DEEPER

Deepening Environmental Education in Pre-Service Education Resource

UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

Natural Curiosity
Building Children's Understanding of the World Through Environmental Inquiry
A Resource for Teachers

TD Friends of the Environment Foundation

Deepening Environmental Education in Pre-Service Education Resource

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Chapter 1

Deepening Environmental Education in Pre-Service Education Resource

INTRODUCTION

The DEEPER guide aims to support and inspire faculty, staff and students to broaden and deepen the implementation of environmental education in initial teacher education programs across the province. It grew out of a provincial roundtable held in May of 2013 at the Ontario Institute for Studies in Education (OISE) at the University of Toronto. This event brought together sixty participants, including faculty and pre-service students from twelve Ontario universities, educators from school boards and representatives from NGOs, all focused on deepening the study and practice of environmental education in initial teacher education programs across Ontario.

This guide is a way to capture and share the extensive expertise of the roundtable participants in formulating a new vision for pre-service environmental education in the province. This vision includes an articulation of a set of core competencies for all teacher candidates in Ontario, as well as a comprehensive set of strategies, practices and recommended resources to make this vision a reality.

ENVIRONMENTAL EDUCATION IN ONTARIO

Deepening environmental education in initial teacher education programs comes at an opportune, if not crucial, time; climate change, resource depletion, plummeting biodiversity, and environmental degradation are pressing contemporary education issues. In response, the Ontario Ministry of Education (OME) published *Acting Today, Shaping Tomorrow* (ATST) in 2009, a policy framework for environmental education in Ontario schools. Within ATST is a clearly articulated vision statement; a policy framework; and goals, strategies, and actions to assist all public education stakeholders implement the policy. For many educators working in faculties of education, this policy framework provided timely support for existing and new initiatives in environmental education with teacher candidates and colleagues alike. For the first time in the province of On-

"DEEPER was a terrific event! Hearing so many educators share their experiences in environmental education was a wonderful learning experience. I felt that I wasn't alone in the challenges I face in doing this work, and that there are lots of others working towards deepening environmental education in their faculties of education across Ontario. I left feeling hopeful that this work will take root quickly in the coming years." DEEPER participant, May 2013

tario, the policy framework provided legislative backing concomitant with their concern for the competent environmental education of initial teacher candidates. Given that graduates of initial teacher education programs eventually become teachers in many of Ontario's public schools, a foundation in environmental education is necessary to the successful implementation of ATST.

Acting Today, Shaping Tomorrow (OME, 2009a) requires all stakeholders in the public education system, including faculties of education, to better integrate environmental education across the Ontario curriculum. Its principal goal for students is clear and far-reaching: "By the end of Grade 12, students will acquire knowledge, skills, and perspectives that foster understanding of their fundamental connections to each other, to the world around them, and to all living things" (p. 11). ATST's most radical requirement, however, is for environmental education to be embedded "in all grades and in all subjects of the Ontario curriculum" (p. 12). This represents a significant departure from previous provincial curriculum policies in this area that placed environmental education only in the science and geography curricula of selected grades.

ATST (OME, 2009a) is primarily aimed at curricular changes in elementary and secondary schools in Ontario, and recognizes the important role played by teachers in the design and delivery of environmental education. But it also notes the important roles played by school boards and faculties of education, and the need for faculties to deliver environmental learning to teacher candidates in preparation for this critical role. In order to attain ATST's goal of improving students' environmental knowledge, skills, and perspectives, teachers, university faculty, and teacher candidates must all become proficient in facilitating teaching and learning about environmental education.

The DEEPER guide attempts to provide, as a complement to current OME documents, a more contemporary vision of teacher education that aims for environmental and social health and well-being. In the DEEPER guide, environmental education aligns closely with many aspects of OME policies for citizenship education (OME, 2013), character education (OME, 2008), and equity education (OME, 2009b). Considered together, these curricular initiatives highlight the need for teacher education programs to revise their curricula to better facilitate teaching and learning, student engagement, community connections, and environmental leadership in the 21st century.

