Teaching for a healthy planet: the power and potential of a non-traditional field experience in environmental education on developing teachers' practice as agents of change.

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Abstract

In this time of unprecedented human-made planetary change, science-based environmentalism has never been more necessary both to understand the effects of environmental degradation as well as to take appropriate, effective action to mitigate those effects. Teachers needs to be on the front line of this massive endeavour in order to inspire and equip our youth to be able to respond to climate change and build a more sustainable future. There is abundant evidence that teacher education courses have little effect on both practicum teaching and on future practice. Research shows that during practice teaching teacher candidates largely become socialized to the status quo rather than engage in transformative learning. Much has been written about the affordances and the constraints around teacher change, and teacher education programs have been evaluated and examined to highlight what works in a sustained way as the teacher candidate leaves the university and begins their teaching career. Teacher change literature points to myriad difficulties and struggles around changing teacher practice, and yet, people change all the time.

Environmental Education in the form of positive action initiatives such as schoolyard greening can provide alternative fields of practice in which teacher candidates can broaden their cultural competencies towards becoming teachers for change. Such an approach is examined here to determine if environmental action initiatives such as greening can set in motion the agentic processes that are so necessary for teacher candidates to be able to change their deep-seated notions of teaching and learning. Sociocultural theory on habitus, field and the duality of

schema and resources grounds this research and provides a methodology to be able to identify agency and better understand what affords and what constrains agentic and activist teaching.

Results of this critical ethnographic action research study suggest that operationalizing outdoor, experiential, environmental education (OEEE) approaches within the framework of environmental initiatives provided a kind of agentic architecture where cultural competencies could be broadened and habitus could be breached. This did not occur without tension and struggle and elements of the McGill-Evergreen Special Opportunity Field Experience (SOFE) that helped construct a risk-friendly environment and community of practice were examined and unpacked to analyze possibilities towards scaling up these approaches to the general program.

Abrégé

Il existe de nombreuses preuves à l'effet que les cours de formation des enseignants ont peu d'effet à la fois lors de l'enseignement des stages et sur leur pratique future. La recherche montre qu'au cours de leur pratique à l'enseignement [lors de leurs stages], les candidats à la formation initiale des maîtres sont largement socialisés au statu quo plutôt que de se livrer à des apprentissages transformateurs et innovateurs. On a beaucoup écrit sur les potentialités et les contraintes des enseignants, en plus des programmes de formation à l'enseignement qui ont été évalués et examinés pour mettre en évidence ce qui fonctionne davantage lorsque les futurs enseignants quittent l'université et commencent leur carrière. La recension des écrits témoigne de multiples difficultés et les luttes autour de l'évolution des pratiques des enseignants, et pourtant, les gens changent tout le temps.

L'éducation relative à l'environnement se décline sous la forme d'initiatives et d'actions positives telles que le verdissement des cours d'écoles. Elles peuvent alors contribuer à d'autres champs de pratique dans lesquels les futurs enseignants peuvent élargir leurs compétences culturelles en vue de devenir des enseignants qui seront impliqués dans le changement. Nous examinons cette approche pour déterminer si des initiatives d'actions environnementales telles que le verdissement des cours d'écoles peuvent favoriser les processus agentiques qui sont nécessaires pour que les futurs enseignants soient capables de changer leurs conceptions profondes de l'enseignement et de l'apprentissage. La théorie socioculturelle sur l'habitus, le champ et la dualité du schéma quant aux ressources de cette recherche déterminent une méthodologie qui pourrait favoriser l'identification de l'agence et de mieux comprendre ce qui donne et ce qui contraint l'enseignement agentique et militant. Les résultats de cette recherche-action ethnographique critique suggèrent que, l'expérience d'une approche éducative environnementale extérieure (OEEE) et son opérationnalisation dans le cadre des initiatives

environnementales prévues selon une forme d'architecture agentique où les compétences culturelles pourraient être élargies et où l'habitus des futurs enseignants et des enseignants actuels pourrait être transgressé. Cela ne se produit pas sans tension et sans lutte. De plus, des dimensions du stage alternatif McGill-Evergreen (SOFE) qui a favorisé la construction d'un environnement dénué de risques de l'environnement et de la communauté de pratique ont été examinés afin d'analyser leurs possibilités pour développer ces approches pour le programme général de formation à l'enseignement.

Table of Contents

Acknowledgements

First and foremost I would like to thank all of the SOFE participants who opted to take a chance on something new and different with me. Their creativity and perseverance were really inspirational. Another massive contribution came in the form of the cooperating teachers involved. Without their openness and generosity in letting us in (and out!) of their classrooms the SOFE would never have happened. I want to thank my advisor Gale Seiler for all the work she has put into me and for helping me to build a methodology and a theoretical framework able to "see" agency as it operationalized in the work of the SOFE students. Gale, your patience, your deep understanding of teaching and learning to teach, and your grounded approach to academia were each invaluable to me these past (gasp!) six years. I also want to thank my co-advisor, David Dillon, whose vision of what teacher education could look like inspired me as an educator. I thank you for your dedication to this dissertation process and the many contributions you have made to the breadth and depth of my understanding of teacher education research. Finally I want to thank my family for being so supportive of this work and of me. Mum, Emilie, Sue, Heather and Robb you have each brought so much to this project—whether in the form of cooked meals, dog sitting, editing, shaping arguments or proofreading, your contributions have made this dissertation better, and made me better too.

Forward

In this time of unprecedented human-made planetary change, science-based environmentalism has never been more necessary both to understand the effects of environmental degradation as well as to take appropriate, effective action to mitigate those effects. Now more than ever in this time of planetary flux, we need young people to become competent and creative problem solvers who are able to collaborate across subject silos and cultural divides to find sustainable solutions to the complex issues of climate change. The Quebec Education Program (QEP) addresses this challenge by promoting competency-based, social-constructivist education, but this requires teachers to teach very differently than they themselves were taught. Extensive research has shown that changing teachers' practice is difficult due to acculturated responses that pull practitioners back to the status quo (Cochran-Smith & Zeichner, 2005; Wideen, Mayer-Smith & Moon, 1998).

Environmental education can offer a viable strategy to a two-pronged issue: high student drop out rates, and the abysmal state of the planet. Young people are frustrated by their lack of control over decisions that will affect their very future. They are tired of hearing about the world's woes before even having the chance to sample Earth's natural treasures and mysteries. At the same time they feel disconnected from their schoolwork and wonder what it all means. A grade 9 student working with a teacher candidate in the McGill-Evergreen Teaching for a Healthy Planet special opportunity field experience (SOFE) summed it up best when, after several months of weekly classes on schoolyard greening, his class measured the outdoor space to purchase the right amount of lumber and plants, and he exclaimed: "So Miss, you mean this isn't just bullshit? We're actually gonna do this!" His shock that the book learning they had done in school was going to amount to something tangible he and his classmates could use and enjoy revealed a lot about the attitudes of many of today's youth towards school.

Positive action initiatives such as schoolyard greening provide young people with an entry point into activism that can help to alleviate the sense of hopelessness and apathy felt as the woes of the world are revealed (Chawla, 1998; Dyment, 2005; Sauvé, 2009). Working with teachers in environmental education has produced some wonderful examples of transformative learning where school communities come together toward a shared goal to make the world a healthier place. Along the way, students and teachers alike build skills and competencies that answer to the curriculum, but also go far beyond Ministry of Education prescriptions into broad life-long areas of learning. "These methods adopt cooperative, experiential, and reflexive processes that stimulate the development of the dynamic qualities (initiative, autonomy, responsibility and commitment) and the action competencies we need to properly inhabit our shared world" (Sauvé, 2009, p. 329).

And yet environmental education continues to be marginalized to the very edges of school life as extra credit, community service, or an extra curricular activity (Greenwood, 2010; Gruenewald & Smith, 2008). Within the vast majority of teacher education programs in North America, environmental education is absent altogether.

Simultaneously, Quebec educators have been challenged to teach in ways very different from their own schooling (Lasnier, 2000). The reforms of the Quebec Education Program are based on a social constructivist approach where learners build their understanding and knowledge through inquiry and problem-solving in a cooperative manner. However, while the tenets of environmental education are integrated throughout the QEP, the subject is rarely taught in practice.

All the above became evident to me through my many years as an independent outdoor and environmental education consultant to school boards across Quebec. In my work as a professional development consultant, I observed the difficulty teachers had in adopting the

approaches to teaching and learning prescribed by the QEP and enacting new practices in their teaching. When I ultimately decided to design a field experience and professional seminar on place-based and outdoor experiential environmental education (OEEE) for pre-service teachers, my aim was to make the adoption of these practices and approaches easier and more durable. Through the enactment of these ways of teaching, teacher candidates would deepen developing schema and diversify their resource sets about what teaching and learning involve.

I began the design of a pre-service teacher field experience and professional seminar at the request of an associate dean at McGill University's Faculty of Education who was familiar with work I had done on schoolyard naturalizing and food gardens for a non-profit environmental group called Evergreen. She was excited by what she saw and felt there was a place for these kinds of approaches to learning within her teacher preparation program.

Dean Elizabeth Wood and I had first met sitting on the organizing committee for the schools and community niche at the World Congress on Environmental Education, held in Montreal in May 2008. Together, we reviewed hundreds of presentation paper proposals from around the world on environmental education in schools. The vast majority of these were submitted by non-governmental organizations (NGOs) working alongside schools to start environmental programs and initiatives. Some were proposals put forward by government agencies, particularly from the developing world, that attempted to integrate environmental education across the curriculum to equip young citizens to respond to the myriad issues posed by climate change. Very few were submitted by teachers and fewer still by university faculties of education, pointing to a gap in scholarship on environmental education in teacher preparation. And yet our niche at the World Congress was called *Schools* and Community. How were teachers supposed to integrate environmental education into everyday practice without training or support?

> Eco-education is not a prerequisite to action, but rather a continuous process that unfurls in the flow of life itself – a reflexive dimension that enriches the trajectory of action projects. Environmental education can contribute to re-enchanting the world and building hope. (Sauvé, 2009, p. 333)

In the Winter of 2009, Dean Wood and I, along with the Director of the McGill undergraduate program and the Director of the Office of Student Teaching, put together the broad strokes of a pilot project in environmental education as a special opportunity field experience (SOFE). I then convinced Evergreen, the NGO devoted to urban and schoolyard greening I worked with, to partner with McGill to offer participating schools access to Evergreen funding for the environmental initiatives and greening projects while I provided design support as the Evergreen Associate. I also submitted a PhD proposal to McGill's Department of Integrated Studies in Education as I realized the project was an opportunity to help fill a gap in the literature in both teacher preparation and environmental education research. At this point I had no formal experience in teacher preparation research, had not taught in a classroom setting since teacher's college at Queen's University, and had never taught university level students.

Looking back, I am surprised that someone without institutional affiliations was given the go-ahead to develop a special opportunity field experience and professional seminar (in fact, I finally became a classroom teacher only after the two-year SOFE project was complete). What I did bring to the project was over two decades of experience working with students and teachers on environmental actions and schoolyard greening—a background I was then able to use to pioneer such innovations at the McGill Faculty of Education as using outdoor spaces and Montreal's Mount Royal as teaching areas, and bringing the practicing teachers who mentor trainee teachers at host schools (known as cooperating teachers) to the university campus.

The aims and design of the SOFE and ensuing research study also aligned well with recent recommendations for future education research needs put forward by Cochran-Smith and Zeichner in the 2005 AERA report on Research and Teacher Education:

> Researchers should examine the impact of various aspects of teacher preparation programs and routes on teachers' learning, particularly their knowledge and beliefs and their professional practice in school settings. (p. 33)

Getting teachers in training to enact outdoor experiential environmental education (OEEE) approaches and launch environmental initiatives and greening with their students provides an entry point for just such an examination of deep-seated beliefs about the enactment of teaching and learning. While I had originally imagined that teacher candidates (as our novice teachers were called) might find it easier to adapt to these innovative approaches than more seasoned teachers, the two years of the SOFE experience instead revealed how immensely complex teaching is, and why taking action and enacting change is never simple or linear. By challenging teacher candidates to achieve the difficult task of getting students to design and implement environmental initiatives that the teacher candidates then integrated into assessable lessons within a major project for their practicum, something very important was achieved: the broadening of cultural competencies (Seiler, 2002; Swidler, 1986). As these cultural competencies broadened the beginnings of a level of conscientization (Freire, 1970) about ways to overcome the reflexive, default attitudes and positions already inculcated in us during what Lortie (1975) calls the apprenticeship of observation developed.

In the meantime, I ask readers to indulge this dissertation's shortcomings as lessons learned for future inquiry and analysis; any errors, of course, remain mine alone.

Introduction

In this time of unprecedented human-made planetary change, science-based environmentalism has never been more necessary both to understand the effects of environmental degradation as well as to take appropriate, effective action to mitigate those effects. Outdoor Experiential Environmental Education (OEEE) combines experiential education's foundation of learning by doing in a critically reflexive way (Kolb, 1976; Vygostky, 1967; Dewey, 1938) alongside environmental education's mission to equip learners to become responsible, adaptive and pro-active citizens (Sauvé, 2009; UNESCO-UNEP, 1978) in practical contexts that can include the outdoors and the larger communities of both living and non-living things (Sobel, 2008; Pike & Selby, 1988). Each of these three areas (Experiential, Environmental, and Outdoor Education) have their respective histories and traditions of practice but become most effective when enacted together, providing learners with the knowledge, understanding, and skill sets to make informed decisions about individual and societal-level interactions with the natural world that surrounds and sustains us.

I had observed in my work as an environmental education specialist that while many practicing teachers I instructed purported to relate to and appreciate the OEEE approaches I put forward, few were able to integrate these into everyday practice. This lack of uptake of OEEE practices in schools has a long history. Environmental education has strived for years to be recognized as a bona fide subject within academia, yet is still marginalized (if it exists at all) in most teacher education university programs (Stevenson, 2007; Lin, 2002; McKeown-Ice, 2000). The obstacles to changing teacher practice have also been well researched. They show that a combination of factors that involve deep-seated schema about school, teaching, and learning can make moving from the possible to the actual very difficult when it comes to education reform and innovative practice.

There is abundant evidence that teacher education courses have little effect on both practicum teaching and on future practice. Research shows that during practice teaching teacher candidates largely become socialized to the status quo rather than engage in transformative learning (Clift & Brady, 2005; Cochran-Smith & Zeichner, 2005, Kennedy, 1999). Much has been written about the affordances and the constraints around teacher change (Britzman, 2003; Flores, 2005), and teacher education programs have been evaluated and examined (Cochran-Smith & Zeichner, 2005; Darling-Hammond, 2006; Wideen & Lemma, 1999) to highlight what works in a sustained way as the teacher candidate leaves the university and begins their teaching career. Teacher change literature points to myriad difficulties and struggles around changing teacher practice, and, yet, as Swidler (1986) points out, people change all the time.

Environmental education in the form of positive action initiatives such as schoolyard greening can provide alternative fields of practice in which teacher candidates' can broaden their cultural competencies (Seiler, 2002; Swidler, 1986) towards becoming teachers for change (Chawla, 1998; Dyment, 2005; Sauvé, 2009). I initiated a OEEE teaching project at McGill's Faculty of Education to better understand what constrains and what affords developing teachers' ability to embrace and enact these ways of teaching to ultimately be able to have better uptake.

Sociocultural theory on habitus (Bourdieu, 1977), field and the duality of schema and resources (Sewell, 1992) grounds this research and provides a methodology to be able to identify agency and better understand what affords and what constrains agentic and activist teaching. Understanding where human action comes from (or doesn't come from as the case may be) is crucial. Innovation cannot enact itself, and often agency is required to be able to embrace change. However, agency can also be truncated by deep-seated beliefs and notions that invisibly guide a teacher's practice. In this research, I explore human agency to see what conditions and

environment would best foster pre-service teachers' ability to examine and change deep-seated notions and beliefs about teaching and learning, and the teaching practices that stem from them.

To do this and understand the processes at work, I used a theoretical framework derived from Bourdieu (1977), Sewell (1992), and Seiler (2012, 2002) that explicates the effects of social structures and cultural conditioning on individual agency in innovative practice. Sociocultural theory helps us to understand that we are the human products of the cultures in which we grow up, repositories of the tastes, dispositions, and patterns of behaviour, rituals and traditions that Bourdieu (1977) collectively referred to as *habitus*. Bourdieu maintained that habitus informs all of our actions and interactions, subsequently reproducing itself through generations.

Several questions emerged: How best to prepare teacher candidates in school to be more agentic and equipped to foster and enact change? What kinds of experiences and situations would set in motion the important recombination of teacher candidates' resources and dispositions that foster a sense of agency? These questions formed the basis for what would become the McGill-Evergreen special opportunity field experience (SOFE). I wanted to determine if environmental action initiatives such as greening can set in motion the agentic processes that are so necessary for teacher candidates to be able to change their deep-seated notions of teaching and learning.

To direct and steer my investigation, I used constructs and methodologies from the allied approaches of action research (Craig, 2009; Creswell, 2002) and critical ethnography (Madison, 2012; Carspecken, 1996) to organize the study and analysis conducted within the socio-cultural theoretical frameworks mentioned. This study lays out its intent, structure, processes, results and analysis through its consecutive regard of theoretical framework, methodology, research context, design, data analysis and discussion, culminating in a summation of paths forward. Results from this study suggest that operationalizing outdoor, experiential, environmental education (OEEE)

approaches within the framework of environmental initiatives provide an agentic architecture where broader cultural competencies can be assembled and *habitus* breached. By breach here is meant to be able to move beyond the default positions as dictated by an actor's habitus. This did not occur without tension and struggle. Elements of the McGill-Evergreen Special Opportunity Field Experience (SOFE) that helped to construct a risk-friendly environment and community of practice are examined and unpacked here to analyze possibilities towards scaling these approaches up to educational faculties' general teacher-training programs.

Chapter 1

Making Sense of Resistance to Change in Teacher Practice

During my work as an environmental education specialist, I have had the pleasure of witnessing some truly champion educators transform their practice as they have transformed their school grounds. These educators have fostered learning environments where open-ended, student-driven inquiry leads to positive action initiatives such as school food gardens, and where students develop problem solving skills and collaborative work habits that will serve them well for years to come as they learn "what they do not yet know how to do by doing it" (Lasnier, 2000).[1] However, my experience in the professional development of teachers who wanted to learn to teach in more place-based and experiential ways has shown me that changing teacher practice is a complex task. In spite of deeply valuing these approaches to teaching and learning, many of the educators I worked with nonetheless did not feel able to enact these ways of teaching in their everyday practice.

> But we must be careful to avoid assuming that the presence of alternatives, even though thousands of people are motivated to diffuse them, automatically produces change. Acceptance of new approaches is obviously contingent, and research should center on the nature of the crucial contingencies. (Lortie, 1977, p. 218)

Understanding where human action comes from (or doesn't come from as the case may be), is, I argue, one of the crucial contingencies that Lortie referred to almost fifty years ago.

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[1]Rendered in quotes only to make it more accessible to the reader, this is actually a close paraphrase of the well-known Quebec socio-constructivist educational maxim by François Lasnier, more properly translated into English as "learning to do what you do not yet know how to do while doing it." François Lasnier was the main architect of the 1999 educational reform in Quebec that brought about the latest version of the Quebec Education program (QEP).

Innovation cannot enact itself, and often agency is required to be able to embrace change, but agency can also be truncated by deep-seated beliefs and notions that may invisibly guide a teacher's practice. In this research, I explore human agency to see what conditions and environment would best foster pre-service teachers' ability to examine and change deep-seated notions and beliefs about teaching and learning, and the teaching practices that stem from them. It is within this examination of practice that opportunities arise where practitioners can retain or reject their images of "Teacher," a process I argue cannot be put into motion through reflection alone but that necessarily must come from a place of action and interaction. This place of action took the form of a special opportunity field experience and professional seminar I designed, taught, and supervised at McGill's Faculty of Education.

Situating Myself: Biologist, Naturalist and Teacher Educator

I came to the field of education later than many of my colleagues. With a background in biology and work experience as a Naturalist with Parks Canada, I wanted to put my experience to work within educational contexts. My intention was not to teach in formal settings but to find creative ways to get children outside, to reconnect educators to Nature,[2] and to bring science to life for people of all ages. I completed my teacher training in 1993 at Queen's University in Kingston, Ontario within the Outdoor and Experiential Education Cooperative Program.

When I graduated, it was a heady time in education in Ontario, where a New Democratic Party (NDP) provincial government had introduced a sweeping reform of teaching and learning

[2] The word Nature was first used in the 12th century. It has come to represent, in its many definitions, all of the universe and the living and nonliving things within it. Before the Scientific Revolution, Nature was considered in a spiritual context, deserving of respect and admiration. Just as we have come to use Nature's capital (animals, fresh water, minerals, forests) in a non-sustainable way, we have replaced the capital letter "N" in Nature with a lower case one. (Excerpt from Earthvalues website, Suzanne Board, 2005).

called *The Common Curriculum* (Ontario Ministry of Education, 1995). Grounded in research from the 1970s and 80s, the curriculum's approach was based on the premise that learning is a process that is continuously adapting through interplay and communication between learners and educators. In this dialectical manner, meaning is constructed, and competencies are developed. Learning is regarded as the active production of meaning rather than a passive reproduction and, in this context, as a manifestation of human power—the ability to synthesize multiple sources of information and look at that data from varying perspectives to make sense of the manifold demands of daily existence.

I was excited by the new curriculum and its approaches to education that were very different from my own experiences as an elementary student in Quebec's French-language Catholic school system during the 1970s, an environment of rote learning and rigid structures around religion, social mores, and language. This experience of formal education had long-lasting negative effects on beliefs, images, and symbols I associate with the notion of schooling, and undoubtedly shaped my ensuing experiences and career. For one thing, in my work as an environmental and outdoor education specialist, I always distinguished between *schooling* and *learning*. My own ideas around teaching viewed the active construction of meaning and the cooperative, collective nature of learning as something largely separate from traditional schooling.

My training as a teacher had been largely focused on experiential education, following Dewey (1902) and Kolb (1996) that learning involved the active construction of meaning and mobilization of an individual's or community's resources to address a perceived problem, issue, or event. My understanding of the Kolb action cycle was in the context of outdoor, experiential, and environmental education; due to my own memories of formal schooling, I didn't immediately see how this approach could be normalized across disciplines and into institutional

pedagogical practice. As a consequence, I opted not to use my teaching degree in a classroom, but to work instead as a freelance environmental educator and naturalist. My beliefs, experiences, and philosophies around learning were quite separate from the ideas I had about school—an automatic distinction between t*rue* learning and formal schooling I didn't think to observe in myself at the time.

As my career got underway, I began working as an outdoor and environmental education specialist with a small non-profit group in Montreal. Much of my work involved getting students outside on field trips, doing pond studies, and interpreting nature without much integration of nature study into everyday teaching and learning. I offered teacher training workshops and participated in several teacher institutes where educators came from across Quebec to participate in environmental and outdoor education workshops with the aim of integrating these approaches into their teaching.

In 2000, seven years into my career (and long after the Conservative government that succeeded the NDP had swept any trace of the Common Curriculum out of Ontario), the Parti Québecois government of Quebec introduced constructivist, competency-based educational reforms that were similar in many ways to my training under the Common Curriculum. The Quebec Education Reform (QEP) was brought in to address the disconnect learners and educators felt between what was being taught in school and what was relevant and meaningful in everyday life. The drop-out rate in Quebec was at an all time high in the mid-1990s, with sixty percent of male high school students leaving school before graduation. Students often had difficulty seeing the point of school, the learning was not relevant to their life experience, and they were not finding fulfillment (Lasnier, 2000; Gouvernement du Québec MELS report, 1997).

I became aware of the Quebec Education Reform when a school board approached me to develop a series of professional development workshops for kindergarten teachers as they moved from half-to full-day programming under the reform's mandate. There was an intuitive or instinctive understanding on the part of the kindergarten teachers and the school board that these youngest students were interested in Nature, and that integrating Nature study with outdoor and experiential education would help make the transition to full-day kindergarten more successful. Introducing the teachers to the concepts of experiential education, the idea of the outdoor classroom, and the teachable moment was very instructive for me. It also became clear that, although twenty five years had passed since I had been in kindergarten, not much had changed in formal education in spite of the reforms.

The kindergarten teachers were excited by their experiences in our outdoor labs and a sense of momentum and energy was evident as the group left the initial training session to begin their first year as full-day teachers. But as the professional development series went on at two-month intervals through the year, it became clear the teachers were experiencing difficulties putting their newfound beliefs into operation. They voiced a lack of confidence about holding open-ended inquiry in outdoor settings, and felt they didn't know enough about plants, animals and natural processes to guide young students through a discussion or experience. I then adapted our workshop series to include team teaching so the teachers could try on the approaches, with me as a safety net.

Challenges of Affecting Lasting Change on Teacher Practice

Whenever I ventured into schools at the time, it became apparent there were other challenges beyond the teachers' sense of inadequacy around natural history. Administrative guidelines and policies about taking children outdoors were prohibitive and involved inflexible

protocols about parent volunteers, student to teacher ratios and advance notice, all of which went directly in the face of the concept of the teachable moment in experiential education. As well, it became clear that while these "outdoor initiatives" were deemed by fellow staff and administrators at the schools as "fun," they were not perceived as part of the educational program, but rather as an entertaining break in the school day. In short, formal education did not involve taking students outside to flip over rocks in front of the school to observe invertebrates.

Over the fifteen years I spent as an environmental education[3] specialist encouraging teachers to embrace new practices, I began to realize there were forces at work I did not understand that seemed to inevitably pull teachers back to their starting positions and the status quo. Change was elusive and hard-won. The feedback following a professional development workshop was initially extremely positive. Teachers would voice a sense of transformation and a renewed energy and commitment for change. But often this sense was short lived, and when our paths would cross again, I would either observe or learn directly from the teachers that they had tried to incorporate approaches and tools from experiential, environmental education, but had then felt impelled to "go back" to what they deemed more "traditional" practice.

Although my work with teachers in professional development had given me an understanding of the powerful received ideas and pre-conceptions at play in the school setting, I was only recently able to find a solid theoretical framework to help me understand and explain teachers' difficulties accepting new practice paradigms (this theoretical framework will be

[3] As described in the Tbilisi Declaration, environmental education focuses on:

- Awareness and sensitivity about the environment and environmental challenges.
- Knowledge and understanding about the environment and environmental challenges.
- Attitudes of concern for the environment to help to maintain environmental quality.
- Skills to mitigate environmental problems.
- Participation for exercising existing knowledge and environmental related programs.

(UNESCO-UNEP, 1978)

further elaborated and connected to my research in the next chapter). Sociocultural theory has helped me to understand that we are the human products of the cultures in which we grow up, repositories of the tastes, dispositions, and patterns of behaviour, rituals and traditions that Bourdieu (1977) collectively referred to as *habitus*. Bourdieu maintained that habitus informs all of our actions and interactions, subsequently reproducing itself through generations. Indeed, looking through this structuralist lens, it often seems unlikely that humans are ever able to change, let alone resist or reject, the powerful social forces that surround and shape us. Other less deterministic views, of course, say this is not necessarily the case.

Looking to champion-teachers for clues.

In the early 2000's, at the same time I was working with kindergarten teachers, I began to work with Evergreen, a national non-profit group striving to make cities more liveable through urban greening and gardening initiatives. I eventually became the director of Evergreen's Quebec Office for ten years, during which I was able to witness and participate in many initiatives that had transformative effects on both the teachers and students involved.

One example that springs to mind is that of a vocational high school for boys on the South Shore of Montreal, where students also coped with many additional challenges from learning disabilities to behavioural disorders. One of their teachers had attended an Evergreen workshop with me on how to apply for funding for school greening and food garden projects, and decided he would bring this to "*les gars*" ("the boys"), as he called his students, and see where it led them. The teacher recognized that for many of these students, vocational school held little meaning or purpose even though it was attempting to prepare them for the workforce with courses in woodworking, culinary arts, and horticulture. Over the next three years, the vocational school's greening project took shape. The boys mapped the school grounds to survey their

potential and met with a food bank serving their community, where they discovered there was always a shortage of fresh vegetables even in the middle of summer. They then reached out to a seniors residence across the street from the school to see if residents would be interested in helping to maintain gardens on school property over the summer months. Throughout, the teacher encouraged group work and consensus decision-making. We ran a design charette[4] together with the boys and other stakeholders, and during this event one student noticed that the planting beds would not work for the seniors because they were too low to the ground. This same student then researched raised bed and container gardening, and developed a design for their food garden.

With help from various staff and neighbours, the students learned how to make the containers and soon branched out to making composters, potting tables, and tool sheds. Eventually word got out, and other schools working on greening projects started ordering these products from them. In their second season, their garden produced 400 pounds of potatoes that were shared with the food bank and the seniors. Kale, Swiss chard, tomatoes, eggplant, lettuce and fine herbs were also harvested and given to the food bank. Whenever I feel that school will never change, I think of the vocational teacher surrounded by "les gars" in their beautiful garden under a pergola they built themselves and am reminded that transformation in our schools is possible, and that building gardens can build lives too.

In contrast to the hard won change in my other efforts with teachers, the work I was doing greening school grounds with Evergreen offered me the chance to see teachers do amazing things

[4] According to the National Institute of Building Sciences (2013), a design *charrette* is defined as an intensive workshop in which various stakeholders and experts are brought together to address a particular design issue, from a single building to an entire campus, installation, or park. A charrette can also be viewed as a creative burst of energy that builds momentum for a project and sets it on a course to meet project goals. It can transform a project from a static, complex problem to a successful, buildable plan.

with students, as together, they built learning opportunities while designing healthier school grounds and "outdoor classrooms" put to use as "living labs," writing retreats, and meditation spaces. Many of these teachers, whom I came to call *champion-teachers*, shared with me that teaching in environmental, experiential ways and using the outdoors and Nature as pillars within their practice had renewed their commitment and energy towards teaching. This came as a welcome contrast to the challenges I had encountered elsewhere in moving forward from what teachers "had always done," and I looked to these champion-teachers to find out what might have contributed to their practice.

Several questions emerged: How best to prepare teacher candidates in school to be more agentic and equipped to foster and enact change? What kinds of experiences and situations would set in motion the important recombination of teacher candidates' resources and dispositions that foster a sense of agency? These questions formed the basis for what would become the McGill-Evergreen special opportunity field experience (SOFE), built on philosophical and theoretical underpinnings I brought from the experiences described above.

Chapter 2 Theoretical Framework

Sociocultural Theory: Structure and Agency

I wanted to understand the forces and processes that effectively prevented many of the teachers I had worked with from adopting change in their practice, and at the same time investigate why the champion-teachers I had encountered had been able to enact real changes. While social structures shape behaviour in countless imperceptible ways, the human ability to make room for change is also well-evidenced and supported by William Sewell's (1992) comprehensive theory of schema and resources. This theory provides a way to explore what occurs as habitus—one's way of being, or way of operating and interacting with the world (Bourdieu, 1977)—is exposed to experiences throughout an individual's life, and thus changed. Bourdieu's work on the mutually informing relationship between habitus and its "field" challenged predominant Foucauldian, structuralist theories (Rabinow, 2010) that disregarded the individual's power to take control of their situation and enact change. Sewell's theory of schema and resources elaborated on Bourdieu and provided concepts explaining *how* individuals respond (and *what* they respond with) when they act in ways that are reproductive and sometimes transformative. Human agents have a lifetime's worth of tools they can draw upon in different situations, and combine and recombine these in new ways as they respond to events and situations in their lives (Moore, 2008; Olitsky, 2005). Thus, change involves agency[5] and can be constrained or supported by structures that exist in the social world.

This idea provides a theoretical framework for the processes undergone by the champion-teachers I observed. Able to come up with creative strategies to push changes through resistant

[5] Agency is used here in the Bourdieuian sense of an individual's ability to act in ways that exert some control over one's position in the social world. In other words, an individual's ability to effect change, as opposed to being passively positioned (Ashwin, 2012; Bourdieu, 1977).

school cultures, this demonstration of *agency* enabled them to enact novel practices that had an ability to effect transformation. These teachers were able to use their dispositions, experiences and understandings (their habitus) to act on the structures that framed their work and move forward in new ways. Working with these champion-teachers, I often observed that they became increasingly skilled over time at independently developing new combinations of resources and approaches to help them negotiate a course of action. While this may help to explain their ability to effect change, it also points to the many systemic challenges that dissuade other teachers from altering their practice even when they acknowledge a desire for change.

Bourdieu's (1977) and Sewell's (1992) theories laid the groundwork for my understanding of what culture is, how human agents use cultural tools to respond to different life situations, and how these actions can and often do produce new culture. The champion-teachers I worked with had found ways to circumvent or navigate the dominant, traditional school culture of classroom-based learning; in doing so, they were engendering a cultural shift that widened their students' experiences and perceptions of what teaching and learning can be.

This was the kind of practice I wanted to nurture and bring about within the McGill-Evergreen special opportunity field experience (SOFE). At the time of its design, I had not yet developed a comprehensive theoretical framework due to an initial focus on the project's practical application. I had a sense, however, that integrating experiential learning, environmental education, and principles from activism into student teacher practica might offer a "growth medium" similar to what my champion-teachers had found so effective in the evolution of their own practices. By providing teacher candidates the chance to design and implement

environmental initiatives with students in a formal school setting, I hoped to foster in them the innovative, risk-taking attitudes and approaches conducive to becoming "teachers for change." [6]

How behaviour is produced—in the context of this study, the ways teacher practices are ritualized and reproduced—is important to understand if it is to ever be challenged or changed. In his book, A Theory of Practice (1977), Bourdieu developed the ideas of *habitus* and the *field* to understand the ways the reproduction of social structures occur, and why systems of inequity and domination often persist. He looked at an individual's way of being and operating as a practice informed and constructed by the relational interactions between habitus and field. As he says,

> Simply put, habitus focuses on our ways of acting, feeling, thinking and being. It captures how we carry within us our history, how we bring this history into our present circumstances, and how we then make choices to act in certain ways and not in others. (1977, p. 210)

Although habitus is both durable and transposable ("able to become active within a wide variety of theatres of social action"), Bourdieu underlines that it does not act alone, and that practices themselves "are the result of an obscure and double relation – an unconscious relationship between a habitus and a field" (p. 214). Of course, practice necessarily requires a space to be enacted within, a space that is never benign or blank but instead comes with its own sets of structures, rules, boundaries and conditions that affect practice. This is defined as the *field*

[6] *Teachers for change* refers to the movement committed to limiting the social reproductive functions of school by equalizing relations so teachers are able to foster agency in themselves and their students as they enact change on many levels, from teaching practice to school environmental activities to engaging with local and global communities to achieve a more sustainable, just society (Ayers, 2013; Gruenewald & Smith 2008; Sobel, 2004; Noddings, 1992).

by Bourdieu, using the analogy of a football field to describe a place with boundaries where certain rules—ways of being—have to be to be learned and perfected by novice players whose "practice" on the field is also a product of the field's particular conditions.

The field of *school* is one that has rigidly-defined structures and rules that are experienced and acted upon both individually and collectively. Constructs of the school field can seem quite static and permanent, and are often internalized in the individual's habitus as *schema* — the useful term developed by William Sewell (1992) when he expanded on Anthony Giddens' (1979) ideas of structure being made up of rules and resources by elaborating a theory of structure based on the *duality of schema and resources* instead. In Sewell's work, schema are procedures that can be applied in an individual's life in a generalizable way and are applicable to all sorts of situations and different contexts. However, the close relationship between field and schema also results in dominant schema that typically rise to the surface in relation to particular fields. Resources, in turn, can be human or material, and include anything that can be used in social interactions. An individual's ability to participate in the social world can be constrained or enabled by the schema and resources they have at their disposal in relation to the structuring aspects of the field. Agency is when a social actor can expand on their existing schema and resources, or put together their schema and resources in new ways.

In this study, the concept of schema provides a way to situate habitus and field by examining how schema, and the human and non-human resources informed by it, work to make up an individual's predicated way of operating (habitus), while leaving room for agency and autonomy—an individual's ability to act and exert control.

In teacher change literature, much has been written about the powerful forces at play in a professional's practice with respect to change or reform. Lortie (1975) describes the powerfully

unique *apprenticeship of observation* in teaching, a phenomenon that exists in no other profession due to the long participation in—and observation of—schooling shared by virtually everyone in society. It is during these lengthy years of "apprenticeship," that people develop their ideas, images and theories of what teaching is. Teachers carry these notions with them, and this base will often inform much of their practice, regardless of the philosophies and approaches a teacher education program tries to instill (Britzman, 2003; Kennedy, 1999). This tension surfaces when a teacher propounds an innovative practice but then proceeds to teach it in an entirely traditional manner, a common occurrence that makes moving past existing paradigms even more difficult—educators may *think* they have embraced a philosophy in education, even though their practice indicates otherwise (Clift & Brady, 2006; Argyris & Schön, 1974).

How does this happen? Many parts of a teacher's practice are unconscious or difficult to articulate: if left unexamined, these may even eventually lead to a teacher espousing one philosophy while actually practicing another. Some teachers may also still be relying on convictions from the "apprenticeship of observation" that warrant reappraisal, or be demonstrating the "personal, practical knowledge" described by Connelly and Clandinin (1986), and further defined by Britzman (2003): "Personal practical knowledge is knowledge which is imbued with all the experiences that make up a person's being. Its meaning is derived from and understood in terms of a person's experimental history both professional and personal" (p. 65).

At this point, we can see there are many ways of talking about the values, symbols and notions that accumulate and inform practice and are changed through experience. As teachers, we carry this around with us perforce, but rarely stop to think of how our actions and decisions are guided and organized by unconsidered processes and structures. My own interests lie in what constrains or affords teachers control, freedom and creativity over their practice; in other words,

agency (Olitsky, 2006; Kennedy, 1999). Both Sewell and Bourdieu recognize the agency of social actors and insist on the possibility of change within the concept of structure. Sewell explains the existence of agency by developing the idea that, while schemas and rules make up structures, resources exist that can be mobilized from diverse fields and schemas to be used in many creative ways. He defines it this way: "agency is the actor's capacity to reinterpret and mobilize an array of resources in terms of cultural schemas other than those initially constituted in the array" (1992, p. 19*).*

My aim in designing a field experience and professional seminar for pre-service teachers was to make the adoption of this "array of resources" both more assimilable and durable, so that innovative outdoor environmental and experiential learning approaches could be embedded with a greater degree of sustainability in today's school system. As teacher candidates enacted these ways of teaching, they could develop and deepen schema, and diversify their resource sets as to what teaching and learning can involve. In accordance with theory, it is within these enactments that evidence of agency will be sought.

Chapter 3 Context of Research

In 2009, I teamed up with the McGill Education Faculty's Department of Integrated Studies in Education (DISE) to partner with the Evergreen NGO in the design and implementation of a second- year practicum and professional seminar for pre-service teachers enrolled in the Education Program at McGill University. As mentioned previously, Evergreen is a national non-profit organization dedicated to making Canada's cities more liveable through naturalization projects. The aim of the pilot project was to provide teacher candidates with the opportunity to teach outdoor and experiential environmental education in the form of schoolyard greening projects and environmental initiatives. In this way, these pre-service teachers could develop the skills, attitudes and approaches supporting more open-ended, place-based, and sustainability-minded ways of teaching. The goal was to develop the capacity of teacher candidates to encourage students to be active learners, engaged citizens, and participants in sustainability in all its dimensions from community engagement and ecological practices and choices to peaceful, cooperative interactions with nature and each other.

Description of the SOFE and Professional Seminar

In collaboration with the Associate Dean, the Director of the Undergraduate Program, and the Director of the Office of Student Teaching, I designed the McGill-Evergreen special opportunity field experience (SOFE) as a pilot project to begin in the Fall of 2009.

Goals of the SOFE.

- To help teachers embrace positive action and become teachers for change.
- To increase new teachers' confidence in integrating hands-on environmental and social justice projects within their classrooms, their schools and their communities.

Objectives of the SOFE.

- To increase understanding of *Nature deficit disorder* and its implications.

- To provide pre-service teachers with both the theory and practice of experiential learning and its relationship to positive action.
- To develop communication and leadership skills towards facilitating experiential education in the classroom.
- To help teacher candidates find ways of better reaching urban youth with hands-on, topical approaches while also awakening these students (and the candidates) to environmental issues and citizen engagement initiatives.
- To develop a network of student teachers and teachers across the city of Montreal to share strategies and experience, and provide support and encouragement to each other.

Second year undergraduate students in Education who signed up for the SOFE completed the same number of hours (105 hours) they would normally complete in the Department's regular second-year student field experience (FE2), held over three weeks each May. However, SOFE students in the SOFE program also worked with their cooperating teachers in host classes for a half-day per week from early October to mid-April and were expected to explore, facilitate, plan and implement experiential, place-based environmental and schoolyard greening initiatives in their host schools. They were supported by a one credit professional seminar (for which I was the instructor) that introduced them to leadership and communication skills, and strategies for community and consensus decision-making.

The SOFE Syllabus.

A major assignment within the McGill-Evergreen SOFE and Professional Seminar was the development of a large project called the Integrated Learning and Evaluation Situation (ILES), where the teacher candidates were tasked with the challenge of activating an environmental education school program connected to the Quebec curriculum that integrated outdoor, experiential, environmental and place-based learning in a positive action initiative. Initiatives

could include, but were not restricted to: schoolyard greening and gardening projects, composting initiatives, energy audits, and environmental awareness campaigns.

Within the syllabus (attached as Appendix A), the other main elements and assignments of the course included: keeping a journal for professional reflections; developing a place-based field trip for their particular host school and class; and composing a literature review and response to a peer-reviewed environmental education article. The readings and films that were part of the course are also listed in the syllabus. Among these were: David Sobel's book Childhood and Nature: Design Principles for Educators (2008); Richard Louv's Last Child in the Woods (2005); the Yann Arthus-Bertrand directed documentary *Home* (2009); and an animated 2007 documentary, *The Story of Stuff* (director, Louis Fox). SOFE students were also tasked with the facilitation of a two-hour Outdoor Classroom Peer Teaching Lab, which was then provided to all second-year elementary education students at McGill in EDEE 270, Elementary Science. In addition to the ILES, the SOFE teacher candidates were expected to develop and facilitate lesson plans within their host classroom in collaboration with the resident cooperating teacher. Finally, trainee teachers in the SOFE were expected to participate fully in the experiential seminars that took place outdoors at the McTavish Reservoir Field and on Mount Royal. They were also expected to attend workshops and go on field trips organized over the two semesters of their SOFE.

Approaches Involved in SOFE

The approaches to outdoor experiential environmental education (OEEE) I took with the SOFE involved blending philosophies and approaches from different educational milieus including environmental education, Nature-study, place-based education and community activism. This way of teaching has come out of many years of practice where I have combined

my roles of biologist, naturalist, teacher and activist to try to gently opening the world of Nature to learners of all ages. The SOFE participants took to referring to these OEEE strategies for place-based teaching and learning as "Evergreening." This approach involved a model integrated across subject silos in which learning and teaching was more open-ended and student driven, and could be enacted outside classrooms in school grounds and the surrounding community.

Ideas From Environmental Education

Several major theoretical and philosophical underpinnings of SOFE came from the area of environmental education. How these ideas informed the design of the field experience and the accompanying professional seminar are described in the sections that follow.

Recognizing environmental education as a discipline.

Environmental Education has long struggled to be a bona fide discipline in academia. Perhaps due to its roots in outdoor pursuits and land conservation, environmental education has remained on the margins of both the Earth Sciences and Education milieus. Environmental education is also difficult to define largely due to varied interpretations of the term "environment." Many in the field even reject the term; after all, what education is not "environmental?" The work of Lucie Sauvé (2009) informed my approach to education in relation to the environment:

> The woven fabric of the environment can be understood to be the network of life itself, at the juncture between nature and culture. The environment serves as the crucible where our identity is forged through our relations of otherness, via our education "about," "on," "in," "by," "through," "with," or "for" the environment, the specific object of environmental education is our relation to the environment. (p. 326)

Environmental education involves three complementary perspectives: sociological, educational, and pedagogical (Sauvé, 2009). Sociologically speaking, environmental education looks at and attempts to "address or redress both degradation of life and resources and disparity in access to resources through environmental problem solving and sustainable development" (Sauvé, 2009, p. 330). Educationally, it seeks to speak to the modern disconnect between largely urban human culture and Nature, as well as associated divisions between human societies. This educational process involves social and personal development in relation to the environment and continues to happen over a lifetime. Pedagogically, environmental education "seeks to develop a more relevant educational process through which environmental transformative learning can take place through the integration across subject silos of an ecological perspective or way of knowing, an eco-pedagogy" (Sauvé, 2009, p. 335).

