative School Students*, is part of the thesis requirement for the Master of Environmental Education and Communication program at Royal Roads University (RRU), in which I am enrolled.

This research topic was inspired by my own experiences as a student who benefited greatly from outdoor programming throughout my teen years. Additionally, background research has shown that why education outdoors seems to work better for some students needs further study. This document constitutes an agreement for yourself as a participant in this research project, the objective of which is to learn how a curriculum-connected, experiential (hands-on) outdoor science program can affect a student’s knowledge about the topics covered, skills relating to natural science, and attitudes towards learning. It promises to be a very fascinating project with wide implications for future teaching of adolescents.

All students at Fraserview Learning Centre have been invited to participate in this field trip program that will provide hands on outdoor learning experiences and the opportunity to earn credit towards their Science 10 requirements. The research will involve the creation of five field trips designed for participating students at Fraserview Learning Centre. The evaluation of the program’s effects will be evaluated by myself with contributions from participating Fraserview staff.

As a staff member of Fraserview you may be asked to assist with a portion of the program preparation, delivery or evaluation. Participation may include the attending field trips, participation in group discussions and feedback surveys. Students will be free to withdraw from the research aspects of the program at any time without reason or consequence other than the need to fulfill their remaining Science 10 requirements in another way. If students choose to not participate in the research components of the program, their attendance on the remaining field trips will be determined by the supervising instructor.

As this research is bound to strict ethical research standards, the student’s privacy, anonymity and confidentiality must be strictly safeguarded. Student group and one-on-one discussions will take place in the absence of Fraserview Learning Centre staff to ensure no undue influence from the persons in authority. Participating staff are expected to adhere to these ethical
Letter of Agreement and Consent

standards and ensure that any personal information collected for the purposes of the research, such as survey results, feedback, and specific trip activities, is to remain confidential and will only be viewed by the principal researcher and thesis advisor for the purposes of this research project.

All group and one-on-one discussions will be recorded and transcribed into written files. Once transcribed, the audio file will be deleted. Any feedback provided or transcribed discussion will be kept secure and free from any identifying information such as the participants’ names. Although all studies have some degree of risk, the potential of personal risk in this study has been kept to a minimum by ensuring that all feedback is free of identifying information.

The completed research will be submitted to Royal Roads University.

I look forward to creating these custom programs for Fraserview Learning Centre and working with yourself and your students in the upcoming months. Please feel free to contact me with any questions you may have about this project.

Sincerely,

Krystal Pyke

[Email Address]
[Telephone Number]

By signing this letter, you give free and informed consent for yourself to be a participant in this project and that you understand your role in protecting the privacy of the students involved.

Staff Participant Name: (Please Print): ________________________________

Signed: ______________________ Date: ________________________________

Researcher Name: (Please Print): ________________________________

Signed: ______________________ Date: ________________________________
### Appendix D: Field Trip PLOs

**Science 10: Chapters 1-3**  
**Life Science: Sustaining Earth’s Ecosystems**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Section</th>
<th>Topic</th>
<th>Trip #1</th>
<th>Trip #2</th>
<th>Trip #3</th>
<th>Trip #4</th>
<th>Trip #5</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Describe the factors that influence the characteristics and distribution of biomes on Earth.</td>
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<td></td>
<td>1.1</td>
<td>Identify biotic and abiotic characteristics of biomes and ecosystems.</td>
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<tr>
<td>Sustaining Earth’s Ecosystems Chapter 1</td>
<td>1.1 &amp; 1.2</td>
<td>Explain the interaction of biotic and abiotic components of biomes and ecosystems.</td>
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<td>1.2</td>
<td>Relate plant and animal adaptations to environmental conditions in biomes and ecosystems.</td>
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<td>Understand the biotic interactions among populations and communities in ecosystems.</td>
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<td></td>
<td>2.1</td>
<td>Explain how energy flows through food chains, food webs, and food pyramids.</td>
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<td>Sustaining Earth’s Ecosystems Chapter 2</td>
<td>2.2</td>
<td>Describe how nutrients are cycled in an ecosystem.</td>
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<td>Explain how chemicals can accumulate and cause harm to organisms in ecosystems.</td>
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<td>2.3</td>
<td>Demonstrate an understanding of how human activities affect biodiversity.</td>
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<td></td>
<td>3.1</td>
<td>Explain how species adapt to changes in their environments.</td>
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<tr>
<td>Sustaining Earth’s Ecosystems Chapter 3</td>
<td>3.2</td>
<td>Explain how ecosystems naturally change over time.</td>
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<td>Explain how the impact of natural phenomenon can alter an ecosystem.</td>
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<td></td>
<td>3.2</td>
<td>Explain how human activities affect and change ecosystems</td>
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<td></td>
<td>3.3</td>
<td>Demonstrate an understanding of how introduced species can alter ecosystems.</td>
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</table>
Science 8: Chapter 10 & 11
Chapter 10: The water cycle plays a vital role
Chapter 12: Changes in water quantity and quality can effect living things

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Section</th>
<th>Topic</th>
<th>Trip #1</th>
<th>Trip #2</th>
<th>Trip #3</th>
<th>Trip #4</th>
<th>Trip #5</th>
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<td>10.1</td>
<td>Distribution of Water</td>
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<td>10.3</td>
<td>Sources of Fresh Water</td>
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<tr>
<td>Chapter 12</td>
<td>12.1</td>
<td>Freshwater Environments</td>
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<td>12.2</td>
<td>Saltwater Environments</td>
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<td></td>
<td>12.3</td>
<td>Water Quality and Its Effects on Living things</td>
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</tr>
</tbody>
</table>
Appendix E: Pretrip Student Survey

Get Out! Outdoor Science Classes
How Do You Learn?

The best way for me to learn new things is...
Fill in your rating for each way of learning

☐ listening to a presentation
☐ drawing my own pictures
☐ following written instructions
☐ making a list of the things I need to know
☐ listening to someone else’s conversation
☐ thinking about it quietly
☐ taking notes
☐ listening to a song about it
☐ having discussions
☐ watching a video
☐ trying to learn one or two things at a time
☐ being told the facts
☐ making a collage
☐ reading a book or handouts
☐ being told a story
☐ watching a demonstration
☐ looking at pictures
☐ looking up information online
☐ taking photographs
☐ watching YouTube

☐ try to learn a lot of information at once
☐ listening to radio, podcasts or audiobooks
☐ writing about my thoughts and ideas
☐ building something from parts
☐ drawing diagrams
☐ making a video
☐ doing things step by step
☐ testing myself with quizzes or flash cards
☐ memorizing things
☐ doing assignments or homework
☐ following oral instructions
☐ asking questions
☐ making mistakes
☐ doing it over and over
☐ or ........................................................................

The best ways for me to show that I’ve learned something is to...

1)...........................................................................
2)............................................................................
3) I prefer working _________________________________

I am really interested in learning about _________________________________

I would like to learn more about it by _________________________________

For me school is __________________________________________

I can make a difference by ________________________________________

Science, to me, is _______________________________________________

I think walking in the outdoors is ___________________________________

A great day for me would be _________________________________________

I've always been curious about _______________________________________

I never thought I would ever _________________________________________

Something I learned in the outdoors is ________________________________

I think an Ecosystem is _____________________________________________

One place I would like to explore is ___________________________________

When I go into the outdoors I like to _________________________________

I think our provincial government should _____________________________

My least favorite part of school is ______________________ because ______

Something I used to be scared of is _________________________________

We should look after our environment because _________________________

I didn't know teachers _____________________________________________

I think our school should __________________________________________

I always thought that learning was _________________________________

Conservation means ______________________________________________

It is really important to me that _____________________________________

I think our federal government should ________________________________

When I read, I __________________________________________________

I wish my friends knew __________________________________________

My favorite thing to do outdoors is _________________________________

Today I feel _____________________________________________________

If I could only use 3 words to describe myself, they would be
Appendix F: Lesson Plan 1—Silverdale Wetlands

Field Trip One
Silverdale Wetlands
Lesson Plan

March 7th 2014

Krystal Pyke
2014
Overview
During the Silverdale Wetlands field trip, students will be introduced to a range of natural science concepts such as: habitat components (biotic/abiotic), organism needs, adaptations, and interrelationships. Students will participate in several activities based throughout the wetland ecosystem to learn the importance of this habitat.

Time
2.5 hours

Grades
Grade 7-11. Focus on Grade 10 Science Unit 1 (Workbook Section 1.2).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic</th>
<th>Vocabulary Words</th>
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</thead>
<tbody>
<tr>
<td>Sustaining Earth’s Ecosystems Unit 1</td>
<td>Describe the factors that influence the characteristics and distribution of biomes on Earth.</td>
<td>abiotic adaptations behaviours biome biotic climatograph elevation latitude ocean currents physiological precipitation structural temperature terrestrial</td>
</tr>
<tr>
<td></td>
<td>Identify biotic and abiotic characteristics of biomes and ecosystems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain the interaction of biotic and abiotic components of biomes and ecosystems.</td>
<td></td>
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<tr>
<td></td>
<td>Relate plant and animal adaptations to environmental conditions in biomes and ecosystems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Understand the biotic interactions among populations and communities in ecosystems.</td>
<td></td>
</tr>
<tr>
<td>Sustaining Earth’s Ecosystems Unit 3</td>
<td>Demonstrate an understanding of how introduced species can alter ecosystems.</td>
<td>commensalism mutualism parasitism competition predation minicry symbiosis population community ecosystem biosphere organism</td>
</tr>
<tr>
<td></td>
<td>Explain how species adapt to changes in their environments.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain how ecosystems naturally change over time.</td>
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<tr>
<td></td>
<td>Explain how the impact of natural phenomenon can alter an ecosystem.</td>
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</tr>
</tbody>
</table>

Location
This program takes place on the trail system of the Silverdale Wetlands. When splitting the group in three, each group will use one portion of the trail system so we will be separated: bird activity will be on the east loop; the habitat activity will be along the main trail; and the water activity will be along the south loop.