More effective implementation of environmental education in initial teacher education is an important part of this vision, yet making it a reality is a challenging undertaking given the complexity of program changes in initial teacher education programs in Ontario. Preservice education in Ontario is administered primarily by three governing bodies: the Ontario Ministry of Training, Colleges, and Universities (MTCU)(administer's faculties of education), the Ontario Ministry of Education (OME)(K-12 schools and curriculum), and the Ontario College of Teachers (OTC)(teacher certification). Currently educators in Ontario are lobbying these organizations to ensure that environmental education takes a more prominent role as initial teacher education programs evolve and move forward.

AN INCLUSIVE APPROACH TO ENVIRONMENTAL EDUCATION

One of the recurring discussions at the DEEPER roundtable centred on the wide range of approaches to the field of environmental education. For the purposes of this guide, it was decided to use the term environmental education to align with the policy and support documents written by the OME; however, this is done with the intention to use this term as an inclusive referent that recognizes and honours the rich contributions of the many traditions that inform it. These traditions in-

clude, but are not limited to, education for sustainable development, environmental and sustainability education, outdoor/experiential education, sustainability education, place-based education and eco-justice education. (For brief definitions of these terms, please refer to Appendix A on page 76.) We recognize the common goal of all of these rich traditions to be the empowerment of teachers and learners to become informed, active, equitable and responsible citizens.

HOW TO USE THE DEEPER GUIDE

Our intention in writing the DEEPER guide was to broaden and deepen the dialogue about environmental education amongst those who teach in initial teacher education programs in Ontario, nationally, and perhaps internationally. (Note that the terms *initial teacher education* and *pre-service education* are used interchangeably throughout this guide.) The guide aims to provide a vision and an introduction to environmental education for faculty and staff who may not have studied in this area by providing a historical overview of the field and its relation to teacher education. It also provides a bank of ideas for better embedding environmental education into faculties of education, drawing on practices and strategies in use in faculties across Ontario.

Chapter Two presents a broad overview of the history of environmental education internationally, in Canada and specifically in Ontario.. This chapter could be used as a course reading for those needing a general introduction to the field from a Canadian perspective.

Chapter Three proposes a new vision for environmental education in initial teacher education in Ontario, including a list of core competencies for teacher candidates to develop as part of their B.Ed experience.

Chapter Four brings together practical recommendations for strategies and practices to deepen environmental education in initial teacher education programs. These are complemented by short vignettes illustrating how these recommendations currently manifest in faculties of education across the province.

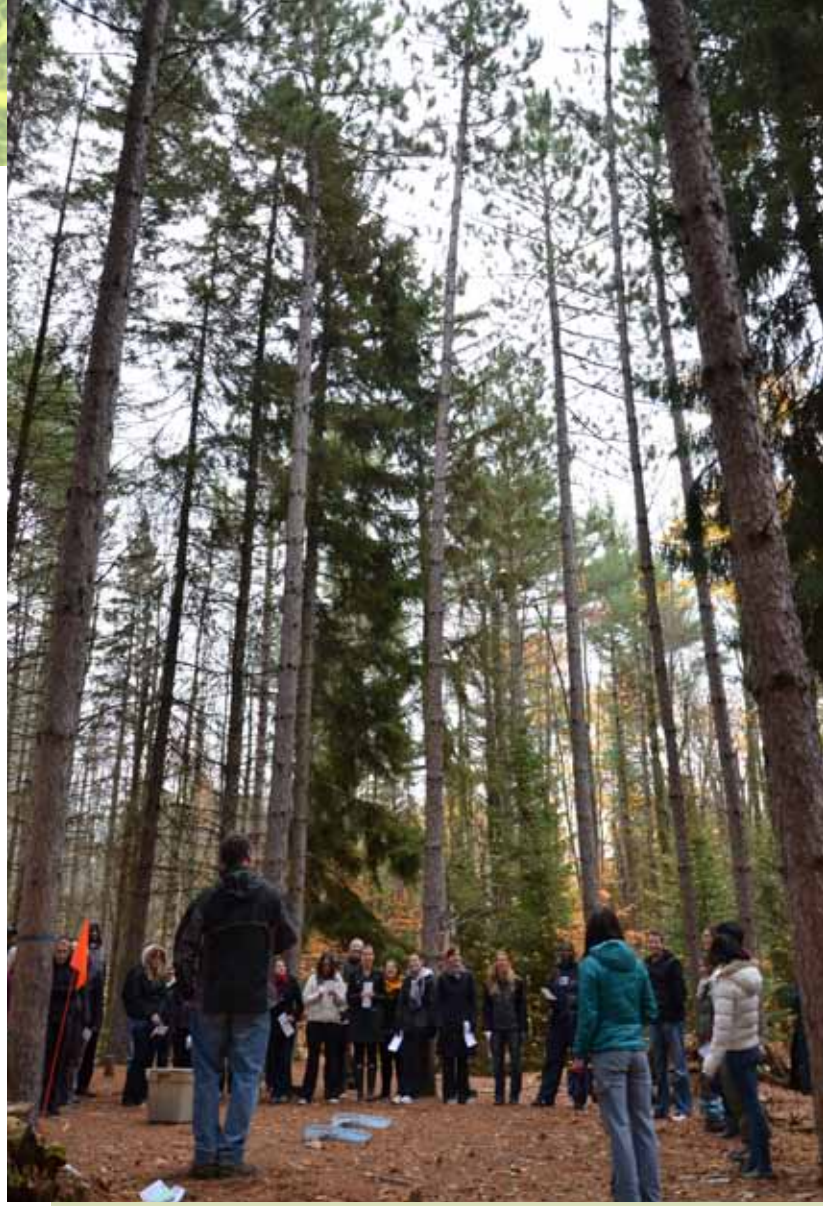
Chapter Five encourages discussion on how this important work in pre-service environmental education can be assessed and how faculties of education can track their progress in deepening environmental education. It offers a list of possible indicators of growth to assess progress. Ultimately, we hope to encourage further discussion on this important topic around our collective efforts.