At the time the SOFE project commenced, the McGill Faculty of Education offered no environmental education courses; indeed, the only introductory-level environmental course available to undergraduates in Education was offered by the University's Geography Department and required science prerequisites. When approached to design the SOFE, I had suggested offering a three-credit course on Environmental Education, but this was not deemed feasible. The history and practices of outdoor, experiential and environmental education was therefore not covered in depth within the SOFE professional seminar due to time constraints, but teacher candidates were exposed to seminal texts and figures in the OEEE field (please refer to the syllabus and reading list in Appendix A). In addition, the teacher candidates had as one of their professional seminar assignments a critique of an environmental education article from a peer-reviewed journal. These two elements were important not only to provide the teacher candidates with the theoretical framework we would be using in our practice but also to validate

environmental education, too often relegated to the margins (if it exists at all) within teacher education programs (Stevenson, 2007; Lin, 2002; McKeown-Ice, 2000).

Nature deficit disorder.

Underpinning the design of the SOFE was the idea that reconnecting people to Nature is important for our planet and for humanity (Louv, 2007; Wilson, 1984; Carson, 1956). In my work as a naturalist, environmental educator and urban greening specialist, I have witnessed the positive impact of getting people, especially children, back in touch with the natural world. Research continues to show the impact that disconnection from Nature has on children. Health statistics reveal rising rates of childhood obesity and social disorders as a result of electronic, sedentary activities and the reduction of free time spent outdoors (Louv, 2007). Studies have shown that simple exposure to a natural setting reduces stress, increases sociability and helps build a sense of place and belonging in youth (Faber-Taylor & Kuo, 2009; Bird, 2007). Other studies have revealed that, almost without exception, history's great environmental scientists and thinkers have had important childhood experiences in Nature that helped develop their sense of stewardship of the Earth (Chawla, 1998). In this time of global environmental crisis, it would seem wise to foster critical thinkers and creative problem solvers who have a deep connection to and understanding of the natural world.

With the advent of video games and changes in societal norms where both parents work and children are literally left to their own devices, usually indoors ("It's where the electrical outlets are," explains one 11-year old in Richard Louv's (2007) Last Child in the Woods), today's kids have become ever more disconnected from the natural world, from unstructured outdoor play, and the many accompanying social, emotional, intellectual and health benefits. Developing two theoretical paradigms he titles *Nature deficit disorder* and *Leave no child inside*,

Louv takes a hard look at contemporary children's lack of connection to the natural world and the implications for healthy childhood development. Subsequent research has continued to show that exposure to Nature and unstructured playtime are essential elements to healthy child development (Faber-Taylor & Kuo, 2009). An alarming element of the Nature deficit theory is that even as we acknowledge the deficit and its need to be addressed, we simultaneously produce young new teachers who are themselves products of Internet and video-game induced Nature deficit disorder (Cardinal, 2010).

It became important, therefore, to account for this research and these concepts within the design of the SOFE by integrating experiences in Nature into the seminar and demonstrating approaches, tools and strategies that teacher candidates could use to reconnect both their students and themselves to Nature. The program thus included experiences in Nature, such as seminars held outdoors and Nature-based art activities on Mount Royal. Within the seminars, seasonal topics were explored such as leaves and composting; spiders and animal architects; and Nature in winter, which including learning about winter animal signs and tracks, tree identification, wintering birds and the science of snow. Participants were invited to share their experiences with Nature as children and to develop creative ways of integrating Nature into everyday teaching and learning. In addition, I held Nature-based workshops with the host classes of participating schools in collaboration with the teacher candidates.

Ecophobia.

There is a delicate balance at play in the use of environmental education to reconnect people, especially children, to Nature. If an individual is not afforded the chance to develop deep bonds with Nature, there lies a risk that faced with the stark realities of today's environmental issues—poor air and water quality, the mass extinction and endangerment of species, habitat

loss, human population growth, extreme weather and natural disasters linked to unprecedented climate change—they will succumb to feelings of dissociation, denial, helplessness and despair (Gruenewald & Smith, 2008; Sobel, 2008; Raffan, 2000). David Sobel (1996) coined the term *ecophobia* to describe the paralysis and disconnect that can occur if a child's only experience of their natural environment is in the context of crisis. Often, the first time a student hears the word "species" it is in the context of *endangered* or *extinct* species; a child's first experimentation with water or research project on the oceans may revolve around *pollution*, *coral reef degradation*, or *water scarcity*. Sobel maintains that:

> If we want children to flourish, to become truly empowered, then let us allow them to love the earth before we ask them to save it. Perhaps this is what [Henry David] Thoreau had in mind when he said, the more slowly trees grow at first, the sounder they are at the core, and I think the same is true of human beings. (1996, p. 27)

As responsible educators, we need to tread carefully and encourage children and youth to develop deep bonds with the natural world before asking them "to save it." Providing children and teachers with positive, awe-inspiring experiences in Nature can build a foundation of respect, love and wonder that leads to a sense of belonging and grows into a solid sense of stewardship towards the natural world and our planet. Within the design of the SOFE, Sobel's work on ecophobia played a central role in the way teacher candidates approached both the SOFE course and their own trial teaching, helping them to avoid common pitfalls[7] in elementary school environmental education. The SOFE was designed to awaken a sense of wonder about Nature in the teacher candidates through its seasonal, outdoor Nature-based seminars and workshops, while acknowledging the serious environmental problems the world currently faces

[7] See Chapter 7.

and providing ideas and information about positive action environmental projects carried out in schools. The teacher candidates viewed environmental films such as *Home* and *An Inconvenient Truth* (the 2006 climate change documentary featuring former U.S. Vice President and environmentalist Al Gore), and explored environmental action projects during a seminar on Evergreen's Montreal greening/gardening projects and a field trip visiting a large-scale school food garden. Through readings of Sobel's Beyond Ecophobia (1996), and his guide for Nature education, Childhood and Nature: Design principles for educators (2008), teacher candidates were able to consider and analyze course concepts, discover creative ways to reconnect with Nature that blended environmental awareness with positive action, and take this into their host classes during their practicum.

Using the community as "texts" for curriculum development.

Place-based education recognizes a child's local community as a primary learning resource where the child's sense of place and belonging can be fostered via teaching in any discipline (language arts, mathematics, social studies, science, etc.). In place-based education, teachers and students look to their communities and natural spaces as sites for learning. By emphasizing hands-on, real-world learning experiences, this educational approach, in Sobel's (2004) words, "increases academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens" (p. 7). By integrating local spaces around the McGill Faculty of Education and the host schools into the SOFE design and implementation, place-based education could be modeled and then operationalized by the teacher candidates during their practica.

Place-based educators advocate using diverse communities as "texts" for curriculum

development and engaging teachers and learners in direct experience and inquiry projects that lead to democratic participation and social action within the local environment. (Greenwood, 2009, p. 275)

Place-based, outdoor education is not the norm in schools and, therefore, requires practice before it can be enacted consistently. This type of teaching can be daunting for beginner educators, because the spontaneity intrinsic to its approach often requires nimble thinking and flexible lesson-making. For example, *the teachable moment* is celebrated in this approach, but seizing upon such moments takes skill and some experience, as Sobel describes below:

> The discovery of a turtle laying eggs in the schoolyard may encourage the children to pretend to be turtles, learn more about turtles in general, discover that some turtles in their area are endangered, and then, raise money to give toward turtle protection. The key is to be open and ready to seize on those un-foreseen natural gifts. (2008, p. 96)

The concept of the teachable moment was central in the design of the professional seminar that accompanied the SOFE. Many of its sessions took place outdoors, enabling participants allowed to model the teachable moment concept by seizing on instances that emerged contextually in order to try teaching with "whatever was fresh, to borrow from the cooking vernacular*"* (Sobel, 2008, p. 310). The term next became part of the lexicon as teacher candidates participated in and then led outdoor labs. Sobel's book Childhood and Nature: Design principles for educators (2008) was purchased[8] for each of the SOFE teacher candidates thanks to funding from the Foundation of Greater Montreal.

[8] Funding from the Foundation of Greater Montreal provided each SOFE teacher candidate in the 2010-2011 cohort with four books on environmental and place-based education (listed in Appendix A).

By using the local green spaces around the Faculty of Education, participants were able to reconnect with Nature and their community. Incorporating peer teaching labs within the Faculty's regular second year science methods lab, the SOFE participants were then able to try out these place-based approaches, seize teachable moments, and share their understanding and appreciation of site-specific Nature informed education. The main objective of place-based education is to increase the landscape of learning opportunities between and among students, educators, and community members. By extension,

> …the larger goals for place-based pedagogy are the mutually informing processes of decolonization and reinhabitation. Decolonization here refers to the broad agenda in education to recognize and redress damage by historic forms of oppression. Reinhabitation, in turn, addresses the deeper sustainability agenda of environmental education. Pedagogically, these two interrelated goals (decolonization and reinhabitation) translate into a set of questions that can be put to any group of learners on any place on earth: What is happening here? What happened here? What should happen here? What needs to be transformed, conserved, restored or created in this place? (Greenwood, 2009, p. 279)

Teacher candidates in SOFE began to ask these questions and bring this style of observation to their field experiences. Their students in the host classrooms were challenged to think about their school buildings, grounds, and the surrounding community as sites for learning and urged to structure positive action initiatives around Greenwood's four essential questions.

Awakening wonder: Nature as mentor and guide.

In my experience working with elementary school teachers, a recurrent theme has been their self-proclaimed lack of confidence when confronted with the challenge of teaching scientific concepts, conducting hands-on Nature exploration, and tackling complex, pressing

environmental issues such as climate change. This lack of confidence may stem from an educators' limited experience with the subject matter, as well as an underdeveloped sense of connection to and understanding of the natural world (Sobel, 2008; Noddings, 1992). Research has shown that many elementary school teachers report feeling negatively about teaching science due to a lack of confidence, training, and experience in scientific concepts (Barton, 2001; Gallagher, 1999; Aubusson & Webb, 1992); the same research indicates this is a prime reason why science instruction has remained underdeveloped in elementary school systems.

In my own work, I have found that Nature can provide a science-wary educator with a safe port of entry. Teachers I have worked with generally recognize the inherent appeal of natural science to children; the palpable excitement and focus children experience when able to closely observe and interact with living things; and the meaning, connection and sense of kinship (with the natural world and with each other) this creates. When teachers first start using Nature as the mentor and guide central to their educational approach, the child's inherent biophillic nature (Wilson, 1984) surfaces and it becomes clear that Nature provides a source of great comfort to children. In the words of the pioneering environmental crusader, Rachel Carson: "Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts. There is something infinitely healing in the repeated refrains of Nature—the assurance that dawn comes after night, and spring after winter" (1956, p. 88).

Within the design of the SOFE, it was important to immerse the teacher candidates in the natural world and wake a perhaps latent sense of wonder through experiences and reflection in Nature. This was accomplished by integrating learning experiences in the seminar and with the host schools that celebrated the wonder of Nature, while challenging teacher candidates to change perspectives about vital cycles and systems we take for granted, such as pollination, the

water cycle, and composting. Educators and students learned to always ask the question: what can we learn *from* Nature, as opposed to, what can we learn *about* Nature? By using the outdoor spaces around the Faculty of Education and the host schools over the SOFE's eight month timespan, the teacher candidates were able to get up close to Nature's eternal cycle of life, death, and renewal, and experience the seasons, the ancient rocks, and the tender new leaves that provide children with a cradle of constancy (Noddings, 1992) and a sense of their place within the great lap of Mother Earth.

In the literature on educational theory, Freire (1974) states, "there is an indivisible solidarity between the world and humans" (p. 81), an assertion that is especially important now at a time when there has never been a more pressing need for the human race to reconnect to the natural world. The design of the SOFE addressed this by integrating readings on the importance of reconnecting children to Nature by Kahn (2002), Sobel (2008, 1996), and Carson (1956), and by sharing children's literature such as The Giving Tree by Shel Silverstein (1964) and Grandad's Prayers of the Earth by Douglas Wood (1999).

Ideas from Experiential and Social Constructivist Education

The SOFE design was informed and underpinned by experiential and social constructivist educational philosophies intended to develop teachers for change. From Aristotle's and Plato's arguments in antiquity about rationalism versus experientialism to Paolo Freire's (1995) and Kurt Hahn's (2002) respective discourses on critical action and reflection in education and service-learning through adventure education, the argument for experiential education that involves positive action has a long history. John Dewey, in his essential work, Experience and Education (1938), best summed up experiential learning as learning that involves one's head, one's heart, and one's hands.

Piercing the skin of the everyday: disrupting the teacher as tour guide.

The SOFE's design was informed by Dewey's (1938) philosophies of experience in education and Vygotsky's (2004, 1967) social constructivist ideas, where learning is built around and on top of what a student already knows through an active social process that involves conflict, disequilibrium, discussion and problem solving. Also explored in the SOFE seminar were Paolo Freire's (1995) tenets of education for social change through an individual's free exploration and constant inquiry into the world around them.

As has been the case for decades, teachers in today's classrooms run the risk of becoming "tour guides" to the curriculum, rather than active co-constructers of knowledge through experience, discussion, and reflection. Reilly (2009) describes this characterization of the teacher as tour guide in a quote by Sumara (1996): "Curriculum is a normalizing experience… Teachers become tour guides, showing students which sites must be noticed… as a daily performance, teaching becomes a pointing ritual that seldom pierces underneath the skin of the everyday" (p. 233). Sumara's memorable phrase, "piercing the skin of the everyday," sums up the disruptive force needed to jar educators and students alike from the lull of textbook-based passive teaching and "the pointing ritual" (p. 233). Introducing the teacher candidates to David Kolb's *experiential learning cycle* (1976) and putting the cycle into operation provided a way to disrupt tour guide teaching.

The experiential learning cycle

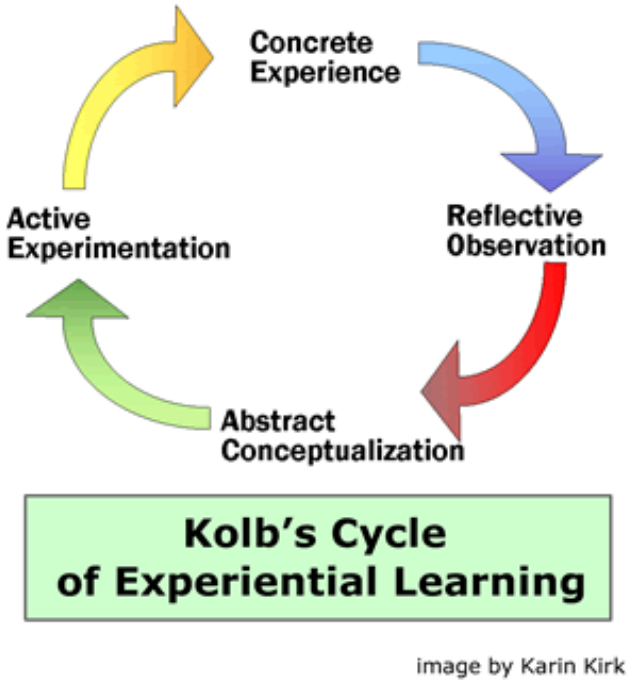

Figure 1. Kolb's Experiential Learning Cycle (1976).

When teaching experientially and using Kolb's experiential learning cycle (Figure 1), it is important that the learning cycle start with concrete experience. This can often come from a coincidental event that acts as an authentic launching point; for instance, a student finds an earthworm in the schoolyard in spring, brings it to the teacher, and the class then goes outside to see if they can find more worms. The concrete experience includes active discussion that is part of the reflective observation aspect of the cycle, where communication channels are opened as the class reviews what has been experienced. This leads to the abstract conceptualization portion of the cycle where the class makes sense of what has happened, and the process of interpreting the events and understanding relationships between them begins. This may involve a discussion about worms and where they were during winter; questions about what the worms ate lead to

their role in composting Nature's waste, which then feeds into the active experimentation part of the experiential learning cycle where the class considers ways of putting their learning into practice.

In the case of worms, this may involve taking a page from Nature's waste management guide and mounting a worm composting project to help the school reduce waste which can then lead to awareness campaigns about composting, waste reduction, and how to build and maintain worm composters in the classroom and at home. Throughout the cycle, students build their learning around a perceived issue of interest that involves concrete experience and the educator then helps the class to construct learning situations that move their exploration further. With every repeated learning cycle, there is reflection on what was learned, how it was learned, and what the next steps could/should be, leading quite naturally into the next inquiry.

The SOFE teacher candidates had, for the most part, never participated in experiential, outdoor education, and had very little experience or knowledge of Nature education going into the course. As they were required to implement Nature-based, sustainability-education activities, projects and initiatives with their host classes, it was important to design opportunities where they could set the experiential education action cycle in motion, be part of the cycle, and continue to shape it over its duration. The candidates' first opportunity to do so came in the form of the peer teaching labs on the concept of the outdoor classroom, in which they had to design and facilitate outdoor and experiential place-based learning situations. This was followed by the planning, design, and implementation of environmental and greening initiatives with their host classes that had to be centered around a perceived issue, problem or relevant topic voiced by the students.

In all of these instances, the teacher candidates were challenged to find ways to activate the

experiential learning cycle to move from concrete experience to reflective observation and then on to abstract conceptualization and active experimentation. Candidates were encouraged to do this within the Integrated Learning and Evaluation Situation (ILES), an assignment within the SOFE course in which they were to practically demonstrate environmental education (Kahn & Kellert, 2004) and place-based education (Sobel, 2008) through the use of Kolb's (1976) experiential learning cycle.

Ideas from Community and Environmental Activism: Engagement and Action

Teachers for change: building a framework in which to enact these ways of teaching.

In my experience with Evergreen and work with champion-teachers I saw that greening and environmental initiatives provided good frameworks for enacting meaningful, powerful teaching and learning situations. Initiatives such as these provide ways of illuminating the intersection of knowledge, power, ethics and desire, each so integral to our constant cultural process of becoming. "How to productively employ that intersection to elicit participation in social life through education? By locating agency, as the shape of our dreams and identities can take in social activity" (Hart *et al*., 2009, p. 343).

In the last section, a description was given of all the different approaches and influences involved in the "Evergreen" approach. It was through the development and enactment of environmental initiatives that these ways of teaching were operationalized, with the initiatives acting as a kind of framework in which SOFE goals of community and environmental activism to develop teachers for change were elaborated and rationalized within the context of schoolyard greening and place-based education, linchpins in the design of the project.

The environmental issues facing our planet are perhaps the most complex issues to ever face educators. Ecological, scientific, social and cultural processes, actions and interactions have to be identified and made sense of—a herculean task for even the most seasoned and nuanced of environmental educators. At the same time, it is well understood that educating our youth in sustainability is the only clear path toward a more successful ecological future. It was therefore important to include literature, research and media on environmental activism in coursework in order to better situate the participants and provide a context for environmental actions within school.

Prior experience in environmental and community activism were not prerequisites to be eligible to participate in the SOFE. Instead, I wanted to provide these teacher candidates with the opportunity to be part of environmental and community change through their schoolyard greening projects. Many environmental and community leaders cite school-based initiatives as being instrumental in their initiation into the world of activism (Dyment, 2005; Chesky, 2001; Chawla, 1999; Lieberman & Hoody, 1998). I wanted to provide an opportunity for the teacher candidates to actualize and then operationalize change through positive action in the hopes the experience would foster the attitudes and approaches of teachers able to look at their students "not as potential citizens of the future, but as citizens NOW" (Gruenewald & Smith, 2008).

Schoolyard greening as entry point for activism.

In the literature on environmental activism, schoolyard greening and gardening projects are cited as typical or common entry points to civic engagement and environmental activism (Chawla, 1999; Lieberman & Hoody, 1998). For this reason and others elaborated below, a schoolyard greening project was a major part of the SOFE as within its framework existed the

possibility of operationalizing the Kolb (1976) action cycle and the participatory design process[9] (Schuler & Namioka, 1993), two important foundational elements for exploring environmental and community activism. Participatory design is an approach that involves all parties with an interest (stakeholders) in the decision making process. While more time-consuming, it ultimately serves to better guarantee that the design will serve the needs and wants of the people who will use it most (Cheskey, 2001). In schoolyard greening, the stakeholders include: teachers, administrators, parents, neighbours, custodial staff and, most importantly, students. The SOFE teacher candidates were introduced to the participatory design process during the seminar, and several teacher candidates were then able to implement the approach in their host schools. The greening project was thus able to provide the teacher candidates with at least an introduction to community activism in which they learned how problem solving, cooperation, group communication and leadership blend together to see an initiative or project through planning, development, and implementation.

By using schoolyard greening, participants were afforded the opportunity to participate in active change. Teacher candidates had access to Evergreen's suite of resources on schoolyard greening in both print and electronic format. As well, each participating host school was eligible to receive a $2,000.00 Evergreen greening grant for the purchase of materials, plants, design help and other resources for their initiative. Participants viewed an Evergreen Quebec slideshow tour of schoolyard greening projects in the province and also toured several Montreal-based sites to meet with the greening committees and students involved. In host schools that opted to develop a greening initiative (some host schools opted for other environmental action initiatives such as

[9] Participatory design is used in many fields from software design to urban planning. At Evergreen, the participatory design process informed the way grants were administered to schools, which had to show how the participatory process would be used when planning their projects.

composting or energy audits), monthly meetings were held with a greening committee made up by the SOFE teacher candidate, school administrators, other teachers, and myself wearing two hats: instructor and supervisor of the SOFE, and Director of Evergreen's Quebec Office. Within the extended time frame of the SOFE, I was able to include a seminar on participatory design, tours of greened schoolyards and school food gardens, and Evergreen resources to help in all aspects of the design process, from surveying school population to site analysis, and the identification of native versus non-native plant species.

The teacher candidates worked with their host class over several weeks to determine if there was an interest in greening their school's grounds. If the host class and school wanted to green the grounds, the teacher candidates in collaboration with students, teachers, administrators and members of the local community would set about developing a design plan, preparing a budget, organizing fundraisers, researching plant lists and constructing built elements such as benches and composters with the students involved. The long time period allowed for a natural progression from one step to the next within the design and planning process. The greening project also offered a framework on which the teacher candidates could build their learning situations (ILES).

Exposure to research and media on environmental issues and activism.

Given that the teacher candidates did not need to have any prior experience in environmental activism and did not necessarily have much knowledge of current environmental issues, it was important to include seminar viewing of research and media on environmental and community activism to elucidate issues and provide more context. This brought the teacher candidates' work on greening and other environmental initiatives into perspective within larger environmental questions and issues. Some of the readings/media were aimed at children and

youth, such as Dr. Suess' The Lorax (1971), to provide the teacher candidates with ideas on how to explore these environmental issues with their students. The teacher candidates were expected to do the readings, view the films and write responses in their journals, as well as contribute to class and on-line discussions. The on-line and classroom discussions provided a good forum for the teacher candidates to voice their opinions and make their arguments regarding environmental issues from climate change to consumerism, to sustainable development.

Leadership, communication and collaboration training.

Community and environmental activism require well-honed communication and leadership skills, as this work involves bringing together different stakeholders around an issue to develop a course of action upon which all parties can agree. In this way, students and teachers can build more sustainable communities as they contribute to school improvement, a model in which "students and teachers combining school learning with community improvement add to a community's ability to solve problems and enact programs of improvement" (Tomkins, 2008, p. 174).

The professional seminar within the SOFE was designed and taught to model collaborative communication and leadership strategies equipping the teacher candidates for improvement work. The seminars were run much like a community council meeting: participants could suggest discussion topics and add items to the seminar agendas. Discussion and sharing time were always allocated in equitable ways (*e.g.*, using a talking stick and universal time limits for speakers). Consensus building techniques and approaches were shared to provide the participants with tools to use while planning the greening projects with their host classes. In one example, these techniques were used during design charette sessions with school greening committees. Group building and leadership activities were combined with training on debriefing to highlight

the cooperative and group processes at play (Rohnke, 1995; Kraft, 1993; Kolb, 1976). Teacher candidates were then able to put this knowledge into operation during the outdoor classroom peer teaching labs before transferring it to their host classes, where the techniques could be used to strengthen community, build trust, and make decision-making more efficient. Connections were also highlighted between these communication and leadership methods and the development of healthy learning and working environments to show how the approaches and tools can serve schools during both community and environmental class initiatives.

Place-based education in the context of activism.

Use of Sobel's (2004) place-based education principles[10] afforded teacher candidates the opportunity to become familiar with research on the importance and effects of opening up the classroom and connecting to the community. Place-based education in schools is recognized as an integral and often overlooked aspect of developing engaged, participatory citizens (Tomkins, 2008). By integrating community-based spaces and initiatives within the seminar, participants were able to experience community place-based learning before enacting similar learning situations with peers in the place-based outdoor science labs, and later their own host classes. The teacher candidates were also asked to prepare a place-based field trip as a seminar assignment, giving them the chance to observe their school's community to determine possible destinations that added meaning to the field trip experience and helped build connections between the school and community.

[10] Place-based education principles include learning on site, in the schoolyard, and in the local community and environment. Often, learning is supported by partnerships with local organizations, agencies, and government. Learning is interdisciplinary and focuses on local themes, systems and content to serve as a foundation for understanding and participating in local and global issues (Sobel, 2004).

SOFE's trainee teachers were encouraged to get to know both the school community and the surrounding local community and help to bring up actions or initiatives that would benefit both. In this way, the teacher candidates could develop activist competencies in step with their SOPE peers, students, and cooperating teachers that could be carried forward both into their practice as teachers and their daily lives in their own communities (with the additional challenge of integrating school learning and assessment into the action initiative).

To be competent at activism involves a unique set of schema and resources that are not necessarily the same as those needed for classroom teaching: these take time to acquire, and require specialized supports (Shor, 2007). The extended time frame of the SOFE over two semesters allowed for a natural progression within the greening project and environmental initiatives, and provided the time necessary to begin to develop activist competencies (that is, new schema and resources). The teacher candidates also needed time to bring members of their host school community together around their greening project and thereby build competency as community and environmental activists. The communication that is generally involved during a schoolyard greening initiative is intended to model good practice for the teacher candidates' future careers as active, engaged members of the learning community. Within the greening project, they needed to keep the various, diverse stakeholders in the loop in ways that were appropriate and meaningful. As well, all manner of real-time problems typically have to be solved throughout the implementation of a greening project, putting into action diverse skill sets and developing or refining learning and professional competencies in multiple ways.

In my experience, school ground greening and action based environmental initiatives reinforce Sobel's (2004) claim that place-based education improves "community vitality and environmental quality through the active engagement of local citizens, community organizations,

and environmental resources in the life of the school" (p. 7). My thinking was that if teacher candidates could be part of the building of community around a greening or environmental initiative, they would stand a better chance of embodying and then incorporating this kind of activism and teaching for change into their future practice.

Ideas from Teacher Education

The other pieces of theory underpinning the SOFE are concepts originating in the literature on teacher change and teacher education.[11] There is abundant evidence that teacher education courses have little effect on both practicum teaching and future practice. Research shows that during practice teaching, teacher candidates largely become socialized to the status quo rather than engage in transformative learning (Clift & Brady, 2005; Cochran-Smith & Zeichner, 2005).

Much has been written about the affordances and constraints around teacher change (Flores, 2005; Britzman, 2003), and teacher education programs have been evaluated and examined (Darling-Hammond, 2006; Cochran-Smith & Zeichner, 2005; Wideen, 1999) to highlight sustainable strategies that beginner teachers can maintain in their early careers. Teacher change literature points to myriad difficulties and struggles around changing teacher practice, and yet, as Swidler (1986) points out, people change all the time—a fact illuminated by the teacher education philosophies and theories informing the design of the SOFE that are analyzed below.

[11] Here I must note that while elements in SOFE align with the thrust of contemporary teacher education research, I wasn't yet fully aware of the literature during the project's early stages (see Chapter 5).

Disrupting the apprenticeship of observation.

A teacher's schema about teaching and learning comes from their own experience as students in school in the form of Lortie's (1975) apprenticeship of observation, as well as their experience as teacher candidates (Britzman, 2003), and finally as teachers (Darling-Hammond, 2006), all set within particular societal structures that reproduce and sometimes produce culture, and therefore beliefs (Sewell, 1992; Bourdieu, 1977). The opportunity to work with teachers in training offered me the chance to reach them as they were embarking on their professional careers. My premise was that their ideas and beliefs (their schema) about teaching might not be as fully formed as experienced teachers who had already had many years in the classroom to consolidate practices and philosophies. By designing a field experience that included opportunities to set in motion experiential environmental learning initiatives challenging this fragmentation[12] of knowledge from experience, I wanted to disrupt the teacher candidates' schema about teaching and learning, and facilitate teacher change. An important element of this disruption was the development of a community of teacher candidates and cooperating teachers ready to support each other in change.

Reflective practice.

As described earlier, the apprenticeship of observation plays a powerful and durable role in shaping teaching practices, and requires deliberate efforts to disrupt its influence. Reflective practice has been suggested as an approach to promote such disruption. A term coined by Donald

[12] Education's power and ability to be a socially transformative experience can be seriously reduced by the fragmentation and compartmentalization of knowledge in schools and teacher education programs. As Britzman explains: "What becomes fragmented is not just our conceptions of knowledge but also our relationships – both possible and given – to it. We lose our ability to theorize about the consequences of social activity and our power to effect and understand its effects" (2003, p. 52). Environmental action initiatives work well to reduce fragmentation, to put learning to work, and to make change happen.

Schön (1991), it describes the process where practitioners engage in a continuous cycle of self-observation and evaluation to better understand their actions and reactions within their practice. Schön argued that the reflective process is crucial to a practitioner‘s ability to truly “see” unspoken or even unconscious understandings that reproduce certain ways of being and ways of practice:

> Through reflection, he can surface and criticize the tacit understandings that have grown up around the repetitive experiences of a specialized practice, and can make new sense of the situations of uncertainty or uniqueness that he may allow himself to experience. (1991, p. 61)

Kolb (1984), in turn, maintained that reflection is a necessary component of the experiential learning cycle and that reflecting on practice facilitates change and is what allows us to continue our learning. Similarly, Deborah Britzman’s Practice Makes Practice (2003) quotes Madeleine Grumet about how teachers come to know: “the teacher must learn to hear, formulate and articulate her own questions about her experience of teaching” (p. 66). The apprenticeship of observation will only ever be disrupted if a teacher can hold up a “reflective” mirror and retain or reject the image contained there. Such reflection can be a powerful catalyst for change when observations and descriptions of teaching situations are captured and analyzed.

For this reason, teacher candidates in SOFE were encouraged to capture their thoughts and reflections as they moved through their coursework and practica. Reflection, for example in journals, is not simply about elucidating patterns of the past; it can provide a scaffold on which to build future practice as the patterns of behaviour within actions and interactions come into new focus. This can provide insight into one’s way of operating in the world and enable the vital examination of ways to and combine and mobilize resources in different circumstances.

Journals for reflection were used and shared as part of the design of the SOFE in several ways. Within the syllabus (Appendix A), the three journal submission dates are highlighted. By collecting and reading the journals at several intervals during the SOFE, the teacher candidates were encouraged to invest more time and effort in their writing and use it to explore the connections (and disconnects) between their coursework within the Education program and their teaching experiences in the classroom. Prompts were given at the end of each seminar session and these were meant to produce disruption; often these prompts would emerge from the discussion during the seminar. For example, when a teacher candidate brought up an experience where administrators blocked outdoor teaching due to safety concerns, the prompt was: How can you mitigate, and have contingencies to address, existing and potential dangers in the outdoor classroom? Another prompt came out of an experience a teacher candidate had where the cooperating teacher assigned to her was not convinced that experiential learning should count as formal learning. In response, the prompt that the candidates and I collectively constructed was: What does learning look like?

Reflections were often shared within seminar classes and served as prompts for discussion, while also serving to build a sense of trust and community among the participants. As an instructor, I used the journals as another way to communicate with my students. By collecting them several times through the SOFE, I was able to get a glimpse at the inner workings of the teacher candidates' experiences and share my own thoughts and reflections in turn. This provided me with a much richer relationship with the teacher candidates I was supervising as it brought me into their everyday experience and revealed their inner thinking about their practicum, and thoughts on teaching and learning in general. Teacher candidates often mentioned

the “reflection journal” in the self-evaluation section of the professional portfolio as having been instrumental in their growth.

Use of professional portfolios.

The Office of Student Teaching within the Faculty of Education implemented the use of professional portfolios in the professional seminars. Professional portfolios are thought to increase teacher reflectivity (Grossman, in Cochran-Smith & Zeichner, 2005) by providing trainee teachers with an ongoing record of their aspirations and achievements that is activated by the discussion, sharing, and evaluation of their mentored teaching experiences (Seldin, 1997). The portfolio is a place where teacher candidates can showcase not only their strengths, but also their evolving growth as educators. In the SOFE, the development and updating of teacher candidates’ philosophy of teaching statements, self-evaluations, and action plans in the professional portfolio was designed to help make their professional pathways more explicit, particularly in relation to outdoor and experiential education.

Selection of cooperating teachers.

Finding cooperating teachers who are reflective practitioners themselves can facilitate the process of communicating the unsaid. In addition, teacher candidates often learn from modeling the cooperating teacher’s unspoken practice. The careful selection and training of cooperating teachers was thus an integral part of the SOFE design, and followed best practices for teacher preparation programs outlined by Dillon (2012, 2009) and Clift and Brady (2005). Too often, cooperating teachers’ practices are far removed from what is being taught within the teacher education program, contributing to the longstanding theory to practice chasm that leaves teacher

candidates adrift between the academic theories of education and the practical day-to-day business of teaching and learning in school (Beck & Kosnick, 2006).

Recognizing the importance of their role, a special approach was taken to the selection and preparation of cooperating teachers for the SOFE. In McGill's program, as is traditionally the case in teacher education programs, teacher candidates work with a practicum mentor who is an in-service teacher willing to open their classroom and share their class time and expertise with the student of teaching. Little to no training is offered to these cooperating teachers, who simply put their name forward and are then assigned student teachers, sometimes multiple times, throughout the year. However, the cooperating teacher's practices may be far-removed from what is being taught to the trainee within the education program, contributing to a theory-to-practice gulf that can leave teacher candidates adrift between academic theories and the practical day-to-day business of teaching and learning in school (Beck & Kosnick, 2006).

Not wanting to directly involve school administrators in the selection of cooperating teachers in case the approached teachers felt obliged to participate (which, in my experience, often leads to an unconstructive learning environment), I instead asked the President of the Montreal Teacher's Association to recommend teachers likely to be open to SOFE initiative. The group recommended to me was made up entirely of teachers who were already active in their schools working on special projects and community initiatives, or were involved with the teachers union. These were individuals who had been actively tweaking their own teaching and exploring ways to involve the community in everyday teaching practice. Most had already mentored many pre-service teachers in their classrooms, and all of them were ready to challenge themselves with providing environments in which the teacher candidates could take risks and explore innovative approaches and practices within their in-school training.

I provided a professional development workshop and information session on Nature deficit disorder and place-based education through schoolyard greening for all those who were interested in participating as cooperating teachers. Once our selection was finalized, clusters of cooperating teachers and teacher candidates were grouped in four schools. Monthly meetings were then held with each school team to look at how the practicum was going, how the environmental initiatives and greening projects were progressing, and how I could contribute as their greening and environmental education resource specialist.

A gathering of the entire SOFE cohort of teacher candidates and cooperating teachers was held at the late-January halfway mark of the field experience. The session was held at the University to better bridge the gap that often exists between the schools where teacher candidates practice and the institution where they learn. The session also provided the opportunity to get the group together to discuss how things were going and build community by socializing and sharing a meal. Building a sense of community takes time and effort: according to the participants, the session was the first time a cooperating teacher had ever accompanied a teacher candidate on campus. The Foundation of Greater Montreal recognized the importance of these kinds of gatherings and in the second year of SOFE provided funding for the Whole Group Session.

Instructor as field supervisor.

A disconnect often exists between schools and teacher education programs, where teacher educators may have little classroom experience and espouse ideas they themselves have not tried in practice (Goodenough, 2009; Clift & Brady, 2005). Modeled practice within teacher preparation programs sometimes follows a "fill up their heads" approach as if the teacher candidates were blank slates that could be shaped by a teacher education experience that may often contradict the methods these same programs espouse as effective in the classroom

(Grossman, 2005; Wideen & Lemma, 1999). As experienced by third-year education students within the Dillon Model (Dillon & O'Connor, 2009) at McGill, however, the theory to practice bridge can be well constructed when a faculty member crosses the threshold into the schools to experience first hand the reality of today's classrooms. When successfully accomplished, this crossover can also better support the mentorship duties of the cooperating teachers. Additionally, practice teaching can be a sink or swim experience with little support from cooperating teachers and evaluations by field supervisors who have little contact with the trainee's teacher education program (Wideen & Lemma, 1999). By taking on the role of field supervisor and integrating cooperating teacher training and on-going communication between the cooperating teachers and teacher candidates, my aim was to provide continued support and informed evaluation of the teacher candidates' fieldwork over the project's duration.

Constraints

In order to provide a more complete and accurate picture of SOFE project design and its alignment with theory and goals, it is important to describe any constraints experienced during design and implementation. As is often the case with alternative courses or approaches that provide a "wedge of innovative practice" (Wideen & Lemma, 1999, p. 133) in an otherwise traditional teacher education program, there existed a clear tension between myself as course designer and the administrative framework I had to work within. As such, my work was overtly constrained in many instances by the "structural fragmentation and competing agendas that typify general teacher education programs" (Wideen & Lemma, p. 134).

One of the first constraints I encountered in the design of the SOFE was the inflexibility of a second year course schedule that ultimately left students with only one free morning or afternoon per week. As a result, this was the only time available to consult with cooperating

teachers, many of whom had scheduling conflicts. The professional seminar was another rigid construct. Normally, a second year professional seminar would run over the three weeks of the practicum for a total of 13.5 hours; although the SOFE spanned the entire fall and winter semesters, this was the amount of time that was allotted. I had also suggested creating an "Introduction to Environmental Education" three-credit course to provide extra credit for the SOFE teacher candidate's intensive field experience (the workload was heavier than that required for regular education students), and enable the time and focus needed for the study of experiential, outdoor, and environmental education. However, I was informed that offering a new course would necessitate the students dropping another course and this was not possible. It became clear that the University was not prepared to change the existing curriculum to include a full credit environmental education course, an eventuality in line with research showing that schools of education rarely regard environmental education as a discipline in its own right (Greenwood, 2010; Orr, 1994).

I did find a makeshift way to fit the square peg of an "alternative" course and field experience into the round hole of a traditional teacher education program. A preliminary schedule was drawn up that allowed for a professional seminar session every week at the beginning of the fall term, and then every couple of weeks throughout December and January with a tapering off in February and March so I was able to spend time with the teacher candidates in their host classrooms while wearing a different hat, that of field supervisor for the McGill Office of Student Teaching.

The aim of the SOFE was to not only construct an alternative field experience but also to study the participants' experience as they lived through it and reflected on it. In the next chapter we will see how action research and critical ethnography provided methodological tools with

which to examine and make sense of the data.

Chapter 4 Methodology

SOFE as a Site for Action Research

The SOFE's design and implementation were intended to provide an effective site for action research; in fact, the chance to apply it within the field experience was one of the things that had brought me into the doctoral program to begin with. Action research (commonly known as AR) was first designed as a collective problem solving cycle for improving organizations (Lewin, 1951) and is a common methodology employed when professionals working in a field seek ways to improve their practice. It is usually instigated by the perception of an overarching problem about the effectiveness of practice. Action researchers are interested in investigating practice to help alter conditions, policies or ways of operating experienced by clients or the community as unsatisfactory or lacking (Creswell, 2002).

I wasn't examining my practice per se as is the more common usage of AR in the reflective practitioner sense (Schön, 1983); rather, I was trying to bring about change while conducting research. I wanted to address what I determined to be problematic paradigms in education and teacher preparation by developing an action, in this case the SOFE, that aimed to make specific changes in teacher practice. My study stemmed from my observations of the poor uptake of well researched, value-tested outdoor experiential environmental education (OEEE) practices in

everyday teaching by teachers. In designing SOFE, I wanted to investigate how teacher education could be changed to better foster and support OEEE capacities in trainee teachers, and to see if positive action projects like schoolyard greening could provide an effective framework for OEEE uptake by school staff and students alike. As such, my study, and its field experience and initiatives, offered a good site for action research and the possibilities to use its iterative, feedback approach to improve teaching for change through environmental and community-based education.

In a sense my AR study began long before the SOFE was designed. The preliminary steps of action research methodology are gathering information, analyzing texts, and observing practice (Ferrance, 2000; Lewin, 1951), which is what I had been doing in an informal sense for several years prior to this project in my work with non-profit organizations on environmental education. Much of the work within these organizations was funded by both private and government foundations and grant programs, and these funding relationships required constant, complete due diligence and reporting to show that the desired outcomes of the funded action or program had been delivered (or to explain clearly why they had not and what else was required). Similarly, the Faculty of Education at McGill had been evaluating their teacher education program and had come up with an action plan—as is the norm within AR (Craig, 2009) —that included seeking innovative ways to incorporate community-based learning within the practicum.

Data as feedback: Using the recursive nature of action research as a calibration tool.

Action research uses an iterative, recursive approach to changing or improving practice (Creswell, 2002; Carhoun, 1993). Data collection and analysis are used to inform the next steps within the action plan. The data traditionally involved in AR provide good tools with which to

analyze practice and inform future actions (Creswell, 2002; Lewin 1951). These include: the researcher's journal and field notes; reports, texts, proposals; interviews; and video-recordings. I included all of these in my data collection as well as the following data sources chosen to provide rich information about the participants' experiences, thinking, and actions within their practice: participant reflection journals, course work and assignments, practice-teaching assessments, and teacher candidate portfolios including their philosophy of teaching statements, action plans, and professional competency self-assessments.

Overall, the SOFE's progression followed what is known as the action research *spiral* or *recursive approach*, where new or modified ways of practice are evaluated and analyzed before other changes are integrated with those findings in the form of an action plan, and the project moves forward as practice moves forward, and the cycle carries on (Creswell, 2002). In keeping with this recursive approach to research and to organizational change (Creswell, 2002; Lewin, 1951), I used data sources that help explain or describe the recursive process involved when actions and adjustments were taken as the SOFE played out. These include the updates and reports I produced for Evergreen and for McGill, as well as funder reports to the Foundation of Greater Montreal, and the preparation of conference papers. Within these latter data sources are descriptions of the SOFE that highlight aspects that worked efficiently, as well as those that posed challenges within the project, along with strategies and ideas toward addressing these challenges. In this way, the ongoing SOFE was calibrated to reflect the feedback from teacher candidates, cooperating teachers, faculty members and myself that came out of the ongoing analysis—a procedure in accord with the action research spiral approach.

Although protocols from action research thus inform this study, AR does not provide all the elements to be a completely suitable methodological approach, particularly with respect to

data collection and analysis. For this, I have employed elements from ethnography. The marginalized nature of experiential environmental education within the larger structures of both education and teacher preparation, and the fact that the theoretical framework is built on structural and agentic processes, render critical ethnographic approaches and methods beneficial in making meaning of the experience.

How critical ethnography provides a methodological framework.

As iterated, in this investigation I am looking at if and how the McGill-Evergreen special opportunity field experience (SOFE) encouraged teachers in training to change their ways of operating—that is, to acquire new schema and resources, to use existing schema and resources in innovative ways, and to use schema and resources from other parts of their lives—to successfully enact outdoor experiential environmental education (OEEE) approaches.

The SOFE was based on the idea that, with repeated enactment and reflection, these educators would find ways of putting their resources together in new combinations that would eventually result in the development of different ways of operating within their roles as school teachers, ways that would better support place-based, experiential environmental education in the classroom and in the community. As Milne, Scantlebury and Otieno (2006) maintain, "one of the main goals in teacher preparation/education is to enlarge teachers' options for action" (p. 328). But no matter how innovative and imaginative a teacher education program might be, the larger question remains: can the creative use of resources and reflection in such practice "construct a sense of teacher agency powerful enough to provide teachers with more options for action" (Zembylas, 2006, p. 353). More specifically for this study, how can it show that agency has indeed developed?

In the influential Practice Makes Practice, Deborah Britzman queries what kind of methodology works best in teacher research:

> Indeed, it is for researchers to narrate and interpret the words of others and render explicit their own process of understanding. This type of knowledge production requires the researcher to be sensitive to representing the voices of those experiencing educational life as sources of knowledge, and to be committed to preserving their dignity and struggle. (2003, p. 66)

Britzman also describes how teachers come to this kind of knowledge production: "For teachers to be authors of their experience, the teacher [must] learn to hear, formulate, and articulate her own questions about her experience of teaching" (p. 66). In this way, the McGill-Evergreen SOFE provided key elements and a framework in which teacher candidates could begin hearing, formulating and articulating questions about their experience of teaching. As such, the study of participants' lived experience within the SOFE "examines how we come to construct and organize what has already been experienced" (Britzman, p. 32). Specifically focusing on how structure and agency are involved in teacher preparation, my research concerns are thus well served by the application of critical ethnography, an approach that links ethnographic inquiry (viewing cultural constructions from the perspective of a study's subjects) to the broad social structures and systems of power relations that mediate the thought and behaviour of research subjects within cultural and social frameworks (Madison, 2010; Anderson, 1989).