Theme
Wetland ecosystems are very diverse and provide important resources for several species that have adapted to live there.
Get Out! Field Trip 1: Silverdale Wetlands  
March 7, 2014

**Objectives**

**Knowledge:**
- Be able to use key words from the vocabulary and understand their importance in an ecosystem and in all natural systems.
- Be able to explain the balancing act that occurs in nature.

**Skills:**
- Identify the relationships between organisms and the interplay of their different roles. Identify biotic and abiotic factors in a natural setting.
- Identify different types of birds.

**Attitude:**
- Develop a respectful attitude towards natural areas and the animals that live there.
- Build a understanding relationship between their own needs for food, water, personal space and safety and those of other organisms.
- Acknowledge and appreciate the diversity of the natural world.

**Activity Outline**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
<th>Group</th>
<th>Materials</th>
<th>Basics</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction,</td>
<td>10 min</td>
<td>Whole</td>
<td></td>
<td>Rules, and Schedule</td>
<td></td>
</tr>
<tr>
<td>Wetlands Walk</td>
<td>30 min</td>
<td>Whole</td>
<td>White Board</td>
<td>Diversity of organisms Biotic/Abiotic habitat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>components</td>
<td></td>
</tr>
<tr>
<td>Bird Search</td>
<td>20 min</td>
<td>1/3</td>
<td>Handouts, books, ID sheets</td>
<td>Identify bird types Habitat availability</td>
<td>Student help.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adaptations</td>
<td></td>
</tr>
<tr>
<td>Water Water Everywhere</td>
<td>20 min</td>
<td>1/3</td>
<td>Bowls / bucket &quot;Adaptations&quot; Whiteboard + markers</td>
<td>Adaptations and relationships</td>
<td></td>
</tr>
<tr>
<td>Habitat Mapping</td>
<td>20 min</td>
<td>1/3</td>
<td>Clip boards, Writing materials Photocopied map</td>
<td>Habitat availability</td>
<td></td>
</tr>
<tr>
<td>Management Challenges, Overview</td>
<td>15 min</td>
<td>Whole</td>
<td></td>
<td>Explain the management challenges at each level.</td>
<td></td>
</tr>
<tr>
<td>Reflection Time/ Writing Exercise</td>
<td>20 min</td>
<td>Whole</td>
<td>Writing materials, Cue cards</td>
<td>Personal reflection of the environment and</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<td>experiences</td>
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</tbody>
</table>
Get Out! Field Trip 1: Silverdale Wetlands

March 7 2014

**Materials**
- White board + markers
- Bird ID books/ cards
- Notebooks
- Bowls
- Bucket
- “Adaptations”
- Corolpast* clip boards
- Binder clips
- Photocopied maps
- Crayons and pencils
- Cue cards

**To Do Before Program**
- walk the route a few times to be sure of the location of features to speak about
- pack all relevant materials in pack
- pack extra gloves, hats, garbage bag rain jackets

**Rules and Guidelines:**

Before starting the program, go over the park etiquette:

*Hello everyone! I’m ________ and I’ll be your leader in the Silverdale Wetlands today. How many people have been here before? Awesome, so for most/some of you this will be a totally different experience.*

**Rules:**

*Since the Silverdale Wetlands are fairly big and many animals actually live here, it is important that everyone stay together and stay on the trail. You wouldn’t want a car driving through your living room, so please respect the animals that live here as you may be accidentally frightening them or even killing them by walking carelessly on their habitat.*

*Since we are going to wander about as a group, it would be really helpful if we made sure that I was up front. Not because I feel super important and just like being bossy, but because I can point things out before they might disappear. I wouldn’t want anyone to miss out on seeing a super cool thing just because someone else didn’t notice it and frightened it away. I will stop if I see anything and will ask you to come closer quietly while staying on the trail.*

*Since the park is home to lots of plants and animals, it is important that we are on our best behavior. We won’t take anything with us, and will try not to bother all the creatures that live here. If you happen to see an animal or plant that would be great for us all to see – be sure to point it out, since there will be others that will be glad they got to see it too.*
Get Out! Field Trip 1: Silverdale Wetlands

March 7, 2014

Now I know this seems obvious, but what you would do in school if you had a question, or wanted to share something? That’s right – put up your hands! We’ll do the same here today since it is going to be a heck of a lot easier to see your hand than for me to figure out who is saying my name.

Alright!

Last, but certainly not least, be curious! We are here to learn new things. So use what you already know to explore and see what you can discover.

I wasn’t born knowing everything I know now... and there is certainly a lot that I don’t know yet. So please ask questions, try new ideas, and challenge your brain to figure things out. Your questions will help me to find answers too!
Get Out! Field Trip 1: Silverdale Wetlands

Materials

- White board + markers

Walk along the main trail to the main ‘lake’ viewing spot. STOP

Here we are at the Silverdale Wetlands. Can anyone tell me what a wetland is? What are its defining factors? (List your defining factors here so you and the other teachers are aware of what you are looking for.)

- What makes it different from, say, a desert? Or a meadow? Or a forest?

There are lots of things that determine what the world looks like at any given spot. When describing the type of environment in a certain place, we use the word “biome”. It represents places that have similar features. There are 8 of them in total and they are usually pretty easy to understand.

If I said we were going to a desert you would likely understand where we were going. Can anyone describe the features we would find if we were looking at these biomes:

- Tropical rainforest
- Grassland
- Desert
- Tundra
- Permanent ice
- Boreal forest
- Temperate rainforest
- Temperate deciduous forest

What kind of biome do you think we are located in right now?

- Would this place look the same if we were near the equator... why...
  - (temperature/sunlight)
- Would this place look the same if we were on the top of a mountain....
  - (temperature, wind, rain).

All of the things we have mentioned that are non-living— the things that affect where these ecosystems exist – are called abiotic things. (weather, elevation, latitude, wind, ocean currents, etc)

Now please close your eyes and imagine you are in an empty gymnasium. It is completely dark, there are no sounds, and no smells. It is dry and there is no air movement. You are part of an experiment to create an ecosystem just like this one in that gymnasium – a functioning ecosystem. As we walk through the Silverdale Wetlands, I want you to take note of all of the different things that are here that you would have to take back to the gym to rebuild a working wetlands from scratch.

- What are some obvious things that we would need to bring back – think about the symbols you made for your maps?
Get Out! Field Trip 1: Silverdale Wetlands

March 7 2014

Continue walking along the east loop and south loop. Point out different habitat features and animals along the way (salmon, amphibians, waterfowl). Talk about the constructed nature of these wetlands. Return to main viewing spot. STOP

So now that we have made a round trip of the wetlands and seen what is here, what would we need to bring back to the gym to make a functional wetland back there?

Have students provide a list of thing we would need:

- Do you notice anything about the items we’ve put on the list? (biotic or abiotic)
- How did those things get here to the wetland?
  - (succession, migration, seed dispersal...)
- What about if we came back in 100 years?
- What changes might you see and what would you expect to remain the same?
- What other things, that are not so obvious, would you need to create or supply to create a functioning wetland in the gymnasium?
  - (sunlight, wind, rain, changes in temperature, insects, bacteria...)
- Where do we see artificial environments in some people’s homes
  - (aquaria, terraria, aviaries or cages, cat toys and litter boxes, planters, grow-ops)
Get Out! Field Trip 1: Silverdale Wetlands  
March 7 2014

**Water water everywhere, but not a drop to drink (20 minutes)**

**Materials**
- Bowls
- Bucket
- “Adaptations”

*Students who have already completed their grade 10 science can help out with this activity. They can help move the water buckets, time the groups, judge the fullness of the water bowls, act as parasites, etc.*

Divide the group into three teams. Assign each team a bag of “adaptations” and explain that they are now wild animals each trying to survive and raise a family. Explain each adaptation and discuss what animals might use similar tactics. Give each of them an empty bowl that will represent their babies. Explain how these items represent various ways different species have of getting water – which is usually the most limiting abiotic aspect of any environment – and in order for their babies to survive they must fill their bowl.

Set up a bin of water an acceptable distance away, highlighting that this is the water source that the animals will be depending on. At the start of a timer the teams must race to fill their bowls with the “adaptations” they have. The first team to fill their bowl wins this round.

Set up an ice cube tray filled with water a distance away. Much farther away place a bucket of water. This represents the amount of water during a dry summer. Have the teams once again try to fill their bowls. Once the water is empty in the ice cube tray, compare each bowl. Have any of them filled the bowls to the top? Who has the most water – what adaptations made it easier for them to get water? Why was it so much harder to get water (competition)?

What if, while you were out getting water, I came by and stole some of that water to feed my own babies. Let’s say I was a flea. Would I be making it harder for your babies to survive? What relationship would this be called? (parasitism).

What if the teams had to work together to get the water to the bowls, one team protects the bowls from other species and the other gets the water (mutualism).

What if I took up living around the bowl/nest and fed off of the food and water you spilled on the ground while you and your babies were eating? Am I affecting you in any way? But I would be getting water (commensalism).

Think of the wetlands as a big cafeteria or the food court. There are lots of options for food, and each animal has a preference, but some animals choose different ways to get food. For example:

- does anyone know someone who never brings a lunch and always eats some of your French fries? This kind of person would be exhibiting **parasitism** (fleas).
Get Out! Field Trip 1: Silverdale Wetlands  
March 7 2014

- What about when a few of you get different foods and share them. This would be called commensalism (co means together and mensalism is eating - thus eating together) – neither of you really benefit and neither of you are harmed (barnacles on whales).

- What about if you and a friend were both really hungry but neither of you have enough money for a pizza, but together you can afford it. Together you both benefit, whereas if you were alone you would both be hungry. This would be called mutualism (lichens).

- What about when someone has brought candies to the class, but there are only enough for half of you. This relationship where each scrambles to get candies and some get none is called competition?

- Here’s a tricky one. What about that person who walks around eating other people? They could be called a lot of things – but here we will call that parasitism if they are eating only part of you (mosquitos, tapeworms) or predation if they killed and ate most of you (cougar or grizzly bear).