Sometimes described as critical and social theory in practice, critical ethnography's extraction of ideology from action and unseen bias from implicit value inevitably moves it to the larger analysis of the dominant social constructions that may repressively reproduce conditions best suiting a dominant culture (Madison, 2010; Carspecken, 1996). Importantly, for the

concerns of this study, critical ethnographic research is often dedicated to exploring ways of disrupting power relations and social structures that tend to reproduce or reinforce the status quo. In educational research, the application of critical ethnography has revolved around the work of Freire (1971), Bourdieu (1977), and Giddens (1979), as it continues to search for "representations of social reality capable of providing social explanations sensitive to the complex relationship between human agency and social structure" (Anderson, 1989, p. 251). Although connections between the thrust of critical ethnography and OEEE practices to foster agency in trainee teachers may not always seem apparent, there are indeed commonalities in intent and approach that can be exploited to utilize ethnographic theory and methodology (particularly in data collection and analysis). These links as they apply are laid out below.

Environmental education in schools often serves as an entry point to activism (Dyment, 2005; Chawla, 1999) and opens the door to agentic processes in youth and teachers alike. However, OEEE has little currency in the regular school system and has been marginalized to the very outer edges of school practice if practiced at all (Gruenewald and Smith, 2008). This hampers the possibility of OEEE practices becoming more normalized within everyday teaching. Viewing research on the effects of OEEE practices generally and schoolyard greening in particular using Evergreen's participatory process, Dyment (2005) found that the experience increased participants' sense of community and voice, and often provided an effective first step to an ensuing practice of civic engagement and democratic participation. In order to better prepare our youth to become engaged decision-makers towards a more sustainable future, it becomes important to understand how to prepare teachers to offer these opportunities and teach using OEEE principles and approaches.

Within this critical ethnography and action research study, I am not only interested in interpreting results of data analysis, I also want to help prepare a path forward towards changing practice for a more sustainable future. There is considerable evidence indicating that "the community of the school" helps to reproduce a dominant worldview that values ecologically-unsound economic considerations above the sustainable stewardship of Earth's badly-impacted resources, systems and cycles, and does so at the expense of the planet's most vulnerable communities, human and non-human alike (Lotz-Sisitka, in Kagawa & Selby, 2009; McKibben, 2007, 1989). In all of its manifestations, this constraint continues to hamper environmental education's inclusion into formal schooling and has marginalized a science-based approach to education and the natural world, ensuring instead an economic view of Nature that in its adherence to "profits" has no conception of our planet's mounting losses. The traditional educational model and its strategies are now hindering essential changes to societal practices and behaviour around resources and consumption, and are not preparing our children for the speed at which at the world is heading towards further environmental disruption and potential disaster (Kagawa & Selby, 2009). As Marcia MacKenzie argues:

> What educational forms promote care for places? What does it take to conserve, restore, and create ways of being that serve people and places? [and] What does it take to transform those ways of being that harm people and places? (2008, p. 369)

In 1977, Lortie wrote that the so-called revolution in education then underway was actually being enacted only in people's expectations of schools and not in actual practice because "the gap between the possible and the actual has become an issue" (p. 218). Almost forty years later, moving from the possible to the actual is at the very crux of this research, and is why critical ethnography offers this study potential insight in the way it incorporates reflexive inquiry

into methodology and asks what *can be done*, rather than describing *what is* (Madison, 2010). Its incorporation and methods of participatory observation and analysis will aid both researcher and subjects to recognize and articulate their own perspectives as a means of acknowledging biases that bear on their practice. Accordingly, the SOFE participants may gain knowledge about their practice that provides some help in cataloguing self-determination (their ability to access the schema and resources necessary to enact transformation) as teachers for change. Sewell's description of Anthony Giddens' work on the relationship between structure and agency speaks to this shift from the possible to the actual:

> This conception of human agents as "knowledgeable" and "enabled" implies that those agents are capable of putting their structurally formed capacities to work in creative or innovative ways. And, if enough people or even a few people who are powerful enough act in innovative ways, their action may have the consequence of transforming the very structures that gave them the capacity to act. (1992, p. 4)

In critical ethnography, the traditional separation between theory and method and interpretation and data are blurred, and the dialectical relationships between them acknowledged and taken into account as mutual, essential contributions to knowledge. The alignment of research tools and methods, the study's long time frame, and the repeated, frequent encounters I had with participants within the sites of the study all work to boost authenticity (Given, 2008).

Chapter 5 Research Design

Participants

This action research study was conducted at McGill University within the McGill-Evergreen special opportunity field experience (SOFE) for second year undergraduates, offered over two consecutive school years, 2009-2010 and 2010-2011, within McGill's Faculty of Education. Seventeen teacher candidates the first year and 14 candidates the second year were placed in two high schools and three elementary schools around Montreal where they completed their 105-hour second-year practicum over eight months, one half-day per week. Teacher candidates were expected to plan, design, and implement environmental and greening initiatives with their host classes. There were 15 cooperating teachers in the first year and 14 in the second. Fifteen students (out of 17) agreed to participate in the research study the first year, and 12 (out of 14) the second year, for a total of 27 participants. Six cooperating teachers out of 14 also signed up to participate in the study (4 in the first year and two more in the second year). Within this action research study, the participants included myself (the teacher and researcher), all consenting students from the 2009-2010 and 2010-2011 SOFE cohorts, and all consenting cooperating teachers from the 2009-2010 and 2010-2011 cohorts. (Please refer to Appendix B to see the Ethics Approval document that includes the consent forms and the interview questions and protocol).

Data collection took place throughout the two academic years, and follow-up was continued with participants through Fall, 2013. The following table summarizes the various data sources and collection process for both years of the project. Additional information on data sources is provided below.

Table 1

Data Sources

	Data sources	Collection process	Year 1	Year 2
1	Teacher candidate introductory letters	Collected via e-mail prior to the beginning of the SOFE	X	X
2	Philosophy of teaching statements (before and after the SOFE)	Submitted electronically as part of the professional portfolio within the professional seminar	X	X
3	Teacher candidates' professional reflection journals	Collected at several intervals throughout the SOFE (for feedback) and photocopied at the end	X	X
4	Professional portfolios including the self evaluation of the MELS professional competencies and action plans	Submitted electronically at the end of the SOFE	X	X
5	Integrated Learning and Evaluation Situation (ILES) in outdoor and environmental, experiential education	Submitted electronically at the end of the SOFE	X	X
6	Field Supervisor and CT formative and summative assessments	Collected in October, January and April	X	X
7	Interviews with Teacher Candidates	Held within 2 months of the end of the practicum	X	X
8	Group interviews with teacher candidates	Held twice with small groups of candidates (from both cohorts)	1	1
9	Interviews with Cooperating Teachers	Held at the end of practicum	3	6
10	Informal follow-up interviews with Teacher Candidates	Held between 2010-2013	2	3
11	Researcher field notes	Written throughout	X	X
12	Photos of the Teacher Candidates	Taken throughout	X	X

As part of the registration process, all participants were asked to provide introductory letters (#1) before the McGill-Evergreen SOFE started. In these letters, the teacher candidates were asked to describe what they were looking for in the McGill-Evergreen SOFE, what they hoped to achieve, and were asked for some background information regarding life and work experiences they thought would add to their own and other candidates' experience of the course. The reflection journals (#3) of those who consented to be part of the research project were copied for analysis and helped to guide questions used in subsequent interviews of the participating SOFE teacher candidates. The field notes (#11) I took during assessment and review with individual teacher candidates were another important source of data. Over the course of the eight-month long SOFE, I had multiple contacts with teacher candidates, and writing field notes was an integral part of data collection and making meaning of experiences and interactions I witnessed and participated in with candidates. It was also important for me to keep up good field notes due to the fact that I wore multiple hats within the project as lead researcher, course instructor, and field supervisor. These observations and notes provide additional context and detail with the aim of boosting the authenticity of the research.

One-on-one interviews with several of the participating teacher candidates (#7) and their cooperating teachers (#9) were conducted in the spring of 2010 and 2011, and follow-up informal interviews (#10) have since been held with several participants as they continue in the McGill Education program. All interviews were audio-recorded and subsequently transcribed: interview lengths were between 60 to 120 minutes in duration. Videotaped discussions (#8) were held on two different occasions with the SOFE cohorts, with four participants the first year, and three the second. Lastly, photo data (#12) taken during teacher candidates' learning and

evaluation situations with host classes and in the peer-teaching "outdoor classroom" lab and seminar provide an additional visual text and elicitation tool.

Data Analysis

Data sources were analyzed to find evidence that the teacher candidates (TCs) engaged in activist and agentic teaching during their SOFE field placements. The following research questions drove the analysis:

1. If and to what extent did teacher candidates enact agentic ways of teaching as evidenced by the mobilization of resources and schema within their SOFE practicum?

2. If and to what extent did teacher candidates enact activist ways of teaching as evidenced by the ways and the degree to which they enacted and integrated into the curriculum in assessable ways experiential, environmental, place-based teaching practices and positive action initiatives?

3. What kinds of experiences and situations in SOFE afforded or constrained the development of these ways of teaching?

In the following section the terms agentic teaching and activist teaching will be defined and categories of agency will be elaborated. Table 3 provides a preliminary draft of how the theoretical framework was used to answer the research questions.

Table 3
Ways in which the theoretical framework was used to answer the research questions

Research Question	Theoretical constructs	Data sources and # from Table 1
1. If and to what extent did TC enact agentic teaching as evidenced by the mobilization of resources	Sewell's schema and resources; Bourdieu's habitus and field	Introductory letters (#1) Philosophy of teaching statements (#2)

and schema in response to the practice teaching situations?		Reflection journal (#3) Action plans (#4) Interviews (#7 & #8)
2. If and to what extent did TCs enact activist teaching as evidenced by the way and degree to which they enacted and integrated into the curriculum in assessable ways OEEE and place-based positive action initiatives?	Kolb's experiential education cycle Sobel's place-based education Dyment's participatory action projects	ILES (#5) Instructor, supervisor & CT assessments (#6) Field notes (#11) Photos (#12)
3. What kinds of experiences and situations afforded or constrained the development of these ways of teaching?	Bourdieu's habitus and field, Sewell's Schema and resources Lortie's apprenticeship of observation	Reflection journals (#3) Action Plans (#4) Interviews (#7 & #8) Field notes of seminar discussions (#11)

Research Question #1

If and to what extent did teacher candidates (TCs) enact agentic teaching as evidenced by the mobilization of resources and schema in response to the practice teaching situations?

Agentic teaching.

Bourdieu (1977) explained agency as occurring where this is a *misfit* between field and habitus. This is where a social agent is confronted with a situation within a field that does not mesh with or resonate with the individual's existing habitus, which then puts into operation the strategies and tools at an individual's disposal, including their array of schema and resources with which to respond to the *misfit*. In teaching, agency is more often used to refer to the capacity of individuals to act independently and make their own free choices. According to Ashwin (2012),

if a teacher can make choices, take new directions, and open up learning opportunities that are not bound by a strict schema of formal schooling and the restrictive or limiting resources connected to that schema, they are then showing agency in teaching. Agentic teaching is anything that involves the mobilizing and recombining of schema and resources to respond to social situations or challenges in teaching. Sometimes agentic teaching can involve tension, and it is the overcoming or ability to effect change on a situation, an event, or a way of doing something that is both motivated by the tension and produced to relieve the tension.

Evidence of agentic teaching.

Within the data analysis, I used Bourdieu's (1977) ideas of habitus and field, and Sewell's (1992) idea of the duality of schema and resources, while also looking for evidence of the combination and recombination of said schema and resources. I looked for instances or examples where the teacher candidates were able to either acquire new ways or tools to approach their teaching, or to use existing tools in new ways and different fields than originally acquired. It was by these means that instances of agency were elucidated or revealed. I then looked for clues as to which elements, if any, of the McGill-Evergreen SOFE served as a catalyst or conducive environment in which to exercise these agentic processes.

The emerging theoretical ideas I have already identified are those of the duality of schema and resources and how these relate to agency. In order to answer my research questions, I needed to be able to show evidence of this mobilization of schema and resources. As part of my data analysis, I then define the categories of agency and connect these to the theoretical constructs used, and show where in the data I located instances or evidence. The following categories of agency (Table 4) were developed using Sewell's theory of schema and resources: with these I was able to look at the data sources to find evidence of agentic teaching to answer research

question #1. Examples of evidence are also provided (other examples of these categories of agency also emerged from the data).

Table 4
Categories and examples of agency

Using schema and resources from other fields

1) Using schema and resources from other fields (*e.g.*, using personal skills from past jobs or from other areas of their lives, such as from sports or camp experiences).

2) Using human resources from other fields (*e.g.*, bringing in people from other parts of their lives to further, enhance or move their teaching forward, such as inviting a friend in design to run a design charette with the students).

3) Using material resources from other fields (*e.g.*, using tools and materials such as books or supplies from the science lab in doing outdoor and environmental activist teaching).

Using schema and resources from the current field but in new ways

4) Using schema and resources from the school field in innovative ways (*e.g.*, using rubrics and portfolios to assess student learning in outdoor and environmental activist learning situations).

5) Using human resources from the school field in innovative ways (*e.g.*, recruiting the custodian to become the de facto project manager on a greening construction site; using the cooperating teacher as a partner and worker within a greening initiative).

Acquiring and using new schema and resources

6) Using new schema and resources from the university field in the host school (*e.g.*, using the journaling strategy shared during a math methods class within the SOFE practice teaching).

7) Using new schema and resources from the Evergreen SOFE in the host school (*e.g.*, using the consensus building methods from the seminar in the host classroom while creating a schoolyard plan).

For the purposes of this study, instances of agency were sought that clearly show an active "digging and rooting around" within the teacher candidates' repertoires of social and cultural tools. Evidence of tension and struggle was also sought from the reflection journals, interviews

and conversations with participants to determine if these tended to be present and obvious as agency was operationalized or demonstrated.

Research Question #2

If and to what extent did teacher candidates enact activist teaching as evidenced by the way and degree to which they enacted and integrated into the curriculum in assessable ways OEEE and place-based positive action initiatives?

Activist teaching.

Activist teaching differs from agentic teaching in a number of ways; while it can be argued that most activist teaching is also agentic teaching, agentic teaching is not necessarily activist teaching. For the purposes of this study, activist teaching involves the desire to initiate change, to facilitate change, and to provide students in school with opportunities to participate in change and to take action. There are many connections between activist teaching and the more general "teachers for change" movement (Ayers, 2013) that is committed to limiting the social reproductive functions of school toward equalizing relations and levelling the playing field for students from all backgrounds. My own specific interests regarding activist teaching centre on whether teachers take action on environmental and sustainability issues with their students. I argue, as Dyment (2005), Raffan (2000), and Chawla (1999) have shown, that place-based experiential environmental education can help achieve the full expression of being human (Ayers, 2013) and aid SOFE teacher candidates and their students to become engaged social participants. Therefore, although activist teaching can involve many things, I looked specifically at environmental and community activism as illustrated in Kolb's (1984) experiential education cycle, which was used as a model of experiential education in the specific context of positive action environmental initiatives.

Evidence of activist teaching.

I was interested in looking for instances where the teacher candidates were able to put into operation open-ended, student-centered teaching and learning situations that integrated the experiential (Kolb, 1984), place-based (Sobel, 2004) and environmental action educational practices introduced to them during the professional seminar (Table 3, Column 2). Evidence of the teacher candidate's use and integration of Kolb's experiential education cycle and Dyment's (2005) participatory action projects was sought within their ILES project and the descriptions of environmental initiatives they developed and implemented with their students at host schools. In addition to this, evidence was also sought of the integration of place-based (Sobel, 2004) approaches where classrooms open up to the surrounding community and anchor learning to students' everyday lives at school and home.

Data helping to demonstrate this (Table 1, Column 3) included the teacher candidates' final project within the professional seminar, which was to produce an integrated learning and evaluation situation (ILES) in environmental education. Close reading of the teacher candidates' ILES helped to highlight elements from place-based, experiential and environmental education (defined and elaborated in Chapter 3). I looked specifically for instances where the learning situations and curriculum covered provided the possibility of expression of action and participation in community and/or school decision-making on the part of the students in the host classrooms. These included things like holding classroom discussions on environmental issues and what students felt they could do in their everyday lives to contribute to change, whether reducing a carbon footprint by turning out lights when leaving a room or potentially lobbying the school administration and board to purchase greener cleaning products and handle hazardous waste properly. Community activism included things like reaching out to a local Montreal *eco-quartier* (neighbourhood environmental group) to help with school greening and composting

projects. Community activist teaching also included things like walks to the park, neighbourhood mapping exercises and natural resource inventorying (identification of plants and animals, etc.) with the aim of preserving and protecting the natural heritage of the community. Evidence was sought of assessment strategies demonstrating that the teacher candidate was able to make activist approaches count in a formal pedagogic sense. Supporting evidence for this came in the form of rubrics, assessments, anecdotal assessment strategies, etc. For many of the candidates, this took the form of an actualized ILES they had put into practice with their host class or classes. I looked for instances where teacher candidates were able to operationalize these ways of teaching (or not), and examined how they made sense of their experience in their reflection journals, in discussions, and in the conducted interviews.

By analyzing the ILES and the accompanying reflection journals as well as my own field notes, I strove to increase the authenticity (Given, 2008) of the analysis by including multiple perspectives and sources. This triangulation added texture and nuance to the descriptions and interpretative analysis of the SOFE experience (Lincoln & Guba, 1985).

Research Question #3: Affordances and Constraints

What kinds of experiences and situations afforded or constrained the development of these ways of teaching?

Research question #3 looks at the affordances and constraints teacher candidates faced as they lived their SOFE experience and attempted to enact outdoor, experiential, environmental and place-based teaching situations through positive action environmental initiatives including greening. As I searched the data for evidence of the kinds of teaching described above, I also looked for instances, events, assignments, etc., that seemed to inhibit or advance the candidates in their work to enact these kinds of teaching. For instance, the inclusion of the Integrated Learning and Evaluation Situation (ILES) final project seemed to provide an affordance for the

candidates, and encouraged them to find ways to integrate the participatory action projects into the curriculum. Conversely, the arbitrary selection of the particular half-day teacher candidates were placed in their host school often resulted in scheduling conflicts with the school that further fragmented and restricted the amount of time candidates had with their host classroom students. This in turn constrained teacher candidates' ability to fully develop action initiatives due to the lack of time with students in which to discuss, plan and implement their initiatives using the participatory planning strategies shared in SOFE.

Often the affordances and constraints were less tangible in nature, and involved the interplay of the schema and resources (the habitus) of the teacher candidates and their cooperating teachers. Evidence for this was found in the reflection journals, in the student teaching assessments, and in interviews with both teacher candidates and cooperating teachers, as well as in observations preserved by my field notes. Some of the cooperating teachers involved were able to guide and mentor their SOFE teacher candidate as the latter grappled with dominant and competing schema about what teaching could involve, affording them the chance to develop and refine schema more in line with SOFE approaches. Other cooperating teachers actually constrained the teacher candidate's practice due to clashing teaching styles or a narrow schema of teaching that excluded all OEEE approaches.

Chapter 6 Results

Three Cases

In this investigation I wanted to examine the effectiveness of the SOFE at getting teacher candidates to gain confidence teaching in more open-ended, place-based, experiential and activist ways. Evidence of this effectiveness was sought in ways described in three research questions: If and to what extent did teacher candidates enact agentic ways of teaching as evidenced by the mobilization of resources and schema within their SOFE practicum? If and to what extent did teacher candidates enact activist ways of teaching as evidenced by the ways and the degree to which they enacted and integrated into the curriculum in assessable ways experiential, environmental, place-based teaching practices and positive action initiatives? And finally, what kinds of experiences and situations in SOFE afforded or constrained the development of these ways of teaching?

Thus, evidence of effectiveness was sought in two main ways: by the agency demonstrated by the teacher candidates through the combinations and recombination of schema and resources from various fields, and through the enactment of OEEE. The latter was evidenced by the teacher candidate's use of the Kolb experiential learning cycle, Sobel's place-based approaches using the community as texts for curriculum development, and by the integration of the environmental initiatives into the ILES with clear connections to the education program and evaluation and assessment strategies and tools.

Complicated categories.

I opted to focus on three individual teacher candidate cases in particular to answer the research questions. When I analyzed the data looking for instances of agentic and activist teaching and affordances and constraints to them, three general categories emerged that were

notable for the presence or absence of tension due to competing internal or external schema. These cases provided well-defined examples of the three general categories that emerged from the total analysis. Tension often either motivates or truncates action. Bourdieu (1977) regarded tension as an important but not always necessary part of setting agentic processes into motion. When habitus and field align, an actor's automatic responses are in tune, so to speak, predicating a normative state where all aspects of "the natural and social world appear to be self evident" as a society's taken-for-granted, non-questioned truths, an eventuality referred to by Bourdieu as *doxa* (p. 164). It is where there is no doxa (because of a *misfit* between habitus and field) that tension arises, which can sometimes catalyze the actor into developing new repertoires of manoeuvre (Biesta & Tedder, 2007) but can often also impede the ability to act at all. Within the data analysis the presence of tension offered clues about what kinds of schema were interacting and revealed either misfits or doxa that could then be further unpacked to better understand the social experience and the hard to see structures and processes at play.

Of the SOFE's 27 participants, most, but not all of the teacher candidates experienced internal tension between existing schema about teaching and learning and the new schema they were exposed to. Tension is something that often truncates agency but can under the right conditions (in this case with supports provided by SOFE that helped actors to access and recombine schema and resources to move forward) provide a catalyst for change and agency. Some teacher candidates resolved the tension themselves with supports from SOFE. In other cases, cooperating teachers helped them resolve this tension. In some cases with no internal tension, the cooperating teachers created an external tension—that is, a tension between the cooperating teacher's schema about what teaching and learning could involve, and what the teacher candidate was trying to enact. In some rare cases (three out of 27), there was no evidence of tension, and actors were able to enact OEEE in a state where habitus and field align. To

summarize, three types of cases emerged through the data analysis: cases with internal tension but no external tension; cases with no internal tension but with external tension; and, finally, cases with neither internal nor external tension. The following analysis showcases examples of each of these categories. Within each category I sought a case that contained multiple elements common to the majority of cases within that same category. These particular three cases were selected to represent their category because they offered the fullest expression of the said category (as identified by presence or absence of tension due to dominant or conflicting internal or external schema). The three cases show how the difference in the presence, absence and location of the tension (*i.e.,* internal or external) effected the particular actor's ability to effect change as evidenced by their ability to recombine schema and resources in order to enact OEEE. Common constraints and affordances will be presented and examined at the end of the chapter.

A Case Study – Isabelle

Internal tension / No external tension.

The first case study concerns a teacher candidate I'll call "Isabelle," a pseudonym. Isabelle struggled a lot with what teaching could look like and involve. Data from early on in the course showed that her schema of a teacher was a "standing-in-front-of-the-class" model of direct teaching, and her tension and disequilibrium were quite evident as she grappled with her existing schema concerning school teaching and the teaching she aspired to enact as part of the SOFE. To better understand this, one can draw on Bourdieu's (1977) theory of agency occurring when there is a *misfit* between habitus and field to explore how the tension that often accompanies this *misfit* can provide the motivation or catalyst to set in motion the agentic processes necessary to re-align, change, or push back the habitus and field.

In both Isabelle's group interview and her reflection journal, there was evidence that other fields of her life included valued schema she wanted to operationalize in her teaching but struggled to do so. She was eventually able to find a way to mobilize schema and resource sets from other fields and use them in her teaching. These fields included a sojourn in an international student exchange program, Canada World Youth, after high school, as well as experiences at university that related to the nature and purpose of education. In the end, Isabelle developed and enacted an ILES with her Grade 6 students that integrated many of the OEEE and activist approaches. She considered her progression in her reflection journal and interview, both of which offer evidence of the active reflection involved in the schematic shift that took place as she tried to teach in more experiential open-ended and student-centered ways. We will see, however, that the extent to which she was able to teach in these ways remained limited.

At this point, the categories of agency developed using Sewell's theory of the duality of schema and resources will be employed to investigate the extent to which teacher candidates were able to enact agentic ways of teaching, as evidenced by the mobilization of resources and schema within their SOFE practicum. Teacher candidates' ability to enact activist ways of teaching will be evaluated by the ways and degree to which they enacted and integrated into the curriculum in assessable ways experiential and environmental place-based teaching practices and positive action initiatives.

Agentic Teaching

Isabelle came into the McGill-Evergreen SOFE wanting to work on her ability to teach in creative ways. In her introductory letter she stated,

> I want to be creative with my students! I find I lack a sense of creativity when I have to do activities with kids or students. I want to be able to offer great and exciting activities to

the students I will have during my field experience. (Isabelle reflection journal, October 4, 2010)

While she did not use the term agency in her letter, she indicated that she wanted to "increase her array of options," a phrase used by Milne, Scantlebury and Otieno (2006, p. 349) to describe agency.

In her first journal entry, Isabelle explored three past experiences that brought her to the decision to take part in the SOFE. She described her time in Canada World Youth, writing about how group building and leadership skill development had been instrumental in the success of the experiences she had in rural Quebec and the nation of Benin in West Africa. She also wrote about her experience as the facilitator of the seventh and eighth grade leadership/nature retreat in her graduating year of high school[13] and described her experience planting trees in wilderness areas during a summer job in Canada's forestry industry, depicting how tree planters thrown together in the wilds depended upon each other as a cohesive group. On many occasions, she wrote at length about how much she loved being in nature and discovering new cultures and places. However, it soon became apparent that these experiences did not provide Isabelle with easy access to an array of tools (schema and resources) because of constraints from other more dominant schema she possessed about school that likely stemmed from her *apprenticeship of observation* (Lortie, 1977) during years of French-language schooling in Quebec.

During the first professional seminar classes, Isabelle was outgoing and gregarious. She embraced the approaches to group building and again described how developing leadership and

[13] High school in Quebec goes from Grade 7 to Grade 11 (graduation), unlike the rest of Canada and the United States (Grades 9 through 12).

communication skills had been important to the success of her experiences in international development and tree planting. As she explained in her journal:

> I believe leadership holds a very important place in the elementary and secondary classroom. Teaching kids leadership skills can benefit them later on in life. Not only will the child be able to confront group work and so on but he/she will also help others mingle with people more easily, influence others, and take part in different opportunities or groups. Group building exercises are also important in the classrooms since it can bring students closer together. (Isabelle reflection journal, September 20, 2010)

When it came time to share some of her learning with peers in the Elementary Science course during the outdoor classroom lab led by SOFE participants, Isabelle took on a very active leadership role within her group of facilitators. She incorporated a cooperative African blanket activity that she took from her six-month experience in West Africa with Canada World Youth. As described in the categories of agency, this demonstrated agency by borrowing resources from other fields and then using them within the field of the university. Isabelle also used many of the leadership and cooperative initiative tasks ("Rainstorm," "Circle Sit," and the "Ball-Toss" name game) that had been shared during the seminar sessions. She debriefed activities well, and was able to show links between these activities and how this kind of learning would benefit students in elementary and high school. She expressed satisfaction and pride following this experience, and wrote in her journal:

> This was a good start to our field experience! I was happy with some of the comments we got during the debriefs [of the activities]. You could see that the activities had really made them think about leadership and group roles and how this could work with kids in school.

> I noticed by the end of the session that students were more happy and awake than if we had held a normal classroom indoors. (Isabelle reflection journal, October 5, 2010)

The resources Isabelle had mobilized to get these initiatives rolling were from fields outside of her school schema (Table 4: #1, 3); as already established, they came from her work experience tree planting and in international development. For instance, before launching into the planning of Earth Day activities, she prepared a PowerPoint presentation about environmental issues that included photos of her tree planting experience and spoke about the effect that camping on a logged "clear-cut" had on her. She shared with the students how she valued resources more, now comprehending that "every piece of paper, every stick of furniture had come from a tree at some point" (PowerPoint presentation, November 22, 2010). Within this same presentation, she also incorporated images and anecdotes from her experience in Benin to demonstrate how people can live with less but be more in harmony with the natural world.

While this shows that Isabelle was mobilizing resources from experiences in other fields, she was still manifesting a schema of direct-teaching; for example, her PowerPoint show was very much a presentation-style teaching situation. Much as Isabelle was able to incorporate these outside resources, her schema of what teaching and learning represented and involved had not shifted, and she was still caught up in the direct transmission approach to teaching. The state of tension and emotion this produced put into motion the agentic processes of recombining schema and resources in new ways or fields (Table 4: # 4, 6), shown when Isabelle did eventually shift her ideas about teaching and learning, although only to some extent.

In the following passage, Isabelle reflects on the discussion that took place between the teacher candidates and their cooperating teachers during a whole group session held at McGill University:

> Our group meeting last week got me realizing that I don't necessarily need to be talking in front of the whole class in order to be teaching. If I go back to my first weeks of *stage*,[14] I remember saying how my CT [cooperating teacher] was not teaching the students anything. Now I understand why Kathleen [Usher] looked frustrated when I said this. Students were working on their Halloween projects. They were learning by finding information for their project, they were working in groups (which is needed for cross-curricular competency), and they got to present their project in front of the whole class. (Isabelle reflection journal, February 21, 2011)

In this passage, it is clear that Isabelle recognizes that she had at first been unable to see her cooperating teacher's approach as teaching; later in the passage, it also becomes apparent that she has developed a new understanding of what was actually going on in her host classroom.

However, within Isabelle's ILES there were still echoes of her struggle to see these kinds of initiatives as legitimate classroom learning. At the end of Class 3 in her ILES (it involved a class discussion about Earth Day, an exploration of the importance of the environment and a game to integrate concepts of group cooperation and leadership skills), she wrote:

> For now, these lessons don't seem like much; however by doing these lessons, students start being conscious about what their school is doing to help the environment.

[14] A French word for an internship or student "work experience" referring here to Isabelle's practicum. The term is often used by English speakers in Quebec.

> Furthermore, they've already start thinking about ideas and ways to present the information they obtain. (Isabelle ILES, p. 6)

From this passage, it seems that Isabelle's schema about what constitutes legitimate classroom learning still didn't include discussion, cooperative learning, leadership and group skills development or environmental education. Later on in the ILES document, however, she seems to further shift her schema to be able to recognize the learning and growth involved in the project on the part of her students.

> Even though this ILES may not seem to provide many learning opportunities, it does. This can be seen throughout the process. Students will gain a lot by taking part in this project. (Isabelle ILES, p. 10)

It could be that the truly agentic thing Isabelle did was to find a way around the constraining forces of competing schema by running her SOFE initiative through a lunchtime committee, which liberated her enough from her school field schema to allow her to put other schema and resources from different fields into action. The additional structure of having to complete and reflect on the ILES as part of the professional seminar afforded her with the opportunity to formally connect the Earth Day initiatives and event into the curriculum. Perhaps in this way she was able to live through the experience and was finally able to see, even though it was in retrospect, what powerfully pedagogic tools these approaches to teaching and learning could be, especially when used with Quebec's Education Program (QEP).

> [*From her final journal entry*:] What does teaching look like? In my case, it was not by lecturing students in front of a class. It was by having them work in groups. Think

critically, solve problems, and work with information, as well as some environmental facts. They have learned things through our discussions. Also they might have learned things about themselves (since they worked in a group on a project for six months). I sure learned things about myself. (Isabelle reflection journal, March 21, 2011)

Activist Teaching

In this section, I will provide evidence of activist teaching using constructs outlined in Chapter 3. As stated in research question #2, I will be looking to see if and to what extent teacher candidates enacted activist ways of teaching as evidenced by the ways and the degree to which they enacted/integrated into the curriculum experiential, environmental, place-based teaching practices and positive action initiatives. Instances where the ILES designed by the teacher candidates provided the possibility of action and participation in community, and/or school decision-making on the part of the students in the host classrooms, will be sought. Evidence will also be sought of assessment strategies linked to these instances to see if the teacher candidate was able to make the activist approach count in a formal pedagogic sense. Each subheading in this section refers to OEEE practices as outlined in Chapter 3.

The experiential action cycle

Isabelle framed her ILES around Earth Day, April 22. Her students had researched, planned, and implemented initiatives they presented that day to the entire school.

> The main focus of this ILES is to get students involved in environmental education as well as community life. An Earth Day presentation in front of the whole school will be the product of what they will have learned throughout the year. Furthermore, as one will see, many cross-curricular competencies will be explored. This hands on project will be guided by the teacher but built by the students. This project focuses on them! Step-by-step

> procedures [developed with the students] will enable them to accomplish this initiative task. Finally, since this is a procedural step by step project, the time allotted can vary. (Isabelle ILES, p. 1)

Environmental action was included in several different ways within Isabelle's ILES. First she shared her own experiences tree planting and in Benin, and spoke of how these experiences shaped the way she looked at the world and helped guide her to make choices to better protect her planet. She showed how those experiences made her more aware of environmental issues and how she became more active in her own life by joining protests about clear cutting and old growth logging. She included a discussion on environmental issues and then connected that to students' lives by discussing what environmental issues and choices they felt they could make to have a positive impact on the environment. From these classroom discussions the class chose and launched three initiatives: battery recycling, Ziploc bag recycling, and milk carton recycling (from the school's morning milk program).

Isabelle's ILES was in line with Kolb's experiential education cycle (see Figure 1 in Chapter 3). The class discussed environmental issues, researched their observations and understandings and collectively sought ways to take positive action, and ultimately developed ways of communicating these initiatives to the rest of the school. For example, one group researched the dangers of throwing batteries into landfills and set up a battery collection program at school in partnership with the local *eco-quartier* and an eco-centre where the batteries would be brought. Although active and recurrent reflection, which is integral to this cycle, was not very present during Isabelle's enactment, she did include student journaling as part of the ILES, along with methods (imported from the university field, Table 4, #6)

encouraging the students to take their journaling seriously. The following is excerpted from Isabelle's ILES:

> After each class, students should be reflecting in their journal. In order to make the teacher's life easier and the journals more meaningful to the students, tell them that only five will be randomly picked up after every class. This will enable students to meaningfully write in their journal all the time since they will not know whether their journal will be picked up to get graded (idea retrieved from Prof. Annie Savard, Faculty of Education, McGill). When class is over, it is important to remind them about this process. (Isabelle ILES)

Using the community as a resource

Isabelle was also able to involve the community outside the school in the learning experiences in several ways. First, she organized a meeting with a local *eco-quartier* representative to learn about the community greening organization's workshops, resources, and environmental initiatives. By extending a hand to a local NGO, Isabelle demonstrated openness to using the community as a resource in her teaching. She also organized a place-based field trip to a local eco-friendly fair trade store, giving students the opportunity to discover a neighbourhood store that embodied environmental principles they planned to share with the rest of their school. In the words of David Sobel (2008), the educator who put place-based education into the lexicon,

> As we come to understand the interplay between the quality of education, the economic life of the community, and the integrity of the environment, we need to train educators who can connect the life of the school with community sustainability. (p. 317)

Participatory action

Activist teaching, as defined earlier, involves the desire to make or facilitate change and to provide students with opportunities to participate in change and to take action. Isabelle put some of her own learning in environmental education and the participatory process to work within her ILES. She developed a survey with her Earth Day committee that asked the rest of the Grade 6 students what Earth Day meant to them, what environmental issues concerned them, and what they felt they could do within their roles as elementary-aged students at school and at home. The results of this survey were tabulated by the committee and helped direct the students' planning of both the environmental initiatives and the kinds of presentations they would give to the rest of the school on Earth Day.

Conclusion: take home messages from this case

As shown, Isabelle was able to enact activist teaching within her SOFE experience; however, as discussed earlier, most of this teaching was held outside of regular classroom hours during lunchtime, a consideration that may point to the persistent schema she held about what teaching and learning can involve. Agentic and activist teaching require changes in schema as existing schema too often constrain and limit teachers in their ability to teach in these ways. The main objective of the SOFE was to provide an environment, a kind of growth medium, in which these changes in schema could be facilitated. The structure of the McGill-Evergreen SOFE may have facilitated the above by building in discussion and journaling, and by having, from the outset, the expectation teacher candidates would develop environmental initiatives with their host classrooms. Aspects of the SOFE that afforded these schematic shifts, such as the development of a risk-friendly environment, the use of reflection and the

importance of communication, and the structure provided by the ILES, will be elaborated at the end of this chapter: all were common affordances across the three cases.

At the beginning there seemed to be great promise in this teacher candidate to be able to enact agentic and activist ways of teaching OEEE by drawing on her descriptions of past experiences. Her outgoing nature served her well during the early seminars and during the peer-teaching lab, but as soon as she entered her school placement, things changed. This case highlights the durability of habitus and, in particular, the schema and resources associated with schooling that make up our habitus.

It is impossible to say with certainty that Isabelle's struggles would have been less difficult if her cooperating teacher had played a less passive role and instead helped her to reconcile her conflicting schema with the practice she wanted to embody. However, it is likely this would have been helpful.

That said, the SOFE experience seemed to play a role in Isabelle's developing practice as she went through more active reflection and rigorous questioning about what it could involve. She continued to struggle and push herself to break free of her school schema, although it is unclear if this internal work would have taken place without the SOFE action initiative framework, as well as the community of fellow teacher candidates with whom she was able to share her struggles. Was she 100 percent successful in her ability to adopt new schema? Not at all; she showed only slight progress in terms of using OEEE in classroom teaching and learning contexts. Almost all of her agentic and activist enactments remained extra-curricular activities outside school hours.

At the same time, constraints on teacher candidate practice do not always stem from personal schema about what teaching and learning involve. In the next case, we see how it is

sometimes the cooperating teacher's persistent unexamined schema on teaching and learning that can present obstacles.

A Case Study – Samantha

No Internal Tension / External Tension

In this case, the teacher candidate I will call "Samantha" did not experience the internal tension of conflicting and competing schema in the way that Isabelle had. As I will discuss shortly, Samantha embodied deeply-held schema about experiential, environmental education and had an experience base that seemed to equip her with a diverse set of tools and resources to help realize well-thought-out and effective enactments of OEEE. There was much evidence of agentic teaching where the recombination and development of schema and resources from the SOFE, the University, and other fields of experience in Samantha's life came together to move her practice forward. Yet Samantha struggled with a cooperating teacher who was largely unable to appreciate what Samantha was trying to accomplish. There was an external tension that stemmed from her cooperating teacher's competing schema interfering with Samantha's desired practice.

Samantha was the eldest SOFE participant. She had completed both an undergraduate and Master's degree before starting her degree in Teacher Education, and for many years had worked with mentally disabled people as a tutor and then as a counselor. She brought quiet competence and introspection to the group, and was the gentle voice that seemed to capture what others had been grappling to articulate in seminar discussions. Samantha was able to reach the most reluctant learners in her host classroom through quiet one-on-one discussion and by working on group skills through various consensus building exercises and activities. As this case analysis will show, she enacted OEEE in several ways. Her ILES (Appendix D), fully woven into the

curriculum to bring students to a place of action, was formally assessed as real learning (learning that "counts").

The school Samantha was placed in had a total of six SOFE teacher candidates working in as many different grades. The SOFE trainees began their practicum in mid-October and together as a team ran several special group building and cooperative learning activities working with all the host classes in rotation. Several of their host teachers were returning cooperating teachers from the SOFE pilot year. Samantha was placed with a returning cooperating teacher who was also mentoring a third-year Education student in a three-month practicum begun at the start of the school year.

Agentic Teaching

In this section, determinations of the presence and extent of agentic teaching will be sought that evidence the mobilization of resources and schema described by Research Question #1. When Samantha embarked on her practicum, she had just finished a peer teaching[15] experience where she had collaborated very well with her two co-facilitators. She seemed satisfied with the way things had gone:

> The most lasting impression was at the very end when I was unexpectedly hugged by Hannah and congratulated by one of the Sophies.[16] In such a short period of time, I have bonded with some of my group members. Looking back over the many years I've been in school, it was a rather rare thing to have had the occasion to get to know my schoolmates as a focal point rather than as a consequence of sharing the same space for extended periods of time. (Samantha reflection journal, October 6, 2010)

[15] These peer-teaching sessions were run as two-hour outdoor classroom workshops on Mt. Royal within the science methods course taken by second year McGill education students.
[16] Not their real names.

Samantha started her field experience the next week in a Grade 6 class at a high needs elementary school. She initiated leadership activities and cooperative games that she had learned in the SOFE seminar and teamed up with other SOFE teacher candidates to run an Evergreen Leadership Workshop integrated into class time that was offered for several classes in the park beside the school. These activities showed evidence of agency through the acquisition of schema and resources from the SOFE in environmental and community activist fields (Table 4, #7). The schema most evidenced by Samantha was that of building trust and community before trying to teach, likely developed during her past experience as a counselor but conceivably also influenced by the SOFE professional seminar and peer teaching sessions. Her acquisition of resources was centred around the activities and debriefing techniques shared in the SOFE.

As Samantha continued at the host school, she spent half-day sessions discussing the environment with her students and conceiving roles at school and home where they could explore various practices in sustainability. At this point, Samantha used the consensus building techniques from the SOFE seminar to get the class working as a team (Table 4, #7). Splitting into groups, the class developed a survey for the rest of the school on greening or environmental initiatives they would like to participate in at school. It was now evident that Samantha had set goals for herself within the SOFE, and had begun planning lessons to meet these objectives:

> An objective for the Evergreen *stage* would be to get exposure to reworking lesson plans so that kids can get their hands dirty before learning from the textbook. Also, another objective is to gain more experience working collaboratively with my peers and cooperating teachers. (Samantha reflection journal, October 4, 2010)

Undoubtedly, Samantha was using schema from her experience as a counselor to employ

in her host classroom. Evidence of this can be found both in photographs of her work with the students and in field notes I made as her supervisor during student teaching observations:

> Samantha is often seen speaking quietly one-on-one with the students in class who rarely speak or have learning problems. As the teacher continues with the lesson or the children complete their worksheets and silent reading, Samantha targets these students and gives them gentle attention and guidance. She is often crouched down low at eye level, or finds a way of unobtrusively removing them from the class to speak to them in the hallway or the little vestibule beside the classroom. (Researcher field notes, November 24, 2010)

In addition to this, Samantha made use of schema and resources from the University field (Table 4, #6). This included schema on the purpose of education and educational critical theory; material resources in the form of books and supplies from the science lab; and non-human material and non-material resources such as pedagogic approaches, methods, rubrics, and assessment and differentiation strategies. She put all of these to work within her teaching practice, showing agency in her ability to move the schema from theory to practice. As will be discussed in the next section on activist teaching, Samantha's construction and enactment of her ILES put into operation newly acquired schema and resources from both the SOFE and university, and utilized existing schema and resources from her life and work experiences:

> Its one thing learning about these different approaches in a textbook [at the university], it's another thing entirely to actually be in there doing it and seeing that it works! I really feel that the field work is more… I feel like I'm really getting to know myself in the field. You're having to put theory into practice, having to feel things out, try things out: if something doesn't work out, you try something else. It's more reciprocal. (Samantha interview, June 2011)

Samantha had little internal tension around the schema she held about teaching and learning, and the schema the SOFE was promoting. In fact, she was surprised these ways of teaching would provoke any controversy, so well embedded were they in her own makeup:

> I wasn't expecting the idea of Evergreen as representing a different, more inclusive approach to learning/teaching to be so radical. On a popular level, we know that the public education system is lacking, particularly in providing for problem or non-conventional learners. We also know that we need to prioritize the environment in the education curriculum. And we know that children love the outdoors. I think these facts become compartmentalized in many peoples' minds where there is a time and a place for everything, and time is always limited. So projects on the environment are done at certain times, usually science class, and also take place by and large in the classroom. (Samantha reflection journal, Oct 17, 2010)

In this passage, Samantha shows that she thinks environmental education should be more integrated across subject silos and that learning should take place outside the confines of the classroom. Samantha felt committed to making school more meaningful and engaging for her students, and this seemed to galvanize her into action with respect to her practice. After a few months of coming into her host class once a week, she wrote in her journal:

> I overheard a kid complain about how boring school is. How often I have seen kids squirm in discomfort, unable to muster the interest to start their work. The experience is as flat as the worksheet staring up at them. I consider this one of my main challenges—to bring in as many of these intelligent but unmotivated boys, principally (but not exclusively of course), into the fold of learning. So they feel like they have a stake in it, that they feel they are

every much a part of the classroom as the more academically successful students. (Samantha reflection journal, December 4, 2010)

Samantha was able to address these issues by developing an ILES that integrated hands-on action initiatives within the learning experience. In this way she hoped to engage the boys who she felt would benefit from less passive learning situations. Following the school survey activity described earlier, she used a math class to tally and graph the results so the students could determine which environmental and greening initiatives were the most popular. Next, Samantha moved ahead with the environmental initiatives the students had voted for and developed an integrated series of lessons about how energy, water and waste were managed within the school. As the students conducted audits of their school building, she gathered resources from her home field and put them to work within the school field, continuing the learning with a series of experiments and activities that looked at energy efficient technologies such as timers, compact fluorescent bulbs, silicone caulking and weather stripping. By doing so, Samantha brought in resources from outside on her own initiative and utilized them in classroom learning, thus showing evidence of agentic teaching (Table 4, #3) concerning the use of non-human resources from other fields, whether material (actual tools and materials/resources) or non-material (skills, dispositions, and abilities).