- There is also one kind of relationship where one organism pretends to be something else. This could be a lizard pretending it’s a leaf, or a snake pretending it is a different, really poisonous snake. People do this too sometimes… acting as if they are something else. It is called mimicry. Like dressing as something scary for Halloween, or putting on a tough face when you are actually sad, or dressing crazy like Lady Gaga.
Bird Search (20 minutes)

Materials

- Bird ID books/cards
- Notebooks

Divide the group into three teams. Each team will be assessing the habitat available of a certain type of bird. Describe each of the birds they will be representing (small perching birds, medium paddling birds, large predatory birds). Discuss what factors would affect each kind of bird (nesting, food, predators, weather, migration).

As you walk around the east wetlands loop, search for signs of your kinds of birds (nests or bird houses – how many, trees and insects, platforms, etc.).

What kinds of birds do you see/hear?

Have each group keep a tally the number of their bird they see or hear, and the number of nesting spots they discover (note books for each group and a pencil to record).

Discuss why you think there might be more of a certain kind (space, location, food source, predatory birds around).

Do all the birds we were looking for make noise? Why or why not?

Small birds – when together in groups, when looking for a mate. What about keeping safe from predatory birds?

Paddling birds – when in groups, when looking for a mate. What about keeping safe from predatory birds or other predators?

Predatory birds – mostly silent. Want to be able to sneak up on prey. Only make noise when in groups of the same bird and when mating.

As a combine group, discuss what might affect what we’ve seen.

- Time of year (migration/nesting)
- Nearby threats
- Availability of habitat
- Global factors such as weather patterns, climate change

Explain how birds know when to migrate north. Their internal clock is based on sunlight, which makes sense since they live outdoors are a woken up by the sun. Since the planet spins around the sun at a regular speed, the day light changes with a regular pattern that isn’t effected by things like weather, climate change, temperature or pollution. These things do affect the birds though. One challenge biologist are noticing is that warmer temperatures earlier in spring are causing insects to come out earlier, but the birds haven’t arrived yet because the day light signal hasn’t happened yet. This means that the birds food, the insects, may have died off before the birds even arrive!

What other things might affect the birds?
Field Trip 1: Silverdale Wetlands

March 2014

Habitat Mapping (20 minutes)

Materials
- Coroplast® clip boards
- Binder clips
- Photocopied maps
- Crayons and pencils

Explain the mapping process:

Speak about each of the different habitat components that were mentioned at the end of the walk (abiotic, biotic, food, shelter, water, space).

Each student will be given a clip board (a piece of Coroplast® and binder clip) and will draw an animal from the bag. The animal card will outline the needs of that particular animal in terms of it habitat. A frog, for example, will need lots of shallow water for swimming and to find insects, rocks and large woody debris to hide under, and slow moving or still water to lay its eggs.

Staying to the main section of the wetland trail, each student will record the different habitat components for their animal on their maps using the symbols they created in the pre trip activities.

You are creating a map that you will be able to predict where we will be able to find your animal. Use the symbols you created in class, coloured pencils, crayons, and any other things that would make your map useful in finding your creature.

You may also want to mark on your map things that might prevent your animal from living there. For example, a fence may stop deer from being able to enter the wetlands, or a waterfall might stop fish from being able to swim upstream.
Field Trip 1: Silverdale Wetlands  

March 2014

**Management Challenges (10 minutes)**

Thinking back to the different ways things affect habitats that we learned today, explain how the “management” of these habitats so they can be sustained or kept in good shape can be so difficult.

Have the group in a big open circle. Ask each person, without moving, to choose two other people in the circle that they normally wouldn’t choose. Keep this a secret without anyone else knowing who you have chosen. When instructed to start moving, try to keep the same distance between yourself and the two other people. You want to make sure they don’t know you have chosen them. Keep trying to stand exactly the same distance away from your two chosen people. You want to be one vertex of an equilateral triangle and the other two people are the other vertexes. Keep moving until you have found your spot. It may take a while as your two chosen people will be moving too as they try to find balance with their two chosen people.

Allow to movement of the group to keep going until they have stopped.

Explain how complicated it was for the class to “balance” when each person was only focusing on two variables – their two chosen people. In nature organisms, whether they are plants or animals, are trying to find a balance between many things (being too wet or dry, getting enough sunlight without falling over, eating enough food without getting eaten by something else, etc. It is important to recognize that variables are always changing and every living thing has to adjust to make sure it finds the right balance and survives.

In this example you were only focused on two other people or variables, let’s say finding water and not getting eaten. You were trying to balance your needs. Imagine if you were trying to keep track of three people, or four? This is exactly why it can be so complicated to understand exactly how the natural world works. Especially when you remember that people are organisms too, trying to find balance between being cold and needing to find food, or being tired but needing the finish homework. The world is a complicated place and always changing so finding a balance is a continual challenge and is always temporary.
Field Trip 1: Silverdale Wetlands

March 2014

**Reflection Time (15-20 minutes)**

**Materials**
- Coroplast® clip boards
- Binder clips
- Crayons and pencils
- Cue cards

Before we head back to the school – I want to give you guys a chance to just enjoy where we've spent the last few hours. This will be an individual quiet activity where you will be able to reflect on what you have learned here today. These reflective writing activities will be combined from each trip at the end of the year for you to review. You might be surprised at how much you'll notice a change in your own writing or remember something that happened on a trip.

I remember writing about... (guided imagery)

Please take a cue card and write any reflective thoughts you have on today's field trip experience. You can write about what you learned, or perhaps what was surprising to you. If you are feeling creative you could write a poem or a song or a story about how you felt on the trip.

You can write point form notes about what you learned – or explain what it made you think of.

Take some time to look around at where you are. Look at thing with soft eyes (staring off into the distance watching trees blow in the wind) – and with hard eyes (focusing on details).

This is your time to reflect.
Appendix G: Lesson Plan 2—Temperate Rainforest

Field Trip Two
Temperate Rainforest
Lesson Plan

April 4\textsuperscript{th} 2014

Krystal Pyke
2014
Overview
During the Temperate Rainforest field trip, students will be introduced to a range of natural science concepts such as: components that make up a forest ecosystem (biotic + abiotic) organism adaptations, and interrelationships. Students will participate in several activities based throughout the temperate rainforest ecosystem to learn the importance of this habitat and understand real world applications of ecosystem science from an individual, community, and career viewpoint.

Time
3.0 hours

Grades
Grade 7-11. Focus on Grade 10 Science Unit 1 (Workbook Section 1.2).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic</th>
<th>BC Science 10 PLOs</th>
<th>Vocabulary Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustaining Earth's Ecosystems Unit 1</td>
<td>Understand the biotic interactions among populations and communities in ecosystems.</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td>Sustaining Earth's Ecosystems Unit 2</td>
<td>Explain how energy flows through food chains, food webs, and food pyramids.</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrate an understanding of how human activities affect biodiversity.</td>
<td>B1 &amp; B2</td>
<td></td>
</tr>
<tr>
<td>Sustaining Earth's Ecosystems Unit 3</td>
<td>Explain how species adapt to changes in their environments.</td>
<td>B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain how ecosystems naturally change over time.</td>
<td>B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain how the impact of natural phenomenon can alter an ecosystem.</td>
<td>B3</td>
<td></td>
</tr>
</tbody>
</table>

Location
This program takes place on the private property of Tami McLellan. The group will stay together as a whole for the duration of the program. During the scavenger hunt students will be in partners. For the stream survey the students will be put into groups of 3-5 people.

Theme
Temperate rainforest ecosystems are very diverse and provide important resources for several species that have adapted to live there.
**Objectives**

**Knowledge:**
- Be able to use key words from the vocabulary and understand their importance in an ecosystem and in all natural systems.
- Be able to explain the balancing act that occurs in nature.

**Skills:**
- Identify the relationships between organisms and the interplay of their different roles. Identify biotic and abiotic factors in a natural setting.
- Identify different types of trees.

**Attitude:**
- Develop a respectful attitude towards natural areas and the animals that live there.
- Build a understanding relationship between their own needs for food, water, personal space and safety and those of other organisms.
- Acknowledge and appreciate the diversity of the natural world.

**Activity Outline**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
<th>Group</th>
<th>Materials</th>
<th>Basics</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction,</td>
<td>10 min</td>
<td>Whole</td>
<td></td>
<td>Rules, and Schedule</td>
<td></td>
</tr>
<tr>
<td>Forest Walk</td>
<td>45-60 min</td>
<td>Whole</td>
<td>White Board Props</td>
<td>Diversity of organisms Biotic/Abiotic habitat components</td>
<td></td>
</tr>
<tr>
<td>Scavenger Hunt</td>
<td>30 min</td>
<td>Whole</td>
<td>Bowls, ID sheets</td>
<td>Identify bird types Habitat availability Adaptations</td>
<td></td>
</tr>
<tr>
<td>Stream Survey</td>
<td>60 min</td>
<td>Whole</td>
<td>Bucket, Nets, Spoons, Jars</td>
<td>Adaptations and relationships</td>
<td>Student help.</td>
</tr>
<tr>
<td>Adaptation Relay</td>
<td>20 min</td>
<td>Whole</td>
<td>Bowls, Spoon, Tongs, tweezers, ‘foods’</td>
<td>Habitat availability Species specific needs</td>
<td></td>
</tr>
<tr>
<td>Management Challenges, Overview</td>
<td>15 min</td>
<td>Whole</td>
<td></td>
<td>Explain the management challenges at each level.</td>
<td></td>
</tr>
<tr>
<td>Reflection Time/Writing Exercise</td>
<td>20 min</td>
<td>Whole</td>
<td>Writing materials Clip Boards</td>
<td>Personal reflection of the environment and experiences</td>
<td></td>
</tr>
</tbody>
</table>
Effects of Field Trips on Alternative Students

Get Out! Field Trip 1: Silverdale Wetlands

<table>
<thead>
<tr>
<th>Feedback Forms</th>
<th>15 min</th>
<th>Whole</th>
<th>Feedback forms, Clip board</th>
</tr>
</thead>
</table>

Materials
- White board + markers
- Bird ID books/ cards
- Notebooks
- Bowls
- Bucket
- “Adaptations”
- Coropast* clip boards
- Binder clips
- Photocopied feedback forms
- Crayons and pencils
- Cue cards

Rules and Guidelines:
Before starting the program, go over the park etiquette:

Hello everyone! I’m ____ and I’ll be your leader here at Tamis house today.