Samantha was also able to recombine the schema and resources from the SOFE seminar to her teaching (Table 4, #7), as made clear by her use of consensus building activities, communication tools, and debriefing and discussion techniques. Some of the students expressed great enthusiasm for their audit, so Samantha found a way to extend the learning by starting a lunchtime Green Club. This lunchtime extra curricular activity involved a group of eight students who would empty recycling bins, collect old batteries and put up waste-reduction awareness

posters about reducing paper use, turning off lights, and packing garbage-free lunches. Samantha's commitment to the student-run club provided further evidence of her prior experience as a counselor working one-on-one and in small groups. She recognized the importance of taking extra time and going the extra mile for these students, a majority of whom were "coded" students with either learning or behavioural issues. This showed that Samantha held schema about reaching the individual in teaching and developing deeper one-on-one relationships with her students. She was able to recombine and more fully operationalize these schema within her SOFE experience through the lunchtime club, while still enacting her ILES within the general classroom.

Activist teaching

In this section, evidence of activist teaching is sought to answer research question #2: If and to what extent did teacher candidates enact activist ways of teaching as evidenced by the ways and degree they enacted and integrated into the curriculum, in assessable ways, experiential, environmental, place-based teaching practices and positive action initiatives? Answering this question requires seeking instances of enactment of OEEE in the form of place-based education, the use of the experiential action cycle, activist teaching, and so on.

Samantha was able to enact well-thought-out OEEE and activist teaching and learning situations during her SOFE practicum. She developed an ILES on promoting environmental awareness and responsibility in children. In this, she introduced her students to the concepts of ecology and sustainability while highlighting the importance of cooperative group work and positive group dynamics. Throughout her ILES (Appendix D), there was strong evidence of the experiential environmental education approaches and philosophies explored in the professional seminar. She was able, perhaps more explicitly than many of the other teacher candidates, to

both verbalize and operationalize the importance of gently introducing students to environmental issues while simultaneously finding ways to contribute to solutions in order to avoid Sobel's idea of ecophobia from setting in. This is clearly stated in the introductory paragraph of her ILES:

> It can be one thing to be aware of a problem and quite another to take the initiative to deal with it. Concerning environmental problems, awareness can lead to apathy as people, including children, feel too overwhelmed and insignificant to do anything about the vastness of such issues as global warming, deforestation, urban sprawl, animal extinction, water contamination, etc., etc. The main idea of the LES, therefore, is to introduce children to specific, everyday environmental issues along with accessible solutions that, over time, become a part of one's routine. (Samantha ILES, p. 1)

The introduction to Samantha's ILES reads like a professional curriculum document — she managed to embody and integrate the OEEE practices into the QEP in a clear, compelling manner. It was obvious that much thought and reflection had gone into its development. Within her journals and my own observational field notes, there was also clear evidence of OEEE enactment and the integration and assessment of these lessons into the educational program: in her ILES, she had even included a test! There were many connections to the QEP, along with compelling evidence she fully understood the curriculum document in the way she tied together and highlighted overlapping areas and cross curricular competencies.

> The ILES is rooted in the QEP. The board areas of learning concern the promotion of environmental and citizenship awareness in children. A couple of guiding questions that will help steer the ILES are: How can I make a positive difference in my community? What small and not so small adjustments do I have to make to my lifestyle in order to live a more environmentally responsible life? In terms of subject specific competencies, there

> is an emphasis on science and technology in the ILES, particularly with regard to systems and interactions in the material world, and systems and interactions between humans and their environment in the natural world. Some attention will also be given to energy in the material world, specifically the consumption and conservation of energy by humans. All three of the science and technological competencies for Cycles 2 and 3 are included in the ILES: proposing explanations for or solutions to scientific or technological problems; making the most of scientific and technological tools, objects and procedures; and communicating in the languages used in science and technology. The particular evaluation criteria of each competency will be noted at the beginning of each lesson. (Samantha ILES, p. 2)

Participatory Action

Samantha was able to integrate science and technology learning into the broader arena of environmental citizenship. She conducted a technical audit of the school building with her Grade 6 class and had them tabulate their results and write up recommendations to both the school principal and the local mayor's office. Examples of these letters can be found in Appendix D; the following is an excerpt:

> Bruno was responsible for checking out the recycling program and discovered that a lot of recyclable items, like paper, gets thrown in the garbage instead of the recycling bins. He recommended a school campaign to inform, or remind, students and teachers about the importance of recycling. (Samantha ILES p. 18)

Evidence of activist teaching is also found within the last part of Samantha's work with this class when she had them write letters to the public works department of their city borough's

town hall, an activity preceded with the reading of a poem by Nobel Prize-winning poet Seamus Heaney called *Digging*:

Between my finger and my thumb

The squat pen rests, snug as a gun.[17]

(Samantha ILES, p. 16)

By framing her lessons in this way, Samantha successfully anchored her teaching in activism; then, by following through with an actual letter writing campaign, she shared the importance of taking action, even in small ways, with her Grade 6 students.

> There is power in writing, which can compete with and, to a large extent, overcome the need for violence in democratic societies. If we want to change something, we can write a letter to our elected politicians and to our civil servants, politely and with logic, asking for a specific area of change, like better recycling services. Sometimes the process is straightforward, like in our case, and sometimes it is a long struggle. However, it is better, over all, than being subjected to violence or the threat of violence, which is an everyday problem in undemocratic countries. (Samantha ILES, p. 17)

The following is a letter the students composed to the director of the Public Works Department at City Hall.

> Dear Ms. Zaizal,
>
> We are a Grade 6 class at Westmount Park elementary school writing to request more recycling services at our school. Having completed a technical audit of our school in March, we found that only paper and cardboard are being recycled. Unfortunately, we also discovered that recyclable items like cans, plastic bottles and juice/milk boxes are thrown

[17] From Death of a Naturalist (1966).

in the garbage instead of being recycled. We would like to have such items collected as recyclables instead of garbage. Your attention to this matter is greatly appreciated.

Grade 6 Class, WPS (see Appendix D)

Samantha was able to build positive, feasible action into her teaching and learning situations while integrating and making good use of leadership and group building approaches; she seemed to have a good understanding of how these complemented each other. She organized her lessons using many of the discussion and debriefing techniques and approaches shared in the SOFE seminar, including the use of talking sticks, consensus decision making (she introduced the class to five little words of consensus: "I can live with it"), and cooperative group roles (maintenance roles, coordinating roles, etc.). These were introduced during the outdoor leadership initiatives she and her fellow SOFE teacher candidates ran at the beginning of the practicum.

In the survey she had the students complete in order to help identify where they felt they could take action, many mentioned energy, water saving habits and technologies, as well as waste reduction. Samantha then had her host class conduct an energy, water, and waste audit of the school where they had to complete a series of surveys and experiments to determine how the school was performing in the three areas. As students circulated throughout the school in small teams they had to ask teachers, administrators and the custodian questions to obtain their results, such as whether the school properly disposed of hazardous waste materials like old printer cartridges, fluorescent light bulbs, and batteries. Following this activity, the students wrote commendations for things the school was doing well along with recommendations for areas it needed to improve.

Experiential Action Cycle

Samantha started the ILES with a hands-on "technical props" session prior to the technical audit. The props were items she brought into school from home and included such things as silicone caulking, faucet aerators, timers and compact fluorescent light bulbs. Here, Samantha's actions aligned with Kolb's experiential education cycle (Figure 1), where the learning cycle often begins with a concrete or hands-on experience, followed by reading and research to refine and deepen understanding. Samantha next had the students work in small groups to match definitions written on slips of paper with the prop items. After students shared their results, they used the reference material to understand how the items helped save energy, and then set about auditing their school to see what energy technologies and best practices it had instituted.

At the end of the props session, Samantha included a short evaluation with questions: How does weather-stripping reduce the amount of energy used in a building? How does a motion detector save energy? (Samantha ILES, p. 11). In doing so, she ensured the learning would count within the formal evaluation of student learning, a key objective in the SOFE. Further evidence of activist teaching is found in her description of subject area competencies, where she demonstrated a firm grasp of the curriculum and how to integrate environmental initiatives into it:

Subject area competencies: to use language to communicate and learn through the course of class discussion and by way of making written recommendations based on the audit; to propose explanations for or solutions to scientific or technological problems with particular emphasis on the development of realistic solutions in the form of recommendations; to make the most of scientific and technological tools, objects, and procedures by the appropriate use of techniques like using a draft detector; to communicate in the languages used in science and

technology by referring to the various tools, objects and procedures by their appropriate names. (Samantha ILES, p. 9)

On the surface, it would seem that Samantha had a successful experience in integrating OEEE into the curriculum by recombining and using her schema and resources from different areas of her life. And yet this same teacher candidate almost failed a formative assessment with a cooperating teacher; as her supervisor, I had to make arrangements for another teacher at the school to provide formative anecdotal assessments as counterbalance. The major constraint on Samantha's ability to enact agentic and activist teaching thus took the form of a clash of teaching styles with her cooperating teacher. The constraining force of these competing schema will be discussed further at the end of this chapter.

Conclusion: Take home messages from this case

Strategies of action – evidence of a broadening of cultural competencies

When it came time for Samantha's interview, she had obviously thought at length about the clash of teaching styles with her cooperating teacher. Interestingly, when she outlined strategies to avoid a similar situation in her next in-school practicum, she said she would seek out teachers with approaches close to her own in order to develop school allies. Having lived through the constraining force of a clash in teaching styles and philosophies, Samantha had been able to come out the other end with a solid awareness and strategy of how to better afford a sense of professional community working toward the same goals.

> When you mention offering this program [SOFE] early on, it really does make a lot of sense. We're just starting out and we don't necessarily have the exact approach we're going to take and we're still flexible, open, because this is a new field. So you have the experience of trying to put a more experiential lesson in place. I mean, I'm not going to go

> back to the conventional classroom and stay there to derive most of the learning from books. Going outside, for example, you have to sort of do that a couple of times before it becomes a good idea; then, when you see that it works enough times, [you can say] this actually does work. Now I know it works: I just have to figure out how to make my intentions clearer with the next CT [cooperating teacher] I'm paired up with. Since this is the way I want to go, I have to make it clear that this is what I want to do. Not that I'm going to give it up, but how to make this work with someone else without them feeling threatened that, oh, your way is wrong. You just want to open up more educational approaches, not necessarily overtake the whole thing … although that might not be such a bad idea… (Samantha Interview, June 2011)

In the passage above, there is evidence of a clear strategy of action about how to better communicate with the next cooperating teacher. Swidler (1986) refers to this as a *re-tooling* where strategies for action come together as the actor recombines for new use all the cultural tools they have at their disposal: these add up to an actor's cultural competency, or habitus. Samantha had to use schema, resources, and cultural competencies from fields outside of school and recombine them to find a course of action, however late in the game, and a way of moving forward with her cooperating teacher. She showed agency in this re-tooling. As Seiler explains, "actions are not determined by one's values. Rather actions are organized to take advantage of cultural competencies. Thus we need to broaden, not exchange, students' cultural competencies" (2003, p. 203).

Like Samantha, some of the other teacher candidates showed schema well-aligned with the SOFE's approaches to teaching and learning. In a handful of cases, a candidate with a lack of internal tension was paired with a cooperating teacher whose schema also aligned well. In those

instances, and there were a few, less energy was spent on reconciliation and more on building communities of practice. Such was the case of the teacher candidate I will call "Emma."

A Case Study – Emma

No Internal Tension / No External Tension

Emma's case demonstrates how agency does not hinge on tension. She experienced no tension in the form of conflicting internal schema about what teaching and learning could involve, and no external tension with her cooperating teacher. Instead, this teacher candidate was able to move forward with agentic and activist teaching, and even helped propel several other SOFE students who teamed up with her at the same school.

Emma was quick to sign up for the SOFE; her name was the first on the sign up sheet in August 2009. When the opportunity arose to complete the SOFE practicum at an alternative high school instead of an elementary school, Emma jumped at the chance. She was clearly a risk taker, confident in her abilities to make the most of any situation. As a francophone working in a second language, she was already taking a risk in attending an English-language university. However, she insisted on submitting her papers in English even though she had the option to do so in French. Her gregarious nature brought a lot of energy and joy to the SOFE cohort. After she signed on to the alternative high school, three other SOFE students soon joined her there.

The school in which Emma opted to complete her practicum was an alternative high school with the motto of "giving students a second chance at a first rate education." Structures within its system were quite different from regular schools: the staff worked as a professional learning community who met at weekly staff breakfasts to discuss student progress, troubleshoot issues and plan events adding to the student experience. Emma and the other SOFE teacher candidates

were immediately included in these weekly meetings where their input was both solicited and valued (evidence of this was shown by the staff's adoption of teacher candidate ideas).

It is fair to say that the teachers working at this alternative school likely held schema more open to the SOFE approaches. They were accustomed to change and innovation, and often took part in research projects and special initiatives with outsiders to help engage the often reluctant learners in their classrooms. The way the school day was structured was also quite different: class was held between 8:00 a.m. and 1:00 p.m., and the students often cooked lunch with a cook who was also a child-care worker. Although the macro structures of the school were out of the mainstream, teaching by the staff was quite conventional for the most part, with a lot of passive book learning and worksheets using direct-transmission teaching. That said, if the embedded teacher candidates had an idea or approach that was more active, the school's resident teachers accommodated them and made time in their teaching schedules for the SOFE teacher candidates.

In Emma's case analysis, there was no evidence in the data of any internal tension from persistent schema interfering with her desired practice in the way that Isabelle had experienced. Emma seemed to have clear schema about teaching and learning that included the active, open-ended and student-driven approaches shared in the SOFE. In her letter of introduction, she talks about a Grade 6 teacher she still admired:

> I remember in elementary school, my Grade 6 teacher had the best way to deal with conflicts in the classroom. It was a session every Friday afternoon called rap session. Everyone would sit in circle and we could openly discuss conflicts that occurred in school, whether at recess, lunch time or in the classroom. Our teacher gave us support and attention while granting us a long-awaited autonomy. We were able to solve our problems and it really helped create a wonderful sense of belonging. I think that giving us more

> autonomy in our problem solving helped us become more accountable for our own actions. Her way of dealing with class discipline is a great example of good professional conduct for a teacher. (Emma, SOFE letter of introduction, August 2009)

At the alternative high school, Emma was able to enact her schema about teaching and learning within the field experience. These enactments aligned with both SOFE and her cooperating teacher, "Kim," and she also got along well with the other four SOFE students assigned to the school (two were mentored by Kim, and another two by "Joan"). In Emma's case, we will see how this lack of both internal and external tension was conducive to agentic and activist teaching of the highest order, and how a community of practice grew up out of this experience.

Emma had a clear idea there was no such thing as a "good teacher." Teaching was an ongoing process where each individual student was unique, and each learning experience offered both teacher and learner new opportunities for growth and development.

> A competent teacher cannot be defined in words. Teachers can have different approaches and still have the desired results. As a teacher, it is not enough to be taught to be competent, but to experience it by teaching and trying things out. A competent teacher is someone who is able to reach out for help, who understands that being competent in a field is an ongoing process. In my life as a student, I have witnessed firsthand what competent teachers are—they are the ones that care, that go above and beyond what is expected of them, and, most of all, do what they do because they love it. Competency is not something that can be taught, it has to be experienced. (Emma, Professionalism in action assignment)

This awareness that change and growth come from a place of action seemed to serve Emma well within her practicum, where she dove in alongside another SOFE participant, "Jacky," to teach science at the high school. They taught Grade 8 and 9 science and technology

with Kim, their cooperating teacher. Kim was open to new ideas, and the two SOFE students were able to transfer a lot of the lesson concepts from their university science methods course directly into their practice teaching situations. Kim did try to make her lessons more hands-on, but often said things along the lines of, "I've tried to do this or that, but with just me in the classroom and all of the behavior issues with my students, I tend to turn back to the textbook and worksheet stuff" (Kim Interview, June 2011). Having the two enthusiastic teacher candidates in the classroom alongside her seemed to make Kim feel more able to bring experiential elements into her teaching. Evidence of Kim wanting to teach more experientially can be found in how she shared ideas and pulled out materials that had been stowed for years in lab closets to use in lessons with her teacher candidates. At one point, she found tools (hammers, saws, and drills) still in the original packaging the Ministère de l'Éducation, Sports et Loisirs (MELS) had sent out to all secondary science teachers in 2005 to encourage more experiential approaches. Kim, Emma, and Jacky used these for the first time in the greening project started in the spring of 2010.

Emma and Jacky were committed to the idea of developing a greening initiative with the students. Emma was appalled at the state of school grounds that had cracked asphalt, no shade or places to sit down, and looked out at an elevated freeway. With Kim's help, they began planning the greening project within the first few weeks of their practicum.

Emma was able to transfer her learning from the SOFE seminars directly to her teaching even though the alternative high school's students could be challenging. One notable example was when Emma took the Grade 9 students outside for their science class, a first in this high school. She instructed the students to begin their school greening project by completing a site analysis and shade audit, and taking an inventory of trees and shrubs already on the grounds. The sometimes uncooperative students made measurements, took photos of the site, noticed where

the sun was to determine shade areas, and then went back inside and began working on design plans for the greening project without skipping a beat.

> I always wanted to bring my classes outside, but I never saw any teachers do it. So I thought maybe it wasn't accepted. But if you learn how to go about it even as a young teacher, you can just go and do it. (Emma, Participatory video, June 2010)

Agentic teaching

Moving through her practicum with apparent ease, Emma, unlike many of the other SOFE participants, never struggled with internal tension caused by persistent or dominant schema that got in the way of practice. Instead, she was able to take up resources and schema from both the SOFE and university and apply them near-seamlessly into her teaching (Table 4: #6, #7). One example of this was when she set up a science lab on global warming and greenhouse gases in her host classroom that incorporated an experiment she had already done in her university science methods course. After arranging to borrow equipment from McGill and doing some research with Jacky to prepare, Emma had the students build the experiment to determine the causes of global warming and what steps they could imagine taking to mitigate the problem. Afterwards, some of the students had more questions so Emma moved the class across the hall to the computer lab and had them do research on the Internet, explaining that she and Jacky had done exactly the same thing before they were able to introduce the experiment to the class.

Emma never wrote in her reflection journal about internal tensions or struggles, although this doesn't necessarily mean she didn't experience them (she mentions in the participatory video that she really disliked keeping a journal). However, having had many encounters with Emma, both during the SOFE and afterwards, I feel confident in saying she actually did just embody this way of teaching. Never afraid to admit not knowing the answer, she would immediately set about

pooling her resources to find solutions to the question at hand. These resources came from the many fields in her life ranging from organized sports (she played soccer competitively), to a close-knit family, to her many friends at university in her faculty and others as well. She was also able to recognize how the learning from SOFE could help her refine and build on other areas in her life. Following the first few seminars, she reflected:

> This exercise (cooperative games) made me realize how important working as a team really is. In many aspects of my life I rely on other people. At my job, on my soccer team, at school and in my own household: in all these settings, communication is key to achieving success. (Emma Reflection journal, September 20th, 2009)

More evidence of agency can be found in the way Emma brought in outside resources to the project (Table 4, # 2): For example, she invited a friend who was completing an undergraduate degree in design to come in and share ideas with the students about their greening initiative:

> Vivien is my awesome friend who wanted to come to P1 [Emma's high school]. She's a design student at Concordia[18] and she presented a PowerPoint on design to the students. Her presentation was great. The students were exposed to many different things, and I think it gave me the boost that I needed to continue. I felt new blood was brought into the project and another way of thinking about things. The students loved her and it was great to see us all interacting about the project during recess. I have HOPE! (Emma Reflection journal, March 10, 2010)

Emma reveals a level of awareness about her teaching in the passage below from her self-evaluation of professional competencies. In it, she acknowledges how bringing in human resources from outside the school field to help with the project made it more real for both Emma

[18] Montreal's other English-language university.

and her students.

> This high school deals with a student body that is generally reluctant (*qui ne s'engagent pas*)[19] in learning situations. Jacky and I tried to engage students by having them do activities where they would learn skills that would eventually lead them to participate in the authentic task asked of them: designing a greener schoolyard. Through this we encouraged teamwork and focused on having the students voice their opinions. Having my friend who's in design come in to talk to them about their designs I think really benefitted in making them feel as though they would be able to make a difference. (Emma, Professional portfolio self-evaluation, April 2010)

The following is a description from memory of an exchange I witnessed between Emma and one of her Grade 9 students on one of my field visits to Emma's school:

Two teenaged boys in sneakers and hooded jackets venture out to the snow- covered schoolyard pulling up their low riders as they walk down the steps. One holds a tape measure and the other a clipboard and pencil. A young woman follows them out with another tape measure and clipboard, and they start mapping out and measuring the schoolyard. One of the young men turns to Emma and says, "So Miss, we're actually gonna do this? This isn't just bullshit?"

Although Emma had been developing a greening plan for the schoolyard with her host classes since the beginning of her practicum in early October, this was one of the first concrete things they had done with respect to the greening project and the student's words summed up what everyone was feeling: that this was going to be different than most school learning because

[19] A number of bilingual teacher candidates (Emma, Isabelle) used English and French interchangeably in their journals. Entries in French have been translated but particular expressions from the original French are sometimes noted.

they were actually doing something tangible and would have something to show for their efforts.

This was also the moment when the project became real for Emma, who suddenly felt the weight of responsibility settle firmly on her shoulders now that she had to deliver on the classes' plan and make the project actual. "And now things have to happen… I'm scared that I'm promising something I can't deliver …. I'm wondering what $2,000 can really do…" (Emma Reflection journal, January 20, 2010).

The $2,000 refers to the Evergreen Learning Grounds grant each host school was eligible to receive as part of the SOFE program. The funds had to go towards materials, tools, and plants for the greening projects. One of the things about greening initiatives is that, like in any environmental or action initiative, the follow through is what everything hinges on. This opportunity to bring people together around an action is invaluable for a young teacher candidate just beginning to build a professional identity.

In Emma's journal, we hear her anxiety as she wonders about her abilities to follow through on her students' greening project. This might have presented more of a constraint had Emma not been part of SOFE. Would the tension and anxiety have motivated or truncated agency if she had not had the support of the field experience community? Often, talking about an idea or an ambition is a necessary part of actualizing it. When the cooperating teachers came together with the teacher candidates at McGill for the Whole Group Session, Emma had a chance to share her greening project alongside her co-teacher candidates and cooperating teacher:

> I feel great after our meeting yesterday. We had the opportunity to talk about what's been done and what has to be done. We got to see our cooperating teachers in another way. I was touched by what my cooperating teacher said about Jacky and me. I'm really excited about the project and think it's actually going to work out. (Whole Group Session field notes, January 2010)

Activist teaching

In this section, evidence of activist teaching will be sought in order to answer research question #2: If and to what extent did teacher candidates enact activist ways of teaching as evidenced by the ways and the degree to which they enact and integrate into the curriculum in assessable ways experiential, environmental, place-based teaching practices and positive action initiatives? Here the study seeks instances of enactment of OEEE in the form of place-based education, the experiential action cycle, and activist teaching, etc.

Participatory Action

Emma and Jacky put together an ILES on the greening project in collaboration with their cooperating teacher. This was one of only a handful of instances where the cooperating teacher was a partner in the development of the ILES. Emma was able to operationalize the SOFE learning throughout her practicum and designed an ILES that made the learning count. Important elements from participatory design were integrated into her lessons. Scale modeling, developing budgets, and learning about design were all elements she was able to integrate from the professional seminar sessions on schoolyard greening. Further evidence of activist teaching took the form of a lesson within the ILES on the difference between native and non-native plant species, and why it was important to purchase native plants for the greening project. This brought a more nuanced understanding of place within the learning as the students discovered the names and natural history of the trees growing around their school. Each of these lessons was well organized and integrated into the curriculum: student learning was assessed throughout in a variety of ways from anecdotal assessment to more formal evaluations, such as a review quiz on native versus non-native species and an evaluation of the greening project's scale models and *maquettes* (Emma ILES, Appendix D).

The oft-repeated refrain of "when are we ever going to use this?" never came up with Emma's lessons as the greening initiative quite obviously depended on student learning and the active participation of all involved, something the students were quick to catch on to. For instance, students had to research different types of seating to determine the schoolyard outdoor seating they were planning to later build as a group. The students began noticing seating and bringing these ideas back to the classroom:

> Actually, when we started talking, Jay [a student] mentioned that his father worked in construction and then he and Tim told me about a bench they liked in St. Leonard. I feel people are a bit more interested… (Emma Reflection journal, March 20, 2010)

Emma helped the students fill in the Evergreen grant application and this was integrated into the assessment of the student work (Emma ILES, Appendix E). She brought the students outside to identify local trees, measure the grounds of the school, and complete a shade assessment. She showed activist teaching not only by using the outdoor classroom but also by designing an outdoor classroom made by the students, for the students.

Conclusion – take home messages from this case

In Emma's case, we can see that tension is not a necessary precursor to agency. Emma was able to enact activist teaching and use the tenets of OEEE without any internal or external tension in the form of competing or dominant schema. Her example demonstrates how an individual can possess agentic currency in the form of cultural capital, such as institutional capital in the form of education and skills or in the form of embodied capital in the form of speech and personality (Bourdieu, 1977) and therefore achieve change in the absence of tension. Also evident is the affordance of having a cooperating teacher as an ally and partner, and the way

greening initiatives can offer structuring frameworks in which to enact activist and agentic teaching.

Common Constraints and Affordances

The main thrust of this investigation was to determine what affords or constrains teacher candidates' ability to adopt and enact transformative teaching methods. In this next section, common affordances and constraints will be categorized and unpacked to help better understand what encouraged or truncated agentic and activist teaching in the SOFE.

The three cases of Isabelle, Samantha, and Emma each represented a certain subset of SOFE participants. The majority of participants, 14 out of 24, fell into Isabelle's category (internal tension/no external tension), while the rest struggled less with internal competing schema. Five of these participants experienced similar clashes to Samantha (external/no internal tension) around teaching philosophy with cooperating teachers even though those teachers, for the most part, had been selected to be more open to these ways of teaching. Finally, eight SOFE participants were able, like Emma (no internal/external tension), to enact OEEE and positive action initiatives, and build communities of practice to realize goals.

Common constraints.

In this section, common constraints will be examined. These include competing internal and external schema, and institutional and assessment constraints.

Competing schema.

There were a number of cases in which the teacher candidates experienced internal competing schema; in other cases the competing schema were between the cooperating teacher and the candidate. But each of these scenarios played out differently. In some cases, the competing schema pushed the teacher candidate to use new schema even more; in others, it

didn't seem to matter much at all. In a third subset of candidates, the competing schema caused tension and considerable anxiety, and actually caused the teacher candidate to revert to teaching in more traditional ways.

Internal tension -

The week after the peer-teaching lab, Isabelle started her half-day per week McGill-Evergreen SOFE practicum in a Grade 6 class at a large French Immersion elementary school. This was a "switch class," meaning that there were two Grade 6 classes, one French and one English. Isabelle was given the French homeroom teacher as a cooperating teacher. Each class spent two and a half days per week in the French-language class. As soon as Isabelle started her practicum at the school, a shift in her feelings became evident in her journal entries, in her interactions with me as her supervisor and instructor, and during seminar discussions. Isabelle voiced sentiments of not knowing where to begin with her practicum, of feeling lost, unsure, and adrift:

> I feel lost, I feel like I don't know what to do during the time I'm at my field experience. I know I will be organizing Earth Day, but still need to figure out what else I'll be doing. I've noticed that I work really well and have a lot of creativity when a project is given to me. However, coming up with my own seems to be harder. Because my cooperating teacher didn't give me guidelines, I feel as if I have too much of an open field: I don't know where to go, I don't know what to work with, I don't know where to start. (Isabelle Reflection journal, October 28, 2010)

Although she had earlier voiced a desire to be more creative in her teaching, Isabelle now appeared to be in a state of paralysis when given an open-ended opportunity. At the same time, she repeatedly stated that she didn't think her cooperating teacher was teaching the students.

These comments are found in her reflection journal and in my field notes of the late fall 2010 seminar session that followed the SOFE trainees' first few weeks with their host schools, as well as in an informal conversation I had with Isabelle when we bumped into each other as she was returning to the university from her half-day at her school. During her first few half-days with her host class, she said that she didn't think the students were doing anything in class. During a seminar meeting following the beginning of the practicum, there was a discussion between Isabelle and other members of the McGill-Evergreen SOFE that began to reveal Isabelle held schema about teaching aligning with a stand-in-front-of-the-class model of direct teaching.

> "They aren't doing anything! The teacher isn't teaching them." When pressed to describe more fully, Isabelle went on to explain: "They're just working on their projects. They aren't doing anything, the teacher isn't teaching, she's just there." After a short pause Isabelle added, "I suppose that is teaching, but they just don't seem to be doing anything." (Researcher field notes from seminar class, November 29, 2010)

Following Isabelle's comments, other teacher candidates in the seminar spoke out. Many felt the situation and teaching approach Isabelle had described was in fact positive. The students weren't simply listening to a teacher at the front of the class, but were instead putting their competencies to work within a self-directed project using the teacher as a resource and facilitator. At this point, there seemed to be a disconnect between Isabelle's perception of what was going on in her host classroom and the other teacher candidates' perceptions of her description. In both her journal and conversations she had with me, Isabelle often returned to this issue of what counted as teaching and learning: that is, what teaching and learning could look like, sound like, and involve. She was struggling to enact the ways of teaching that aligned with the McGill-Evergreen SOFE and called for her to actively engage her students, develop

initiatives, and integrate the curriculum within the initiatives in open-ended, experiential, and place-based ways.

Different fields evoke or bring forward different schema and associated resources. Perhaps the change in field from university to an elementary school shifted the schema and resources Isabelle had access to. As it was, she drew on dominant schema that resonated with the classroom field and competed with alternative, less traditional schema about teaching, the end result being a constraining force on her practice. She held schema about teaching, presumably acquired during the apprenticeship of observation, that constrained her ability to enact new ways of teaching, holding her to rigid notions of instruction in which the teacher presented from the front of the class as students took notes or did exercises in workbooks.

Tension was clear in Isabelle's interactions with both her cooperating teacher and myself during several informal meetings, and in her own writing in her journal. Isabelle had been working with her host class for several months at this point, but still felt unsure how to proceed with her practicum. Her uncertainty was evident in the level of emotion she exhibited (a teary exchange with me on a walk home from her school in October; a fraught exchange during the seminar discussion later the same week). However, even in her admitted state of tension and uncertainty, Isabelle continued to try to forge ahead with the early stages of the participatory action initiative. She researched and developed three potential environmental initiatives with students in her host classes—a Ziploc bag collection, a recycling initiative, and a hazardous waste collection campaign—but immediately showed signs of further constraint and downgraded the initiatives to an extra-curricular activity. Evidence she didn't perceive these action initiatives as teaching is found in her repeated comments in her journal, in the seminar, and during conversations with her cooperating teacher and myself as supervisor during field visits. "I know

I'm organizing Earth Day with the students but what will I be *doing* in class? What will I be teaching?" (Isabelle Reflection journal, October 28, 2010).

A misfit existed between the schema Isabelle held within the school field and other schema she held about environmental initiatives, and this dissonance produced a tension around what constituted learning and teaching. There were many teacher candidates in the SOFE who experienced the constraining force of competing internal schema. As we will see in this next section, some teacher candidates, like Samantha, also had to deal with the constraining force of external competing schema.

External tension -

One of the major constraints to Samantha's agentic and activist teaching was the incompatibility of her teaching style with that of her cooperating teacher, who I will call "Jamie." This experienced teacher's style was more authoritative and direct, and she "appreciated a calm, orderly classroom" (Jamie comment, Field notes from emergency meeting, January 26, 2011). Samantha was much more interested in discussion, sharing, and getting all voices heard: she enjoyed the back-and-forth volley of student ideas and discussion, such as the hubbub over the voting to pick environmental initiatives. I was actually observing the class on that very occasion, a moment when Jamie had stepped out of the room and left Samantha in charge. When Jamie returned to class a few minutes later, she immediately shut down the rambunctious discussion and the students returned to their desks to work from a math textbook. As the cooperating teacher, Jaime's schema of what teaching and learning could involve clearly differed (and clashed) with the kind of practice Samantha was attempting to enact. It became clear as time went on that Jamie did not recognize the interactions Samantha had with their shared students as "teaching," and she became less willing to let Samantha be the principal

teacher during the latter's half-day practice teaching time. She resisted Samantha's plans and ideas, and would often shut down lessons Samantha was running.

By January of 2011, halfway through Samantha's practicum, Jaime began voicing concerns outside the classroom the two shared. In the third week of that month, she called what she referred to as "an emergency meeting," and asked me to attend to discuss problems she perceived with Samantha's practice. During the meeting Jamie sat across from Samantha and myself, and never once made eye contact with Samantha. Instead, she held my gaze and described how Samantha's lessons seemed shapeless, how her classroom management was lax, and how she was unsure what her trainee teacher was trying to accomplish.

> The three way meeting was very uncomfortable. I was looking at Jaime who was complaining to Kathleen [Usher] about me. She was quite agitated anyway, which no doubt got all mixed up in some reservations she has about my performance. (Samantha Reflection journal, January 26, 2011)

We listened, and I then pulled out Samantha's formative assessments (at that point, two had been completed by me in my role as field supervisor, both of which were very positive) and her notes on lesson plans, and we began discussing which of her plans had been accomplished and where things were going with respect to the practicum. During this discussion, Samantha was subdued, but able to respond clearly and provide explanations of her lessons and overall approach to the SOFE practicum. During the meeting it also became abundantly clear that, although Jaime appreciated the environmental education ideas and approaches within the SOFE, she did not recognize what Samantha had been doing as actual teaching. When Samantha explained that the students had tallied the results of the school-wide survey and then chosen the most popular initiatives to put into practice/action at the school, Jamie said, "Oh I thought you

were just talking," referring to the occasion described above where she had stepped out before returning to class.

In my field notes on that day, I had registered how impressed I was by Samantha's ability to seamlessly take over the class at a moment's notice, and use the time to further her SOFE initiative. My notes showed that she had been able to "encourage discussion among the students by opening a "conference circle" where the class huddled around the whiteboard to share their ideas, using an eraser as a talking stick to take turns" (Researcher field notes, January 10, 2011).

From Jaime's perspective as the experienced teacher and mentor, however, her class had been "filling time" while their teacher was out of the room and taking advantage of Samantha by being loud and "informal" (*i.e.*, away from their desks). Samantha did not share her thoughts on this viewpoint during the meeting, which demonstrated a further constraint: she seemed unable to communicate with her cooperating teacher. Their interactions were strained at best, and Samantha would do her best to avoid having one-on-one interactions with Jaime even as they administered a class together for a half-day each week.

Evidence for the tension and interference created by the contrasting schema between Jaime and Samantha can be seen in several emotional discussions that took place during the seminar. It was a fellow SOFE student, "Sarah," who actually brought the situation to the group because she was concerned for Samantha. As the eldest of the group, Samantha took the high road and never spoke negatively about her Jaime. Privately, she thought in terms of accommodation: "Jaime rattles easily, so I'll make sure to prepare everything in advance and avoid surprising her in any way" (Samantha Reflection journal, January 30, 2011). One of the reasons why Samantha likely opted to run a lunchtime Green Club, as well as to run her ILES in the classroom, was the opportunity to interact with students in the absence of a cooperating teacher who she felt constrained her ability to teach how she wanted.

A clash of teaching styles between a cooperating teacher and teacher candidate is arguably different than that of two experienced teachers with different approaches. In this latter context, there may exist a level of respect and mutual admiration that allows for an appreciation of an approach even if it differs dramatically from one's own. But how can this be reconciled within a mentee and mentor relationship? The cooperating teacher was able to recognize the relevance and contributions of the SOFE (she did volunteer to take part after all), but was nonetheless unwilling to allow the assigned teacher candidate room to enact these ways of teaching. In the summative assessment, Jaime wrote at one point: "Samantha is growing more accustomed to emailing lesson plans ahead of time. She needs to be sure all materials are prepared before the lessons" (Samantha OST Summative assessment, March 31, 2011). The cooperating teacher wanted detailed lesson plans with worksheets laid out beforehand, which went in the face of the experiential, student-centered approach that Samantha favoured, promoted by the SOFE. But Samantha did prepare, and proved as much in emails to her cooperating teacher in which she detailedly described the ILES she had planned for her practicum.

As her supervisor, I found this to be ample planning for her weekly half-day sessions. Samantha gave her lesson plans in broad strokes: "Students will have the opportunity in the next few lessons to familiarize themselves with the technical language of buildings as well as the function of everyday household technologies" (e-mail communication from Samantha to her cooperating teacher, January 16, 2011). So although the cooperating teacher had been given the opportunity to review the resources Samantha was using as a reference for planned lessons on a technical audit of the school, it is clear that this either did not happen, or did not assuage the concern the cooperating teacher had about the lessons. Certainly the experiential, student-driven approach Samantha employed was very different than the more textbook-oriented teaching the

cooperating teacher Jaime used. And while Samantha did not fully elaborate her lessons until later (in her formal ILES), the level of planning and preparedness she was showing was fully acceptable to a different cooperating teacher who I had also asked to observe Samantha for an anecdotal assessment.

In Samantha's case, she did not seem to posses schema insisting teaching had to involve presenting at the front of the class. In fact, this was something she rarely did, an approach that was noticed in her formative and summative assessments by Jaime, the cooperating teacher, as a deficiency she needed to work on. "As her confidence in the front of the classroom grows, she will become more effective" (Samantha, Summative assessment, March 31, 2011). Samantha's cooperating teacher seemed to view her teaching not as a "style" but as evidence of a lack of experience and confidence.

It could be that Samantha's long experience working as a life coach and counselor in group homes with adults suffering from mental health issues gave her access to a different set of schema with regards to interacting with her students in the classroom. For the purposes of this study, Samantha's ability to access and utilize schema and non-human resources in school from her life's other fields counts as evidence of agentic teaching. However, in the eyes of her cooperating teacher, Samantha's approach with the students seems to have been interpreted as an indication of an underdeveloped "teacher identity."

Although I met often with Samantha and was in her host school at least once a week to work with other teacher candidates, I had not been fully aware of how badly her match up with her cooperating teacher was going. It was a journal entry that alerted me to how unsupportive the experience was proving to be. Samantha worked in another class from time to time with a different teacher, and her experience there proved to be more positive:

> Elaine's[20] class was an enjoyable experience. She even participated in the class discussion by telling the kids about the eco-toilets with two flush settings. I prefer this type of interaction as opposed to having the cooperating teacher remain at her desk all through the class. The kids benefit from this as well by seeing two adults collaborate in a friendly manner. (Samantha Reflection journal, January 17, 2011)

The journal entry provided a glimpse into how interactions with Samantha's formal cooperating teacher differed. There was almost a complete lack of a sense of collaboration and trust, so much so that having another presiding teacher invite her to take part in a class discussion became noteworthy in Samantha's journal.

Samantha's experience was not unique. There were several cooperating teachers in the SOFE who had a difficult time recognizing the OEEE approaches and environmental initiatives as true teaching and learning. In some of these cases, the opposing schema coming from the cooperating teacher acted to reinforce the teacher candidate's commitment to the ways of teaching promoted in the SOFE (discussed in the affordances section). In Samantha's case, things were a bit more complicated. Layered on top of the opposing schema held by her cooperating teacher, Samantha struggled to communicate with the teacher, and thus constrained her practice further. In other cases where there was external tension but good communication, the cooperating teachers involved invariably became less oppositional as the year went on.

In some cases the cooperating teacher was not explicit about opposing schema, and so there was less interference. In interviews with cooperating teachers, however, there was no shortage of evidence that the kinds of teaching their SOFE teacher candidates used with the students, while appreciated, was not learning they felt could be counted academically.

[20] A pseudonym.

> So I think, these kids, I see how they shine with these extra kind of things. With these spoken word projects and the mural project, the planting… And they need opportunities to shine because I think they've lost all their self–confidence and self-worth – if they ever had it. And now they don't have it and they need to feel successful at something. They haven't been successful at school, you know, academically, and they need to feel successful. ("Joan," SOFE cooperating teacher at the alternative high school)

Note that at the end of Joan's remarks there is evidence that even though this cooperating teacher recognized the benefits of the SOFE initiatives, she still did not perceive them as "academic." At the same time, Joan was quick to praise her SOFE teacher candidates for engaging their students and was able to see that having the additional challenge of the SOFE initiatives helped to make the practicum experience richer:

> It's so good that they have this mission that they have to think about. You know, at this stage in their education, I think it's fabulous. This gives them the opportunity to have to really think about what they should be doing with kids, and find out first hand what works and doesn't work. I think the more they're exposed, and the more opportunities they're given to have to assume the responsibility of teaching these kids, and relating to them and disciplining them —all those things that go along with teaching, cause it's so much more than just… *teaching*. ("Joan," SOFE cooperating teacher at the alternative high school)

In one other example of opposing schema, the teacher candidate had to constantly justify the effectiveness of OEEE approaches to a cooperating teacher, who would say things like, "Okay, today I saw you teaching!" (This was after a lesson where the teacher candidate had shown examples on the blackboard). In this case, the teacher candidate felt no internal tension and the cooperating teacher's opposing schema did not interfere with the candidate's ability to

practice in their own way. I thought this might have been due to the easygoing nature of the cooperating teacher and the very grounded confidence this teacher candidate embodied. But the case took a surprising turn when I interviewed the cooperating teacher at the end of the practicum. When I asked him (as I did every cooperating teacher I interviewed) about his interest in Nature and the environment, he replied, "Well, I'm a real camp kid. I went to camp my whole childhood and then worked as a counsellor until I started university, so Nature and being outdoors is a big part of who I am." Once again, I was brought face to face with the grasp dominant and persistent schema can have over a teacher's practice. Here was a cooperating teacher who liked to mention that "real" teaching involved chalk and a blackboard, a mentor who had so far been unable to comment favourably on his teacher candidate's OEEE approaches, and yet, subjectively at any rate, he was a real camp kid and lifelong Nature lover. This shows the strong hold that schema in the school field can have in reproducing traditional teaching: even a teacher who proudly aligns himself with Nature, outdoor pursuits, and experiential leadership finds it hard to recognize any of these as teaching once back on school grounds.

Institutional constraints.

The fact that the SOFE operated within a larger, more unwieldy program meant that there were institutional factors that presented constraints on the teacher candidates. For example, McGill's academic course schedules for its Education students were unalterable: cooperating teachers had to be found who could accommodate candidates' schedules that freed up only a specific half-day per week. Within the University's teacher education program, the teacher candidates followed a course load that didn't take into account their experiential participation in the SOFE throughout the fall and winter semesters, unlike the rest of their academic classmates who worked through the year on coursework and then had a three-week field experience in May.

However, no allowances were made for the SOFE participants, such as extensions or reductions in their course workloads, or recognition for SOFE assignments in other courses. By the end of the SOFE in early April, the teacher candidates were exhausted; many were feeling barely able to cope. One way to mitigate this would have been to offer the SOFE as a replacement for one of three McGill credit courses in the winter term, which would have alleviated some of the stress and workload, and would have recognized the labour-intensive strategies of OEEE as bona fide academic work.

Assessment constraints: using traditional assessment rubrics for a non-traditional field experience.

Another constraint that emerged was how teacher candidates were assessed. They were evaluated by me, their field supervisor, and by their cooperating teacher; however, the assessment tools and conventions that existed did not properly take into account what the SOFE was trying to accomplish. The fact the teacher candidates were assessed using forms and procedures based on traditional teaching expectations while trying out new, different ways of teaching was inherently problematic.

The formative and summative evaluation forms from the Office of Student Teaching (OST) were intended to be used by cooperating teachers and supervisors to evaluate the teacher candidates. Samantha's case illustrates that using a traditional assessment tool for a non-traditional field experience can make for a rocky relationship between a teacher candidate and the cooperating teacher, and even result in negative evaluations that could negatively impact the teacher candidate's future ability to find a position after graduation. In both formative assessments by her cooperating teacher, Samantha received a "good" or "very good" in all areas except two. Her cooperating teacher's assessment was "satisfactory" in the areas concerning the

use of voice effectively in the classroom and the smooth running of the classroom (Samantha, Office of Student Teaching (OST) assessment form, Appendix F). Of course, these concerns speak to traditional teaching models of direct transmission where students absorb knowledge sitting in rows as their teacher fills their heads from the front of the class, the very thing that Samantha had once rejected in no uncertain terms in a journal entry: "The experience was as flat as the blank worksheet staring up at him". Effective use of voice is another aspect of the assessment form that reaffirms traditional teaching. The cooperating teacher used a loud authoritative voice and felt no compunction about chastising individual students in front of the class, whereas Samantha found ways to tackle students privately to discuss behaviour or other issues one-on-one. Ultimately, Samantha opted to "not rock the boat" in her practice and operated in ways her cooperating teacher would recognize as more "teacherly" (Samantha Interview, June 2011). This likely also played into Samantha's decision to start extracurricular activities for the students (the lunchtime Green Club), where she could remain true to herself away from her cooperating teacher's disapproving gaze.