Mrs. McLellan has been super generous for allowing us to visit her property. This is a fantastic opportunity to get outdoors and actually climb around and get dirty. But remember that we are visitors to her house, so please respect the animals that live here as you may be accidentally frightening them or even killing them by walking carelessly on their habitat.

Since we are going to wander about as a group, it would be really helpful if we made sure that I was up front. Not because I feel super important and just like being bossy, but because I can point things out before they might disappear. I wouldn’t want anyone to miss out on seeing a super cool thing just because someone else didn’t notice it and frightened it away. I will stop if I see anything and will ask you to come closer quietly while staying on the trail.

Since the property is home to lots of plants and animals, it is important that we are on our best behavior. We won’t take anything with us, and will try not to bother all the creatures that live here. If you happen to see an animal or plant that would be great for us all to see – be sure to point it out, since there will be others that will be glad they got to see it too.

Now I know this seems obvious, but what you would do in school if you had a question, or wanted to share something? That’s right – put up your hands! We’ll do the same here today since it is going to be a heck of a lot easier to see your hand than for me to figure out who is saying my name.

Alright!

Last, but certainly not least, be curious! We are here to learn new things. So use what you already know to explore and see what you can discover.
Get Out! Field Trip 1: Silverdale Wetlands

I wasn’t born knowing everything I know now... and there is certainly a lot that I don’t know yet. So please ask questions, try new ideas, and challenge your brain to figure things out. Your questions will help me to find answers too!
**Forest Hike (45-60 minutes)**

**Materials**
- White board + markers
- props

*Walk along the main trail to the main 'lake' viewing spot. STOP*

**Before entering**
- Explain how/why we are in temperate rainforest (latitude, rainfall, ocean currents, elevation, etc) (5-10 minutes)

**Big Rock with Moss (5-10 minutes)**
- How old do we think this forest is? How long has it been here? What was here before it? How did it become a forest?

**Dark grove in Forest (5 minutes)**
- Where does this forest get it's energy from? Explain how the sun's energy is cycled through the forest. How the plants are specially adapted to living where there is very little light.

**Alder grove/ skunk cabbage/ marsh (5-10 minutes)**
- How is this spot different from the other patches of forest we were in?
- How will this area change over time?
- Will the same animals and plants be here in 10, 50, 200 years.

**Nurse Stump (5-10 minutes)**
- Back to the 'how old is this forest' question - You can actually read the history of the forest if you know how understand the clues and work backwards.
- Age of the trees growing on the stump. Age of the stump. Age of the forest around it.
- Where do things in the forest grow? Fact: The needles of coniferous trees can make the soil really acidic so that other plants can't grow and interfere with the water and nutrients they collect from the soil. One of the best places to grow is on something that is rotting as it has all the pieces you need to grow (nutrients, water, etc) without having to collect them from the soil.
Scavenger hunt (30 minutes)

Materials
- Bowls
- ID sheet

Hand each student or group the plant scavenger hunt list and a bowl. Allow enough time to collect the items - return to the (seating area?). With the group go through and organize the things using the categories determined in class. Talk about the differences and similarities, how they help the plant survive.

Diversity / Interrelatedness

Give each student/ pair a bowl while on the forest walk. Instruct them to gather as many different things as they can (that are smaller than the size of their thumb) fit in the bowl.

When they return to the “seating area” give each student/pair a large piece of paper. Have them group their items on the paper by similarities (green things, seeds, hard, soft, things that fell, things that grow, etc.)

Once they have gone through a couple groupings, have them do it on their own, seeing who has the most different categories of similar things. Who has the most different things?

Randomly pick two items – what to they have in common? What makes them different?

Randomly pick 3 items – repeat.

Pick 4 items – repeat?

How are these items related to each other?

Have them create circles (van diagrams) or connecting lines of similarities and see how many things are different and similar. Use bright crayons or markers.

Compare with each other.

Take a picture of each collection of things and compare in the classroom after the trip.
Effects of Field Trips on Alternative Students

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Get Out! Field Trip 1: Silverdale Wetlands   April 4th 2014

**Stream Survey (60 minutes)**

**Materials**

- Clip boards
- Waterproof paper
- Pencils
- Dip nets
- Bowls
- Jars
- Spoons
- Eslon tape
- waders

Divide the group into two teams. One team will be working on the stream assessment while the other is working on the invertebrate sampling.

**Stream Survey (60 minutes: broken into two (30 minute chunks) Groups**

**Stream assessment (30 minutes)**

- measure the width and depth of the stream (5 measurements averaged)
- measure the speed of the stream (using a ball, measuring line, and a stopwatch or counting)
- draw a section of the stream to show trees, plants, rocks, etc. (each person draws a different 1m length by 5 m wide section on graph paper and they can put their sections together after.

**Invertebrate sampling (20-30 minutes)**

- collect samples of insects in the stream using a Surber sampler (kick net)
- collect terrestrial insects using the bush shake method
- sort the insects using magnifying glasses or microscopes (if possible - may purchase these if money is available)
- identify as best as possible (use SPES invert sheet)
- discuss the different adaptations
Get Out! Field Trip 1: Silverdale Wetlands
April 4th 2014

Adaptation Relay (20-30 minutes)

Materials
- Adaptations
- Bowls

Assign teams. Provide adaptations and explain real animals that have similar adaptions.
(Tweezers=humming bird, tongs = heron, shop sticks = red winger blackbird, slotted spoon = duck)

Scatter the bowls around with different “food” in them.

Each team must try to fill up their bowl first using only the adaptations to gather the food.
Get Out! Field Trip 1: Silverdale Wetlands

April 4th 2014

**Management Challenges (10-15 minutes)**

Thinking back to the different ways things affect habitats that we learned today, explain how the “management” of these habitats so they can be sustained or kept in good shape can be so difficult.

Have the group in a big open circle. Ask each person, without moving, to choose two other people in the circle that they normally wouldn’t choose. Keep this a secret without anyone else knowing who you have chosen. When instructed to start moving, try to keep the same distance between yourself and the two other people. You want to make sure they don’t know you have chosen them. Keep trying to stand exactly the same distance away from your two chosen people. You want to be one vertex of an equilateral triangle and the other two people are the other vertexes. Keep moving until you have found your spot. It may take a while as your two chosen people will be moving too as they try to find balance with their two chosen people.

Allow movement of the group to keep going until they have stopped.

Explain how complicated it was for the class to “balance” when each person was only focusing on two variables – their two chosen people. In nature organisms, whether they are plants or animals, are trying to find a balance between many things (being too wet or dry, getting enough sunlight without falling over, eating enough food without getting eaten by something else, etc.) It is important to recognize that variables are always changing and every living thing has to adjust to make sure it finds the right balance and survives.

In this example you were only focused on two other people or variables, let’s say finding water and not getting eaten. You were trying to balance your needs. Imagine if you were trying to keep track of three people, or four? This is exactly why it can be so complicated to understand exactly how the natural world works. Especially when you remember that people are organisms too, trying to find balance between being cold and needing to find food, or being tired but needing the finish homework. The world is a complicated place and always changing so finding a balance is a continual challenge and is always temporary.
Field Trip 1: Silverdale Wetlands

March 2014

**Reflection Time (15-20 minutes)**

**Materials**
- Coroplast® clip boards
- Binder clips
- Crayons and pencils
- Cue cards

Before we head back to the school – I want to give you guys a chance to just enjoy where we’ve spent the last few hours. This will be an individual quiet activity where you will be able to reflect on what you have learned here today. These reflective writing activities will be combined from each trip at the end of the year for you to review. You might be surprised at how much you’ll notice a change in your own writing or remember something that happened on a trip.

Please take a cue card and write any reflective thoughts you have on today’s field trip experience. You can write about what you learned, or perhaps what was surprising to you. If you are feeling creative you could write a poem or a song or a story about how you felt on the trip.

You can write point form notes about what you learned – or explain what it made you think of.

Take some time to look around at where you are. Look at thing with soft eyes (staring off into the distance watching trees blow in the wind) – and with hard eyes (focusing on details).

This is your time to reflect.

Before you go, I want to read you a quote from Aldo Leopold, a naturalist I greatly respect and admire, that relates to the balance between people and nature.

**Thinking like a Mountain**

“We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes - something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters’ paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view...I now suspect that just as a deer herd lives in mortal fear of its wolves, so does a mountain live in mortal fear of its deer. And perhaps with better cause, for while a buck pulled down by wolves can be replaced in two or three years, a range pulled down by too many deer may fail of replacement in as many decades. So also with cows. The cowman who cleans his range of wolves does not realize that he is taking over the wolf’s job of trimming the herd to fit the range. He has not learned to think like a mountain. Hence we have dustbowls, and rivers washing the future into the sea.”

— Aldo Leopold, *A Sand County Almanac: With Other Essays on Conservation from Round River*
Appendix H: Lesson Plan 3—Migration Station

Field Trip Three
Migration Station
Lesson Plan

May 2\textsuperscript{nd} 2014

Krystal Pyke

2014
Get Out! Field Trip 2: Migration Station

Overview
During the Migration Station field trip, students will be introduced to a range of natural science concepts such as: global energy cycles, migration as an adaptation, animal breeding adaptations, and organism interrelationships.

Students will participate in several activities based throughout a protected wetland ecosystem to learn the importance of this type of habitat and understand real world applications of ecosystem science for managing species, habitats, and humans.