It is interesting to note that several of the cooperating teachers who worked on the SOFE opted to not use a checklist that is part of the formative and summative assessment forms, and instead evaluated the professional competencies outlined by MELS in anecdotal ways. This rejection of the OST assessment form provides evidence that this type of evaluation tool can be regarded as a constraint within teacher candidate assessment. For one thing, I would argue that the use of these traditional assessment tools immediately risks forcing constraints on non-traditional practice. What if teacher candidates in an "alternative" program know what traditionally-minded field supervisors and cooperating teachers are looking for, and then try to satisfy these biases in order to obtain a favourable evaluation of their practice?

Within the syllabus I have added several additional competencies that were specific to the SOFE (Appendix A), including this one: To demonstrate a firm understanding of the QEP and the lifelong learning and cross curricular competencies in order to better integrate service-learning and environmental initiatives into everyday teaching and evaluation practices. While these additional competencies helped to more fully evaluate SOFE-specific learning, in hindsight I realized I had not altered the cooperating teacher's corresponding assessment tools at all. Indeed, there were teacher candidates who consciously planned a more traditional lesson on some of their practicum days to align with what their cooperating teacher would be looking for; the real reason for the remark by a cooperating teacher quoted earlier when his protégée was at the blackboard ("Today I saw you teaching"). However, there were other viewpoints as well among the SOFE's classroom mentors. Several cooperating teachers opted to forego the use of the OST assessment forms altogether, one of them stating they never used the forms as they found them "outdated and meaningless" (that was a cooperating teacher from Willingdon Elementary School in the Notre-Dame-de-Grâce neighbourhood, who instead used a more contemporary Université de Montréal model).

Had the assessment tools and rubrics been more tailored to the SOFE, the cooperating teacher in Samantha's case might have been better equipped to assess teaching situations very different than those she would normally expect to see during a teacher candidate's practicum. This would have helped ensure teacher candidates did not stifle or truncate their desired practice to opt instead for traditional approaches lowering stress loads or securing favorable evaluations.

Common affordances

Agency can be defined as the mobilization of schema and resources in response to social situations where habitus and field don't fully align, and there is a *misfit* (Bourdieu, 1977). As

discussed previously, a misfit can produce tension, and there is often a period within (or preceding) this mobilization when an agent can feel unsure of what to do next, or even be overwhelmed as Isabelle was in the journal entry quoted earlier (November 8th) where she confessed to feeling entirely lost as the practicum began. While these feelings may not always be present when some agentic action is called for, the evidence suggests they often are. One of the important conditions for the emergence of agency is an environment where the individual can feel these ambiguities and crosscurrents, and puzzle through the dislocation without reverting back to whatever modes of operation their habitus held as a default position within the field. Ultimately this was the aim of the SOFE: to provide the training, support, and sense of group and community conducive to taking risks with new teaching practices.

This next section will examine three aspects of the SOFE that proved to be common affordances across the cases: (a) a risk-friendly environment and the different elements that produced this; (b) active reflection that helped support and expose otherwise unexamined schema about teaching and learning; and (c) the way the SOFE was organized in a framework in which teacher candidates could enact new, unfamiliar OEEE practices.

A risk-friendly environment.

Despite the constraints experienced by the teacher candidates in their efforts to enact OEEE and activist teaching, there were intervening factors that mediated the constraints. One important factor that seemed to contribute to the development of new schema was the creation of an environment in which teacher candidates felt safe to try things and admit uncertainty because they knew their risk taking would be supported. Evident in several cases, the establishment of this environment was accomplished through trust and community building activities, having the

SOFE instructor act as field supervisor, and developing cooperating teachers as allies. Each of these factors will be discussed.

Opting in and building trust -

When the opportunity of participating in SOFE was first offered to the McGill Faculty's pre-service teachers, it was made clear that they would be trying out new things and teaching in different ways in an experimental setting. Teacher candidates were then free to opt into this special opportunity field experience with the knowledge they would be challenged to do things a bit differently. Right from the start, this fostered a risk-friendly environment.

The fact that students had to sign up for the field experience may have encouraged a sense of solidarity about the value and importance of the modes of education espoused. There was no prior experience or prerequisite criteria needed to participate in the SOFE, and so it was understood that everyone was new to trying out ways of OEEE teaching in a formal school setting. This may have afforded the participants with the sense that they could take risks while trusting they would be supported and encouraged along the way. Evidence of this sense of trust can be found in the interviews and journals where the teacher candidates noted feelings of being heard in their seminar sessions, of feeling better after a seminar, and of feeling less alone and more supported. Once the school practicum began, many seminar sessions started with the teacher candidates sharing a sense of doubt about their abilities to teach in these ways. In this safe space within the seminar sessions, they shared stories of victories and defeats, and provided each other with support and encouragement. The following is a passage from Isabelle's journal after a seminar discussion early in the practicum:

> I was happy to hear during seminar that I was not the only one who felt they did not know what to do with their class, or where to start: "lost". I feel like our seminar class motivated

everyone to go forward and think positively about this experience. I know that things will not get done unless I "apply myself." [*Here she uses the French word, foncé, or push, and adds: il faut foncé pour obtenir ce qu'on veut*].[21] (Isabelle Reflection journal, November 8, 2010)

Without this carefully constructed safe space where the teacher candidates could share their anxieties and feelings of self-doubt without judgment, it is unclear whether they would have continued trying to teach in the open-ended and place-based ways they were initially so enthusiastic about.

In addition, trust-building activities and approaches commonly found in outdoor and experiential education were integrated into the professional seminars. These cooperative and trust-building activities provided a shared experience base for the SOFE teacher candidates, and helped them build a sense of camaraderie and shared purpose. With increased trust often comes a increased willingness to take calculated risks, and the teacher candidates often mentioned they felt more able to take risks because they were part of the SOFE. As Isabelle said in her self-evaluation portfolio,

> My field experience provided the opportunity to explore and take risks. I might not have explored as much as I could have; however, I believe [in the end] I took some risks that ended up bringing about a positive outcome. (Isabelle, Professional portfolio, April 2011)

Active communication -

There was much discussion within the seminars about how the teacher candidates' could remain committed to the ideas of OEEE when faced with the many obstacles that traditional

[21] "You have to push hard to get what you want."

schooling presented: the limited time with classes due to chopped up schedules, specialists and resource time, as well as pressure from their cooperating teachers to "cover the material." In this particular "field of struggles where agents strategically improvise in their quest to maximize their positions" (Grenfell, 1992, p. 54), the teacher candidates were able to dig more freely into toolboxes of skills, temperament and personal experience (their habitus) to discover recombined schema and resources than might have been possible in a traditional second year practicum. Isabelle voiced this idea of a "field of struggles" and the change it can induce,

> There were times when I felt overwhelmed about the project. Times where I just wanted my field experience to finish. But when I look back on those downhill moments, I realize that they were important to my learning. They were important because I would question myself as to why I was feeling that way. I would reflect and try to find solutions. The solutions helped me advance in the project and not give up. (Isabelle Reflection journal, March 28, 2011)

Communication was a cornerstone of SOFE and grew out of the risk-friendly environment that was mindfully constructed through leadership and coaching exercises, community development structures (rules of conduct for meetings, maximum speaking times, consensus building), and active reflection and discussion opportunities. As Sewell (1992) explains: "The transpositions of schemas and remobilizations of resources that constitute agency are always acts of communication with others" (p. 21).

The teacher candidates had to communicate with each other, with cooperating teachers, students, myself as their instructor and field supervisor, and, in their journals, with themselves. There were multiple structures and conventions in place to facilitate this communication, from seminar discussions, to weekly host-school team meetings, to formative field assessments

completed by both the cooperating teacher and myself. This knitted a kind of framework for the transactional nature of these "acts of communication," in which making sense of these acts of communication with others may have been facilitated by common goal orientation and opportunities for discussion, reflection, and sharing in the seminar and the SOFE. The framework established can be seen as a disruptive force meant to provide the necessary momentum to counteract the schematic inertia of all involved: teacher candidates, cooperating teachers, and students within the host school. It is much easier to fall back into a habitus-informed default position when isolated. But with support from peers, cooperating teachers, the instructor/supervisor, and others struggling with the same issues and challenges, there may be a greater sense of purpose and solidarity that can provide the motivation and strength to push past urges to revert to a default position.

> In SOFE, there was a smaller group. I mean, with the [education] program [as a whole] there is a lot of group work but you are <u>put</u> with these people; I don't find the program has much of a sense of community. It is so important to talk with other teachers to develop bonds. In SOFE, we really got to know the people more deeply. (Isabelle, Group interview, January 2012)

Samantha was able to address the tension between her and her cooperating teacher by developing more detailed lessons and communicating with her cooperating teacher the day before each practicum session via e-mail. This was something I had discussed with Samantha during our debrief of the "emergency meeting," during which I was impressed with her ability to assume some of the responsibility in the miscommunication with her cooperating teacher Jaime . It was also clear from a journal entry dated the day after the emergency meeting that she felt her cooperating teacher was making things harder than they needed to be: "My cooperating teacher and I have a new routine worked out which, frankly, relieves me. She rattles easily, and more

structure, hopefully, means less room for miscommunication" (Samantha Reflection journal, January 17, 2011).

Samantha and her fellow SOFE students continued to collaborate, and often met for tea at the end of practicum sessions to share and debrief. One SOFE colleague remarked in her journal that she was surprised Samantha was experiencing negative tension with her cooperating teacher; from what she had witnessed, Samantha had operationalized many OEEE learning situations in the short time she had been at her host school.

It could be argued that Samantha did develop new schema and resources within the school field (Table 4, #5). By collaborating with the cooperating teachers and other teacher candidates over the course of the seven month practicum while being immersed for a half-day per week in school culture, Samantha's range and diversity of school and teaching/learning schema and associated resource sets could well have developed further.

Would Samantha have been able to salvage a practicum distinguished by clashing teaching styles if she had not been in the SOFE's risk-friendly environment? She might well have stifled her classroom approach to fit in better or, contrarily, have given up if she was not able to teach in ways authentic to her teaching philosophy. Being part of a community in the SOFE may have provided her with a sense of security, confidence, and solidarity as she confronted the situation with her cooperating teacher and the clash of their approaches to teaching.

Enacting agency will ideally lead the actor to a more powerful place. Without this sense of solidarity, of a peer group also experiencing common challenges and sharing their trials and tribulations, this re-tooling might not have occurred. Had Samantha forged ahead with her ILES deprived of the safety net of the SOFE when dealing with this particular cooperating teacher, her "agency" might have resulted in failure and an unsatisfactory grade on her practicum. As well,

had Samantha been in a regular second year practicum lasting only three weeks, she would not have had the time for reflection or to warm up to a new situation. As she describes,

> It really took awhile for me to get what the Evergreen SOFE was all about. It took a couple of months to really understand, to formulate in my mind what I needed to do. I didn't feel like I got a lot of info or direction from the cooperating teachers – they didn't really know what I was doing or what I was supposed to be doing. It did take awhile, I didn't get it right off the bat (Samantha Interview, June 2011).

Although the above passage points to a delayed activation in the uptake of OEEE, the SOFE seemed to provide a path forward for Samantha to put her teaching philosophy into operation. Within the SOFE, she was likely able to more fully reflect and articulate her teaching philosophies and values. Her commitment to making learning meaningful and connected to real life brought her to the SOFE to begin with, and ultimately she enacted the teachings involved in fully integrated environmental experiential education with aplomb. During her interview with me after the SOFE in June 2011, she spoke with confidence and renewed commitment about these ways of teaching; most importantly, she acknowledged the fact that she would need to openly and frankly discuss teaching philosophies and approaches with her next cooperating teacher. In this way, there was the possibility of some transposability of agency between the SOFE experience and the next steps in her practice.

Teacher candidate / field supervisor relationships-

By playing the dual roles of SOFE instructor and field supervisor, I interacted more with the SOFE participants and developed deeper relationships with them. This afforded a greater understanding of their situations and enabled me to provide more effective support to them during their practicum experience, which added to the building of a risk-friendly environment.

For example, when Samantha's cooperating teacher called me in for an emergency meeting, I came equipped with more interactions and experiences as Samantha's SOFE seminar instructor than I would have as a regular field supervisor. When Samantha's cooperating teacher said she wanted to discuss what she felt was Samantha's lack of contribution and confidence with respect to teaching situations in the classroom, I was able to recognize this as a clash of teaching styles. I had participated in or observed lessons and activities that Samantha had organized with her host class and so could provide another perspective, especially when it became clear that her cooperating teacher's model of teaching was entirely conventional. Samantha's quiet demeanour was also perceived by the cooperating teacher as a lack of self-confidence and as evidence of a lack of communication skills. She was surprised to hear Samantha eloquently map out her lesson plans during our emergency meeting.

It was also unclear whether the cooperating teacher had actually attempted to communicate with Samantha and clarify her approach to her practicum before calling an "emergency" meeting. Under normal circumstances, a cooperating teacher calling an emergency meeting with a teacher candidate's field supervisor would result in a major red flag at the Office of Student Teaching and result in extra scrutiny of the trainee teacher over subsequent years of the education program. Without the SOFE's combined role of field supervisor and instructor, this could have been fatal to the teacher candidate's future career, thus truncating any risk-taking in order to secure needed favourable evaluations.

In Isabelle's case, the fact that I was her field supervisor as well as her seminar instructor provided her with a greater number of opportunities and contexts in which to examine her practice. This dual relationship afforded her the time and space required to grapple with the dominant schema she was facing. I was aware of her struggle through her reflection journal and

brought that awareness with me on field visits. Traditionally, the field supervisor has no contact with the teacher candidate other than during the field placement assessments.

Cooperating Teachers and others as allies –

For some teacher candidates, significant allies helped to reduce barriers and afford success in meeting SOFE goals. For example, some teacher candidates who experienced internal tension from persistent schema that interfered with their practice worked with cooperating teachers who were able to help them reconcile their internal struggle. In one case, this took the form of a cooperating teacher who took the teacher candidate aside over lunch and went through the curriculum to highlight all the QEP competencies and formulations ("areas of lifelong and broad areas of learning") that could be put into operation within the SOFE initiatives. This kind of mentoring helped move the teacher candidate's practice quickly forward. In Emma's case, the cooperating teacher was an active ally in realizing the greening initiative. She provided supplementary material, gave extra time, and was instrumental in helping Emma connect the greening initiative to the curriculum. While Emma did not manifest any sense of constraint in her practice, this could have at least been in part because her cooperating teacher was so supportive.

In Isabelle's case, although the competing schema she struggled with were internal, she did not have a cooperating teacher who was able to help her puzzle through her dilemmas. Instead, it was her relationships with fellow SOFE students and myself as her instructor/supervisor that seemed to play a more important role in supporting her to come to terms with who she was as an educator, and what she wanted to change.

In SOFE, there were logistical constraints that forced us to put a number of teacher candidates in difficult placements. One candidate, "Rachel," was placed with a cooperating teacher who was very open to OEEE but also taught math to three Grade 6 classes on the one

morning Rachel had available. This constraint, however, provided Rachel and her cooperating teacher with an opportunity to put their teaching philosophy to the test: they developed some ingenious and effective experiential and environmental learning situations that were then integrated into the greening project other SOFE teacher candidates and cooperating teachers were organizing at the same school.

> For the geometry introduction, I had the kids create a roof for our worm farm. I showed the kids a PowerPoint presentation of how construction engineers create miniature models before starting a major project. Then I had the kids create their own miniature model. (Rachel Reflection journal, January 2010)

Here, the teacher candidate had no internal tension about OEEE approaches or the logic of integrating these ways of teaching into a math class. She was able to pick her way through these learning situations. This same teacher candidate completed her third year practicum at one of the SOFE participating schools the next year (2010-2011), where she was able to enact numerous OEEE and activist teachings across the curriculum (Rachel, Follow up interview, January 2011).

In another case, the cooperating teacher helped the teacher candidate see how much the students had learned from an outdoor experiential activity on how worms compost fallen leaves. The cooperating teacher integrated that learning into a language arts class on a day when the teacher candidate was not at the school. When the teacher candidate returned for her half-day the following week, she was greeted with adventure stories by the children about the worms and composting. This same cooperating teacher had the stories bound in hardcover as a year-end gift for each student and included a copy for her SOFE teacher candidate. The cooperating teacher said to me during her interview:

> I wanted "Susie" to see what an impact that experience of going out and finding the worm castings had on the children. It's hard to know what they are taking in when you're out there and everything's kind of busy, so I thought it would help her with this kind of hands-on work she likes to do, to see that the students learned so much, and that it got them excited about writing! (Interview, Anonymous cooperating teacher, June 2011)

In other cases, an ally had to be called in to aide a teacher candidate. Because Samantha's cooperating teacher did not seem able to appreciate or support the kind of teaching she wanted to enact, I arranged for another teacher, "Pam," who had been a SOFE cooperating teacher the year previous but was now working as a resource teacher, to come and observe Samantha. I trusted her opinion and also wanted Samantha to get feedback from sources other than her formal cooperating teacher. In the lesson Pam observed, Samantha had the students working in small groups on energy-saving technologies that could be found throughout the home. The groups were given different materials and props to work with, and conducted research using information Samantha provided to see if or how the items saved energy. Samantha had brought in things from her home including compact fluorescent and incandescent light bulbs, pink fibreglass insulation, silicone caulking and weather-stripping. In Pam's anecdotal assessment she mentions, "Great use of tangibles. Overall meaningful lesson embedded in the contexts of the students' lives" (Samantha OST Anecdotal assessment, January 21, 2011). The following week Samantha ran a lesson on the ecological footprint using the *www.ecofootprint.org* website calculator questionnaire on the SmartBoard. Pam observed this lesson and wrote in her anecdotal assessment: "Great use of technology! Loved the student involvement in managing the interface of the website. Effective guidance of student questions to help them build their understanding.

Find a method comfortable to you to regulate when to talk and when to listen" (Samantha OST Anecdotal assessment, January 25, 2011).

When a cooperating teacher's schema clashes with the teacher candidate's schema, it can adversely impact the latter's desired practice (described in the section on constraints). By bringing in other teachers who did not embody these clashing schema, Samantha was able to get the support and recognition she needed to bolster her confidence in her own practice. This helped her to move forward in meeting SOFE goals.

Active reflection.

Active reflection was a common affordance for the participants in SOFE. In order to shift default habitus into new practice, unexamined schema and values need to be brought to the surface. By providing SOFE participants with an exchange forum in the form of course seminars, host school team meetings and teacher candidate and field supervisor consultations, there was a lot of opportunity to actively discuss and reflect on practice. Teacher candidates were also expected to keep a reflection journal and to share passages during seminars. These passages often resulted in discussions among the SOFE students that led to more reflection in their journals.

> Our group meeting last week got me realizing that I don't necessarily need to be talking in front of the whole class in order to be teaching. If I go back to my first weeks of *stage*, I remember saying how my cooperative teacher wasn't teaching the students anything. Now I understand why Kathleen [Usher] looked frustrated when I said this. Students were working on their Halloween projects. They were learning by finding information for their project, they were working in groups (which is needed for cross-curricular competency),

and they got to present their project in front of the whole class. (Isabelle Reflection journal, February 21, 2011)

Isabelle was able to work on developing new schema within the school field (Table 4: #6 and #7) through active reflection and the sharing promoted by the tight-knit group of McGill-Evergreen SOFE students. Moving from the tacit to the explicit through reflection (Schön, 1983) may have encouraged Isabelle to be actively persistent in her reflection and subsequent re-evaluation and construction of new schema about what teaching and learning could involve.

> What does teaching look like? In my case, it was not by lecturing students in front of a class. It was by having them work in groups. Think critically, solve problems, work with information as well as some environmental facts. They have learned things through our discussions. Also they might have learned things about themselves (since they worked in a group on a project for six months). I sure learned things about myself. (Isabelle final Reflection journal entry, March 21, 2011)

Using the outdoor classroom was very much outside of the norm in all the host schools. Many of the teacher candidates in SOFE felt they had to justify their use of OEEE approaches and practices, which often led to deeper reflection about these practices. One of the teacher candidates in the SOFE's first year wrote:

> Because this field experience was centered on outdoor and experiential learning, my cooperating teacher and other people who I shared the experience with often asked me why I went about certain ways of teaching. For example, why did I bring my students outside almost every class when they could be learning in the classroom? I had to constantly defend my choices in terms of how I went about teaching a lesson because some people

> viewed my bringing the students outdoors as a waste of valuable time. Having to explain and justify my choices continually reminded me of why I was doing this field experience and reinforced my ideas that what I was doing was applicable and valuable. (SOFE Teacher candidate self-evaluation, April 2010)

This appraisal and resulting sense of renewed commitment was evident in many of the teacher candidates. Justifying why you want to operate in particular ways is an important part of becoming a more conscious practitioner. The SOFE students from the first cohort remained in close contact with me after the course as they completed their third year practicum over the following school year (it ran from late August until the end of November, 2010). During the reunion potluck in early December 2010, several of them spoke about having had "the talk" with their new third year cooperating teachers. This was their way of describing how beginning a practicum invariably involved justifying their "unconventional" methods to cooperating teachers who needed to be reassured about the "validity" of approaches the latter had already been apprised of when volunteering to act as mentors for the SOFE. These former candidates reassured the second cohort of SOFE participants also at the reunion dinner that they still felt confident integrating OEEE and environmental action projects into practica despite the push-back and uncertainty that accompanied initial enactments.

The journals were a great tool for teacher candidates to voice both their doubts and their commitment regarding non-traditional ways of teaching. The seminar classes, whole group sessions, and reunion potluck provided effective forums to share these reflections and deepen the examination of practice and its influences.

SOFE framework & assignments

The assignments and the framework[22] of the SOFE also acted as affordances for the participants. These included assignments for the professional seminar, such as the Integrated Learning and Evaluation Situation (ILES) project and the place-based field trip assignment, and the expectation that greening and environmental positive action initiatives would be integrated into practicum experience.

ILES – making the work count

The SOFE was trying to disrupt the long-held notion that while OEEE and positive action initiatives are fun, engaging and important with respect to developing future citizens, they are not actual coursework covering actual curricula. How did the SOFE attempt to disrupt this? By including the development of an ILES and a place-based field trip as course assignments, the teacher candidates were encouraged to find ways of integrating these environmental and community-based initiatives into "real" formalized learning situations that covered curriculum in assessable ways. In the professional seminar, we discussed how important it was to connect environmental and community-based learning to the curriculum, and regularly explored ways to do so.

In Chapter 1, I described observing how practicing teachers introduced to OEEE principles and positive action initiatives would finish a training course seemingly ready to enact these approaches, only to revert to traditional practices once re-embedded in their own schools. Similarly, the teacher candidate we've called Isabelle also seemed "to hit a wall" the moment she entered her host school. Isabelle was greatly constrained by the well-entrenched schema and resources structuring her school that relegated OEEE and activist teaching to extra-curricular

[22] This reference to the framework of the SOFE includes the way it was set up over two terms in host schools with clusters of teacher candidates and cooperating teachers utilizing the greening grants and participatory design processes.

activities. It is clear that consigning OEEE to the domain of extra-curricular activities leads to a greater risk of dropping environmental initiatives altogether—any work considered *extra* on top of a busy teacher's often overfull plate risks being abandoned to make time and energy for so-called *real coursework*.

Across all of the three case studies observed, the teacher candidates used the ILES as a structuring tool to either help rationalize the approach to themselves (Isabelle); to their cooperating teachers (Samantha); or, as in Emma's case, to provide an organizing tool to take an initiative from inception to implementation while covering curricular outcomes and assessments of student learning along the way.

One turning point in Isabelle's growth seemed to come when she put together her Integrated Learning and Evaluation Situation (ILES). This assignment provided a structure where she was able to more formally present her Earth Day event and environmental initiatives as learning situations connected to the curriculum, and so highlight the competencies and broad areas of learning covered within the different situations, activities, and initiatives she had planned (Table 4, #4). In a follow up group interview eight months after the SOFE, Isabelle said:

> Doing the whole ILES, to see how many cross-curricular competencies and how much curriculum was covered, I was amazed. On my latest *stage*, [the third year practicum within the McGill Education program] I got the students working on a comic strip project. I didn't want to just talk to them the whole time. I would circulate and help them out. (Isabelle, Group interview, January 2012)

Like most of the students in the SOFE, Isabelle only truly formalized the work she was doing in her host class when she started assembling her final course project: the building of an

Integrated Learning and Evaluation Situation (ILES, Appendix C). As novices in constructing OEEE learning situations, the teacher candidates tended to find more success by diving into chosen initiatives and then later finding ways to integrate the learning into the standard curriculum. The SOFE's participants had spent the beginning of the professional seminar looking at the QEP and how well it lent itself to place-based environmental education. Isabelle's reflection on the development and preparation of her final ILES project in late March, six months into the SOFE practicum, showed that she had begun to develop new schema about what teaching and learning could involve:

> While organizing Earth Day with my students, I realized they are learning a lot of different things without my having to lecture in front of the class. By doing research, using their prior knowledge and communicating with others, they're gaining information for their presentations. (Isabelle, Professional portfolio, April 2011)

And yet, in Isabelle's case, what transpired was not a full expression of agentic and activist teaching. Although her ILES was very well done, with connections to broad areas of learning and cross-curricular and subject specific competencies that all *sounded* very good, it was not actualized in a pedagogic or evaluative sense. Thus, while the ILES did seem to act as an affordance, there remained evidence of constraint in Isabelle's continuing ambivalence about whether the initiatives and approaches developed in her ILES constituted real teaching (note how her journal entries rationalized lesson approaches: "they may not seem like much, but the students will get something out of it" p.183 Appendix C in this document).

Schoolyard greening: a framework that affords activist teaching

Looking at Emma's case, we see how the schoolyard greening project, where she had her host classes devise and build a school garden and outdoor studying space, was a useful

framework to help teacher candidates operationalize OEEE. By using the outdoor classroom and enacting teaching in this space, Emma's schema of what learning could involve and where it could take place expanded from what she had been exposed to during her own school experience. The complex process of setting a greening initiative in motion and connecting the student activities involved to the curriculum provided Emma with the opportunity to give full expression to her desired practice. Emma's cooperating teacher played an important role in this process, seeing an opportunity to get back to "teaching in the ways I know I *should* be teaching" (Kim Interview, June 2011), and acting as an ally in the development of Emma's ILES and greening project.

The following is a description of a video clip of the day Emma's school started to build their schoolyard project:

Three teenagers work together to brace a large piece of lumber while a man, the custodian of the school, cuts it to size. They are using school desks as workbenches, the boys having carried them out earlier when the group was getting set up. Another group of students use drills to put together benches made from pieces of 2x2 lumber. As the school math teacher works alongside them, everyone is chatting and looking happy. Emma circulates checking everyone has the materials they need, and inspects the design plan with students making a mural to be sure planned planters won't conceal the artwork. On the school steps, her cooperating teacher sits with the school's head teacher and shakes her head at the scene:

Cooperating teacher: This is great. I never thought we'd see Gino [the math teacher] come out and work with us, but look at him! He's happier than I've ever seen him.

Head teacher: And look at Niko [the custodian], he is SO in his element. And, you know, those are his power tools the kids are using. Amazing!

Conclusion of data analysis of the three cases

The analysis reveals that constraints to the enactment of the SOFE non-traditional teachings were multiple and strong, and came from both within and outside the SOFE, an institutional entity within a teacher education program. There was evidence for some constraints being lessened or eliminated by a variety of affordances, which worked on an individual and collective level to advance the learning and practices of the teacher candidates. However, some constraints were persistent and were not ameliorated by the SOFE experience.

In the analysis, we see that each individual responded and developed strategies for action based on their particular repertoires of manoeuvres (Biesta & Tedder, 2007), cultural toolkits (Swidler, 1986), and cultural competencies (Seiler, 2002), which they used to operate within the structures of each field.

> [This] …concept of agency highlights that actors always act by means of their environment rather than simply in their environment . . . the achievement of agency will always result in the interplay of individual efforts, available resources, and contextual and structural factors as they come together in particular and, in a sense, always unique situations. (Biesta & Tedder, 2007, p. 137)

Each person faced a different set of constraints. Isabelle's persistent schema about what learning could involve got in the way of her practicing OEEE, even though she consciously wanted to enact these new ways of teaching. Her schema about school, teaching, and learning had remained largely unexamined before her practicum, when she had to face the contradictions between who she was as a teacher and who she wanted to be. It was by recombining her skills and tools and finally working within an extra-curricular framework that she succeeded in

enacting different ways of teaching and came to appreciate the "real learning" these action initiatives encouraged.

For Samantha, the SOFE experience initially provided an opportunity to enact ways of teaching she espoused but had not seen operationalized in school. Her experience as a counsellor working with the mentally disabled had honed a particular skill set with regards to active listening, communication and empathy, and this served her well with the students in the host classroom. However, a clash in teaching styles and schema with her cooperating teacher acted as a constraining force. While the competing schema was, in contrast to Isabelle's case, external, it had the same effect of initially truncating agentic and activist teaching. To some extent, Samantha developed strategies of action within her practicum and looked forward to see how to better approach subsequent field experiences.

Emma's case reveals evidence of a fuller enactment of OEEE that was able to evolve due to the absence of competing schema. This candidate experienced neither schematic inertia nor a clash in teaching styles. The greening initiative prompted her to bring in human and material resources from other fields, as well as from within the school field, and then use them in creative ways to meet set challenges. Her agentic teaching seemed to encourage more agency in her cooperating teacher, and the greening initiative provided a structure in which to enact these non-traditional ways of teaching while covering the curriculum in assessable ways.

Chapter 7 Discussion

Within the data analysis of the previous chapter, I identified and elaborated on a few of the issues contingent to teacher candidates' ability to embrace and enact change. We saw that issues such as competing schema about teaching, learning, and school can constrain practice. In some cases, cooperating teachers helped teacher candidates negotiate and reconcile their internal tensions. In other cases, cooperating teachers had opposing schema that interfered with a teacher candidate's ability to practice in the ways they desired. This latter situation involved further complications as issues of identity, power and authority can also constrain practice, particularly for teacher candidates asked to bridge the roles of student, learner, teacher and authority figure. This study has indicated how being part of a learning community collectively engaged in reflective practice and fostering a risk-friendly environment can cultivate teacher candidates' abilities to enact and embrace change.

On a macro level, I designed the structure of the experience so that teacher candidates could test out these ways of teaching; within that structure, the candidates recognized and came to terms with their own teaching schema at the micro level. The OEEE and greening initiatives provided an entry point, a way to unearth long-hidden individual ideas and deep-seated notions about what teaching and learning involve. Indeed, perhaps this is what teacher preparation really is, or should at least be about—a preliminary period in which to innovate and take risks in order to look in the mirror at one's novice practice, and then ultimately reject or refine the image that appears.

> If there is an inherent conflict between policy and practice, it lies in the tension between simplification and generalization on the one hand, and individuation and localization on the other. Policies are normally defined for general circumstances, typically devoid of

nuance or conditionality. Practice, on the other hand, is terrifyingly local and specific. (Shulman, in Darling-Hammond & Sykes, 1999, p. xiv)

This chapter expands on this study's findings and provides context by first linking to the existing literature on the challenges of fostering transformative learning in teacher preparation programs. Any such review must highlight the central issue of moving from theory to practice and the obstacles produced by this translation, impediments that too often block the desired enactment of innovative teaching methods. Here, two key aspects of the process of transforming teaching methods will be discussed: (a) achieving awareness of the tacit principles and values that drive one's teaching decisions and practice (*conscientization*); and (b) broadening one's cultural competencies and breaching habitus in order to learn to teach by different principles and values.

The argument will also be made of the importance of fostering transformative practice for pre-service teachers within Quebec's particular context, where teachers are expected to teach using competency-based, socio-constructivist methods even though their own education and teacher training may have been quite different. Finally, the enactment of environmental education initiatives such as the SOFE within teacher preparation programs will be presented as effective ways to reveal the hidden structuration and schema about teaching and learning that can have a truncating effect on new teachers' practice if left unexamined.

Inefficacies of teacher education methods courses

The report of the AERA Panel on Research and Teacher Education (Cochran-Smith & Zeichner, 2005), a significant, wide-ranging review of recent research in teacher education, supports the notion that teacher preparation programs are often ineffective at fostering transformative practice. A chapter authored by Clift and Brady (2005) examining methods

courses and field experiences assesses research on whether (and to what extent) teacher candidates in field experiences enact theories about education and teaching learned in academic methods courses. Most of the studies reviewed seek to identify elements helping pre-service teachers to vanquish the apprenticeship of observation in order to move on to more active and engaging learning. Here, the research findings are sobering, showing repeatedly how teacher candidates revert to maxims from the apprenticeship of observation once in the classroom, doing so even when they explicitly evince the approaches and theories studied in methods courses.

> The difficulty of enacting practices recommended by methods courses and adopted by prospective teachers tells us that even when pre-service teachers believe in teaching a certain way, they often do not know how to act on that desire or how to deal with difficulties they encounter. Moving to action is more difficult than the intention to do so. The studies conducted by Tobin and his colleagues provide an insight not found in the other content areas—that when dedicated and competent teacher education practitioners work in classrooms alongside prospective teachers, they, too, have difficulties with practice. Working, discussing, and revising together may hold promise for reshaping relationships among all trying to improve practice. (Clift & Brady, 2005, p. 322)

In contrast with the observations above, however, the reality is that in most teacher education programs the field supervisor in particular is not a faculty member, does not teach methods courses, and has limited contact with teacher candidates and cooperating teachers (often next to none in the case of the latter). These circumstances invariably produce mixed messages, as the person evaluating the practice teaching may not necessarily adhere to, or even be aware, of the theoretical paradigms taught in the corresponding education faculty. In fact, even when a teacher education program does have a very coherent message across academic content areas into practice teaching situations, trainee teachers "…may still resist changing beliefs or practices

because they are personally uncomfortable with the competing beliefs and experiences, coursework, and current perceptions of curriculum, students, pedagogy and other factors" (Clift & Brady, p. 331).

The SOFE experience supported these findings, as we saw in Isabelle's case when dominant and competing schema truncated her ability to enact desired practice. More optimistically, it may be that the opportunities provided by SOFE for discussion, reflection, and continued enactment ultimately helped the program's teacher candidates to move beyond entrenched schema.

> Methods instructors increasingly dismiss conceptions of teaching merely as transmitting information; instead they attend to the entering beliefs of prospective teachers with the goal of enabling them to rethink their assumptions about teaching and learning to act on those new assumptions. (Clift & Brady, p. 329)

My thinking originally was that teacher candidates would not be as set in their ways as the experienced teachers I had worked with previously, and would therefore be more open to new ways of teaching. However, I discovered that the structures and habitus involved in school have persistent, dominant schema that often exclude these ways of teaching or push them to the margins as extracurricular or special one-time activities. Even though teacher candidates had to deliberately choose the SOFE project, and therefore were more certain from the outset that OEEE was something they intended to pursue in their practices, they still faced significant obstacles and constraints when they tried to enact these ways of teaching during their practicum.

> Methods courses and field experiences can impact prospective teachers' thoughts about practice and actual teaching practices, but implementing a practice based on one's beliefs is neither linear nor simple. Simply intending to engage in a desirable

> teaching practice is insufficient. The research [in AERA's report] documents numerous situations in which prospective teachers and even teacher educators want to teach in desirable ways but are not able to move easily from intention to action. (Cochran-Smith & Zeichner, 2005, p. 15)

The problem of enactment

Mary Kennedy (1999) calls this issue, "the problem of enactment," where teachers espouse a desired practice but are seemingly unable or unwilling to enact it. As Darling-Hammond and Bransford (1999) describe,

> Helping teachers to learn to teach more effectively requires them to not just *think* like a teacher but also to put what they know into action, They need to not only understand but to *do* a wide variety of things, many of them simultaneously. (p. 359)

Kennedy uses the term "frame of reference" in much the same way *schema* is used in this research:

> An important role for pre-service teacher education is to change these initial frames of reference. Pre-service teacher education is ideally situated to foster such a shift in thinking. It is located squarely between teachers' past experiences as students in classrooms and their future experiences as teachers in classrooms. (1999, p. 57)

In her study, Kennedy observed that there was a difference between what teachers thought they might like to do (in view of the philosophies they believed they adhered to, and what they actually did. By analyzing different responses to concrete situations, it became evident there was a consistently large gap between intent and practice: "Teachers often espoused different ideas

when they talked about teaching in general, and yet they turned to their traditional frames of references when they faced particular situations" (Kennedy, 1999, p. 68).

This analysis has also helped me to better understand my own practice, an awareness that has proved to be a timely development. Since I started this research, my own professional life has brought me from the margins of school life into the heart of *the school* in my current employment as an elementary science teacher at a large primary school in Montreal. Here I have come face to face with my own apprenticeship of observation, rearing its baleful head even after 20 years of working as an environmental education consultant designing and implementing social and environmental initiatives. Within a week of arriving in my new elementary school classroom, the powerful pull of habitus around *school* had me quickly questioning whether I could actually teach to cover the curriculum and still be true to my own desired practice.

These doubts showed me just how difficult and fraught it must be for new practitioners, vulnerable to the peer pressure of common practice that exists in every school along with the threat of poor performance reviews that could affect their livelihood. I was brought into my current post as an elementary school science teacher precisely because my new school's administration and parent community wanted to revamp an existing science program to usher in a more place-based, experiential and socially active approach—yet I still struggled with the problem of enactment when I arrived. As Kennedy (1999) says, "the problem facing pre-service teacher education is not merely one of giving teachers a new frame of reference, but in addition giving them the behavioural enactments that accompany these ideas" (p. 71).

Fostering transformative learning in teacher education

The themes of innovation, reform, and change are ever present in a great deal of teacher preparation research. I began this investigation formulating a question about how best to foster

agency in pre-service teachers so that they could become teachers for change, a question that seems naïve to me now, as well as too simplistic. The ability to effect change is contingent on a great many things, conceptualized here after Bourdieu (1977) as the interplay of habitus, field, and their requirements. Within these contingencies structurally shaped by culture and society, agentic processes (the recombination of schema and resources, and the retooling of cultural toolkits) are set into motion in the intimately individuated ways this study has examined (per the previous chapter's three case studies). How then to consistently reproduce Kennedy's "behavioural enactments" to foster the sustainable, clearly focused change in practice I once envisioned?

Conscientization

There are many ways of talking about systems or processes that can result in changing practice, ranging from Swidler's (1986) toolkit for action, Lévi-Strauss' *bricoleur* (Reilly, 2009), to Schön's (1987) artistry in professional practice, and Freire's (1998) levels of conscientization. What they have in common is the idea that human action involves the combining and recombining of resources, tools, perspectives and skills, enabling agents to act in and on their practice and experience. Individual actors have access to different inherited or accumulated cultural tools in many different fields that each come with a set of rules and resources (Bourdieu, 1977). Cultural tools can be used in both innovative or default ways as human actors act in and on their various fields.

The status quo exerts an inexorably powerful force, but it may be possible to overcome this constraining inertia by illuminating and analyzing the underlying structures and schema that control actions and tend to constrain change. In other words, by achieving a sense of *conscientization*—the Freirian (1998) term that refers to the "process in which men, not as

recipients, but as knowing subjects, achieve a deepening awareness both of the sociocultural reality that shapes their lives and of their capacity to transform that reality" (p. 519) —change may be more readily enacted.

One of the ways the McGill Faculty of Education responded to teacher education reform recommendations (Smith-Cochran & Zeichner, 2006) was to include in its syllabus a requirement to keep journals for reflection in all professional seminars. However, reflection alone does not foster conscientization and agency, as it is necessarily the interaction between habitus and field that enables strategies of action to be "cobbled" together. As Freire (1998) puts it: "Critical consciousness is brought about not through an intellectual effort alone, but through praxis—through the authentic union of action and reflection" (p. 515).

I had originally designed the SOFE thinking that OEEE and positive action initiatives could be much better integrated into everyday teaching to add new meaning and modes of education to schooling. In fact, the SOFE appeared to provide an environment in which beginning teachers could become aware of both an alternative schema and their pre-existing schema of what teaching and learning involve—what these look like and sound like as they enact them with students—, and sort through what might be retained or rejected. It is precisely this kind of noticing, this kind of *seeing* or conscientization, that might liberate teachers from persistent schema that stand in the way of innovative practice.

Understanding these competing and sometimes constraining forces of schema and resources within an individual's habitus as they interact in the school field is a complex task. Ultimately, these contingencies affect our ability to embrace and enact *change.* The field of educational research on teacher agency and activism needs to develop and further refine research tools that are both nuanced and nimble in their ability to identify affordances to agency in order

to better design teacher education experiences that prepare teachers for change.

Unfortunately, within the limits of the SOFE, there were only glimmers of reflexivity; any real sense of conscientization would require a greater number of enactment-reflection-discussion-analysis cycles. Using video analysis would also have benefited the participants (and researcher!) to be able to review and observe those enactments. Although the SOFE spanned two semesters, the hours involved remained very limited. If teacher candidates were afforded more time to enact OEEE and activist teaching in field placements, they would have more time to reflect and discuss and increase their ability to develop conscientization.

In addition to this, as a result of my own background I only began to study the sociocultural theory of agency in earnest after the SOFE process was initially underway. Had its concepts and relationships been explicitly integrated into the professional seminar, both the participants and myself would have been immediately better equipped to analyze and understand the experience. Having the ideas and language to help us better understand constraining and affording forces on desired practice might have facilitated our ability to see the otherwise invisible structures that can return a practitioner's settings to "default" regardless of innovative methods courses or field experiences. It would also have benefitted the cooperating teachers and might have helped them to make their practice and thinking more visible and explicit, increasing their effectiveness as mentors to the teacher candidates in SOFE.

That said, within the analysis there is evidence that the SOFE provided a conduit in which teacher candidates and their cooperating teachers could make more visible the structures and schema that control our practice as teachers. The teacher candidate shared a joint enterprise of learning in a risk-friendly environment where communities of practice could emerge, and where reflection and dialogue helped make explicit the dialectical nature of structure and agency.

When asked why they had opted into the alternative practicum, all of the SOFE participants responded that they wanted to "DO something" to contribute "more" during their practice teaching. Although none of them used the term risk, many of the responses intimated they were choosing the SOFE experience thinking it would push them to teach differently, to look at school and their role as educators differently. The affordance of a risk-friendly environment is key to fostering agency.

The SOFE: an alternative field in which to broaden cultural competencies

The SOFE provided a kind of alternative field within the larger field of school, facilitating access to different schema and resources or different cultural tools from which the teacher candidates could draw alternative strategies of action. The inclusion of the ILES meant that teacher candidates had to find ways of integrating the SOFE initiatives into the curriculum, forming a bridge that made schema and resources developed in the alternative SOFE field more easily accessible in the school field. Action operationalizes schema, skills, and expertise that come from an individual's interaction within culture and society. Seiler (2006) articulates these as cultural competencies: "Actions are not determined by one's values. Rather actions are organized to take advantage of cultural competencies. Thus we need to broaden, not exchange, students' cultural competencies" (p. 203). The practitioner has to "be in action" and be challenged to broaden their cultural competencies, and it may only be then that reflexivity can help foster change.

In the SOFE, these ways of teaching, along with the framework of environmental initiatives that helped operationalize them, served as disruptive forces that challenged schematic inertia and helped set in motion agentic processes that led the teacher candidates (and sometimes the cooperating teachers) to deeper reflection, more nuanced enactment, and renewed or new

commitment to more open-ended, student driven, and community-based teaching practices. “If schools aim to counter social reproduction they must find ways to breach the students' habitus or to mediate in the automaticity of selecting from alternative strategies of action” (Seiler, 2006, p. 188). This was the disruption that SOFE began to achieve. Practice has to challenge the system and in that way change it. “Social reproduction does not occur because its outcomes are in line with the values and aspirations of the disadvantaged. Rather cultural production involves a dialectical interaction between system and practice” (Sewell, 1999, p. 188). But practice in isolation will be less likely to breach habitus as the human instinct to preserve resources may push more automatic responses to the fore. Equipped with the role of “SOFE” teacher candidate within a "SOFE" community of practice, there was greater chance that habitus could be breached.