Time
3.0 hours

Grades
Grade 7-11. Focus on Grade 10 Science Unit 1 (Workbook Section 1.2).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic</th>
<th>BC Science 10 PLOs</th>
<th>Vocabulary Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustaining Earth's Ecosystems Unit 1</td>
<td>Understand the biotic interactions among populations and communities in ecosystems.</td>
<td>B1 &amp; B2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relate plant and animal adaptations to environmental conditions in biomes and ecosystems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustaining Earth's Ecosystems Unit 2</td>
<td>Explain how energy flows through food chains, food webs, and food pyramids.</td>
<td>B1</td>
<td>B1</td>
</tr>
<tr>
<td></td>
<td>Describe how nutrients are cycled in an ecosystem.</td>
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<td></td>
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<tr>
<td></td>
<td>Explain how chemicals can accumulate and cause harm to organisms in ecosystems.</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrate an understanding of how human activities affect biodiversity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustaining Earth's Ecosystems Unit 3</td>
<td>Demonstrate an understanding of how introduced species can alter ecosystems.</td>
<td>B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain how species adapt to changes in their environments.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Explain how ecosystems naturally change over time.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Explain how the impact of natural phenomenon can alter an ecosystem.</td>
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<td></td>
</tr>
</tbody>
</table>

Location
This program takes place at the Great Blue Heron Reserve in Chilliwack, BC. The group will stay together as a whole for the duration of the program except during the scavenger hunt when students will be in partners or teams of 3-4.
Effects of Field Trips on Alternative Students

Get Out! Field Trip 2: Migration Station
May 2nd, 2014

Theme
Migration is an adaptation that many animals have developed to increase their chances of survival by moving to locations that better provide for their needs throughout the year. Wetlands ecosystems are very diverse and provide important resources for several species that migrate.

Objectives

Knowledge:
• Be able to use key words from the vocabulary and understand their importance in an ecosystem and in all natural systems.
• Be able to explain why certain animals migrate and others do not.

Skills:
• Identify the relationships between organisms and the interplay of their different roles. Identify biotic and abiotic factors in a natural setting.
• Identify different types of migratory birds.

Attitude:
• Develop a respectful attitude towards natural areas and the animals that live there.
• Build a understanding relationship between their own needs for food, water, personal space and safety and those of other organisms.
• Acknowledge and appreciate the diversity of the natural world.

Activity Outline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
<th>Group</th>
<th>Materials</th>
<th>Basics</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who’s Who</td>
<td>On bus</td>
<td>Whole</td>
<td>Clip boards</td>
<td>How nature wise is FLC</td>
<td></td>
</tr>
<tr>
<td>Migration Walk</td>
<td>45-60 min</td>
<td>Whole</td>
<td>White Board Props</td>
<td>Migration adaptations</td>
<td></td>
</tr>
<tr>
<td>Scavenger Hunt</td>
<td>45 min</td>
<td>Groups</td>
<td>Binoculars a ID sheets Note paper</td>
<td>Identify bird types Habitat availability Adaptations</td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td>30 min</td>
<td>Whole</td>
<td>Dating Cards</td>
<td>Breeding behaviour of local wildlife</td>
<td>Teacher or student volunteers</td>
</tr>
<tr>
<td>The Dating Game</td>
<td>30 min</td>
<td>Whole</td>
<td>Dating Cards</td>
<td>Breeding behaviour of local wildlife</td>
<td>Teacher or student volunteers</td>
</tr>
<tr>
<td>Adaptation Relay</td>
<td>30 min</td>
<td>Whole</td>
<td>Bowls, Spoon, Tongs, tweezers ‘foods’</td>
<td>Habitat availability Species specific needs</td>
<td></td>
</tr>
<tr>
<td>Feedback Forms</td>
<td>On bus</td>
<td>Whole</td>
<td>Feedback forms, Clip board</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Get Out! Field Trip 2: Migration Station  
May 2nd 2014

**Materials**
- White board + markers
- Bird ID books/cards
- Notebooks
- Bowls
- “Adaptations”
- Corolpast* clip boards
- Binder clips
- Photocopied feedback forms
- Crayons and pencils

**Rules and Guidelines:**
Before starting the program, go over the park etiquette:

Hello everyone! I’m __________ and I’ll be your leader here at the Great Blue Heron Reserve today.

This is a fantastic opportunity to get outdoors and explore. But please remember that we are visitors to the Heron Reserve, so please be respectful of the people who put a lot of time into protecting this wetland but also to the plants and animals that live here too. I don’t want to see any behaviour that I would have to apologize for.

Since we are going to wander about as a group, it would be really helpful if we made sure that I was up front. Not because I feel super important and just like being bossy, but because I can point things out before they might disappear. I wouldn’t want anyone to miss out on seeing a super cool thing just because someone else didn’t notice it and frightened it away. I will stop if I see anything and will ask you to come closer quietly while staying on the trail.

Since the property is home to lots of plants and animals, it is important that we are on our best behavior. We won’t take anything with us, and will try not to bother all the creatures that live here. If you happen to see an animal or plant that would be great for us all to see – be sure to point it out, since there will be others that will be glad they got to see it too.

Now I know this seems obvious, but what you would do in school if you had a question, or wanted to share something? That’s right – put up your hands! We’ll do the same here today since it is going to be a heck of a lot easier to see your hand than for me to figure out who is saying my name.

Alright!

Last, but certainly not least, be curious! We are here to learn new things. So use what you already know to explore and see what you can discover.

I wasn’t born knowing everything I know now... and there is certainly a lot that I don’t know yet. So please ask questions, try new ideas, and challenge your brain to figure things out. Your questions will help me to find answers too!
Get Out! Field Trip 2: Migration Station

May 2nd 2014

Migration Hike (45-60 minutes)

Materials
- White board + markers
- Props
  - Heron skull, egg, and feather
  - Hummingbird and warbler skull

Walk along the dyke trail.

Before entering
- Explain how/why migratory animals come to locations like this (food, safety, space). Note that we will see more animals if we are quiet and observant. There are hundreds of species here; we just have to pay attention to be able to see them. There is only so much I can do as a biologist if we as a group are loud and scare them all away.

Dike gate (5-10 minutes)
- Differences in habitat due to human impacts. Farms, roads, dykes, etc. all change the way the world looks and functions.
  - Human & Natural Disturbances

Any birds that fly away while walking along the dyke (5 minutes)
- Why do these birds fly away when we come near? (escaping possible predation, protecting their nest).
- Wasting energy un-necessarily reduces their chances of survival or their young’s.
- Areas where dogs are not allowed, trails are closed, etc.

Heron Colony (10-20 minutes)
- Take five minutes to watch the colony.
  - how many nests can we count?          - in how many trees?
  - what are the birds doing?             - do they seem to care about us?

How is this spot different from the other patches of forest?
- How will this area change over time?
  - What might cause the herons to leave?
  - What predators might be an influence?

Heron Adaptations versus other birds (props)
Get Out! Field Trip 2: Migration Station

May 2nd 2014

Scavenger hunt (30-45 minutes)

Materials
- Binoculars
- ID sheet
- Clip boards

Hand each group the scavenger hunt list (one per student) and a set of binoculars and ID sheets. Allow 30 minutes to collect walk along the trails and visit at least one bird blind and the tower - return to the (seating area/ outdoor classroom) when done.

With the group discuss the creatures they found.

Talk about the differences and similarities in adaptations how they help the animals survive.

Camouflage or Bright colours

Tree nesters vs Ground nesters vs Cavity nesters

Migrators vs Winter Adaptations

Seed eaters vs Bug eaters vs Fish eaters vs Plant eaters
Get Out! Field Trip 2: Migration Station

Lunch Break

Allow time to explore the nearby areas, birds, and animals
Adaptation Relay (20-30 minutes)

Materials
- Adaptations
- Bowls
- Seeds – bugs – fluffies – gummy worms

Assign teams. Provide adaptations and explain real animals that have similar adaptations. (Tweezers=humming bird, tongs = heron, shop sticks = red winker blackbird, slotted spoon = duck)

Scatter the bowls around with different “food” in them.

Each team must try to fill up their bowl first using only the adaptations to gather their food.

Bigger animals with larger adaptations have two bowls representing larger babies to feed.

Teams will race to see who can feed their babies with the limited supply of food.

Follow up questions (examples):

What kinds of foods were certain adaptations good for?

Is it harder or easier to be a bigger animal?

How many babies do you think you could feed? What kinds of animals have lots of babies/ few babies?

How would choose a place to nest based on your food adaptations?
The Dating Game (20-30 minutes)

Ask for three male volunteers to be the wild bachelors. Have a teacher or a female volunteer be the bachelorette.

Assign each bachelor an animal without letting the bachelorette know who it is. Have the bachelorette read each question (see Dating Game attachment) and have the bachelors read their scripted responses.