In Quebec, the need for conscientization and the broadening of cultural competencies in teacher education is particularly relevant if teachers are ever to successfully adopt the socio-constructivist, competency-based approaches prescribed by the Quebec Education Program. Lasnier (2000) summarized socio-constructivist, competency-based learning as “learning to do what you do not yet know how to do while doing it” (p.97), and this is the educational philosophy underpinning the Quebec Education Program today. However, for this approach to be embraced, teachers have to examine their schema about teaching and develop resources that will better assist them in the kinds of teaching necessary to enact competency-based learning.

Beck and Kosnick (2006) offer an examination of their own program at Toronto’s Ontario Institute for Studies in Education (OISE), along with an overview of seven other teacher preparation programs that have also integrated social constructivist approaches. Their work has special relevance in Quebec, where teacher candidates are now expected to teach using a socio-

constructivist, competency-based approach often different from how they were taught themselves.

> Teacher education programs based on a constructivist view of learning need to do more than offer a constructivist perspective in a course or two. Teachers' beliefs need to be illuminated, discussed, and challenged. Teachers need to be engaged in learning experiences that confront traditional beliefs, in experiences where they can study children and their meaning-making, and in field experiences where they can experiment collaboratively. (Fosnot, in Beck & Kosnick, 2006, p. 35)

Once again, we see the notion of making the examination of beliefs and values about teaching and learning more explicit. Reading Beck and Kosnik offered me a sense of validation, as many of the structures and approaches I integrated within the SOFE are described in their work: the importance of creating a risk-friendly environment; the careful selection and professional development of cooperating teachers; the integration of faculty lecturer and field supervisor roles; and the clustering of many teacher candidates within the same school. However one major difference was that the full programs they examine are not individual "projects" or "alternative initiatives," as with SOFE. In order to effect any real change in teacher education, more comprehensive programs must be integrated to increase coherence and communication among all stakeholders.

The challenge of using knowledge in action has proven to be difficult, and many professions use case-based or problem-based approaches to their training programs. Environmental education in the form of integrated OEEE field experiences like the SOFE can help to address this abiding *problem of enactment.* The OEEE initiatives put into action or operationalize many professional teaching competencies simultaneously, while also providing opportunities to examine preconceived notions or schema about teaching/learning that may

inhibit or constrain practice. The SOFE could be presented as a problem-based approach, but with more emphasis on the individual teacher candidate's enactment of *doing, implementing, and realizing* as the larger learning community supports and shares these experiences. This fosters an environment that facilitates risk-taking and provides teacher candidates with the safe environment needed for practice innovation.

In SOFE, the challenge of integrating environmental education and positive action initiatives into everyday teaching provided a rallying point, a sense of shared enterprise for the participants. In the final seminar of both years, the teacher candidates voiced their respect for OEEE, their commitment, and their desire to continue its approaches in future practice.

> Environmental education can be a powerful approach to activate dialogical processes and different modes of learning in a contextually and culturally adapted, meaningful, holistic and coherent curriculum. This ecological epistemology could transform teaching and learning and foster agency, empathy and reflexivity. (Sauvé, 2009, p. 332)

In some cases, participating in the SOFE and enacting OEEE provided cooperating teachers with the opportunity to reflect on their overall practice. Kim, the cooperating teacher who worked with Emma and Jacky, took on another two students in SOFE the following year and also continued the redesign of her school's grounds with my help in the spring of 2010, a shared venture that was becoming a community of practice. In Wenger (2000), a community of practice is defined as, "groups of people informally bound together by shared expertise and passion for a joint enterprise" (p. 139). The main purpose is to develop members' capabilities to build and exchange knowledge. In a community of practice, members select themselves, and the group is held together by a shared sense of identification, passion, and commitment to the group's expertise.

In the whole-group session in February 2011, Kim the cooperating teacher voiced how taking part in the initiative had reminded her of how she wanted to teach. This was an outcome I had hoped for when I first wrote up the proposal for the SOFE. I mentioned how the teacher candidates could be used as vectors to carry OEEE and activist practices into schools to provide examples for teaching staff who might then be more ready to take on these approaches.

However, this idea has been criticized in the literature by Britzman (2003), and Wideen and Lemma (1999), as unrealistic. They cite research showing how schools' power structures are too uneven and schema too embedded for a trainee teacher to be able to model different teaching styles to cooperating teachers. And yet it does happen. After working with Emma and Jacky, and being exposed to the SOFE, Kim the cooperating teacher left her alternative high school and went back to teaching Grade 6 in an elementary school, a place she felt she could more easily teach "in the way we know we should be teaching" (Kim Interview, June 2011).

Many of the champion-teachers I had worked with previously on Evergreen projects voiced similar observations about their practice. The fact that the learning of different course material and the development of both cross-curricular and subject-specific competencies were being accomplished within an authentic project seemed to make the teaching more meaningful and provided the educator with the energy and willingness to go the extra mile. When a teacher helps actualize a learning experience, the same sets of schema and resources need to be activated. Getting started on this way of operating may be easier when the "project" is more concrete, but the reality is that all teaching and learning situations need to be cobbled together by *bricoleurs* in this way. Tools in the form of resources, materials, approaches and skills need to be adapted and recombined differently in all teaching and learning because each situation is unique and requires courses of action or approaches that best fit a particular situation. In the SOFE, the

greening project provided a good conduit to set those important processes into motion. In the words of one cooperating teacher, "As teachers, you fall back on what you know so if this (gestures to show all of this meaning the SOFE) is what you know, you might *fall back on it*" (Anonymous cooperating teacher, Interview, June 2011).

This study can add to the existing body of research in teacher education probing the problem of enactment and the overcoming of preconceived frames of learning. By providing an alternative field within which to broaden, develop, and exercise cultural competencies, the SOFE was able to provide a growth medium in which the teacher candidates (and their cooperating teachers) could begin to examine deep-seated notions about teaching and learning, and dip into their wide array of cultural tools to develop strategies of action able to enact these new ways of teaching. Whether or not there will be transposability of this agency in future practice[23] is unknown and warrants further investigation. But there is the likelihood that with a broadened cultural-competency base providing access to a greater diversity of repertoires of manoeuvre, these teacher candidates will be able to apply their SOFE experience to their future practice. The mutually informing sociocultural theoretical framework and critical ethnographic methodology used in this study worked well to help identify agency as it operationalized making an often nebulous idea, that of what affords and what constrains change, take shape. Within that discernment our ability to recognize actors as change agents provides a sense of optimism whilst also driving home the point that many structural and schematic obstacles lie just beneath the surface of our everyday practice as teachers,

[23] I know of only five of the 29 participants who found teaching positions in the first few years after their degree. Three of those worked up north for the Cree School Board and two others worked as French teachers – not very conducive to following up on the carry-over to future practice.

Chapter 8 Paths Forward

This final chapter discusses several promising paths toward making teacher education programs more effective at supporting their trainees to enact different approaches to teaching, especially through program-wide efforts that cohere in an integrated approach. Such an approach requires better coordination and communication amongst all players—instructors, supervisors, and cooperating teachers alike. The goal of such an approach is emancipation and empowerment for individual teacher candidates, and for teacher education programs in general.

A great deal has been written about what teachers should be. Much has also been written about needed changes in teacher practice, about revamping school policy and frameworks, and, more generally, about what education should be in a rapidly altering world. But little has changed in most teacher education programs. The hope is that this research will contribute to the field's identification and understanding of the *contingencies* involved in changing teacher practice, as well as aid the design of pre-service training and teaching experiences that coherently speak to those contingencies.

There is hope that change will come as the debate over improving teacher preparation continues. As recently as 2012, the Canadian Association of Teacher Educators (CATE) was still grappling with how to operationalize this reform within teacher education programs. The following were questions put forward by CATE for the 2012 Working Conference:

BECOMING A TEACHER: Sites for teacher development

The topic includes the following focus questions:

• Where should teacher education happen and what form should it take? For example, when we talk about practice-based teacher education, what should that look like?

• Who becomes or should become a teacher? Who is involved in this process of becoming? What qualities do both teachers and teacher educators need to possess? What partnerships are (or should be) involved in this process?

• When does a person become a teacher, and what does identifying that moment mean for learning to become? In what ways can sites for ongoing learning or prior learning be integrated into teacher development ?

• Descriptions such as "teacher as transformer" and "teacher as agent of change" suggest that teachers need to develop capacities that exceed their socialized repetition of the status quo in education. How important is this aspect of becoming teacher? How should these capacities be developed? How much control does/should teacher educators have in the process?

Each of these questions highlights how teacher education institutions and faculty continue to search for ways to address the inertia with respect to teacher change. The final question asks how teachers can develop capacities that exceed the replication of the status quo in education. I believe this research helps to show how alternative fields such as the SOFE can do just that. However, simply adding an environmental initiative into a teacher education program will not bring about change. As detailed in Chapter 3, the SOFE used many different approaches associated with well-established philosophical and theoretical underpinnings in order to create an ecology of change—one that cannot be reproduced by selecting only the most easily scalable elements.

Coherence and communication in teacher preparation programs:

Teacher education and teacher change research has focused on those teacher preparation programs that have seen success, as measured by teacher retention, surveys, scores and the

maintenance of professional learning communities. In Darling-Hammond's (2006) survey, a study examining seven exemplary teacher education programs found that the programs had many common features, including:

• a common, clear vision of good teaching that permeates all course work and clinical experiences, creating a coherent set of learning experiences.

• well-defined standards of professional practice and performance that are used to guide and evaluate course work and clinical work.

• a strong core curriculum taught in the context of practice and grounded in knowledge of child and adolescent development and learning, an understanding of social and cultural contexts, curriculum, assessment, and subject matter pedagogy.

• extended clinical experiences—at least 30 weeks of supervised practicum and student teaching opportunities in each program—that are carefully chosen to support the ideas presented in simultaneous, closely interwoven course work.

• extensive use of case methods, teacher research, performance assessments, and portfolio evaluation that apply learning to real problems of practice.

• explicit strategies to help students to confront their own deep-seated beliefs and assumptions about learning and students and to learn about the experiences of people different from themselves.

• strong relationships, common knowledge, and shared beliefs among school- and university-based faculty jointly engaged in transforming teaching, schooling, and teacher education.

Of course, these points above refer to whole programs. One of the greatest limiting factors of the SOFE was the fact that it was working in isolation. Although many of the recommended practices and approaches listed above were put into operation within the SOFE, there was little

cohesion within the larger education program. The last two points above refer to strategies to confront deep-seated beliefs about teaching and to develop strong relationship s among all parties involved: in the SOFE, liaison between teacher candidates, cooperating teachers, field supervisors and faculty was particularly emphasized, as it is in the current handful of other so-called alternative programs within McGill's Faculty of Education. These are often insular islands of innovative practice that could be coupled together with bridges built by a creative few in the University's program. In this way, I am aware of several teacher candidates who went on from the SOFE to the Dillon project, followed by final practica in Northern and First Nations communities. For the few individuals able to chart this archipelago of innovation, a rather different experience was had from the norm within the Faculty. But the reality now is that both the SOFE and the Community Service Learning initiatives, as well as the Dillon project, have all been closed.

What remains largely unexamined is how to develop better permeability between field supervisors and faculty: as much as possible, faculty should be taking on this role. Cooperating teachers also need to be brought into the university. From the SOFE experience, it is clear that they can contribute a great deal to teacher candidates' ability to examine their nascent practice, while also using the experience as an opportunity to examine their own veteran practice. In this way, the teacher candidates in the field experience can act as both vectors and recipients of more innovative and reflexive practice. McGill's Office of Student Teaching (OST) has tried to respond to these issues, for example by offering a half-day workshop for cooperating teachers for the first time in 2012. This is a step in the right direction, as it is very important to align the teaching philosophies and approaches espoused at universities with those of teaching programs' cooperating teachers in the schools.

Agency needs to move the practitioner to a more powerful place

I argue (and add my voice to many others, including Cochran-Smith & Zeichner, 2005; Darling-Hammond & Sykes, 1999; and Wideen & Lemma, 1999) that one of the contingencies to accepting and embracing change is that the change involved must be emancipating, and must eventually lead the practitioner to a more powerful place. Institutions cannot enact change, only individuals can do so, and this is as true for teacher educators as it is for teacher candidates. Institutional habitus needs to be examined: assessment tools, faculty teaching, and the way social capital is gained (heavy publishing and teaching loads do not leave time for field supervision and tutelage). Faculties of Education will never embrace teacher reform recommendations, such as having professors and faculty members work out in the field as field supervisors and as co-teachers, unless this is the accepted pathway to tenure and professional success. Smaller class sizes, more training for cooperating teachers, less rigid entrance requirements for teacher education (such as accepting people with relevant work and life experience who may not possess the currently required college degree) —none of these changes will ever be embraced by teacher education institutions unless it moves them to a place of greater "power." So many obstacles and barriers are put up against change within teacher education. There is a need to test out approaches and ideas to be able to see beyond the constraints. As Freire (1993) puts it:

> Real consciousness implies the possibility of perceiving the "untested feasibility" which lies beyond the limit-situations. But whereas the untested feasibility cannot be achieved at the level of the "real [or present] consciousness it can be realized through "testing action" which reveals its hitherto unperceived viability. (p. 113)

The best teacher educators can do is to build programs that offer a wide diversity of experiences for teacher candidates to choose from. An integrated and coherent approach is

needed across the teacher preparation program with consistent crossover and permeability among faculty, field supervisors, and cooperating teachers. There also needs to be a great deal of time devoted to co-teaching with repeated cycles of enactment, reflection, and discussion integrated into both methods courses and field placements. The ability to opt in to a particular kind of placement or experience may help set agentic processes into motion, given that these are so deeply individual. Overall, all involved need to make explicit just how difficult it is to learn to teach, and recognize that it is an ever-evolving process that continues in each one of us throughout our practice.

> Teachers capable of creating these kinds of classrooms begin by rejecting the notion of teaching as something simple or settled. They conceive of teaching as a fundamentally ethical, political and intellectual form of work, a vocation for educators willing to plunge in beside their students to search for new, creative ways that nourish knowledge, satisfy need, and nurture the widest possible range of interests and aspirations for young people. From the time they are teacher candidates, teachers like this recognize teaching as a creative act that, like all creative acts, is characterized by uncertainty, mystery, obstacles and struggle (Ayers, 1995, p. 220).

Conclusion

In this dissertation, I describe in ecological terms a special opportunity field experience and professional seminar (the McGill-Evergreen SOFE) I designed and taught over a two-year period. The dissertation determines and analyzes the conditions, connections, and interdependencies involved in fostering agency towards developing teachers for change. Its findings reveal that teaching, learning to teach, and finding agency in teaching is ultimately an individual experience that is complex and non-linear. Every individual has accumulated their

own particular complete set of experiences, tastes, culture *(habitus)* and capital that inform and are informed by many different areas and arenas in their lives (*fields*). The challenge towards developing teachers for change is to provide a framework and environment within which agentic processes can be put in motion, for it is only within the interaction of *field* and *habitus* that agency can be operationalized. Examination of the SOFE revealed that Environmental Education can play a useful role in providing just such a framework. Through enactment of OEEE, teacher candidates in the SOFE were able to articulate and act deep-seated notions and beliefs about teaching and learning, and retain or reject what they saw. Competing schema between teacher candidates and cooperating teachers about what teaching looks like and where to enact it forced SOFE teacher candidates to justify their desired practice, and their practice was made stronger for it. For teacher education programs, the message is that there are no shortcuts to developing an ecology of change. The difficult-to-scale-up elements of community building and development of a risk-affording environment based on trust and a sense of solidarity with ALL parties involved—teacher candidates, cooperating teachers, faculty members, field supervisors, community groups and students at host schools —need to be carefully and mindfully constructed. Doing so will require wide and deep changes to the ways faculties of education and student teaching offices are currently set up and run.

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Appendix A: SOFE Syllabus

McGill University

Department of Integrated Studies in Education, Faculty of Education

EDEC 253 and 254: Second Professional Seminar (K/Elem and Secondary)

Concurrent with 2nd Field Experience (Special Opportunity Field Experience with Evergreen)
(Seminars to be held over 9 Wednesday evenings between September 2009 and March 2010)

Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you... while cares will drop off like autumn leaves. (John Muir).

Seminar instructor's contact information etc. to be provided at first class.

An important note on contacting the instructor:

As per McGill policy, you need to use your McGill e-mail address in all correspondence with the instructor. E-mail sent from any other server will not be acknowledged.

Course Goals

This second professional seminar (PS2) serves to prepare you for the special Evergreen-McGill field experience (EDFE 254) through development of basic practices in planning and teaching for change through environmental service learning projects in schools. In addition to Competencies (professional and subject-specific), LES (learning and evaluation situations), Professionalism, and the Working Professional Portfolio; Nature Deficit Disorder; Participatory Planning, Managing Action Projects and Group, Communication and Leadership Skills will be the themes of inquiry during this Professional Seminar. The main goal of this special field experience professional seminar is to equip you with the skills, approaches and experiences that will best support you in your professional development towards teaching for social and environmental change in practical, meaningful and positive ways. In addition to this, the goals are to develop deeper understanding of the professional and subject-specific competencies, and the links between them; a sound grasp of the fundamentals of effective lesson planning and evaluation for all students; appreciation of good conduct and professionalism; participation in a portfolio-focused learning community to deepen meaningful portfolio development across five (or more) main sections. It is up to you to make sense of what you see, hear, read, experience, discuss and debate. It is up to you to ask questions and to question. This is an opportunity for you to deepen and broaden your professional tool-kit of resources and personal/teacher knowledge.

Professional Competencies to be addressed (*indicates an additional competency to those undertaken in PS1/FE1):

*#1 To act as a professional inheritor, critic and interpreter of knowledge or culture when teaching students.

#2 To communicate clearly in the language of instruction, both orally and in writing using correct grammar, in various contexts related to teaching.

*#3 To develop teaching/learning situations that are appropriate to the students concerned and the subject content with a view to developing the competencies targeted in the programs of study.

*#4 To pilot teaching/learning situations that are appropriate to the students concerned and to the subject content with a view to developing the competencies targeted in the programs of study.

*#6 To plan, organize and supervise a class in such a way as to promote students' learning and social development.

*#7 To adapt his or her teaching to the needs and characteristics of students with learning disabilities, social maladjustments or handicaps.

#9 To cooperate with school staff, parents, partners in the community, and students in pursuing the educational objectives of the school.

#11 To engage in professional development individually and with others.

#12 To demonstrate ethical and responsible professional behaviour in the performance of his or her duties.

(*Teacher Training: Orientations, Professional Competencies*: p. 55. 2001, Québec: Gouvernement du Québec, Ministère de l'éducation.)

Additional competencies specific to the Evergreen-McGill Field Experience:

- To recognize the roles and functions in groups and to plan accordingly
- To develop experiential learning situations related to leadership skills and group dynamics appropriate to the development of the target group.
- To integrate, across subject areas, experiential learning situations into everyday teaching practices
- To demonstrate a firm understanding of the QEP and the lifelong learning and crosscurricular competencies in order to better integrate service-learning and environmental initiatives into everyday teaching and evaluation practices.
- To develop communication and motivation techniques to best move your group forward in their action cycle.
- To develop debriefing and discussion skills in a group setting to add to the teacher's toolkit

Organization of Concurrent Professional Seminar and Field Experience

Evergreen PS2 is held over 9 Wednesdays between **September 1 and April 7,** 2009, 1.5hr hour seminars (5:25PM-6:55 PM).

Evergreen FE2 runs for ½ day per week, mid Sept 2009 - March 2010**.**

- Assignments carry a numerical weighting. The overall Seminar is graded Pass/Fail. Attendance is compulsory and no activity or other event may be used as justification to miss

these interactive professional gatherings. In the event of absence due to illness, a doctor's letter must be presented to the instructor. Unexplained absence may result in a failure for this course and subsequently, the field experience (FE2). Attendance means active participation for the entire class and students are expected to arrive on time and to remain for the full class period. **Refer to PS2 itinerary for assignment protocols and due dates**.

- The Office of Student Teaching (OST) is responsible for your second field experience (FE2) and organizes the placements in host schools for all students. You should have already submitted your online placement form available at www.mcgill.ca/ost/students/placementform/ (if not, *please do so immediately* and alert the Office of Student Teaching). Your FE2 placement information can be viewed at www.mcgill.ca/ost/students/myplacements/ .
- You will be assigned, along with several other students to a cooperating teacher(s) (CT) in a host school. You will also be assigned a McGill supervisor (Kathleen Usher). Your CT(s) and McGill supervisor are responsible for assessing you based on your participation in the CT's class.
- EDFE 254 packages for CTs will be handed out at first class. It is your responsibility to see that the appropriate copies of the Formative and Summative Assessment Forms are returned to the OST, duly completed and signed by your CT, on March 31, 2010 (along with other documents, see below).

Required Materials

- Office of Student Teaching information, online at www.mcgill.ca/ost, pertaining to FE2, competency grids and "Yearly Progress Review" form
- Quebec Education Program: Secondary School Education, Cycles I and II
  http://www.mels.gouv.qc.ca/DGFJ/dp/menusec.htm
  - Students are responsible for printing the general sections, and the section specific to their selected discipline area, of this document.
- MELS Scale of Competency Levels (Cycles I and II)
  http://www.learnquebec.ca/en/content/reform/evaluation/
  - Students are responsible for printing the general sections, and the section specific to their selected discipline area, of this document
- Evergreen Learning Grounds on-line and PDF resources
  http://www.evergreen.ca/en/lg/lg.html
  - Students are responsible for printing or downloading the relevant sections of the Evergreen Learning Grounds documents and are encouraged to peruse the site to mine for activities, lesson plans, research summaries and project ideas

- Access to WebCT: go to www.mcgill.ca/webct and 'sign in' using your Minerva ID and PIN. EDEC 254: Second Professional Seminar (Secondary) should be on your list of courses. WebCT will be used to fulfill some of the requirements of this seminar, as well as communicate with your instructor and fellow-classmates through the Discussion Postings, in the Chatrooms and via course e-mail

Class Requirements

You are required to attend all classes, read and conduct research, prepared to contribute to the discussion formats, present and discuss the seminar assignments, keep a personal reflective journal, and select and reflect on artifacts for inclusion in the appropriate sections of your *Working Professional Portfolio* (to be handed in Wednesday April 7, 2010, see below). With guidance from course instructors, you will continue developing this *Working Professional Portfolio* throughout your program. It is your responsibility to assure that certain important artifacts, such as your developing 'Statement of Philosophy of Education', lesson plans, competency grids, 'Action Plan' and 'Yearly Progress Review' are safeguarded in your *Working Professional Portfolio*. You will draw upon these artifacts in your *Working Professional Portfolio* for your finished **Professional (Showcase) Portfolio** by the end of your program.

A. The impact of teaching for change and service-learning - 20% - (*Professional Competency 1: To act as a professional inheritor, critic and interpreter of knowledge or culture when teaching students).*

You will select an article from a *current (2004-2009) refereed education journal* having to do with some aspect of service-learning and experiential, outdoor education within a school/classroom context. Write an analytic summary of the article. In addition, respond to what the article says to you as a future teacher in relation to the Professional Competencies. (750 words) This text, along with a link/citation to the article must be included in your Working Professional Portfolio (**due October 14**).

B. Professionalism in Action – 20% - *(Professional Competency 12: To demonstrate ethical and responsible professional behaviour in the performance of his or her duties).*

In any teaching situation and in service-learning situations in particular professionalism is an asset. You will be communicating with people across communities, crossing cultural and linguistic lines, a solid understanding of what professionalism entails as well as how to best practice it will be integral. You will write up a situation you have witnessed (reality or fiction), overheard, read about, or imagined that calls for the exercising of particular professional teacher skills. You will explain how the teacher's response in/to that situation reflects teacher professional conduct both in keeping with the *role* of teacher as explained by MELS and by your understanding of professional accountability. Special emphasis should be placed on how SL and teaching for change fits you're your sense of what professionalism is. (750 words) This text must be included in your Working Professional Portfolio (**due Dec. 2**).

C. LES (Learning and Evaluation Situation in a service-learning context) – 20% - (*Professional Competency 3: To develop teaching/learning situations that are appropriate to the students concerned and the subject content with a view to developing the competencies targeted in the programs of study; Professional Competency 6: To plan, organize and supervise a class in such a way as to promote students' learning and social development; Professional Competency 7: To adapt his or her teaching to the needs and characteristics of students with learning disabilities, social maladjustments or handicaps + Evergreen professional competency: to be able to integrate SL and SJ tenets into everyday teaching practices*).

One of the most important teacher skills is the designing and writing up of effective lesson plans that provide opportunities for, and evidence of, learning for every student. A big hurdle in the integration of SL into the education program is the absence of evaluation norms and tools for teachers to make the work "count". This will be a challenge for every participant in this SLFE you will be required to design (or modify) a LES so that it demonstrates an understanding of the intersections between learning and evaluation for all students and across a range of abilities. Given that this is a service learning field experience the LES should reflect the competencies and learnings from experiential education and be integrated as much as possible into the specific project at the host school. The finished LES, along with an explanation/rationale of the steps and process used to arrive at its completed format must be included in your Working Professional Portfolio (**due February 3, 2010**).

D. Educational Philosophy - 15% - *(Professional Competency 11: To engage in professional development individually and with others)*.

One of the objectives of this seminar is to encourage you to continue to critique and reflect upon your own professional development and practice. This is particularly important given the experiential nature of this PSII. Journaling plays an important role for the experiential educator both personally and professionally. You are encouraged to keep a reflective journal to track your experiences, concerns and questions related to this PS2 seminar and your FE2 (as you did for PS1/FE1). Although the audience for this journal is yourself, you will be invited to share selections of your reflections to both your instructor and to the group as such you are encouraged to take the writing, and the discipline of the journal-keeping seriously. Concentrate on what you are experiencing and learning, *especially as this impacts your developing 'Philosophy of Education'*. In April, you will submit, in your *Working Professional Portfolio (*'Professional Identity' section) your reworked/refined statement of 'Philosophy of Education'. Please also include your original statement of 'Philosophy of Education' from PS1.

E. Competency Grids, 'Action Plan' and 'Yearly Progress Review' - 25% - *(Exercising and developing Professional Competencies 1,2,3,4,6,7,9,11&12)*

Professional Competency Grids associated with the competencies addressed in this seminar: #1,2,3,4,6,7,9,11&12 (see above) can be found on the OST website (www.mcgill.ca/ost). On April 7th, you will submit, in your *Working Professional*

Portfolio ('Professional Competencies' section) these thoughtfully completed competency grids that capture in an articulate and succinct manner your professional development during this course and whilst you are on your field experience. In addition, you will complete a 'Yearly Progress Review' of your overall competency development. A synthesis of this learning and development will inform your 'Action Plan' that is to be completed and safeguarded in your Working Professional Portfolio (and will be required for FE3).

Your Working Professional Portfolio, to be submitted electronically to your instructor's McGill e-mail, by midnight on Wednesday April 7th 2010, should include:

- A Cover Page: Your Name, Course Title / Number, Instructor's Name
- A Table of Contents and Artifacts for 5 (minimum) portfolio sections;
- A LES and explanation of process (placed in the 'Teaching and Learning' section);
- A 'Professionalism in Action' scenario and explanation (placed in the 'Professional Identity' section);
- An analytic summary of an article (link/citation provided) on service learning and OEE (placed in the 'Embracing Cultural Diversity' section);
- A developing/refined personal 'Philosophy of Education' (placed in the 'Professional Identity' section) as well as your original statement from FE1;
- Completed Professional Competency Grids #1,2,3,4,6,7,9,11&12, 'Action Plan' and 'Yearly Progress Review' form (placed in the 'Professional Competencies' section).

ALL the above components must be word-processed.
ALL work for this seminar will be evaluated with regard to English language proficiency.

Professional Competency 2: To communicate clearly in the language of instruction, both orally and in writing using correct grammar, in various contexts related to teaching.

Work handed in late will be subject to 10% mark penalty off overall course mark per 24 hours late.

University Policies

Code of Professional Conduct

"Programs in the Faculty of Education have professional components and field placements. In all aspects of any program, on campus and off, students are expected to demonstrate ethical, responsible, and professional behaviour in the performance of their duties, to conduct themselves in accordance with the law (e. g. Youth Protection), and to meet the expectations of schools, boards and the host institutions receiving them for field placements. This applies to all aspects of professional conduct, including but not limited to respect for persons, property and confidentiality, appropriate dress and punctuality. Failure to meet these expectations, regardless of the performance in courses or other formal program requirements, will be taken into account in the assessment of the students' overall academic standing in the program and, in the most serious instance, may result in a requirement to withdraw from the program."

Course Etiquette

Given the growing concern among professors and students over significant lapses in classroom etiquette (e.g. incessant chatting, recurring lateness, repeatedly walking in and out of class, use of technology in disruptive ways), it is important to remind students that the Faculty of Education is committed to 1) the development of responsible professional behaviour (MELS competency no. 12), and 2) a classroom environment conducive to learning. As stated in the McGill *Student Rights and Responsibilities Handbook* (2006), "disruption which occurs during the teaching of a course may be treated as an academic offence under the provisions of Article 19."

McGill's Policy on Academic Integrity

On January 29, 2003, the Senate of the Royal Institution for the Advancement of Learning approved a motion intended to foster academic integrity. Further, Senate decreed that this motion must be included in every course description so as to make students aware of McGill's commitment to scholastic honesty.

McGill University values academic integrity. Therefore, it is the responsibility of each student to understand the meaning and consequences of cheating, plagiarism and other academic offences under the *Code of Student Conduct and Disciplinary Procedures* (see www.mcgill.ca/integrity for more information).

Seminar	Topic	Assigned Readings & Other Tasks
September 2	Introduction to Evergreen-McGill PS2 - • Intro to Evergreen • Service-Learning and greening • Professional Competencies • QEP Program Guides • MELS Scale of Competency Levels • FE2 – expectations and guidelines • *Statement of philosophy of education* • *Competency grids*	Please watch this 1hr30 minute film during the first two weeks of class: Film: Home Film: HOME en français
September 9	• Group building and Leadership skills development: their place and function in service-learning. • Nature Deficit Disorder and Leave no Child Indoors	Please dress in comfortable clothes and adjust for the weather as ideally the class will be held outdoors Please read Richard Louv's article before class : **Leave no child inside: Richard Louv article** Please familiarize yourselves before class with Evergreen Learning Grounds by visiting : **http://www.evergreen.ca/en/lg/lg.html** And with some specific research on the benefits of schoolground greening **Gaining Ground research summary** Evergreen's Literature Review: Nature Nurtures: Investigating the Potential of School Grounds: http://www.evergreen.ca/en/lg/nurtures-en.pdf
September 16	Kolb's cycle of experiential learning. Participatory planning process: Evergreen steps to successful greening projects. The integration and evaluation of your school's project from planning to implementation. In addition to the competencies that you are developing throughout this seminar, you will	Beyond Ecophobia (David Sobel): http://www.yesmagazine.org/issues/education-for-life/803 Kolb's cycle of experiential learning: Kolb's cycle Evergreen on-line workshop- Getting Started: http://www.evergreen.ca/en/lg/lg-workshop_box.html • Reflect on your statement of philosophy of education

	exercise the following competencies in the field: *Professional Competency 4: To pilot teaching/learning situations that are appropriate to the students concerned and to the subject content with a view to developing the competencies targeted in the programs of study.* *Professional Competency 9: To cooperate with school staff, parents, partners in the community, and students in pursuing the educational objectives of the school*	• Reflect on your competency grids
Sept. 23 Additional class to prepare for Oct. 5 & 6 science lab sessions	• Objectives of the peer-teaching • assignment of teams / tasks • debriefing review	**Please remember to capture in your journals thoughts, questions and reflections on the peer-teaching preparation and experience to share with the group at the October 7th class.
October 7	• Debriefing of the peer-teaching sessions - journal sharing • Review of journal articles, overview of current topics / issues in EE (prep for first assignment); • Schoolground greening – transformative learning: an overview of successful and innovative projects • Intro to the participatory process with Evergreen Learning Grounds. • Practical examples of hands-on integrated LES's (eg; schoolground mapping, surveys, plant identification, modeling)	Two examples of peer-reviewed Environmental Education Journals: Orion Magazine: http://www.orionmagazine.org/ Canadian Journal of Environmental Education: http://cjee.lakeheadu.ca/index.php/cjee/article/view/188 Evergreen Learning Grounds Guide (Chapter 3: Mapping your site): http://www.evergreen.ca/en/lg/lg-guide.pdf **Assignment #1: The impact of teaching for change and service-learning - analytic summary of journal article 20% -** (*Professional Competency 1: To act as a professional inheritor, critic and interpreter of knowledge or culture when teaching students).*

October 14 No class Assignment #1 due	**The impact of teaching for change and service-learning - 20% -** (*Professional Competency 1: To act as a professional inheritor, critic and interpreter of knowledge or culture when teaching students).*	
***** Workshop with your host teachers TBA**	Attendance mandatory **hours to be deducted from minimum hours for the field experience*	
December 2 **Assignment #2 due (***See description in body of course outline.)	Quebec Education Program (QEP) LES Differentiation *Statement of philosophy of education* *Competency grids*	• Be prepared to present (as a host-school team) a summary of your FE experience to date • Bring to today's class a useful and practical lesson plan idea that ties in with your host-schools' project. • Reflect on your statement of philosophy of education • Reflect on your competency grids
Jan 13	LES Code of conduct and professional ethics Professionalism - scenarios *Statement of philosophy of education* *Competency grids*	Bring to today's class the lesson plan that we worked on last class. Revisit the "Professional Portfolio Guidelines": www.mcgill.ca/ost/students/portfolio/ Revisit the "Code of Conduct", Office of Student Teaching information, www.mcgill.ca/ost Reflect on your statement of philosophy of education Reflect on your competency grids
***** Evergreen Event TBA**	Attendance mandatory **hours to be deducted from minimum hours for the field experience*	
Feb. 3 No class Assignment #3 due	**LES (Learning and Evaluation Situation in a service-learning context) – 20%**	*See description in body of course outline.
Feb 17	Professional Working Portfolio Sections: 'Professional Identity'; 'Theory to Practice'; 'Teaching and Learning'; 'Professional	Bring to today's class: The components of the Working Portfolio that you are working on, and any other artifacts that you wish to place in your Professional Working Portfolio

	Competencies'; 'Embracing Cultural Diversity' Competency grids and graph	Draft copies of the competency grids, 'Action Plan' and 'Yearly Progress Review' form
April 7		**Submit all components of your Working Professional Portfolio electronically to your instructor's McGill e-mail.**

Appendix B: Ethics Application

McGill

Applicable Research Ethics Board
___REB-I ___REB-II
XX REB-III

Application for Ethics Approval for Human Subject Research
(Please refer to the Application Guidelines [www.mcgill.ca/researchoffice/compliance/human/] before completing this form)

Project Title: Teaching for a healthy planet: the impact and role of a non-traditional field experience with Evergreen on a developing teacher's identity as an agent of change in environmental education.

Principal Investigator: Kathleen Usher Dept: Integrated Studies in Education

Phone #: Fax #: n/a Email:
(students must provide their McGill email)

Mailing Address (if different than Dept.):

Status: Faculty ___ Postdoctoral Fellow ___ Other (specify)XX__Instructor and supervisor____
Ph.D. Student **XX** Master's Student ___ Undergraduate ___

Type of Research: Faculty Research ___ Thesis XX_
Honours Thesis ___ Independent Study Project ___
Course Assignment (specify course name and #)_____
Other (specify) ___

Faculty Supervisor (for student PIs): Dr. Gale Seiler **Email:** gale.seiler@mcgill.ca

Co- Investigators/Other Researchers (list name/status/affiliation):

List all funding sources for this project and project titles (if different from the above). Indicate the Principal Investigator of the award if not yourself.

Awarded:

Pending:

Principal Investigator Statement: I will ensure that this project is conducted in accordance with the policies and procedures governing the ethical conduct of research involving human subjects at McGill University. I allow release of my nominative information as required by these policies and procedures.

Principal Investigator Signature: _____ Date: _____

Faculty Supervisor Statement**:** I have read and approved this project and affirm that it has received the appropriate academic approval. I will ensure that the student investigator is aware of the applicable policies and procedures governing the ethical conduct of human subject research at McGill University and I agree to provide all necessary supervision to the student. I allow release of my nominative information as required by these policies and procedures.

Faculty Supervisor Signature: _____ **Date**: _____

1. Purpose of the Research

Describe the proposed project and its objectives, including the research questions to be investigated (one page maximum). What is the expected value or benefits of the research? How do you anticipate disseminating the results (e.g. thesis, presentations, internet, film, publications)?

In 2009 Evergreen teamed up with McGill's Faculty of Education in the Department of Integrated Studies in Education (DISE) to design and implement a second year practicum and professional seminar for pre-service teachers enrolled in the Education Program at McGill. Evergreen is a national non-profit whose mission is to make our cities more livable through naturalization projects. The purpose of the initiative was to help address the dual issues of students and student teachers who are disconnected from both the natural world and science and to support teachers in training in their application of the horizontally-axed Quebec Education program (QEP) that is so different from what the education students experienced within their own schooling. Much research has been done that shows a clear link between child health and connectedness to Nature (Sobel (2006, 1996); Louv (2007); Cheskey (2004), Dyment (2005), Lieberman and Hoody (1998). The Quebec Education Program has infused environmental education and social justice education across the curriculum by developing competencies that include areas of lifelong learning. Teachers in Québec have been struggling to adapt to this new Québec Éducation Program (QEP) that does not reflect their own experience in school. The QEP promotes learning through problem solving and inquiry. The curriculum is horizontally-axed and cross-curricular in nature with an emphasis on group work and on helping students understand what they learned and how they learned it (Lasnier, 2000). This bears little resemblance to the teachers' own experience with vertically-axed, rote learning (Mundy, 2005; Daigle, 1999).

The proposed research seeks to answer the following questions:

- What attracted these students and cooperating teachers (CTs) to the alternative Evergreen Field Experience (FE)?
- What environmental education or environmental activism did the students and CTs have prior to this field experience and where do they situate themselves within the environmental and experiential education milieu now?
- What impact do these students and CTs feel this Evergreen FE and Professional Seminar (PS) had on their development as educators?
- What particular impact did the experience have on their sense of personal and professional identity and on their relationship to science.
- What were the challenges students and CTs experienced during this Evergreen FE and how did these challenges impact, both negatively and positively, their experience within the program, within their practice as well as in their development as educators.

The benefits of the research:

1. McGill University's Faculty of Education has been looking at various ways to reform its undergraduate program with the inclusion of several non-traditional or alternative field experiences. Understanding what impacts the Evergreen FE has had on students in the pilot year will help to inform the directions and strategies McGill might adopt to offer their teachers in training with the best possible support in light of the curriculum they would be expected to teach in Quebec schools.

2. The study is designed to provide more immediate benefits to the students and CTs involved.

The process of sharing, reflecting and critiquing is intended to help students and CTs construct ways in which they can participate more fully in their teacher-training and teacher-mentoring program and in their future pursuits.

The results of this study will be shared at a presentation this spring at the Canadian Federation of Humanities and Social Sciences (CFHSS) conference in association with the Canadian Association of Teacher Education (CATE). The results of this study will also be submitted for publication to a peer-reviewed journal. A written debriefing will also be supplied to both the Office of Student Teaching and the Faculty of Education to help guide the continued efforts in program reform.

References

Cheskey, E. (2001). How schoolyards influence behaviour. In T. Grant & G. Littlejohn (Eds.), *Greening School Grounds: Creating habitat for learning* (pp. 5-9). Gabriola Island, BC: New Society Publishers.

Daigle, J. V. (2005). Five Years In: The education reform and Quebec teachers. *Schoolscapes* (Vol. 1, No. 2).

Dyment, J. (2005). *Gaining Ground: The power and potential of school ground greening in the Toronto District School Board*. Toronto, ON: Evergreen.

Lasnier, F. (2000). *Réussir la formation par compétences*. Montréal, QC: Guérin.

Lieberman, G. & Hoody, L. (1998). *Closing the Achievement Gap: Using the environment as an Integrating Context for Learning,* State Education and Environment Roundtable: San Diego, CA.

Mundy, K. (1999). *Charting Global Education in Canada's Elementary Schools*. Chapter 7. OISE, UNICEF.

Sobel, D. (1996). *Beyond Ecophobia: Reclaiming the heart in Nature education*. Great Barrington, MA: Orion Society.

2. Recruitment of Subjects/Location of Research

Describe the subject population and how and from where they will be recruited. If applicable, attach a copy of any advertisement, letter, flier, brochure or oral script used to solicit potential subjects (including information sent to third parties). Describe the setting in which the research will take place. Describe any compensation subjects may receive for participating.

The participants in this project will be myself (the teacher and lead researcher), all consenting students from the 2009-2010 and 2010-2011 Evergreen special opportunity field experience cohort and all consenting cooperating teachers from the 2009-2010 and the 2010-2011 Evergreen special opportunity field experience cohort. There are 13 participating students from 2009-2010 who have already consented to participate in the study until the end of the 2011-2012 academic year. There are currently 14 students registered and 14 cooperating teachers in the field experience for 2010-2011, although the exact number of research participants will depend on how many consent. Data collection will take place at the end of the Winter 2011 semester (April and May 2011) and continue to follow-up with participants over the next two years. Cooperating Teachers will be invited to take part in this research project after their student teachers have finished their field experience (April 8th, 2011) and the summative assessments have been submitted to the Office of Student Teaching. In this way there will be no conflict of interest between the CT's role as mentor of the student teacher and participant in the study.

As part of the professional seminar class requirements, all students in the class have kept a reflective journal. However, only contributions written by those students who consent to participate in the research will be used as research data. Data collection will take place at the end of the Winter 2011 semester (April and May 2011) and continue to follow-up with participants over the next two years, as they complete their teacher education program at McGill.

During class time with the students and during team meetings with the cooperating teachers I will discuss the proposed research with my students and their cooperating teachers (separately) and hand out consent forms (see attached for sample consent form and script of discussion). Students and cooperating teachers will not receive any remuneration for participating.

3. Other Approvals

When doing research with various distinct groups of subjects (e.g. school children, cultural groups, institutionalized people, other countries), organizational/community/governmental permission is sometimes needed. If applicable, how will this be obtained? Include copies of any documentation to be sent.

N/A

4. Methodology/Procedures

Provide a sequential description of the methods and procedures to be followed to obtain data. Describe all methods that will be used (e.g. fieldwork, surveys, interviews, focus groups, standardized testing, video/audio taping). Attach copies of questionnaires or draft interview guides, as appropriate.

In order to evaluate the impact of the Evergreen field experience interviews will be carried out with the pre-service teachers and the cooperating teachers after the field experience and accompanying seminar have ended. In addition, the participating pre-service teachers will be required to keep a reflective journal, which they will be invited to share in whole or in part at their discretion.

One-on-one interviews will be conducted in April and May 2011, guided by interview protocols, with a view to gathering feedback upon completion of the experience (please see Appendix A for sample questions). Specifically I will be looking for indicators of increased environmental awareness, understanding of teaching and learning from a global perspective, self-confidence,

empathy, level of maturity, self-reflection and appreciation of feedback for personal and professional growth. All interviews will be audio-recorded, and subsequently transcribed. Interviews will be approximately 30-45 minutes in duration. A participant-facilitated, videotaped discussion will be held involving one or more groups of four participants (depending on the numbers who consent to this). The purpose of this last data collection method is to provide a forum for discussion between and among the participants toward developing a rich and textured portrait of their experience as well as to provide the ancillary benefit of increasing participants' recognition of the importance of developing reflexive practices. The reflective journals of those who consent to be part of the research project will be copied and the material will help guide and evolve the guiding questions used in the interview. As well anonymized excerpts will be used to help elicit response in both the individual and group interviews / discussions.

5. Potential Harms and Risk

a) Describe any known or foreseeable harms, if any, that the subjects or others might be subject to during or as a result of the research. Harms may be psychological, physical, emotional, social, legal, economic, or political.

It is possible that students will feel pressured to contribute to the research in certain ways due to my – the teacher/researcher's – power over their grades, these risks will be eliminated by recruiting the participants at the completion of the field experience and seminar. Consent forms will not be returned to the researcher and course instructor. Instead they will be returned to Dr. Gale Seiler, as indicated on the consent form. Dr. Seiler will deliver the signed consent forms to the researcher after all course grades have been submitted.

It is possible that the cooperating teachers will feel pressured to contribute to the research in certain ways due to my – the teacher/researcher's – involvement as supervisor and instructor of

their student teacher, these risks will be eliminated by recruiting the participants at the completion of the cooperating teacher's assessment of their student teacher's field experience. Consent forms will be returned to the researcher and course instructor upon submission of the summative assessments to the Office of Student Teaching at McGill.

b) In light of the above assessment of potential harms, indicate whether you view the risks as acceptable given the value or benefits of the research.

The benefits of this project far outweigh the risks, which can be minimized as described in part a). Through participation in this project students will gain a deeper understanding of their own experience in their field of study and will therefore have the opportunity to engage more fully in their program.