Have students guess which animal each bachelor is.
<table>
<thead>
<tr>
<th>Round 1</th>
<th>Owl</th>
<th>Raccoon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) What is your idea of a romantic date?</td>
<td>Well first I would serenade you from a distance. You would love the sound of my deep voice echoing through the evening air. We’d watch the sunset from a nice branch and I’d swoop down and grab you a tasty treat from the meadow below. Later we’d go back to my place and we’d both throw up our dinner before settling in for a warm snuggle.</td>
<td>We’d met up in a public place with lots of others around so things wouldn’t be weird. We could go shopping and the local thrift market; you know what they always say “one man’s garbage is another man’s buffet.” Our hands would accidentally touch while browsing through the items and I’d lean in and take a bite of the pizza you were chewing on. You’d get mad at me and hiss, but I know you secretly were hoping I’d kiss you.</td>
</tr>
<tr>
<td>2) How to you show you are interested in a lady? What do you do to impress her?</td>
<td>I’m like to be the only man in a woman’s life so I like to let the whole world know. I would sing about your beauty for hours and hours, long into the night. And, for the very special ladies out there, I’d try to shove a dead rat in your face and insist you eat it until you throw up.</td>
<td>If I was really crushing on a girl, the first thing I would do is probably start a fight with you. You know, I wouldn’t want you to think I was too into you or that my feelings made me vulnerable. I’d probably start by showing you away from the food, then I’d probably try to scratch you across the face. But I’m just testing you, I really like a fighter. You’ve got to be able to hold your own if you’re going to take care of my kids.</td>
</tr>
<tr>
<td>3) After a long day gathering food, where do you like to rest?</td>
<td>I like to find a nice sturdy stronghold where I can get a good panoramic view and settle in for a nice long nap. I’m a light sleeper though, so I’m usually found napping throughout the day.</td>
<td>Any place I can lay down in the sun will do. I’ll take a nice nook in a tree, a warm deck, sometimes I’ll even ponder life laying on a park bench. When the weather gets chilly though I like to snuggle up in a nice warm tree hole, or even better! a well-insulated attic.</td>
</tr>
<tr>
<td>Round 1</td>
<td>Owl</td>
<td>Raccoon</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
<td>---------</td>
</tr>
<tr>
<td>4) What would you say is your most distinguishing feature?</td>
<td>That depends on whooo you ask. Most people know me by my famous vocals eerily drifting on the night winds. But I'm also known for my piercing stare and wonderful hearing.</td>
<td>A bunch of my cousins were hunted down a long time ago due to some weird fashion craze where humans wore our tails on their hats? Imagine that - WEIRD! I'm most fond of my incredibly dexterous front paws, people often call them hands. I can unlock doors and unzip backpacks to get at the goods inside.</td>
</tr>
<tr>
<td>5) What is your idea of the perfect family home?</td>
<td>A nice hollow in a tree, a broken top tree with a great view, or even a big empty bird house will work (if it's big enough). I'm not one for fancy decor though, so me and the missus will just scrape a shallow nest out of the middle for the eggs.</td>
<td>Meh - I'm not big on cohabitation. I lived with my mom and my brothers and sisters for a while but that got old fast. Mom kept having kids and dad was never around so I hit the road to scratch out my own place. Whenever I have to share a place with others we tend to get in screaming and scratching fights. It usually doesn't end well for anyone.</td>
</tr>
<tr>
<td>6) Do you consider yourself a family man?</td>
<td>Family comes first I always say. When I've got little ones to look after I'll spend nights and even days hunting down food to feed everyone. It's a father's duty to make sure everyone in the nest is fed.</td>
<td>I'm all for having a good time - but taking care of little ankle biters is not my thing. Hey if you want to have kids that's fine - but count me out of babysitting duty.</td>
</tr>
<tr>
<td>7) Do you see yourself settling down with the same lady, or are you a party animal out for a good time?</td>
<td>What can I say, when I fall in love, I fall in love hard. I'm a one lady kind of guy. I have eyes for only one love and I'll defend and protect her to the bitter end. If anything were to happen to my lady I might die of a broken heart.</td>
<td>There's so much love for me to give, I can't keep it all for one lady. What can I say - I'm a ladies man. I've got to spread my wild oats and have a good time. You only live once right!</td>
</tr>
<tr>
<td>Round 2</td>
<td>Beaver</td>
<td>Duck</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1) What is your idea of a romantic date?</td>
<td>I like to take things slow and keep it casual. I think a nice late afternoon or evening swim at the lake would be a nice idea. Spend a few hours paddling around in the water enjoying the sunset and watching the bats overhead. We could grab a snack along the bank and daydream about that log home we’d build together.</td>
<td>I’d say we start it slow and hang out with a big group at first. That way it’s not too awkward and we could mix and mingle. Head to the pond for a picnic and splash around the water for a while. We could go for a nice waddle in the grass and maybe even take a nap together. You’d probably catch me peaking at you while you sleep; I just want to make sure you’re safe.</td>
</tr>
<tr>
<td>2) How to show you are interested in a lady? What do you do to impress her?</td>
<td>Well I’d like to think I’m a family man, I’ve lived with my Mom, Dad, brothers and sisters for as long as I can remember. We all pitch in and help out around the house and yard. I guess the best way you’d know I was ready to commit is when I set out on my own, take the leap and leave home for good. I plan on building my own log home one day. I think the best way to show a lady you love her is to work hard and build her a beautiful home. I’ll move rivers for the right girl.</td>
<td>I can get a little carried away when I fall in love. What can I say, I’m a passionate lover. I would shower you with attention and pick a fight with any other guys trying to get with you, and make a pretty big splash. I’d be loud and tell the whole world how much I loved you. Let’s just say that anyone around would know I was interested in being your man.</td>
</tr>
<tr>
<td>3) After a long day gathering food, where do you like to rest?</td>
<td>First of all, I wouldn’t spend all day gathering food. But, since I’m known as one of the busiest animals I would certainly enjoy crawling up into my cozy home and cleaning myself off, and having a snack in the main room. After that I think it would be time to head to the bedroom and snuggle with my loved ones.</td>
<td>After a long day I like to find a nice safe spot to call it a night. We could snuggle up in some long grass, join in with the others on the grass and watch the stars as we sit next to each other, or we could find a nice log in the middle of the pond and spend the night next to each other watching the stars reflect off the water.</td>
</tr>
</tbody>
</table>
### Round 2

<table>
<thead>
<tr>
<th></th>
<th>Beaver</th>
<th>Duck</th>
</tr>
</thead>
<tbody>
<tr>
<td>4)</td>
<td>What would you say is your most distinguishing feature?</td>
<td>Us guys take pride in our fancy outerwear. You’ve got to work pretty hard to keep this kind of color. I know you ladies like to keep it simple and functional, but man do I like to be flashy. Some of us are so snazzy, it’s like we are heading to a wedding or a fancy dress party all the time.</td>
</tr>
<tr>
<td></td>
<td>I’m not big on boasting and I think that a strong work ethics should more common these days. You’ve got to work hard to build a home for your family. You’ve got to work together as a team to get the big projects done. But hey, who doesn’t like a nice tail.</td>
<td></td>
</tr>
<tr>
<td>5)</td>
<td>What is your idea of the perfect family home?</td>
<td>I’d liked to keep it simple, and nice little cozy bed near the water’s edge would be great. It’s a short waddle to get local food. The kids will love how close it is to the pool. It’ll super easy to maintain, just bring home a few pieces of grass every now and again and it’ll feel like whole new place!</td>
</tr>
<tr>
<td></td>
<td>A cozy little log home on a nice little island or along the shore would work for me. It wouldn’t need to be very big. A main room for eating, a small bathroom, and a warm cozy bedroom to snuggle in. I’d like to build it myself or move into a fixer upper maybe. I’m quite the handy man.</td>
<td></td>
</tr>
<tr>
<td>6)</td>
<td>Do you consider yourself a family man?</td>
<td>I’d make a great Dad. I will certainly provide a good home and a warm bed for my little guys. I will take care of you and the kids if that’s what you’re asking. I can’t wait to teach them how to swim, and how to fly! It’d be so much fun.</td>
</tr>
<tr>
<td></td>
<td>Oh I am a family man through and through. I’ve lived with my Mom, Dad, brothers and sisters for as long as I can remember. We all pitch in and help out around the house and yard. I’d work tirelessly to give my family a beautiful home and put food on the table.</td>
<td></td>
</tr>
<tr>
<td>7)</td>
<td>Do you see yourself settling down with the same lady, or are you a party animal out for a good time?</td>
<td>Who knows what life has planned for us. I will be a great Dad and a great partner raising our cute little family. I’d lay down my life to protect you and the kids. But hey, when the kids have grown up and moved out, if we don’t feel the same way, I want the freedom to find love again.</td>
</tr>
<tr>
<td></td>
<td>I’m a one woman man. I come from a time where you find a good lady, you build a home together and you spend your days working hard and your nights snuggled up in the home you built together.</td>
<td></td>
</tr>
<tr>
<td>Round 3</td>
<td>Squirrel</td>
<td>Heron</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>1) What is your idea of a romantic date?</td>
<td>It would be totally random. I'd see you across the field casually brushing your tail. I've always been impulsive and I rush over to say hello. Well, I guess I startled you (running right for you out of the bushes and everything) and you start running as fast as you can. I want to make sure you know I just like you and I'm not crazy, so I run after you. Up and over the fences, around the trees, up one trunk and down the other, until I finally corner you on a branch. Or so I think, as you gracefully leap through the air to the next tree and take off. Call me!</td>
<td>After days of dropping fish at your feet, bringing you sticks, and waving my neck around in front of you you'd finally agree to be seen in public with me. We would go to the lake and spend the afternoon walking along the shore. I don't want you to think I'm too into you just yet and we are both kind of awkward and shy, so we would spend most of the time staring at the water and catching each other out of the corner of our eyes and then turning our heads embarrassed.</td>
</tr>
<tr>
<td>2) How to you show you are interested in a lady? What do you do to impress her?</td>
<td>What can I say, I like to chase some tail. I'd chase you all day, all over the park, through the streets, up the telephone pole, over the roof, down the fence, through the yard with the scary dog in it. I wouldn't stop until you were mine.</td>
<td>I would shower you with gifts. Fish, frogs, mice, sticks. I would spend all day searching for the perfect branch for you. Even if you threw it away every time, I would search for another until I found the exact perfect branch to make you happy.</td>
</tr>
<tr>
<td>3) After a long day gathering food, where do you like to rest?</td>
<td>I'm pretty high energy, so I'm rarely caught sleeping. I occasionally like to snuggle up in abandon bird houses or in a nice tree cavity. But not for long - life is short, and there are lots of tough nuts to crack.</td>
<td>I'm a pretty relaxed kind of guy. I can just set a foot down and sleep pretty much anywhere. I'm a big fan of yoga and can hold a one legged pose on my favorite beach rock for hours!</td>
</tr>
<tr>
<td>Round 3</td>
<td>Squirrel</td>
<td>Heron</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>4) What would you say is your most distinguishing feature?</td>
<td>I don’t want to brag or anything, but ladies love my luxurious tail. They spend hours wanting to run their little claws through its luscious fur. Not only is it a beautiful specimen of a tail - it is also multifunctional. Who do you know that can use a body part as an umbrella? Come here little lady, let’s get out of the rain.</td>
<td>I don’t know. I’m pretty tall and lanky. I’m all legs and neck. I guess some people might be jealous of my freakishly long legs and slender neckline. I can certainly hold a pose.</td>
</tr>
<tr>
<td>5) What is your idea of the perfect family home?</td>
<td>I’m not really into the whole “family scene” myself. Sure, occasionally I’ll snuggle up with a few furry friends when things get chilly out. But I’m really the lone ranger of the trees.</td>
<td>I don’t think we need much really. A strong foundation with a few good sticks to start off with. But when the kids are young they don’t need much. They’ll be spending most of their time stretching their wings anyways. As long as I’ve got a lady to call my own and two legs to stand on (or one even!) I know we’ll be just fine.</td>
</tr>
<tr>
<td>6) Do you consider yourself a family man?</td>
<td>I’m all for having a good time. If a lady shows she is interested in me I will totally fall for her. But taking care of crazy little fur balls is not my thing. Hey if you want to have a kid that’s fine - but count me out.</td>
<td>I would do anything for my family. We’d build a tiny but cozy little home for our young. I’d fly huge distances, miles and miles over fields and oceans to make sure everyone was fed. Heck, I’d fight an eagle to protect our family. Maybe not to the death though, we can always try again.</td>
</tr>
<tr>
<td>7) Do you see yourself settling down with the same lady, or are you a party animal out for a good time?</td>
<td>I like to live in the fast lane, never knowing where I’m going to wake up or what adventure I’ll be running from. I can’t tie myself down, there are too many trees to climb, too many treasures to find, and not enough time.</td>
<td>I like the family life. You know, building a cute little home, heading out to find food for my girl when she is craving fish and frogs as we wait for the little ones to arrive. I really do believe in love, but hey, if things don’t work out after the kids have flown the coop, I think it’s only fair we each find love again.</td>
</tr>
</tbody>
</table>
Appendix I: Student Interview Script