The benefits of this project far outweigh the risks for the cooperating teachers as well, which can be minimized as described in part a). Through participation in this project cooperating teachers will gain a deeper understanding of their own experience in their field of study and will therefore have the opportunity to engage more fully in their practice.

c) Outline the steps that may be taken to reduce or eliminate these risks. If deception is used, justify the use of the deception and indicate how subjects will be debriefed or justify why they will not be debriefed.

See 5a.

6. Privacy and Confidentiality

Describe the degree to which the anonymity of subjects and the confidentiality of data will be assured and the specific methods to be used for this, both during the research and in the release of findings. This includes the use of data coding systems, how and where data will be stored, who will have access to it, what will happen to the data after the study is finished, and the potential use of the data by others. Indicate if there are any conditions under which privacy or

confidentiality cannot be guaranteed (e.g. focus groups), or, if confidentiality is not an issue in this research, explain why.

All data and resulting reports/publications will be fully anonymized through the use of pseudonyms. Data will be stored on a secured external hard drive at the lead researcher's home, and will be transferred only through the use of a password protected memory stick that will be cleaned after each use. All names will be changed in all of the stored data as a backup security measure, unless the student (aged 18 and over) has requested that their real name be used in the presentation of results. Electronic data will be permanently deleted (wiped, not just sent to recycling bin) after 5 years. Any paper data will be stored in a locked filing cabinet at the lead researcher's home, and will be shredded after 5 years. Should a student withdraw from participation during the semester and not wish for previously collected data to be used, all corresponding collected data will be immediately and permanently destroyed as described above.

7. Informed Consent Process

Describe the oral and/or written procedures that will be followed to obtain informed consent from the subject. Attach all consent documents, including information sheets and scripts for oral consents. If written consent will not be obtained, justification must be provided.

The proposed research will be explained in detail during class time (at the last professional seminar on April 4th. A class discussion (appendix C) will take place in which we discuss the pros and cons of participation – students will have a chance to suggest modifications to the proposed research, both during this discussion, or if they wish, by email to my work email address. The consent form (appendix B) will be distributed; time given for students to read it through, then I will go over it with the class as a whole and respond to questions. For the cooperating teachers the proposed research will be explained in detail during the final team meeting at each participating school (during the week of April 11th). A group discussion

(appendix C) will take place in which we discuss the pros and cons of participation – cooperating teachers will have a chance to suggest modifications to the proposed research, both during this discussion, or if they wish, by email to my work email address. The consent form (appendix B) will be distributed; time given for cooperating teachers to read it through, then I will go over it with the group as a whole and respond to questions.

8. Other Concerns

a) Indicate if the subjects are a captive population (e.g. prisoners, residents in a center) or are in any kind of conflict of interest relationship with the researcher such as being students, clients, patients or family members. If so, explain how you will ensure that the subjects do not feel pressure to participate or perceive that they may be penalized for choosing not to participate.

Students enrolled in the Evergreen field experience volunteered to participate in this innovative program. At the end, they will be asked to take part in the follow-up research. As the participants are my students, it is very important that they do not feel pressure to participate in the proposed research, as outlined in #5. The reflective journal will be a class assignment, regardless of whether the proposed research is carried out and will be graded on an all or nothing basis, not on content or quantity. In this way, all students – participants or not – will receive equal grading treatment, and students will also not feel pressured to write things just because they think I want them to write such things, as they are not graded on content.

b) Comment on any other potential ethical concerns that may arise during the course of the research.

All participants will be allowed to withdraw from the study at any point, and for any reason.

Interview Protocols and questions:

Student teacher participants

- What attracted these students to the alternative Evergreen Field Experience (FE)?

- What environmental education or environmental activism did the students have prior to this field experience and where do they situate themselves within the environmental and experiential education milieu now?

- What impact do these students feel this Evergreen FE and Professional Seminar (PS) had on their development as educators?

- What impact did their experience in the Evergreen FE and PS have on their overall experience of their program of study this year?

- What were the challenges students experienced during this Evergreen FE and how did these challenges impact, both negatively and positively, their experience within the program as well as in their development as educators.

Cooperating teacher participants:

- What attracted the cooperating teachers (CTs) to the alternative Evergreen Field Experience?

- What environmental education or environmental activism did the CTs have prior to this field experience and where do they situate themselves within the environmental and experiential education milieu now?

- (CT) What impact do the CTs feel this Evergreen FE had on the development of their student teacher as an educator?

- (CT) What impact did their experience in the Evergreen FE have on their overall practice this year?

- (CT) What were the challenges the CTs experienced during this Evergreen FE and how did these challenges impact, both negatively and positively, their experience within their role as mentor to the student teacher as well as in their own professional and continued development as educators.

Consent Form (Student Teachers)
Tools toward teaching for change: the McGill-Evergreen field experience and professional seminar

Researcher: Kathleen Usher, Ph.D. student at McGill University, Dept. of Integrated Studies in Education
Contact Information: tel: email:
Supervisor: Dr. G. Seiler; tel:

Research Questions:

Student teacher participants:

- What attracted you to the alternative Evergreen Field Experience (FE)?
- What environmental education or environmental activism did you have prior to this field experience and where do you situate yourself within the environmental and experiential education milieu now?
- What impact do you feel this Evergreen FE and Professional Seminar (PS) had on your development as an educator?
- What impact did your experience in the Evergreen FE and PS have on your overall experience of their program of study this year?
- What were the challenges you experienced during this Evergreen FE and how did these challenges impact, both negatively and positively, your experience within the program as well as in your development as an educator.

Purpose of the research: To share, reflect on and critique experiences that have influenced your development as an educator striving to teach for change using experiential and environmental education methods and approaches. This research is designed to allow your voice to be heard by myself and the Faculty of Education as we strive to better adapt the Education Program to present day environmental and social justice issues as well as to better prepare pre-service teachers with respect to the competency based, constructivist Quebec Education Program.

The results of this project may be disseminated through the publication of a journal article as well as in a report to McGill's Faculty of Education. The writings, interviews, videotape and any other data contributed from participants will be analysed by myself (Kathleen) and may be used during conference presentations. The data/results may be used as data for Kathleen's thesis.

What is involved in participating:

Reflective Journals:

As part of our class work, all students (participants or not) were asked to keep a reflective journal. In this journal you were to reflect on your experiences both within the professional seminar and within your stage-work during your field experience. The reflective journal is graded on participation only, not on content or length.

If you choose to participate in the proposed research, your journal writing will be used as data to be analysed to help answer the research questions described at the top of this page. All data from the reflective journals will be confidential, and there will be no way for anyone reading the results of this study to be able to link any data with your name. PSEUDONYMS WILL ALWAYS BE USED in any publications that may result from this study, as well as in the stored data. If you choose not to participate in the project, you will still keep a reflective journal as part of your class work, but your writing will not be used in the research. If you withdraw from participation at a later date, all collected data will be deleted upon request.

I consent to have the contents of my reflective journal be analyzed and used as data within this research project.
(Please circle one) Yes or No

Interviews: Informal one on one interviews will be held over the month of April and May at the participants' convenience. This interview will take one hour. The interviews will be audiotaped.

I consent to participating in the informal, one-on one interview
(Please circle one) Yes or No

I consent to be audiotaped for this interview to aid in the evaluation of the interview.
(Please circle one) Yes or No

Group Discussion: Groups of four to five participants will be given some guiding questions or framework to hold a videotaped discussion of their experience within the field experience. This visual and audio data will be used for research purposes and may be disseminated in clips to support conference presentations.

I consent to participating in the videotaped participatory discussion.
(Please circle one) Yes or No

Consent forms should be returned to Gale Seiler, Professor McGill University. They will only be given to Kathleen Usher after your final grades are submitted. In this way, Kathleen, your teacher and researcher, will only know who has consented to participate in the research after your final grades are submitted.

Participation, or lack of participation in this research will NOT affect your academic standing in the McGill Evergreen FE II and PS II. Your participation is entirely voluntary and you may choose to withdraw at anytime.

My pledge to confidentiality also means that only myself as the lead researcher as well as my advisor will have access to the materials collected and that they will be coded and stored in such as way as to make it impossible to identify them directly with any individual. All names will be changed in the stored data and resulting publications. All data will be stored on a password secured hard drive, and will be destroyed after 5 years.

STUDENTS**:** please tick the appropriate box, sign, date and **return to Prof. Gale Seiler Rm 358**

□ I am 18 years or older. I have read and understood the information provided on the consent form, and I agree to participate in the proposed research. I am aware that my participation is voluntary, I may withdraw from participation at any time, and **my academic standing will NOT be affected in any way** by consenting or not consenting to participate in this study.

Student's signature: _____ Date: _____

Student's name: _____

Researcher's signature: _____

When the study is complete, please send me a copy of the findings at the following email (or postal) address. _____

Consent Form (Cooperating Teachers)
Tools toward teaching for change: the McGill-Evergreen field experience

Researcher: Kathleen Usher, Ph.D. student at McGill University, Dept. of Integrated Studies in Education
Contact Information: tel: email:
Supervisor: Dr. G. Seiler; tel:

Research Questions:

- What attracted you to participate as a cooperating teacher in the alternative Evergreen Field Experience (FE)?

- What environmental and/or outdoor education and environmental activism did you have prior to this field experience and where do you situate yourself within the environmental, outdoor and experiential education milieu now?

- What impact do you feel this Evergreen FE had on the development of your student teacher as an educator?

- What impact did your experience in the Evergreen FE have on your overall practice this year?

- What were the challenges you experienced during this Evergreen FE and how did these challenges impact, both negatively and positively, your experience within your role as mentor to your student teacher as well as in your own professional and continued development as an educator.

Purpose of the research: To share, reflect on and critique experiences that have influenced your development as an educator striving to teach for change using experiential and environmental education methods and approaches. This research is designed to allow your voice to be heard by myself and the Faculty of Education as we strive to better adapt the Education Program to present day environmental and social justice issues as well as to better prepare pre-service teachers with respect to the competency based, constructivist Quebec Education Program.

The results of this project may be disseminated through the publication of a journal article as well as in a report to McGill's Faculty of Education. The writings, interviews, videotape and any other data contributed from participants will be analysed by myself (Kathleen) and may be used during conference presentations. The data/results may be used as data for Kathleen's thesis.

What is involved in participating:

If you choose to participate in the proposed research, your contributions will be used as data to be analysed to help answer the research questions described at the top of this page. All data will be confidential, and there will be no way for anyone reading the results of this study to be able to link any data with your name. PSEUDONYMS WILL ALWAYS BE USED in any publications that may result from this study, as well as in the stored data.
Interviews: Informal one on one interviews will be held over the month of April and May at the participants' convenience. This interview will take one hour. The interviews will be audiotaped.

I consent to participating in the informal, one-on one interview
(Please circle one) Yes or No

I consent to be audiotaped for this interview to aid in the evaluation of the interview and for research purposes.
(Please circle one) Yes or No

Groups of four to five participants will be given some guiding questions or framework to hold a videotaped discussion of their experience within the field experience. This visual and audio data will be used for research purposes and may be disseminated in clips to support conference presentations.

I consent to participating in the videotaped participatory discussion.
(Please circle one) Yes or No

Consent forms should be returned to Kathleen Usher after the summative assessments have been completed and submitted to McGill's Office of Student Teaching.

Your participation is entirely voluntary and you may choose to withdraw at anytime.

My pledge to confidentiality also means that only myself as the lead researcher as well as my advisor will have access to the materials collected and that they will be coded and stored in such as way as to make it impossible to identify them directly with any individual. All names will be changed in the stored data and resulting publications. All data will be stored on a password secured hard drive, and will be destroyed after 5 years.

□ I am 18 years or older. I have read and understood the information provided on the consent form, and I agree to participate in the proposed research. I am aware that my participation is voluntary and that I may withdraw from participation at any time.

Cooperating Teacher's signature: _____ Date: _____

Cooperating Teacher's name: _____

Researcher's signature: _____

When the study is complete, please send me a copy of the findings at the following email (or postal) address. _____

Script for asking students and cooperating teachers to participate in the research

The following script outlines the discussion I will hold with my class of 14 students as well as with the 14 cooperating teachers (in a separate meeting) before distributing consent forms.

- Explain my status as a Ph.D. student at McGill as well as the students' instructor and field supervisor;
- Introduce main purpose of the research project, outlining its objectives;
- Explain how data will be collected and provide a timeline (eg; the interviews will be held between April 11th and May 30th at participants' convenience and then at various times over the next two years again at the participant's convenience)

Explain how the student or cooperating teacher is expected to participate in this project and describe the participant-facilitated video group discussion. Including how clips from the video-discussion may be used in conference presentations.

For the student teachers: Emphasize that their participation is voluntary AND explain how there is no way that their grades can be affected by choosing not to participate. Explain that Prof. Seiler will be collecting the forms (Rm 358 Education Building), and that I will not see them until after final grades have been submitted. For the cooperating teachers: Emphasize that their participation is voluntary and that their formal role as a mentor and assessor of their student teacher will be completed before they participate in this study.

- Explain how confidentiality will be maintained, emphasizing that their names will be changed in the stored data as well as in the final publications to ensure that their privacy is fully protected.

- Explain how results will be disseminated, and explain that it is possible that this research will provide a basis for my future thesis, hence the data may be used in future reports and/or publications.

- Discuss benefits of participating in this research – for themselves, but also for future Evergreen FE students and cooperating teachers.

- Tell them that if they wish to read the research proposal they may email me and I will forward it to them.

- Tell them that they have the option of viewing a draft of the final publication and suggesting any changes if they wish. They may also receive a copy of the final results if they so indicate on the consent form.

- Read consent form through with students and cooperating teachers (during separate meetings) and leave time for questions

Appendix C: Isabelle's ILES

<table>
<tr><th colspan="2">Learning and Evaluation Situation</th></tr>
<tr><td><u>Subject Areas:</u>
Science - Moral Education -
Language Arts - Mathematics</td><td><u>Cycle:</u> 3
<u>Year:</u> 2</td></tr>
<tr><td><u>Topic:</u> Earth Day (April 22nd of every year)</td><td><u>Time Allotted:</u>
Approximately 15-20 class periods (the teacher will decide the amount of classes per week)</td></tr>
<tr><td colspan="2"><u>Big Idea:</u>
The main focus of this LES is to get students involved in environmental education as well as community life. An earth day presentation in front of the whole school will be the product of what they will have learned throughout the year. Furthermore, as one will see, many cross-curricular competencies will be explored. This hand on project will be guided by the teacher however built by the students. This project focuses on them! Step by step procedures will enable them to accomplish this initiative task. Finally, since this is a procedural step by step project, the time allotted can vary.</td></tr>
<tr><td colspan="2"><u>Inquiry questions</u>
What can we do as a classroom and as a citizen to spread our knowledge concerning environmental factor?
In what ways can we make people around us aware about the importance of our planet?
How will my learning's affect the decisions and choices I make? How can it impact society as a whole?</td></tr>
<tr><td colspan="2"><u>Cross-curricular competencies*:</u>

To use information
• To gather information
• To recognize different information sources
• To put information to use

To solve problems
• To formulate possible solutions
• To analyze the components of a situational problem

To use critical judgment
• To qualify his/her judgment</td></tr>
</table>

- To express his/her judgment

To use creativity

- To imagine ways of proceeding
- To begin the procedure
- To become familiar with all the elements of a situation
- To begin the procedure

To adopt effective work methods

- To begin the process
- To perform the task
- To analyze the task to be performed

To cooperate with others

- To contribute to team effort
- To use teamwork effectively
- To interact with an open mind in various contexts

To communicate appropriately

- To carry out the communication
- To establish the purpose of communication
- To select the mode of communication

*Throughout the evaluation and learning situation, students will be able to accomplish all of the above competencies.

Broad Area of Learning:

Environmental awareness and consumer rights and responsibility

- Awareness of his/her environment
- Construction of a viable environment based on sustainable development

Citizenship and community life

- Involvement in action in a spirit of cooperation and solidarity

Subject Area and Competencies

Moral Education:

- **Competency 2**: To take an enlightened position on situations involving a moral issue
  - To justify the choice in terms of a better individual and collective way of living

- To envisage possible choices and their consequences
- To analyze the situation from different viewpoints
- To explain the moral problem

Essential Knowledge's

Take a critical look at the reasons behind the choice*:

- How does the choice promote a better individual and collective way of living?
- Are the reasons sound? Why?

Anticipate the effects of the various possible choices*:

- Consider the consequences for oneself and for others
- Consider the consequences for society
- Consider the short-term consequences
- Consider the long-term consequences

*The action of choosing ones position on environmental factors/problems. In what ways does the student decide/choose to take part in the well being of their environment?

Science:

- **Competency 1** – To propose explanations for or solutions to scientific or technological problems
  - To identify a problem or define a set of problems
  - To use a variety of exploration strategies
  - To assess his/her approach

Essential Knowledge's

Systems and Interactions:

- Interactions between humans and their environment
- Environmental technologies (eg. recycling)

Language Arts:

- **Competency 1 –** To read and listen to literary, popular and information-based texts
  - To use a response process when reading and listening to information-based texts

Essential Knowledge

Reading, listening to and viewing a range of self-selected and personally relevant texts that include:

- Searching the internet to locate texts that entertain, promote, and inform

- **Competency 3** – To represent her/his literacy in different media
  - To follow a process to respond to media texts

- To follow a production process in order to communicate for specific purposes to a specified audience

Essential Knowledge

Make meaning of media text by:

- Drawing on prior knowledge
- Sharing response with peers
- Returning to text

Production

- Function as information-based text type (see the QEP for further detail)

Post Production

- Presentation of text to intended audience

❖ **Competency 4** – To use language to communicate and learn

- To use language (talk) for learning and thinking
- To interact in collaborative group activities in a variety of roles
- To use communication information experience and point of view

Essential Knowledge

- Refer to the Quebec Education Program for further detail (many essential knowledge`s for this competency are applied in this LES)

Mathematics:

❖ **Competency 3** – To communicate by using mathematical language

- To interpret or produce mathematical messages

Essential Knowledge's

Statistics

- Formulating questions for a survey
- Interpreting data using a circle graph

Learning Objectives (intensions and rational**)**

Students will be able to:

- Gather information in such a way that will help them get to their final result (in this case, a presentation on Earth Day)
- Recognize the difference between different information sources
- Evaluate and choose reliable informational sources
- Interpret information
- Work as a member of a group
- Communicate in such a way that benefits the group they are in
- Use their prior knowledge to fulfill the required work
- Employ their critical judgment based on different perspectives and/or choices made by others
- Employ creative ways to accomplish the task

Materials

Black board
Bristol boards (arts supplies)
Computers

Introduction *(teachers note)*

After each class, students should be reflecting in their journal. In order to make the teacher's life easier and the journals more meaningful to the students, tell them that only five will be randomly picked up after every class. This will enable students to meaningfully write in their journal all the time since they will not know whether their journal will be picked up to get graded (idea retrieved from Prof. Annie Savard – Faculty of Education, McGill). When class is over, it is important to remind them about this process.

Here are some ideas for journal entries:

- What have they been doing in class?
- What have they learned, enjoyed or disliked?
- Reflect on ways they work as a group or individually
- What can be done better to work in groups
- Why did something work or not work while working in a group?

Throughout this LES, flexibility will be something very important to consider. Some classes might take longer than others. It is up to the teacher`s discretion to decide how many times a week he/she wants to work on the project

An extension of this LES can incorporate different workshops on each theme that is being used

for the presentation.

With all the information that the students will have acquired throughout the project as well as the cross curricular competencies, they will be able to effectively present Earth Day.

Class 1	**Activity: Environment vs. Nature**
15-20 minutes	*This class is intended to make students think about the environment and nature; due to the fact that students will be spending a great deal of time (throughout the year) working on these themes.* To begin, ask students to think of words that remind them of the *environment* (for example: green, trees, 3 R`s etc). Jot down their ideas on the black board (this can be done through the format of a concept map or a list). When ideas start to dissipate, have students do the same activity but this time for the word *nature*.
15-20 minutes	When finished doing a concept map or a list, have students pay closely attention to the words that were mentioned by classmates, and ask them to compare and identify similarities between the two lists/concept maps (nature and environment). Can some aspects of the environment be found in nature and vice versa? Throughout the above discussion, ask students how one can affect the other (ex. How can nature affect the environment? How can the environment affect nature?) *These discussions should reminisce on their prior knowledge concerning the environment.*
10 minutes	Before ending the discussion, ask the students what the school has done in order to take care of the environment and nature. Is it working/effective? (Such examples include: recycling plastic bottle, paper, batteries etc.) Finally, ask students what *they* do in order to take care of the environment and nature. These discussions are open ended. The teacher should also talk about his/her thought on nature and the environment. *Do not forget to pick up their journals (this should be done after every class)*

Class 2	Activity: A glance on recycling and how it can help the environment
15 minutes	Begin the lesson by reading the book *Recycle* by Gail Gibbons. (This book explains the process of recycling and discuses the impact of what some recyclable materials can have on the environment if they are not recycled. Furthermore, it gives tips on how to help a community to better take care of their environment) Gibbons, G. (1992). *Recycle: A handbook for kids.* NY: Boston
10 minutes	Have students get into groups of three and let them discuss things they learned about recycling that they did not know before. You can also ask them to discuss what they already knew (this will enable students to use their prior knowledge and go back on what they have learned in previous years). Discuss as a class.
20-25 minutes	Bring students outside and have them pick up litter found in the school yard or around the school. This is a great way to get them conscious about the environment as well as knowing where their school stands within the environment (in other words, is the outside of their school clean?) Also, the goal of this outing is not simply to pick up litter but to be outdoors. To enjoy it. Hopefully the weather will be nice. You can also have them explore the smell (does it smell like anything?) Have them use their five senses in order to get them closer to nature.

Class 3	Activity: Introducing the idea of Earth Day
10-15 minutes	Introduce today`s class by playing the Rain Storm game. Once you have modelled it and the students have taken part in it individually, have them do a collective rainstorm. Debrief. Explain to them the importance of working as a group. What happens when one person decides not to participate, does this affect the result? When everyone works together, can things be accomplished more effectively? (These are only examples). Have students return to their desk.
	Re introduce lesson 1 (class 1) to the students. Hopefully the teacher will have documented on paper what was written on the board so as to look back on what student`s had said: ``What the school does in order to take care of

10-15 minutes	the environment``?  Explain to them that as a yearend project they will be presenting a ``compte-rendu`` based on environmental initiatives undertaken by the school (will build a sense of community towards the school -YAY!). This presentation will be in front of the whole school. They will focus on different themes (these themes will depend on the type of recycling the school undertakes – ex. recycling paper, batteries, plastic bags and plastic bottles). Tell them that the presentation will take in consideration what they believe earth day is or should be. As a group discussion, discuss what the class would like to accomplish for earth day. *For now, these lessons don't seem like much; however by doing the above lessons, students start getting conscious about what their school is doing to help the environment. Furthermore, they already start thinking about ideas and ways they will want to present the information they obtain.*
25 minutes	Individually, ask students to fill in the questionnaire (see appendix 1) This questionnaire will help you better understand their meaning of earth day as well as their expectations for that big day. When the students are done filling in the questionnaire, have them share what they have written. You can collect them for marks or simply to be read. *For the next lesson, make sure you reserve the computer lab since students will have to use them*

Class 4	**Activity: Internet search**
10 minutes	To the teacher's discretion, have the classroom divide into four groups (or depending on the amounts of themes you want them to work with). The teacher can decide whether he/she wants to choose the groups or have them choose their own groups. This is the same for the theme. Groups can either choose the theme they want to work with (which might cause some problems if several groups want to work on the same theme) or the teacher can choose the theme for them. Have students line up, and bring them to the computer lab.
	Once at the computer lab, explain to the students that the group they belong too will be the group they will work with all year. Explain to them that the goal of today`s class is to do an internet search on their topic/theme. Give

60 minutes	them a handout (see appendix 2) and explain it to them; that way they will be able to better understand what to do. Without going into many details, explain to them what a reliable source is. In other words, ask them, if possible to compare information they find with different internet resources to make sure the information is accurate. This activity should be done individually so as to get as many information about the theme as possible (if members of groups work together, they will have all the same information). Remind them not to copy word for word the text they are reading. Encourage them to paraphrase. In other words, to take somebody's idea and put it into their own words. Once they are done, take the papers back. You can use this to evaluate their writing skills.

Class 5	**Activity: Discussing our findings**
10-15 minutes	Give them back the internet search paper (corrections and comments are up to the teachers discretion). Ask students to get into their groups and discuss their findings. Have them write down what they found most interesting and important. Have them present to the class what they have found. Hand them over a duo tang and ask them to decorate it. This folder will be where they keep accumulated information about their theme.
10-15 minutes	Discuss with the class in what ways they would like to present their information to the school (ex. Skit, PowerPoint or both (or if they have any other suggestions)). How can they make it effective? What is the purpose of presenting it to the school? With the identified purpose, guide students in thinking how they will attain their objective. This is really up to the students. The teacher should be documenting everything as a way to see their progress in thinking critically. Encourage the whole class to take part in the discussion.

	Remind them that for next class (the ones that are sacrificed for the project) there will be a field trip (have a letter of permission for parents)

Class 6	**Activity: Field Trip**
120-140 minutes	Refer to appendix 3 for lesson on field trip *This field trip is to make them see different ways of helping the environment and their community. This field trip can enable them to grasp ideas for them to incorporate in their presentation. Furthermore, this field trip will make them even more conscious that there are other ways besides recycling that can help the environment.*

Class 7	**Activity: Discussion and Brainstorming**
20 minutes	*This lesson should be followed the day after the field trip.* Have them reflect on their experience. Ask any student if they would like to share. If no one volunteers, you could talk about your experience and what you have learned. This might encourage students to speak up since you are modelling. Ask them how they feel. Ask them what they found interesting. Can anything they learn be incorporated into their future presentations? Should we present anything that we found interesting at the coop as a way to get our spectators engaged?
30 minutes	Have them begin to work on their presentation (either by organizing a skit or doing a PowerPoint). If they are doing a PowerPoint, make sure you let them know that it should be engaging for the spectators in order to not bored them out. While students get started, walk around and guide them through. This class should be intended to brainstorm ideas of what they will want to do.

Class 8	**Activity: Survey time**
	Now that they have brainstormed ideas, introduce the topic of doing a survey. This will later help them incorporate more information about their theme and how well the school actually takes care of the environment. Have

20 minutes	each group design 2-4 questions concerning their theme and how it is employed in the school. An example would be "do you use both sides of the paper instead of using one? Once you are done with the paper do you recycle it or throw it in the garbage? Inventing the questions should take no longer than 20 minutes *Send a letter to the teachers in order to inform them that some students will be coming in their class the following day/week (depending on the amount of classes per week you are working on this project), to ask students some questions* (an example of this letter is given in the appendix 4).
20-30 minutes	Once they have finished working on their survey question, they could go back to working on their presentation.

Class 9	**Activity: Assembling findings**
20 minutes	Assign each group with different classrooms. Have them go to designated classes to do the survey. Once they come back, have them interpret the findings and create a circle graph.
20-30 minutes	Once they are done, have them go back to working on their presentation. Don't forget to walk around and guide them.

Class 10-11-12	**Activity: Working on their presentation**
40-50 minutes (for every class)	Have them work on their presentation. During every class (for the following three sessions), reserve an area in the classroom where you will take individual groups for about 10-15 minutes in order to discuss how everything is going; putting them in the right direction and so on. By the end of class 12, students should be more than half way done. If they are doing a skit and a PowerPoint presentation, then the skit should be done and the PowerPoint should be closely under way. Their materials should start getting made (costumes, manipulative, accessories etc.) and/or organized. They will also need to figure out who will be presenting the PowerPoint? *Meanwhile, the teacher should start thinking about the organization of the*

	presentation, how long should it be, where should it be, how will we divide the school? What day? Who will do the introduction, the conclusion, the thank you`s... etc.) *After lesson 10, classes can be altered depending on the rate of the children's work and the due date (the date of the presentation).*

Class 13-14	**Activity: Wrapping up**
	Start closing up the project (last minute details) Assign task to different people (Who will be setting up chairs, stage etc. This can definitely incorporate leadership skills.

Class 15	**Activity: Earth Day Presentation!**
	Day of presentation

Class 16	**Activity: Debrief on the whole experience**
20-25 minutes	Reflect – Debrief on the whole experience. Guiding questions include the following: - What have you learned intellectually and about yourself? - What could you have done better? - What do you think was the purpose of this presentation? - What do you think was the purpose of researching information and making a survey? - If you would have to redo your grade 6, would you redo the project? Explain to me your thoughts These guiding questions are not necessarily the questions they need to answer. They are simply put here as a way to help children write; especially if they do not know what to write. *These reflections can be done several ways: can be done by discussion, journal writing, collage etc.)*

Conclusion:
Even though this LES may not seem to provide many learning opportunities; it does. This can

be seen throughout the process. Students will gain a lot by taking part in this project.

With the knowledge they have acquired through internet researching, reading books, attending the field trip, taking part in discussions and considering their prior knowledge, the following rubric will be used.

Evaluation rubric:

Name:	Excellent (4)	Very good (3)	Good (2)	Satisfactory (1)
Creativity	The student was able to employ creative ways to accomplish the task.			The student was unable to employ creative ways to accomplish the task.
Communication and group work	The student showed interest in the group and brought ideas in such a way that benefited the group.	The student showed somewhat of an interest in the group and brought somewhat of a benefit to the group	The student showed a few amount of interest in the group and brought few benefits to the group.	The student showed no interest in the group and brought not benefits to the group
Research	The student was able to obtain information relevant to his/her topic	The student was able to obtain a small amount of information relevant to his/her topic	The student was able to obtain very few information relevant to his/her topic	The student was not able to obtain information relevant to his/her topic
Journal Writing (The teacher can also have another rubric based on the amount of journals written)	The student completed all of his/her journal entries with a thorough reflection demonstrating understanding and meaning	The student completed his/her journal entries with a thorough reflection demonstrating some sort of understanding and meaning.	The student completed his/her journal entries with a minimum of understanding and meaning	The student completed his/her journal entries with no understanding or meaning

*Note that the evaluation rubric does not contain many criteria's. This LES is in part intended for students to acquire knowledge on the subject without being formally evaluated. Furthermore they will develop, as mentioned previously, many [if not all] cross-curricular competencies.

Appendix 1

Name:_____ Date: _____

Earth Day

1. What does Earth Day mean to you?

   _____
   _____
   _____
   _____
   _____

2. What do you do in order to take better care of your environment? *Explain*

   _____
   _____
   _____
   _____
   _____

3. How can your environmental choices benefit (or not) other people in your community? *Explain*

   _____
   _____
   _____
   _____
   _____

4. Why do you think Earth Day is an important day for some people and not for others? *Explain*

   _____
   _____
   _____

_____
_____

5. What would you like to do for Earth Day? *Explain*

_____
_____
_____
_____

_____
_____

Internet Search – Earth Day

Instructions:

1. Write down the names of your group members in the space provided
2. Search at least two different internet sites that speak about your topic/theme
3. For each site, write down interesting and relevant information that you have found
4. To help you, here are some guiding questions:
    - How does your topic/theme have an impact of the environment?
    - Why should we recycle (your topic/theme)
    - While recycling (your topic/theme), what are the advantages for the environment?

Members of group:

_____

_____

_____

Topic/Theme: _____

Internet site # 1:

What kind of information have you found?

Internet site # 2:

What kind of information have you found?

Reasons for this place base activity:

Given that the Grade 6 class is organizing Earth Day and have been taking part in recycling projects, bringing them to Coop- La Maison Verte would be a good way for them to explore an environmentally friendly store. Furthermore, La Maison Verte will hopefully encourage them to act as responsible consumers and realize that there are different ways of living to better our environment. This field trip will enable them to transmit their experience and knowledge to members of their family to further encourage the use of several products sold in that store, by identifying benefits and advantages; not only for the environment but also for one's own well

being (this would include not using products that contain Sodium Lauryl Sulfate – ingredient is a suspected carcinogen).

Objectives:

By the end of this fieldtrip, students will be able to:

Explain the meaning of biodegradable, organic and fair trade products
Construct their own identity in relation to their environment
Construct own moral values
Anticipate effects of various choices made
Analyze choices that are made regarding the environment around them
Respect the environment
Learn different ways to engage one in being an environmentally friendly citizen

Procedure

- Students will get to *Coop- La Maison Verte;* situated on the corner of Sherbrook and Melrose Street.
- When they arrive, students will be told to simply look around and explore the store. They will be encouraged to write down anything they find interesting as well as questions they may have.
- After several minutes (approx. 15 minutes), students will be ask to gather around the tables placed in front of the store, in order to discuss.
- Discussion will be the time to ask questions and talk about specific topics such as biodegradable, organic and fair trade products. An employee of La Maison Verte will attend this discussion in order to explain the history and goal of the Coop. Also, any questions or comments that cannot be answered by the teacher will hopefully be able to get answered by the employee. Further information about the topics previously mentioned will be elaborated if it was not done during discussion.

This field trip should take no longer than 2 hours including getting there and back to school. Depending where your school is, a budget might be needed for transportation

Evaluation

In order to assess students understanding regarding the purpose of the field trip, students will be ask to reflect about their experience in their journal. Guiding questions will be provided in order to help students reflect. However, they are free to write about anything else they wish to include in their journal. Such guiding questions include the following:

1. What have you learned about your experience at La Maison Verte?
2. Why do you think La Maison Verte is/is not an environmentally friendly place to be?
3. What do you think are the consequences or advantages of purchasing items at la Maison Verte?
4. In your opinion, what kind of action can be taken from citizens to better the environment? Explain your reasoning.

5. What do you think are the effects and benefits of biodegradable, organic and fair trade products? Why would you encourage/not encourage these types of products?

Students will be evaluated based on their comprehension and reasoning of the questions they answered. Different opinions will be accepted; however, as mentioned previously, reasoning will be demanded with the opinion in order to better evaluate the student's comprehension of the field trip.

Extensions

As an extension to this field trip, teachers can later do another field trip to Ten Thousand Village store in order to further the discussion on fair trade products. This other place base field trip will enhance the student's curiosity and hopefully raise more questions and awareness regarding fair trade products and its importance. The question and issue of equality could be discussed and explored

Cross Curricular Competencies:

- To use information:
  It mentions in the QEP that it is important for children to "diversify their information sources"; this field trip will give students the opportunity to gain more knowledge and then be able to apply it.

- To exercise critical judgment:
  This cross curricular competency will be developed by having students make their own opinion and judgment regarding a specific topic; in this case, fair trade products.

Broad Areas of Learning:

- Environmental awareness and consumer rights and responsibilities.
  Its educational goal: "To encourage students to develop an active relationship with their environment while maintaining a critical attitude towards exploitation of the environment, technological development and consumer goods." (QEP, p.47)

Specific Subject Area:

Science and technology:

- Competency 3: To communicate in the languages used in science (relate it to objective) and technology.
  Even though no essential knowledge's are used throughout this field trip, students will be able to integrate definition of words they have learnt. This builds up in competency 3 since students are required to communicate in the language used in science. Definitions such as biodegradable, organic, not to forget many other words they will learn, are part of science

Moral Education:

- Competency 2: To take an enlightened position on situations involving a moral issue.

Essential knowledge's: (taken from the Quebec Education Program)

- Anticipating the effects of various possible choices (considering consequences for society as well as considering long and short term effect consequences on different choices made by a person).
- Taking a critical look at the reasons behind the choice (how does the choice promote a better way of being individual and collective way of living?)

- Competency 1 - To understand life situations with a view to constructing a moral frame of reference

  Essential knowledge's:

  - Values that one can define in own words and that were experienced (values related to the life situations being studied: cooperation, openness to others, equality, commitment)

Phone Numbers and contact people:

Coop- La Maison Verte:
5785, Rue Sherbrooke W.
Montréal
(514) 489-8000

Ten Thousand Villages
5675 Avenue Monkland
Montreal
(514) 483-6569

Dear teachers of _____(school name),

This letter is to inform you that on _____ (date), several students from room _____ (classroom number) will be coming to your class for a quick survey. This survey is intended to gain information on where the school stand concerning environmental initiatives. The results of this survey will be presented during the Earth Day presentation (date to be announced). This survey should take no more than 5 minutes and will comprise of a hands up format.

Thank you for your time,

Sincerely,

(Name and signature)

Appendix D: Samantha's ILES

Learning and Evaluation Situations: Towards the promotion of environmental awareness and responsibility in children.

I. **Emphasizing Positive Group Dynamics**
II. **An Introduction to Recycling**
III. **An Introduction to Recycled Art**
IV. **Introducing a Technical Audit**
V. **Technical Audit Workshop**
VI. **Technical Audit of School**
VII. **Introducing the Ecological Footprint**
VIII. **Promoting Activism and Preparing for Earth Day**
IX. **A Trip to the Local Recycling Plant: Concluding the LES**

Introduction

It can be one thing to be aware of a problem and quite another to take the initiative to deal with it. Concerning environmental problems, awareness can lead to apathy as people, including children, feel too overwhelmed and insignificant to do anything about the vastness of such issues as global warming, deforestation, urban sprawl, animal extinction, water contamination, etc, etc. The main idea of the LES, therefore, is to introduce children to specific, everyday environmental issues along with accessible solutions that, over time, become a part of one's routine.

Each lesson proceeds from an activity as children have a chance to 'get their hands dirty' (a literal reading is also expected), before encountering an explanation. Focusing on recycling and the undertaking of a technical audit of the school building, students will learn about reusing recyclable or refuse items in creative ways, the different types of materials that are recyclable, including the meaning behind recycle symbols, the different technologies that contribute to the maintenance of a building, the science behind what makes some technologies more energy efficient than others, and, some simple techniques to check for drafts and leaks, including the significance of weather proofing. Finally, an introduction to the ecological footprint will consolidate prior learning as students learn to assess the different components of their lifestyle in terms of the impact it has on the earth's limited resources.

The LES is rooted in the QEP. The board areas of learning concern the promotion of environmental and citizenship awareness in children. A couple of guiding questions that will help steer the LES are: How can I make a positive difference in my community?; and What small and not so small adjustments do I have to make to my lifestyle in order to live a more environmentally responsible life? In terms of subject specific competencies, there is an emphasis on science and technology in the LES, particularly with regard to systems and interactions in the material world and systems and interactions between humans and their environment in the

natural world. Some attention will also be given to energy in the material world, specifically the consumption and conservation of energy by humans. All three of the science and technological competencies for Cycles 2 and 3 are included in the LES: proposing explanations for or solutions to scientific or technological problems; making the most of scientific and technological tools, objects and procedures; and communicating in the languages used in science and technology. The particular evaluation criteria of each competency will be noted at the beginning of each lesson.

Given the multidimensional vision of the LES as well as the overlapping nature of competencies, other subject area competencies are included. *Engaging in a moral dialogue* is an excellent starting point for the LES since it captures the humanist imperative of conscientious action and respect for others, particular in the context of group work. It includes such evaluation criteria as expressing personal ideas while taking into account oneself, others and the subject; listening, while taking into account oneself, others and the subject; and finally the identification of conditions that promote or hinder group reflection. *Producing media works in the visual arts* is a fun competency to help facilitate the aforementioned competency of engaging in a moral dialogue. As such, greater emphasis is on the process of working on the media work rather than the end result. Certainly, *to use language to communicate and learn* is a competency that runs through all of the lessons in terms of class discussion but also, more pointedly, in the written work where such evaluation criteria includes: experimenting and adapting linguistic features when communicating in specific contexts for a familiar audience (this meshes well with the competency of communicating in the languages used in science and technology); and developing through trial and error, strategies for working collaboratively with peers – another competency to encourage productive group work. More specific subject based competencies dealing with mathematics will be pursued in the lesson on the ecological footprint whereby students will need *to solve a situational problem related to mathematics* as they think through their various consumption habits; and *reason through the use of mathematical concepts and processes* as they interpret comparative pie charts and graphs generated from the questions they answered on the interactive website.

While the inductive approach of the LED emphasizes critical judgment and solving problems, attention must be equally paid to promoting respectful and productive group involvement. As such, it is crucial that all of the cross curricular competencies are exercised throughout the lessons, namely; solving problems, using creativity, exercising critical judgment, cooperating with others, adopting effective work habits and communicating appropriately.

A class equals 50 minutes.

I. Emphasizing Positive Group Dynamics

Working in groups is a fundamental human activity. Fostering greater self-awareness about how one behaves in a group goes a long way towards improving interrelations and making the group objective easier to carry out. The objective in this case is to have students in small groups come up with an art project using only recyclable items. Students will have a chance to reflect on their group behaviour, following the introduction of relevant vocabulary, after the art activity.

Subject area competencies: to engage in a moral dialogue; to use language to communicate and learn through the course of class discussion; and to produce media works in the visual arts.

SWBAT
Organize as a small group and decide on a project theme
Work harmoniously as a group toward completing project
Reflect and think critically about one's role in the group

Materials: recycled objects, scissors, glue, some clamps to keep work together while the glue is drying, and tape

Engage: 5 minutes
Since this is the first lesson in a series of lessons about environmental responsibility, brief the students on some of the funs things we will be doing together: exploring and doing art that is environmentally friendly; learning technical skills to help make our homes and schools more energy efficient (Does anyone know what 'energy efficient' means?) and learning to identify areas of our life, what we eat, how long we take showers, etc., that needs to be adjusted in order to live more harmoniously with nature. Today we are going to start out in groups making a recycled art project using only recyclable items. Please remember that we have a limited timeframe so it is crucial that everyone respects each other and tries to work productively in their group.

Explore: 25 minutes
Arrange the class into groups of 4 and 5. Each group will be given a bag with recyclable objects of various shapes, colours, textures and size. Glue, scissors and tape will be distributed as needed. Each group must come up with an idea for a sculpture, college or multimedia work and begin putting it together. While checking out the progress of the different projects, pick out different behaviours that reflect the different vocabulary and express this as general observations for the next part of the lesson.

Explain: 15 minutes
Students will be given a worksheet on group roles, which is divided into *task function*, including the initiatives of "seeking/giving info", "giving opinions", "defining problems", and "testing feasibility". The *group building* section includes "coordinating", "encouraging", "following" and "mediating". The final section regards *individual functions*, like, "blocking", "out of field",

"digressing", and "seeking recognition". Demonstrate the use of the vocabulary with examples of relevant life situations and examples from the previous class activity.

Would anyone like to share their group experience? Referring to the worksheet, can you describe some of your actions? How many encountered blocking or digressions? What was the consequence of such negative behaviours?

The last 5 minutes will be toward clean up. The unfinished projects will be placed in bags to be completed in another class.

Extend:
Students will have a chance to finish their projects in an upcoming lesson on recycled art. Also, students will have a chance to work on environmental themes in art again for Earth day. It is suggested that the project they are working on now can be developed further for the Earth day celebration.

Evaluate:
On the back of the leadership sheets, write the names of your group members and describe what you are doing with the recycled objects. The sheets will be returned when we do an upcoming lesson on recycled art.

II. An Introduction to Recycling

Students will learn about the role of recycling in the larger context of consumption habits and waste management in North America. While the practice of recycling has been imposed throughout most municipalities in Canada and the US, the science behind sorting one's garbage has not, unfortunately, been similarly disseminated. For most of us, the story stops once we have tossed out items in the recycling bin. However, recycled items must be transported, sorted as well as chemically broken down and reprocessed, all of which involves a lot of fossil fuels. While recycling is an important part of the waste management system, and will play an increasingly crucial role as recycling technology advances, consumption habits can be changed, less paper and water bottles consumed for example, to reduce the need for recycling in the first place. Also, we can all learn to re-use items that would normally be thrown into the recycling bin. Reusing can involve art projects where one is giving new life to disposable items in the form of sculpture, murals or multimedia art.

Subject area competencies: to use language to communicate and learn through the course of class discussion; to propose explanations for or solutions to scientific or technological problems. The evaluation criteria will include the development of relevant explanations or realistic

solutions for dealing with the problem of refuse as well as the justification of such explanations or solutions.

SWBAT
Apply prior knowledge to sort a variety of items into recyclable and non-recyclable categories

Observe some differences in characteristics between the recyclable and non-recyclable items and infer some reasons behind the differences (ex: denser, heavier materials cannot be recycled)

Discuss A) the order of importance of the three R's, B) and the steps needed to form a recycling club

Engage: 5 minutes
In terms of waste management, what are the three "R's"? *Reduce, Reuse, Recycle.* What is the order of priority for the three R's? Using the example of plastics, ask the students how it is that so much plastic ends up in the recycling bin. Address the problem of over-packaging and over-consumption.

Explore: 20 minutes
Provide each group of 3 or 4 students a pile of recyclable and non-recyclable refuse items.

Are there any items that are made from recycled materials? Usually there is a label on the item which shows how much of it is made from recycled material, or, if it is made from pure materials.

What do you think the different numbers inside the recycling sign on plastics represent?

Ask them to classify recyclable objects and non-recyclable objects. Then classify the recyclable objects into different material categories.