Get Out!
Feedback Session
Plan

June 9-10-11\textsuperscript{th} 2014

Krystal Pyke
2014
Effects of Field Trips on Alternative Students

Get Out! Feedback Session Lesson Plan

June 2014

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1 Materials
- Note pads / paper
- Pens / Pencils
- Lined blank paper (for each student)
- Envelopes (numbered)
- Bottled water (for each student)
- Breakfast snack
- Voice recorder
- Flip chart with Paper

1.1 Thesis Question
How does a curriculum-connected experiential outdoor science program affect students’ knowledge about the topics covered, skills relating to natural science, and attitudes towards learning?

1.2 Knowledge measurables
- knowledge about the topics covered
- facts and PLOs

1.3 Skills measurables
- skills relating to natural science
- observation, communicating, details, listen and sorting skills

1.4 Attitude measurables
- attitudes towards learning
- attendance, interactions, engagement

1.5 Methods
For this research I will be utilizing the narrative inquiry approach (as outlined in Doing Qualitative Research Differently, Holloway & Jefferson 2013). A combination of group feedback sessions and individual feedback sessions (for those students who would prefer to not be part of a group discussion) will be utilized.
2 Group Feedback Sessions:

Group feedback / discussion sessions will be conducted to collect qualitative information about the students’ field trip experiences. The sessions will involve 5-6 students, who have participated in at least one field trip. Each student will be provided the opportunity to answer each of the questions below as part of the group discussion.

Each session will be approximately forty five minutes in length and will include 5-6 students. There will be three different group sessions in total to ensure all of the students have participated in a feedback session.

2.1 Before the feedback sessions:

Distribute a worksheet to all student participants to be completed prior to the feedback sessions. Have the students place the completed worksheets in an envelope to be sealed by a student delegate for Krystal to pick up prior to interviews.

2.1.1 Worksheet:

1) Rank the field trips 1-4 (provide a brief description of each trip, date, activities), which was your favorite (1), least favorite (4).

<table>
<thead>
<tr>
<th>Trip</th>
<th>Attend?</th>
<th>Brief description of each trip, date, activities</th>
<th>Rank?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silverdale Wetlands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperate Rainforest - Mrs. McLallen’s house</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Blue Heron Reserve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh Water Fisheries Society – Abbotsford</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe the following four things (from any field trip)

<table>
<thead>
<tr>
<th>Trip</th>
<th>Trip #?</th>
<th>the hardest thing to learn</th>
<th>something they didn’t know before</th>
<th>something they would like to know more about</th>
<th>the most exciting thing you learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favourite</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Least Favourite</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.1.2 Flip Chart

Create the flip chart needed for the feedback sessions. The flip chart will include the following pages:

1) Get Out! Feedback
   a. Your honest input is important information to help me understand how field trips can be used to learn and how we can make future trips better.

2) Things to remember!
   a. Every idea is important
   b. There are no ‘right answers’ to the questions
   c. Respect others opinions *including letting them finish talking, or not letting others talk
   d. Write notes, ideas, or doodles
   e. Ask if you don’t understand
   f. Relax and join in the conversation
   *remove and tape to wall

3) Field Trip Refresher
   a. Silverdale Wetlands
   b. Temperate Rainforest - Mrs. McLellen’s house
   c. Great Blue Heron Reserve
   d. Fresh Water Fisheries Society – Abbotsford

4) What was your favorite field trip experience?

5) BLANK

6) The Question: How does a curriculum-connected experiential outdoor science program affect:
   i. students’ knowledge about the topics covered,
   ii. skills relating to natural science,
   iii. and attitudes towards learning
   *remove page and tape to wall

7) Knowledge

8) BLANK

9) Question 1: Tell us a story about something you learned during your experiences on the field trip(s)?

10) BLANK

11) Nature & Science skills

12) BLANK

13) Question 2: Describe how your skills have developed as a result of your experiences on the field trips?

14) BLANK

15) Question 3: describe how you feel about learning about science and the natural world?

16) BLANK

17) Question 4: Can you tell us a story about a time when you really enjoyed learning outside?

18) THANK YOU!
   a. Your ideas and feedback will help make programs better!
Effects of Field Trips on Alternative Students

2.2 Feedback Session

2.2.1 Introduction:
Ensure tape recorder is on and working prior to beginning the session.

Welcome to the feedback session and thank you for joining in. Without the feedback from your
individual experiences, I wouldn’t be able to know how field trips can help students. By participating,
you are making it possible to adapt programs in the future. And, truthfully, without your feedback I
wouldn’t be able to finish this project and graduate. That is why I need your cooperation and honest
feedback.

Each of your experiences are important, and there are no “right answers” to the questions that will be
asked and discussed. I want everyone to feel safe in expressing their thoughts and ideas.

This session is being recorded so that I can write it all down afterwards, there is no way I can keep up
with what we are saying. I will not include any names or voice clips in the research or the written
transcript, I just need to make sure I keep track of what everyone says. When the project is complete, no
one will know what any one person has said.

Everyone will have the opportunity to answer each question, so while we are listening to one person
speaking feel free to write notes and ideas on your note pad so you remember your thoughts when it is
your turn to speak. After the feedback session is complete, please be sure to leave the pens and note
pads in the room. I will be keeping the notes and if you would rather write down an idea that is ok too,
but I still need everyone to join in on the discussion.

For the most part I will be listening and writing notes. It may seem a little strange and awkward at first,
but I want to hear what you have to say since that is the important information. I already know what I
have to say ☺

Before we start, let’s take a look at the flip chart.

I want you each to think about your favorite field trip and hold that thought in your mind.
2.2.2 Knowledge Questions:
Before asking the knowledge question(s), introduce the word knowledge and have the group brainstorm on what it means to know something or to learn something. Write the different terms, concepts, and ideas on the flip chart to use as a reference in the following question(s).

Explain that you are asking a question about knowledge because you want to understand how the field trips effected what they learned.

**Question 1:** Tell us a story about something you learned during your experiences on the field trip(s)?

**Potential Follow up question:** Imagine you are talking with a classmate who did not attend a trip; can you please explain one of the concepts you learned from your experiences on the field trips to your friend?

**Potential Follow up question:** Can you tell us about something you understand better from your experiences on the field trips, or something that you learned that was totally new to you?
2.2.3 Skills Questions:

Before asking the skills questions, the group will be asked to brainstorm on different nature and science skills. The skills will then be written on the flip chart (new page) to be used as a reference in the following question(s).

- Examples:
- Observing,
- Communicating,
- Describing things,
- Classifying

Explain that you are asking a question about skills because you want to understand how their experiences on the field trips may have changed how they do things.

**Question 2:** Can you describe how your skills have developed as a result of your experiences on the field trips?

**Potential Follow up question:** Can you describe other skills that you would have liked to have learned or had the chance to develop more?
2.2.4  Attitude Questions:
Before asking the skills questions, the group will be asked to brainstorm on different attitudes towards learning. The ideas will be written on the flip chart to be used as a reference in the following question(s).

Explain that you will be asking a question about attitudes so that you can understand how the field trips may change how people like you feel about learning.

Question 3: Can you please describe how you feel about learning about science and the natural world?

Follow up: How have your feelings towards learning in general changed, if at all, since going on the field trips?

Potential follow up: Can you describe any changes you’ve noticed in how you interact with other students or teachers since participating in the field trips?
2.2.5 General Questions:

If time permits, review the previous questions with the students and discuss any new ideas that come up. Once the previous questions have been reviewed, the following question may be asked.

Question 4: Can you tell us a story about a time when you really enjoyed learning outside?
3 Individual Feedback Sessions

Individual feedback/discussion sessions will be conducted to collect qualitative information about the students' field trip experiences from student participants that wish to share their experiences without the group. The sessions will involve a student who has participated in at least one field trip, and the researcher.

Each session will be approximately twenty to thirty minutes in length. There will be six different individual sessions in total to ensure all of the students have participated in a feedback session.

3.1 Before the feedback sessions:
Same as above (Group Feedback Sessions)

3.2 Feedback Session

3.2.1 Introduction:
Welcome the student to the feedback session and thank them for joining in. Explain that, without the feedback from their individual experiences, we wouldn't be able to know field trips can help students. By participating, they are making it possible to adapt programs in the future. And, truthfully, without their feedback I wouldn't be able to finish my thesis or graduate!

Highlight that their individual experiences are important and unique. There are no “right answers” to the questions that will be asked and discussed. And I want to make sure they feel relax and feel safe in expressing their opinions and ideas.

The session is being recorded on tape so that I can transcribe what was said afterwards. I will not include your name in the research or the transcript, I just need to make sure I keep a record of your voice because I have a terrible memory when people are talking. When the project is complete, no one will know what any one person has said.

You will have the opportunity to answer each question, and you are welcome to write notes and ideas on your note pad so you remember your thoughts as different ideas come up. After the feedback session is complete, please leave the pens and note pad in the room. I would like to keep these things as the notes might show ideas that they chose not to speak about or it may help me to make better questions to ask with the next group.

For the most part I will be listening and writing notes. It may seem a little strange at first, but I want to hear what you have to say since that is the important information. I already know what I have to say ☺

Begin by asking the participant to think about their favorite field trip experience and share it with the researcher.