Explain: 20 minutes
The numbers in the recycle logo represent the difficulty and effort it takes to recycle the object. The number "1" represents the easiest plastic to recycle and "6" means that the object is difficult to recycle properly, and some recycling facilities, like Montreal, cannot recycle this plastic. The numbers also represent what the object is composed of and into what it can be recycled. Mention some of the things that are made out of the different recycled plastics, for example, the number 1 plastics can be recycled into: fiber-fill for winter coats, sleeping bags and life jackets.

There are energy costs to recycling, such as, the cost of transporting the items to the recycling facility, the cost of manually separating the items, and the heat energy involved with chemical reprocessing. Ink must be separated from paper and it is crucial that the different plastics, for

example, are properly separated because a mix up of numbers will ruin a batch of newly recycled plastic.

There is a debate regarding the over all costs of recycling, that is, whether it is cost-efficient to recycle given all the energy that goes into the recycling process. However, there is evidence that the overall costs of say, recycling plastic instead of using raw materials in their pure state to make plastic, is less costly in the long run. Refer to the two different ways a social scientist can look at the problem: A) considers only the monetary cost of recycling B) considers other factors like quality of life (who wants to live near a dump?) It comes down to a question of values.

Evaluate: 5 minutes
Does anyone know what is being recycled at your school? What is getting thrown out into the garbage? Perhaps there is a need to create a recycling or environmental group to help drum up student enthusiasm for environmental issues.

How does using recycled items in art save on energy? Items that would normally undergo the process of being recycled get reused towards an interesting art project.

Extend:
Tell the students that they will have a chance to see for themselves how the process works when the class visits the local recycling plant in a few weeks.

III. An Introduction to Recycled Art

Thinking of art, and the making of art, as a human imperative rather than as a talent that only some will develop, what could be more accessible than using recycled items to produce works of art? By having students reuse items that would normally be tossed in the recycling bin, or garbage, the intention is to have them begin looking at rubbish in terms of shapes and colours, for example, instead of with the conventional mindset of 'out of sight, out of mind'. The students will be first introduced to examples of professional artists who use recycled material, including child-produced recycled art, and they will be expected to begin planning their own art projects, which involves 'testing feasibility', in small groups.

Subject area competencies: to use language to communicate and learn through the course of class discussion; to produce media works in the visual arts.

SWBAT
Conduct oneself in a mature manner while working in groups
Cooperate on a theme for the project as well as the execution of said project

Materials involve a variety of recycled items (it is advisable to let students know about the lesson a few weeks ahead of time so they can also collect items of interest), worksheets to record group work, and a Smart board to show students examples of both professional and student-level works of recycled art. If there is no access to a Smartboard, it is advised to have printouts and/or books to show the students.

Engage: 20 minutes
Students will organize themselves in an orderly fashion in front of the Smart Board station. For the next 10 minutes, they will be introduced to some professional artists that work with recycled materials, such as: John Dahlsen, HA Schult, Tim Noble and Sue Webster, Jane Perkins. They will also be introduced to some ideas that other kids came up with.

Explore: 20 minutes
Students will be asked to return to their groups in order to start planning their recycled art project. The leadership sheets are first handed back, and one designated person must jot down the progress of his/her group. Thereafter, the recycled items are handed out in separate bags. They have 20 minutes to get things started.

Explain: 5 minutes
Students will be introduced the vocabulary: 'recycled art', 'garbage art' and 'eco art'. Differences between the art forms will be discussed, *i.e.*, eco art only contains environmentally friendly materials, recycled art focuses on materials that can also be recycled whereas garbage art includes non-recyclable materials like, for example, heavy metal or rigid plastic pieces.

How does doing recycled art help the environment? – By reusing items that would normally be recycled (uses energy) or thrown in the dump.

In distinguishing between recycled and garbage art, ask the students what they remember about the lesson on recycling: what did some of the non-recyclable items look like in terms of hardness/softness, for example? Focus on a couple of questions regarding group progress: Was your group able to coordinate on an idea? What happened to help or hinder the group's progress? Give examples.

Evaluate: 5 minutes
A member of each group is able to explain their idea to the class and show the class a near-finished product. If the project has not materialized, members must explain why without resorting to name-calling.

Extend: Final words: Student will be notified again about an Earth Day celebration, whereby they must find a theme related to environmental awareness and produce an art project that reflects the theme. Perhaps some of you will want to carry on with the recycled art projects?

IV. Introducing a Technical Audit

Students will be introduced to a 'technical audit' of a building, following the *Action Conservation* guidelines. The guide divides an audit into 3 board categories: energy, water and waste. Energy includes: heating, ventilation, air conditioning, draft proofing, domestic hot water system, lighting, transportation, winter parking, office equipment and appliances. Water includes: sinks, washrooms, outside use while waste involves the recycling programs and hazardous waste. Students will have the opportunity in the next few lessons to familiarize themselves with the technical language of buildings as well as the function of everyday household technologies.

Subject area competencies: to use language to communicate and learn through the course of class discussion; to propose explanations for or solutions to scientific or technological problems, which includes the evaluation criteria of students beginning to describe the problem of maintaining an energy, water and waste efficient building. Also students will begin to develop relevant explanations or realistic solutions to the problem of insufficient maintenance as their understanding of a technical audit increases.

SWBAT
Identify specific issues related to energy, water and waste
Identify some weatherproofing tools and the significance of their use
Listen to short videos, one relating to a student-run technical audit of a high school, and the others depicting men and women engaged in aspects of a technical audit.

Materials: one tube of caulking, stripping, plastic for windows and a piece of insulation; A pencil and a strip of toilet paper (to determine where there are drafts around windows/doors); Access to the internet/Smartboard

Engage: 10 minutes
Taking out the weatherproofing material, ask the students if anything is recognizable to them. Do they know, or can they guess what purpose each item has in terms of weatherproofing?

Show the class a simple auditing tool with a pencil and a strip of toilet paper hanging off one end of the pencil. Can they guess its purpose? If the paper flutters when it's held up to a window, what does that mean?

Let the students know that if they show enough interest/motivation, the *Action Conservation* contains a technical audit guide that, when followed, will produce a total score which can then be presented to the principal/school board. One can bring up the importance of trades here, and how useful such technical knowledge is for the day-to-day. Is anyone planning on getting into a

trade? As technology becomes more advanced, there is a greater need for technically skilled people. What about the custodian at school? What sort of functions must he/she perform?

Explore: 25 minutes
A video of a student run 'technical audit' initiative is shown. Ask the students about their impressions – does it look possible, from their perspective, to do? How would they go about starting such a thing? Then show a couple more videos of a man and a woman engaged in some aspect of a technical audit. Does anyone have any family members who do such things for a living? Remind students that this is an important activity that results in a more energy efficient building. Money is saved and more importantly, we help out the earth by using less energy.

Explain and Evaluate: 15 minutes
Student's will be introduced to a 'technical audit', following the *Action Conservation* guidelines, which focuses on three main areas: Energy, Water and Waste. Drawing a tri segmented pie chart on the board, students will be asked to recall what information they already know, such as, recycling and composting under waste, leaky taps and toilets under water, and such energy considerations as drafty windows/doors. Do they know which lighting is more energy efficient or, for that matter, why incandescent light bulbs become so hot? Introduce florescent and incandescent light bulbs – be sure to note pro and cons, that is the latter loses heat and the former contains Mercury, a toxin. What measures do their parents take in making their homes warm in the winter or cool in the summer? What about dimmers – are you actually saving energy by lowering the light intensity? No, the same amount of electricity is running regardless of the lower light intensity.

Extend
Students are informed of a technical audit workshop as the next step towards completing an audit of the school. Drum up enthusiasm – this is what professional consultants do, they run audits and then submit them to businesses etc., for consideration. After the audit, students will need to write up recommendations to submit to the principal of their school.

V. Technical Audit Workshop
Students will be introduced to various technological objects found in and around buildings. This is to familiarize them with the appearance and function of such objects for the upcoming technical audit of their school. This workshop will take place over two consecutive classes.

Subject area competencies: to use language to communicate and learn through the course of class discussion and by way of a short answer evaluation; to propose explanations for or solutions to scientific or technological problems, with an emphasis on identifying the problem of proper building maintenance along with the development of relevant explanations or realistic solutions thereof; to make the most of scientific and technological tools, objects and procedures

with regard to associating tools, etc with their appropriate use and the identification of the effects of using such tools, etc.; to communicate in the languages used in science and technology, so that students refer specifically to the proper names of tools or procedures.

SWBAT
Exercise critical judgment in differentiating the various objects and finding out their purpose
Conduct oneself in a mature manner while working in groups

Materials: Different types of light bulbs, including fluorescent and incandescent, for different functions: a large space like the gymnasium and outdoor verses indoor lights. Also new lighting technology like LED in the form of a flashlight. A motion detector, thermostats including an electronic one, weather stripping, a piece of insulation, aerator, low flow shower head, washers, photoelectric cell and a kid's bakers oven (including cake mix) for the incandescent heat loss demonstration.

Definitions for many of the items, taken from the Action Conservation binder, are to be printed out and cut into thin strips – one strip per definition.

Procedure: Group items and randomly chosen definitions into 5 bags which, are given to each group after the review and class discussion. One bag contains only glass items and an adult helper will be stationed at that particular table throughout the workshop. Each group is to spend time at each table checking out everything and trying to match the definitions with what they find on the table. If they did not find a match at one table, they are to take an unmatched definition with them until they find the match, at which point the definition remains with the object for the others to see. The kid's baker's oven demonstration can begin after the students have put all of the items back into the bags. The purpose of the demonstration is given – an incandescent light bulb loses so much heat it can bake a cake - and then students are given worksheets to do for the remainder of the class. The baked cake is presented at the very end.

Engage: 15 minutes
Students will need to practice their group skills for this workshop: cooperation, sharing information, not blocking others from participating fully, or digressing into other topics that are irrelevant to the workshop. Can anyone tell me what 'irrelevant' means?

The baker's oven demonstration will begin in front of the entire class before they get into groups. Students will be informed that the oven uses an incandescent light. They will be asked the questions: Can anyone guess what exactly is baking the cake? What type of bulb is being used? Could fluorescent bulbs be used instead? No, because they do not give off much heat.

Explore: 35 minutes

Students will have approximately 7 or so minutes at each table.

Explain: 15 minutes

Students will be asked to return to their seats calmly, and are then shown the baked cake. Can anyone explain how this cake got baked? With an incandescent light bulb that loses a lot of energy in heat.

When someone checks for drafts around the doors of a building, must they check all of the doors? - Just the doors leading to the outside. Doors within the building cannot be airtight. What does 'airtight' mean?

Which type of bulb makes the most sense for wintertime use and which other type of bulb makes more sense for summer use? – Hint: which bulb produces a lot of heat?

Does anybody remember the major drawback for using fluorescent light bulbs? – They use less energy to produce light and, unlike incandescent, they don't lose energy in heat, but, unfortunately, they contain Mercury, a poisonous substance

Evaluate: 25 minutes
Students must then begin working on a sheet with the following 6 review questions:

1. Where is weather-stripping used?

2. How does weather-stripping reduce the amount of energy used in a building?

3. Why does an incandescent light bulb feel so hot?

4. If you are choosing the type of lighting in your house, which season is most appropriate for fluorescent lights? Why?

5. Does a dimmer switch save energy? Why/Why not?

6. How does a motion detector save energy?

The answers will be briefly discussed at the end of the class. Worksheets are picked up and graded.

VI. Technical audit of school

The audit will take place over two consecutive classes. A test comprised of 8 multiple choice questions and two short answer questions - covering the lessons on recycling and the technical audit workshop - will be completed in the first half hour. Then the technical audit will be undertaken, followed by the writing down of recommendations based on the audit.

The Test:

1. The numbers located on plastic objects, like bottles and containers, are there to tell you:

a) How many times the object has been recycled

b) What type of plastic it is and whether or not it can be recycled

c) The number of chemicals in the plastic

d) The street number of the company where the plastic was made

2. Artists who use recycled garbage in their art are helping the environment because:

a) They are reusing objects that would normally go in the dump

b) They do not use toxic chemicals in their paint

c) They do not have to spend so much money on art supplies

d) Their art is less expensive to buy

3. The three main areas you need to consider when doing a technical audit is:

a) Energy, electricity, waste

b) Waste, energy, drafts

c) Waste, water, energy

d) Energy, leaky faucets, drafts

4. Drafts around doors and windows can be fixed by using what:

a) An aerator

b) A thermostat

c) Weather stripping

d) Energy saving light bulb

5. Incandescent light bulbs feel so hot when you touch them because:

a) They lose a lot of energy in heat

b) The glass is very thin

c) The bulb needs to be changed

d) There's too much electricity going into the bulb

6. A dimmer switch does not save you energy because:

a) It only uses electricity

b) It only works in the wintertime

c) It only dims the light, it does not reduce the energy

d) It only lights up if there is motion in the room.

7. The main environmental problem with fluorescent lighting is that:

a) It uses too much electricity

b) It does not last very long and needs to be changed frequently

c) The light is neon

d) It contains a toxin, Mercury, which is harmful to the environment

8. When we are considering *waste* in a technical audit, what are the two areas to focus on:

a) Recycling and composting

b) Composting and weatherproofing

c) Recycling and leaky faucets

d) Drafts and weather stripping

9. How would you explain a technical audit to someone who doesn't know anything about it? Briefly describe a technical audit.

10. Briefly explain two things that can be done to a building to reduce *energy*.

The Technical Audit:

Subject area competencies: to use language to communicate and learn through the course of class discussion and by way of making written recommendations based on the audit; to propose explanations for or solutions to scientific or technological problems with particular emphasis on the development of realistic solutions in the form of recommendations; to make the most of scientific and technological tools, objects and procedures by the appropriate use of techniques like using a draft detector; to communicate in the languages used in science and technology by referring to the various tools, objects and procedures by their appropriate names.

SWBAT:
Work cooperatively in small groups
Ask critical questions based on the various audits to school personnel - the secretary, the principle, the custodian, etc.
Write up recommendations based on your findings

Engage: 10 minutes
Each group of two students will be given an audit (or two depending on the numbers) to focus on a specific area like, for example, an energy audit of the domestic hot water system or a water audit on washrooms. They will have a score sheet and a series of questions to answer, and eventually calculate into scores, by talking to school personnel like the janitor and secretary. The *Action/Conservation* binder contains all of the energy, water and waste audits. It must be emphasized that this activity requires a lot of cooperation and a professional attitude since the students will be doing the audits on their own. Again, we are performing the same jobs that professional technicians do and so we must behave like professionals.

Explore: 25 minutes
The students should all be back in the classroom after the 25 minute mark.

Explain: 10 minutes
A debriefing discussion on the audits – was anyone surprised by their findings? Are there any questions that went unanswered – why?

Evaluate: 30 minutes for the test at the beginning of the lesson, 20 minutes for the recommendations at the end of the lesson.

It is crucial that the students have enough time to write up their recommendations. Write the name of the principal on the board as well as the first sentence of introduction, like for example: "Dear (name), We, (names), have tested the waste program for hazardous waste - for example - and found that we do not have any halon-free fire extinguishers." The students are instructed to recommend a change or offer congratulations on something done right.

Extend:
Students are told that the recommendations will be typed up into a report, which they can refer to for Earth day ideas and also to show their parents.

VII. Introducing the Ecological Footprint
Saving the earth, as some children will express it when asked about the significance of recycling or doing a technical audit, is an abstract notion that tends to stay in the classroom for times when environmental issues are brought up for class discussion. Engaging students in a conversation about lifestyle choices, and testing their awareness of the day to day routines and choices they make, brings the idea of environmental responsibility home.

Subject area competencies: to use language to communicate and learn through the course of class discussion; to propose explanations for or solutions to scientific or technological problems whereby students will begin to appropriately describe the problem of unsustainable lifestyles; to solve a situational problem related to mathematics as the students tally up their scores from the ecological footprint calculations; and to reason using mathematical concepts and processes as they must interpret comparative pie charts and bar graph generated by the interactive website.

SWBAT
Apply critical thinking in answering questions about one's lifestyle as well as interpreting graphs and pie charts
Calculate one's ecological footprint
Cooperate with others in a group setting

Engage: 5 minutes
Before heading to the Smartboard, introduce students to new a concept: ecological footprint. Does this ring a bell with anyone? Footprint in this case is a metaphor. Does anyone know or have an idea about what it means? Let's find out more about it.

Explore: 25 minutes
Check out this interactive website, http://www.myfootprint.org/
which demonstrates how we figure out our footprint by way of a series of questions. The questions for the kid version are quite involved, like, how many kilometers did you spend on

public transport, car, etc, so we will do a couple of footprint calculations and spend time interpreting the concluding pie charts and bar graphs.

Explain: 10 minutes
Drawing from Tim Turner's lesson plan on the ecological footprint - the bibliography of which is listed in the next section – there are three facts that necessitate the need to reduce our footprint, namely; that the amount of productive, or usable, water and land is far smaller than the unproductive portion of the earth, that the human population keeps expanding and that what little productive land/water we have is declining due to urbanization, overgrazing by livestock, deforestation, toxic contamination, poor agriculture practices, desertification and global climate change. Write the new vocabulary on the board and briefly offer definitions. Encourage students to condition their ears to prick up when they hear the word "global warming" on the news since it affects us all.

Evaluate: 10 minutes
The final part of the class will be focused on each student doing their own footprint calculation, derived from:

Turner, Tim. (2004). "How big is my ecological footprint?" In Teaching Green: The Middle Years, (Eds), Tim Grant and Gail Littlejohn, (pp 86-7). Toronto: New Society Publishers.

It will be necessary to go over the various categories and unfamiliar vocabulary first, which may take up the rest of the class.

Extend:
There will be sufficient time next class to finish their footprint calculations, the completion of which will account for participation marks.

VIII. Promoting Activism and Preparing for Earth Day
This lesson will tie together preceding themes and learning as students are invited to try and solve a technical problem they discovered through the technical audit of their school, in this case by petitioning the Public Works department to extend the range of recycling services at their school. Students will also have more time to reflect on their lifestyle choices as well as prepare for the Earth day celebration. The technical audit report will also provide students with more ideas for their art projects.

Subject area competencies: to engage in a moral dialogue as students think about their role as citizens with responsibilities towards one's community; to use language to communicate and learn through class discussion as well as through the articulation of a project theme; to propose

explanations for or solutions to scientific or technological problems as students must come up with their own environmental theme, which includes a message about the problem as well as a solution, or set of solutions, for the problem.

SWBAT
Exercise one's citizenship rights by signing a petition for better recycling services at the school (or whatever happens to be the issue)
Calculate one's ecological footprint

Engage: 10 minutes
Distribute the technical audit report and have a student read the first paragraph. Pick out unfamiliar vocabulary. Afterwards, remind the students about what they have accomplished and learned. What needs to be improved according to the audits? For example, only paper and cardboard gets picked up at Westmount Park elementary school. Show the students a letter to the Public Works department, which requests better recycling services, and have them exercise their citizenship rights by signing the letter. Mention the importance of letter writing in democratic societies. To quote poet, Seamus Heaney, from a poem entitled "Digging":

Between my finger and my thumb
The squat pen rests, snug as a gun

There is power in writing, which can compete with and, to a large extent, overcome the need for violence in democratic societies. If we want to change something, we can write a letter to our elected politicians and to our civil servants, politely and with logic, asking for a specific area of change, like better recycling services. Sometimes the process is straightforward, like in our case, and sometimes it is a long struggle. However, it is better, over all, than being subjected to violence or the threat of violence, which is an everyday problem in undemocratic countries.

Technical Audit of Westmount Park Elementary School, March 2011

This is a report on the findings of a technical audit done on Westmount Park elementary school by Ms. Jody Wilson's grade 6 class. Following the *ActionConservation* guidelines, which are part of an educational program offered by the Earthvalues Institute, the students ran a variety of tests, or technical audits, to check how efficiently energy, water and waste is dealt with in the school. The students have written up recommendations based on their audit findings, which are listed below. They would like to extend their congratulations for some positive results, and encourage the school administration to follow through with their simple, yet effective recommendations. A more efficient running building not only benefits the school community but also the environment.

Energy

Khaleem and Brendan checked out the lighting situation in the gym and found that all the lights were working. They recommend delamping some of the lights in order to save energy and money.

Nahid and Leah were responsible for checking to see if lights were left on in unoccupied rooms and of the 9 empty classrooms they checked, 5 rooms were lit. They recommend that lights be turned off when leaving an empty room.

Vaibhov and Dhan found that some computers were left on when not in use. They recommend that students remember to turn off computers or use the energy saving button.

Patrick and Hoon tested 23 windows for draftiness and found one window with a draft. They congratulate the school administration for ensuring that the classrooms have air-tight windows.

Ciara and Jessica tested entrance door locations for drafts and found that all the doors were drafty. They recommend that weather stripping be put around the doors in the wintertime.

Water

Stella and Javier tested 24 taps around the school and found only two leaky taps, one in rooms 209 and 309. They wish to extend their congratulations on the well maintained faucets and recommend that the leaky taps be fixed.

After testing 28 toilets for leaking, Daniel, Tina and Christina found no leaks. They wish to extend their congratulations on the well maintained toilets.

Waste

Bruno was responsible for checking out the recycling program and he discovered that a lot of recyclable items, like paper gets thrown into the garbage instead of the recycling bins. He recommends a school campaign to inform, or remind, students and teachers about the importance of recycling.

Ethan checked out how much garbage was collected at lunch time and discovered it was between 8 to 10 bags. He also discovered that recyclable items like paper and cans, as well as food and broken items get thrown into the garbage. He recommends that students use less packaging for their lunches.

Kemuel and Diana discovered that milk cartons and juice boxes get thrown into the garbage. They recommend that these items be recycled instead.

A letter to the Westmount Public Works Department requesting more recycling services for the school

Dear Marianne Zaizal,

We, a grade 6 class at Westmount Park elementary school, are writing to request more recycling services at our school. Having completed a technical audit of our school in March, we found that only paper and cardboard are being recycled. Unfortunately, we also discovered that recyclable items like cans, plastic bottles and juice/milk boxes are thrown out in the garbage instead of being recycled. We would like to have such items collected as recyclables instead of garbage. Your attention to this matter is greatly appreciated.

All students have the opportunity to sign their names on the letter.

Explore: 25 minutes
The students will have time to finish their footprint calculations. Tell the students to do their best to try and figure out the questions themselves. The instructor will deal with questions individually. If the same question keeps coming up, take the time to address it to the class as a whole. For those who finish early, they can start brainstorming a theme and an art form for Earth day.

Explain: 15 minutes
Students have a chance to ask for clarification on any, as yet unanswered, footprint questions. New vocabulary can also be reinforced, like, for example the definitions for organic and processed food.

Students have already been told about an upcoming Earth day celebration where they have the opportunity to show off artistic skills while sharing some of their newfound knowledge about the environment. Let's brainstorm some themes, which can be gleaned from the footprint and technical audit texts in front of you. For ideas on an art form, hand out the "Multiple Intelligences Product Grid", which contains an exhaustive list of activities categorized under 8 types of intelligence from Howard Gardner's multiple intelligence theory. It is called the *Multiple Intelligence Product Grid* and a copy is easily found on the internet under that name.

Evaluate:
Students must hand in footprint calculations for participation marks. Students must also indicate an idea for their art projects on the back of the grid sheet (to be returned when the projects are worked on again), as well the names of their group members.

Extend:
Two additional classes, or chucks of time, must be reserved for the consolidation of projects. Students will have already indicated the theme and the art form that they would like to pursue, as well as the people they would like to work with, so this is a chance to bring in helpful supplies and provide individualized guidance as the various groups begin putting together their projects.

Since these projects are not only reflecting an artistic flair but also a message about environmental awareness and responsibility, be sure that each group member can articulate something about the message like, for example: we waste too much water in North America, here are some facts as well as some accessible measures we can all take to save water, like less time spent in showers. If a student is stuck on drawing skeletons, for example, but is vague about the message, encourage him or her to pursue the theme of hazardous waste and have the skeletons impart, in speech bubbles, some cautionary facts about proper handling and disposal of hazardous waste. Accommodations can be made as long as there is evidence that the students have learned something from previous lessons.

XI A trip to the local recycling plant: Concluding the LES

Being a citizen of a democratic country necessitates some knowledge about the array of services offered by the different levels of government. Recycling is one such service that is facilitated by our municipal government. Every week, our recyclables are picked up by special trucks and that is where the story ends for most of us. Here is a chance to see how the whole process works. While the emphasis is on observing a technological process, students are also expected to behave in a respectful manner and communicate appropriately.

Subject area competencies: to propose explanations for or solutions to scientific or technological problems as students see for themselves the recycling process and how it positively impacts on their daily lives.

Complexe Environmental de St. Michel - Centre de tri de récupérationndes materieres recyclables.

TOHU, la Cité des arts du cirque
2345, rue Jarry Est
Montréal (Québec)
H1Z 4P3 Canada
T 514 374-3522, poste 4000

Appendix E: Emma's ILES

EDEC 253: Second Professional Seminar
Instructor Kathleen Usher

Learning and Evaluation Situation in a Service-Learning Context
by
[redacted]

McGill Université
March 17th, 2010

Learning Evaluation Situation

<table>
<tr><td colspan="2">Subject: Science</td></tr>
<tr><td>High school, Cycle 1, Level 3:</td><td>BIG IDEA: Schoolyard greening project</td></tr>
<tr><td colspan="2">Desired Results (What do you want your students to achieve?)</td></tr>
<tr><td>Selected Competency or Competencies from the QEP</td><td>Key features of the Competencies</td></tr>
<tr><td>Competency 1: Seeks answers or solutions to scientific or technological problems</td><td>-Defines a problem: The schoolyard is a square of asphalt.
-Chooses an investigation or design scenario: How can the schoolyard be improved (seating, trees, etc.)
-Carries out the procedure: Measurements are taken, scale-drawings are made, and with detailed calculations of costs and maintenance, 3D models are created.</td></tr>
<tr><td>Competency 2: Makes the most of his/her knowledge of science and technology</td><td>-Identifies the effects of science and technology: Discussion on the relationship of humans and their milieu (natural or not) as well as analysis of environmental issues.</td></tr>
<tr><td>Competency 3: Communicates in the languages used in science and technology</td><td>-Participates in exchanging scientific and technological information: Discussion and opinion-sharing of knowledge and ideas in relation to the greening project.
-Divulges scientific or technological knowledge or results: The design of the schoolyard takes into consideration the target audience which primarily includes the school population. As well, various methods of presenting the design are demanded (sketches, 3D model, information grids, etc.).</td></tr>
<tr><td>Understanding(s): Students will understand that…
- nature is everywhere, and therefore it is essential to us, as we are constantly</td><td>Essential Question(s):
1) Why do we need nature and why</td></tr>
</table>

interacting with it. It also has many positive effects, and therefore we should try and preserve it. - they are given the opportunity to change their environment: their own schoolyard. - in order to make changes, one must go through a specific planning process: brainstorming, voicing opinions, discussing, analyzing the schoolyard and what needs to be changed, taking measures, drawing things to scale, calculating a budget, considering maintenance detail, and finally, creating a 3D model that represents the realistic portrayal of the changes that will be brought to the schoolyard.	is nature important for you? 2) How can we take care of nature? 3) How can we integrate nature into your schoolyard in a way that would be to your advantage? 4) What key elements are necessary to consider before building a model?
What key knowledge and skills will students need to know? - measuring - designing a plan - scaling - Indigenous plants of Québec	
Assessment Evidence **How do you know your students have achieved the desired results?**	
Performance Task: Participating actively in designing and building a 3D representation of the schoolyard with respect to the budget, schoolyard dimensions, as well as maintenance details.	**Other Evidence:** Overall participation in class activities: brainstorming, discussions, research, as well as specific tasks such as scaling and comparing prices.
Assessment tools and criteria: see rubric (see Appendix 2)	
Learning Plan: how will you and your students get the desired results?	
See lesson plans, Appendix 1	

Appendix 1: Lesson Plans

Lesson 1 : Introduction	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School:** Perspectives
Objectives	This lesson introduces students to the importance of the environment, and how changes can be made to things as simple as a schoolyard to help preserve nature and to integrate it into the student's everyday life. It also helps the students grasp the idea that every step taken towards a	

	greener environment, no matter how small, matters in the goal of creating a better and healthier Earth for the future.
Group Size & Materials	8-10 students, Projector to show videos
QEP Science Competencies:	Competency 2: Makes the most of his/her knowledge of science and technology
Cross-Curricular Competencies:	Competency 3: Exercises critical judgment (students discuss and analyze their relationship with nature as well as sharing it with others)
Time	**Lesson**
15 minutes	Icebreakers: The teacher explains the Evergreen program, which aims to modify and embellish the present schoolyard in a natural way to promote outdoor and hands-on experimental learning. These changes aim to enable the teacher to teach classes in an outdoor setting and allow students to spend more quality time with Nature in their own schoolyard. The project consists of getting students to voice their opinion on what they want for their schoolyard and then making substantial changes to it while directed and overseen by the teacher, who acts as a facilitator.
20 minutes	Introduction/Development: The teacher will show an excerpt from the movie 'Wall-E' containing scenes from a world without Nature to start a discussion of the importance of cherishing one's environment. Students will be asked questions like: 1) What are the differences between a rural area and an urban area (in relation to the five senses)? 2) Have you ever been to rural areas? If so, how do you feel when you are there? 3) Why do we need nature and why is nature important for you? 4) How can we take care of nature?
10 minutes	Closure Activity: This discussion will be followed by another video that presents the Evergreen greening project, along with examples of schoolyards that have been transformed by the project.

Lesson 2: Imagining a new schoolyard	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School:** Perspectives
Objectives	By going outside and seeing for themselves what their schoolyard looks like, they will be able to plan what they want to change about it.	
Group Size & Materials	8-10 students, Pieces of cardboard in the shape of the schoolyard, pencils.	
QEP Science Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems.	
Cross-Curricular Competencies:	Competency 2: To solve problems (students try and find ideas to enhance the environment, notably in their schoolyard).	
Time	**Lesson**	
20 minutes 25 minutes	Introduction/Development: Students are taken outside to the schoolyard to assess its condition. The teacher encourages them to notice its components: vegetation, seating, shadows and sunlit areas, windy spots, waste disposal areas, etc. They are also required to take note of at least three things they would like to change/add to the schoolyard. Closure Activity: Once inside, they are given a small cardboard representing the schoolyard where they have to draw in their observations as well as their adjustments. Extra Note: The teacher will compile the results of the cardboard model schoolyards in order to analyze the common aspirations of the student body.	

Lesson 3: Measuring the school yard	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School:** Perspectives
Objectives	The students' hands-on experience outside with a measuring tape will make the upcoming project more concrete in their minds, as well as get them to understand that there are many things to take into consideration when conducting a project of such amplitude. They will also gain experience with a very practical home tool: the measuring tape.	
Group Size & Materials	8-10 students, 5 measuring tapes, paper, pencils.	
Professional Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems.	
Cross-Curricular	Competency 8: Cooperates with others (students are put in a	

Competencies:	situation where they must cooperate with others in order to achieve the desired result).
Time	**Lesson**
10 minutes 25 minutes 10 minutes	Icebreakers: The assignment for students today will consist of measuring the schoolyard. The class will begin with a discussion on the purpose of doing this and why it is necessary for the final product to get precise measurements. Introduction/Development: Each team of two is given an area to measure and a measuring tape. They must get their results through accurate measuring techniques as well as team collaboration. Closure Activity: Once inside, measures are compiled together on a plan of the schoolyard.

Lesson 4: Scaling	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School**: Perspectives
Objectives	By doing this activity with students, they will be able to transfer their knowledge to the focus of the project and be ready to draw the schoolyard to scale.	
Group Size & Materials	8-10 students, Rulers, paper, pencils.	
QEP Science Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems.	
Cross-Curricular Competencies:	Competency 2: To solve problems (students use trial and error to solve the problem they are presented with: putting the students to scale on their sheet of paper).	
Time	**Lesson**	
10 minutes	Icebreakers: To introduce the idea of scaling to students, the class begins with questions from the teacher: 1) What is scaling? 2) How would we represent something big on a sheet of paper? 3) What do we have to do to the actual measurements? Introduction/Development: The teacher has one tall student and one shorter student come up to the front of the class. Their height is measured	

10 minutes 15 minutes	and written on the blackboard by fellow students. The teacher then questions the students on how to represent, to scale, both students on paper. She asks them to begin by counting the number of squares and asks if there are enough squares for every cm. Seeing that there isn't, students give possible alternatives. Closure Activity: Once the concept is understood, the teacher then separates the group into two. One side of the class has to use a scale of 10 to draw the two students, and the other has to use a scale of 5. Assessment: If answers are incorrect, the students will have to correct their work.

Lesson 5: To-Scale schoolyard	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 School: Perspectives
Objectives	The students will be able to use their to-scale drawing of the schoolyard to assist them in the upcoming task of making a model of the schoolyard that accurately captures the actual dimensions of the grounds.	
Group Size & Materials	8-10 students, graph paper, worksheets indicating the measurements of the schoolyard.	
QEP Science Competencies:	Competency 3: Communicates in the languages used in science and technology.	
Cross-Curricular Competencies:	Competency 2: To solve problems (students must use skills acquired in lesson 4 in order to solve another situational problem: putting the schoolyard to scale)	
Time	**Lesson**	
45 minutes	Introduction/Development/Closure Activity: In this lesson, students will follow up on last class' activities and attempt to put the schoolyard to scale on a graph paper using a small drawing of the schoolyard with the actual measurements on it. The teacher will assist the students in finding the appropriate scale (1square: 2m) to use in their drawing. The remainder of the lesson is dedicated to finishing up this drawing. The teacher must verify that students draw lines correctly, calculate correct measurements, and add in details such as stairs and gates. Assessment: The teacher will correct each map and have	

	students make necessary corrections in the next lesson.

Lesson 6: Pricing and Seating	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 School: Perspectives
Objectives	In addition to developing Internet researching skills, this activity will allow students to find prices for the upcoming task of making a model of the schoolyard in line with its $2,000 budget.	
Group Size & Materials	8-10 students, Projector to show videos.	
QEP Science Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems.	
Cross-Curricular Competencies:	Competency 6: Uses information and communication technologies (students research on the computer to find prices and information about elements they want to include in their future 3D schoolyard model)	
Time	**Lesson**	
10 minutes 35 minutes	Icebreakers: The teacher begins the class with a short brainstorm/discussion with students on the necessary elements to consider for the upcoming project: cost, environment, etc. Introduction/Development: The students are given a sheet with a small grid that they must fill in with deciduous trees, evergreens, vines and plants of their choice. They must go on wwww.jardinjasmin.com and find price, height, width, and the necessary shelter, care advice and soil for each plant. A second worksheet is handed to the students, this time on seating. Various types of benches are proposed, and it is the students' job to find the approximate pricing for the particular bench that they like. They are also provided with an '"other"' category, where they can be innovative if they feel like creating their own bench.	

Lesson 7: Introduction to Reduced Model	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School:** Perspectives
Objectives	The students will be familiarized with the steps of creating a project, as well as how creativity must be 'tamed' in order for it to take form.	
Group Size & Materials	8-10 students, Projector to show videos.	

QEP Science Competencies:	Competency 2: Makes the most of his/her knowledge of science and technology.
Cross-Curricular Competencies:	Competency 3: Exercises critical judgment (students are involved in a discussion which challenges their ideas of the influence of the environment on their lives).
Time	**Lesson**
25 minutes 10 minutes	Introduction/Development: A student guest speaker studying in the field of design will come in to introduce the making of a model of the student's schoolyard out of recyclable material. She will begin a discussion with the class on architecture and creativity, and how it is connected to their own lives. Closure Activity: According to their design interests, the students will form teams and begin jotting down ideas.

Lesson 8: Construction of Model	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School:** Perspectives
Objectives	Students will learn to build a model by considering real-life constraints: budget, dimensions, etc. As well, they will see that science is innately creative and that the only way that something becomes concrete is through a series of small innovative accomplishments.	
Group Size & Materials	8-10 students, Worksheets with price grids, scissors, glue, markers, recycled material, exacta knives, pencils, paper.	
QEP Science Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems. Competency 2: Makes the most of his/her knowledge of science and technology. Competency 3: Communicates in the languages used in science and technology.	
Cross-Curricular Competencies:	Competency 4: Uses creativity (students use prior knowledge as well as their imagination in order to create a representative model of what they want the future schoolyard to be) Competency 5: Adopts effective work methods (students must effectively follow the design process in order to achieve the final goal according to requirements) Competency 8: Cooperates with others (students must	

	participate actively in their group, be open to others' ideas, etc.) Competency 9: Communicates Appropriately (articulates well their ideas to produce a model of the schoolyard true to their vision)
Time	**Lesson**
45 minutes	Introduction/Development: Students will use the remainder of the class and the entire next science lesson to build their model according to the school dimensions as well as the budget and the cost, size and maintenance of the elements they want to include. They will be provided with a grid that provides them with various plants, their costs and their details, as well as prices of wood, cement-cutter rentals, etc. As well, each group will obtain a variety of recycled material and tools to either draw, cut, or glue the items of their choice.

Lesson 9: Conclusion	**Duration:** 45 minutes	**Class:** Secondary Cycle 1, Level 3 **School**: Perspectives
Objectives	In addition to finishing their model, students will need to assess other peoples work and vote in a democratic way for their preferred schoolyard model.	
Group Size & Materials	8-10 students, Worksheets with price grids, scissors, glue, markers, recycled material, exacto knifes, pencils, paper	
QEP Science Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems Competency 2: Makes the most of his/her knowledge of science and technology Competency 3: Communicates in the languages used in science and technology	
Cross-Curricular Competencies:	Competency 4: Uses creativity (students use prior knowledge as well as their imagination in order to create a representative model of what they want the future schoolyard to be) Competency 5: Adopts effective work methods (students must effectively follow the design process in order to achieve the final goal according to requirements) Competency 7: Achieves his/her potential (students will see that their ideas resulted in concrete realizations, thus	

	boosting their self-confidence and helping them see that if they if they put effort into something, there can be very meaningful results) Competency 8: Cooperates with others (students must participate actively in their group, be open to others' ideas, etc.) Competency 9: Communicates Appropriately (articulates well their ideas to produce a model of the schoolyard true to their vision)
Time	**Lesson**
30 minutes 15 minutes	Introduction/Development: Students will finish up their models. Closing activity: The choice of the public will be used as a base for the actual project of enhancing the school grounds. This choice will be made by having the students in this class as well as the other have a silent vote, by writing their preferred choice on a piece of paper (students are not allowed to vote for their own model).

Evaluation Rubric for Final 3D to-Scale Model of the Schoolyard

	1: Failed to meet expectations	2: Needs improvement	3: Satisfactory	4: Very Good	5: Excellent
Participation	The student refused to participate.	The student participated in the project only when prompted.	The student participated with a minimum of effort.	The student participated with good effort.	The student participated actively and showed a great amount of incentive and interest.
Respect of budget	Budget is not respected in any way.	Several aspects of the budget have not been considered.	Most of the budget has been respected, but two aspects have not been considered.	The overall budget is respected, but one aspect has been omitted.	Budget is respected in all ways: the budget does not exceed 2000$, and considers equipment rental and all necessary building material. As well, at least 50% is allotted to plants.
Model respects scale of 1:100	The model is not to scale.	The model has many scaling errors that impact the shape of the school yard.	The model contains important scaling errors but the model still demonstrates some understanding of scaling.	The model contains a few minor scaling mistakes that do not have a big impact on the overall shape of the schoolyard.	The model of the schoolyard respects the scale of 1:100 perfectly.

Appendix F: Office of Student Teaching Assessment (OST) Forms

(https://www.mcgill.ca/isa/files/isa/fe2_summative_2014final_fillable.pdf)

McGill **FIELD EXPERIENCE**: □K/ELEM □SECONDARY □TESL □MUSIC

Date(mm/dd/yyyy):_____
Student:_____

School:_____
Cycle/Year/Subject(s):_____

Cooperating Teacher: _____ McGill Supervisor:_____

Summation of all reports & Formative Assessments. Indicate the degree of accomplishment of the student teacher's development of the professional competencies below. Use the *Guide to PC Development in Field Experience 2* and the *Professional Competency Rubric*.

KEY: 5 = Advanced 4 = Thorough 3 = AccepTable 1 = Partial 1 = Minimal

SUMMATIVE ASSESSMENT FIELD EXPERIENCE 2

PROFESSIONAL COMPETENCIES

1. To act as a professional inheritor, critic and interpreter of knowledge or culture when teaching student.

2. To communicate clearly in the language of instruction, both orally and in writing, using correct grammar, in v contexts related to teaching.

4. To pilot (with the help of the cooperating teacher) teaching/learning situations that are appropriate to the stude concerned and the subject content with a view to developing the competencies targeted in the programs of study.

6. To plan, organize and supervise a class in such a way as to promote students' learning and social development

9. To cooperate with school staff, parents, partners in the community and students in pursuing the educational ob the school (as appropriate).

10. To cooperate with members of the teaching team in carrying out tasks involving the development and evaluation of the competencies targeted in the programs of study, taking into account the students concerned.

11. To engage in professional development individually and with others.

12. To demonstrate ethical and responsible professional behaviour in the performance of his or her duties.

Yes No

Comments:

The student teacher has selected and discussed aspects of this field experience (e.g. plans, evidence of student lea self□assessments) for inclusion in the Working Professional Portfolio that show evidence of ongoing insight into professional development.

I recommend that (*name of student teacher*)_____
is □□is not □□ready to proceed to the next field experience.

Signature:_____ Cooperating Teacher / Supervisor (*circle one*) *White – Student Teacher Yellow – Student Teaching Office Pink – Cooperating Teacher/Supervisor* March 2014

McGill **OBSERVATION ASSESSMENT 1 SECOND FIELD EXPERIENCE**

PROGRAM (*please circle*): **K/ELEM SECONDARY TESL MUSIC**
Date(mm/dd/yyyy):_____
Student:_____
School:_____
Cycle/Year/Subject(s):_____ Cooperating Teacher: _____ McGill Supervisor:_____
Small group context:_____
_____

KEY: S=Satisfactory D=Developing U=Unsatisfactory

PROFESSIONAL COMPETENCY DEVELOPMENT	**S**
Assess based on observation of a small group activity:	
Foundations (Professional Competency 2)	
Communicates appropriately, clearly and accurately at all times– orally and in writing	
Recognizes and corrects errors in students' oral and written work	
Teaching Act (Professional Competencies 4 & 6)	
Activity objectives have been met	
Structures and makes the learning relevant to the students and subject□specific competencies	
Encourages students to work well together	
Sustains a positive, assertive and professional presence	
*Maintains routines that ensure the smooth running of the classroom	
*Monitors, interprets and responds fairly to issues of classroom conduct	
Professional Identity (Professional Competencies 11 & 12)	

Behaves in a manner expected of a teaching professional

Maintains a complete and up□to□date record of the process of collaborative lesson planning

Is appropriately dressed and well groomed

Is punctual and reliable

*With the help of the cooperating teacher.

Discuss the above assessment with the student teacher and record your comments on the **Post□ Observation Conference** form (required). This discussion should be undertaken in a timely manner.

Signature:_____
Cooperating Teacher or Supervisor

White – Student Teacher Yellow – Student Teaching Office Pink – Cooperating Teacher/Supervisor May 2015

McGill **OBSERVATION ASSESSMENT 2 SECOND FIELD EXPERIENCE**

PROGRAM (*please circle*): **K/ELEM SECONDARY TESL MUSIC**
Date(mm/dd/yyyy):_____
Student:_____
School:_____
Cycle/Year/Subject(s):_____ Cooperating Teacher: _____ McGill Supervisor:_____
Lesson context:_____
_____

KEY: S=Satisfactory D=Developing U=Unsatisfactory

PROFESSIONAL COMPETENCY DEVELOPMENT

Assess based on observation of part or all of a lesson co□planned with cooperating teacher:

Foundations (Professional Competency 2)

Communicates appropriately, clearly and accurately at all times– orally and in writing

Recognizes and corrects errors in students' oral and written work

Teaching Act (Professional Competencies 4 & 6)

Lesson objectives have been met

Structures and makes the learning relevant to the students and subject□specific competencies

Encourages students to work well together

Sustains a positive, assertive and professional presence

*Maintains routines that ensure the smooth running of the classroom

*Monitors, interprets and responds fairly to issues of classroom conduct

Professional Identity (Professional Competencies 11 & 12)

Behaves in a manner expected of a teaching professional

Maintains a complete and up□to□date record of lesson planning and post□teaching reflection

Is appropriately dressed and well groomed

Is punctual and reliable

*With the help of the cooperating teacher.

Discuss the above assessment with the student teacher and record your comments on the **Post□ Observation Conference** form (required). This meeting should be undertaken in a timely manner.

Signature:_____
Cooperating Teacher or Supervisor

White – Student Teacher Yellow – Student Teaching Office Pink – Cooperating Teacher/Supervisor May 2015