3.2.2 Knowledge Questions:
Before asking the knowledge question(s), introduce the word knowledge and have the student brainstorm on what it means to know something or to learn something. Write the different terms, concepts, and ideas on the note paper to use as a reference in the following question(s).

Explain that you are asking a question about knowledge because you want to understand how the field trips may have changed what they have learned.
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**Question 1:** Can you tell me a story about something you *learned* during your experiences on the field trip(s)?

**Potential Follow up question:** Imagine you are talking with a classmate who did not attend a trip; can you please explain one of the concepts you learned from your experiences on the field trips to your friend?

**Potential Follow up question:** Can you tell me about something you understand better from your experiences on the field trips?
3.2.3 Skills Questions:
Before asking the skills questions, ask the participant to brainstorm on different nature and science skills. The skills will then be written on the note paper (new page) to be used as a reference in the following question(s).

Examples:
- Observation,
- communicating,
- describing things,
- classification skills

Explain that you are asking a question about skills because you want to understand how their experiences on the field trips may have changed how they do things.

Question 2: Can you describe how your skills have developed as a result of your experiences on the field trips?

Potential Follow up question: Can you describe other skills that you would have liked to have learned or developed more?
3.2.4 Attitude Questions:
Before asking the skills questions, ask the participant to brainstorm on different attitudes towards learning. The ideas will be written on the note paper (new page) to be used as a reference in the following question(s).

Explain that you will be asking a question about attitudes so that you can understand how the field trips may change how people feel about learning.

Question 3: Can you please describe how you feel about learning about science and the natural world?

Follow up: How have your feelings towards learning changed, if at all, since going on the field trips?

Potential follow up: Can you describe any changes you've noticed in how you interact with other students or teachers since participating in the field trips?
3.2.5 General Questions:
If time permits, review the previous questions with the student and discuss any new ideas that come up. Once the previous questions have been reviewed, the following question may be asked, if there is time.

Question 4: Can you tell me a story about a time when you really enjoyed learning outside?

Ending: Is there anything else that you would like to add?
4 Closing:
Thank you for participating in the field trips - which were lots of fun, and in the feedback session, which is incredibly helpful.

Your participation will not only help me finish my thesis, but it will also mean I can continue to improve field trip programs and hopefully come back in September and plan more trips.

Please remember to leave the pens and note pads.

Don’t forget about the upcoming trip to the Vancouver Aquarium this Friday, June 13th.

4.1 Clean up
Turn off the tape recorder and save the file immediately to a backup.
Collect all note pads, pens, and other materials. Ensure all notes are labeled in association to the students involved for reference during transcription and data analysis.
Ensure all data (research notes, student notes, and voice recordings) are kept locked and confidential.
Appendix J: Teacher Interview Script

Get Out!
Teacher Interviews

Krystal Pyke
2014
Get Out! Feedback Session Lesson Plan

June 2014

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1 Materials

- Note pads / paper
- Pens / Pencils
- Lined blank paper (for the teacher)
- Envelopes (numbered)
- Voice recorder
2 Thesis Question

How does a curriculum-connected experiential outdoor science program affect students’ knowledge about the topics covered, skills relating to natural science, and attitudes towards learning?

2.1 Knowledge measurables
- knowledge about the topics covered
- facts and PLOs

2.2 Skills measurables
- skills relating to natural science
- observation, communicating, details, listen and sorting skills

2.3 Attitude measurables
- attitudes towards learning
- attendance, interactions, engagement
3  Methods
For this research I will be utilizing the narrative inquiry approach (as outlined in *Doing Qualitative Research Differently*, Holloway & Jefferson 2013). Each teacher will be interviewed individually in their classroom, or in the break room. Each interview will be approximately 20-30 minutes in length.
4 Teacher Interview Sessions:

Individual teacher interview sessions will be conducted to collect qualitative information about the students’ field trip experiences. The sessions will involve 1 teacher, who has supervised the students who have participated in the field trips. Teachers will be provided the opportunity to answer each of the questions below as part of the interview session.

Each session will be approximately twenty to thirty minutes in length and will be recorded using a voice recorder (either iPhone, camera, or laptop).

4.1 Before the feedback sessions:

Schedule a time to come in with each of the teachers for the feedback session.

4.2 Feedback Session

4.2.1 Introduction:

Ensure tape recorder is on and working prior to beginning the session.

Welcome everyone to the feedback session and thank them for joining in. Explain that, without the feedback from their individual experiences, we wouldn’t be able to know how field trips can help students. By participating, they are making it possible to adapt programs in the future. And, truthfully, without their feedback I wouldn’t be able to finish my thesis or graduate!

Highlight that each person’s experiences are important, and there are no “right answers” to the questions that will be asked and discussed. We want the interviewee to feel safe in expressing their opinions and ideas.

Inform them that the session is being recorded on tape so that I can transcribe what was said afterwards. I may ask them to state their name before thinking so that I can easily record who said what. I will not include any names in the research or the transcripts, I just need to make sure I keep track of everyone’s voice. When the project is complete, no one will know what any one person has said.

They will have the opportunity to answer each question, and they are welcome to write notes and ideas on your note pad so you remember you thoughts as different ideas come up. After the feedback session is complete, they will be reminded to leave the pens and note pads in the room. I would like to keep these things as their notes might show ideas that they chose not to speak about or it may help me to make better questions to ask with the next group.

For the most part I will be listening and writing notes. It may seem a little strange at first, but I want to hear what you have to say since that is the important information. I already know what I have to say 😊

Beginning by asking the participant to think about their favorite field trip experience and share it with the researcher.
4.2.2 Knowledge Questions:
Explain that you are asking a question about knowledge because you want to understand how the field trips may have changed what they have learned.

*Question 1:* Can you tell me a story about something you learned during your experiences on the field trip(s)?

*Potential Follow up question:* Imagine you are talking with a classmate who did not attend a trip; can you please explain one of the concepts you learned from your experiences on the field trips to your friend?

*Potential Follow up question:* Can you tell me about something you understand better from your experiences on the field trips?

4.2.3 Skills Questions:
Before asking the skills questions, ask the participant to brainstorm on different nature and science skills. The skills will then be written on the note paper (new page) to be used as a reference in the following question(s).

Examples:
- Observation,
- communicating,
- describing things,
- classification skills

Explain that you are asking a question about skills because you want to understand how their experiences on the field trips may have changed how they do things.

*Question 2:* Can you describe how your skills have developed as a result of your experiences on the field trips?

*Potential Follow up question:* Can you describe other skills that you would have liked to have learned or developed more?

4.2.4 Attitude Questions:
Before asking the skills questions, ask the participant to brainstorm on different attitudes towards learning. The ideas will be written on the note paper (new page) to be used as a reference in the following question(s).

Explain that you will be asking a question about attitudes so that you can understand how the field trips may change how people feel about learning.

*Question 3:* Can you please describe how you feel about learning about science and the natural world?

*Follow up:* How have your feelings towards learning changed, if at all, since going on the field trips?
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_Potential follow up:_ Can you describe any changes you've noticed in how you interact with other students or teachers since participating in the field trips?

4.2.5 General Questions:

If time permits, review the previous questions with the student and discuss any new ideas that come up. Once the previous questions have been reviewed, the following question may be asked, if there is time.

_Question 4:_ Can you tell me a story about a time when you really enjoyed learning outside?
4.3 Teacher Interviews:
I will be asking questions relating to the field trips as a means to answer the main research question driving these programs:

| How does a curriculum-connected experiential outdoor science program affect students’ |
| knowledge about the topics covered, |
| skills relating to natural science, and |
| attitudes towards learning? |

The various questions will focus one of the main topics above: knowledge, skills, and attitudes.

<table>
<thead>
<tr>
<th>Knowledge measurables</th>
<th>Skills measurables</th>
<th>Attitude measurables</th>
</tr>
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<tbody>
<tr>
<td>knowledge about the topics covered</td>
<td>skills relating to natural science</td>
<td>attitudes towards learning</td>
</tr>
<tr>
<td>facts and PLOs</td>
<td>observation, communicating, details, listen and sorting skills</td>
<td>attendance, interactions, engagement</td>
</tr>
</tbody>
</table>

Knowledge Questions:

Explain that you are asking a question about knowledge because you want to understand how the field trips may have changed what and how the students have learned.

*Question #1*: Can you describe any changes you’ve noticed in how students understand natural science as a result of participating in the field trip(s)?

*Potential Follow up*: Can you describe any differences you have noticed in what the students know as a result of participating in the field trip(s)?
Skills Questions:
Explain that you are asking a question about skills because you want to understand how their experiences on the field trips may have changed how they do things.

Question 2: Can you describe how students’ skills have developed as a result of field trip experiences?

Potential Follow up question: Can you describe other skills that you would have liked the students to have learned or developed?

Attitude Questions:
Explain that you will be asking a question about attitudes so that you can understand how the field trips may change how students feel about learning.

Question 3: Please describe how the field trips have affected student attitudes towards learning?

Follow up: Please describe the most notable change in student attitudes since participating in the field trips?

Potential follow up: Can you describe any changes you’ve noticed in how the students interact with each other or teachers since participating in the field trips?

Overall program question:
Question 4: What was the most surprising outcome that you noticed as a result of the students participating in the field trips?

Question 5: Imagine you have been asked to defend/justify the use of field trips to the school board. Can you please describe how you would explain the use of field trips to teach curriculum components to the students at Fraserview Learning Center?
5 Closing:

Thank everyone for participating in the field trips, which were lots of fun, and in the feedback session, which is incredibly helpful. Remind them that their participation will not only help me finish my thesis, but it will also mean I can continue to improve field trip programs.

Ask the students if they have any other questions or comments to add. Remind everyone to leave the pens and note pads.

Before they leave, remind the students about the upcoming trip to the Vancouver Aquarium on Friday, June 13th.

5.1 Clean up

Turn off the tape recorder and save the file immediately to a backup.

Collect all note pads, pens, and other materials. Ensure all notes are labeled in association to the students involved for reference during transcription and data analysis.

Ensure all data (research notes, student notes, and voice recordings are kept locked and confidential.)