Chapter Six offers suggestions for going beyond the strategies of the previous chapter to consider the far-reaching implications of this work. The information found in the Resources and Appendices sections near the end of the guide may prove to be helpful in this regard, providing readers with course syllabi, definitions, and key documents in environmental education to continue their own learning in this area.

There is no question that environmental education can, and should be deepened in initial teacher education programs and throughout faculties of education. Our hope is that the DEEPER guide will be used in creative and unanticipated ways, and that it may inspire faculty, staff and students to imagine and implement environmental education more deeply in initial teacher education in Ontario.

Chapter 2

The Roots of Environmental Education in Initial Teacher Education



TRACING THE ROOTS OF ENVIRONMENTAL EDUCATION

While some identify environmental education's beginnings as being grounded in the cultural and environmental movements of the 1960s, its roots extend further back. The ancestral branches of what we now recognize as environmental education have come under many names and have been informed by wider social, cultural, political, and economic influences; this has been documented in detail by many scholars (Carter & Simmons, 2010; Hart, 2003; Palmer, 1998; Sauvé, 2005; Stevenson, 2007; Stevenson, Brody, Dillon & Wals, 2012). Here we offer an introduction to its history to recognize this richness and to help contextualize environmental education in relation to initial teacher education in Canada generally and in Ontario more specifically.

In the early 19th century, Wilbur Jackman's (1891) *Nature Study for Common Schools* and Anna Botsford Comstock's (1911) *Handbook of Nature Study* encouraged taking students outdoors for first hand learning experiences across the disciplines. Nature study was prevalent in education until the 1920s and was eventually overshadowed by the rise of science education in the post-World War II period. The conservation education movement of the early 1900s centred on the conservation of resources for human consumption and was encouraged by governments in the US, United Kingdom, and Canada. Developed in the 1920s, outdoor education stemmed from nature study and used the outdoors as both the content and context for learning, bringing together all areas of the curriculum.

Other educational movements prior to the 1960s informed the development of environmental education, as described by Disinger (1998/2001): resource-use education (similar to conservation education but focused on geography and economics); progressive education (a more holistic approach to curriculum and instruction informed by Dewey, Rousseau, Pestalozzi, and Froebel); resource management education (highlighted a professional relationship between humans and the environment through teaching soil conservation, water management, landscape design, etc.); population

This chapter offers an introduction to the history of environmental education to recognize its richness, and to help contextualize it in initial teacher education in Canada generally and in Ontario more specifically.

education (related environmental impact to population issues); and general education (worked against compartmentalization of disciplines by integrating curricula).

Following World War II, governments began to standardize school curricula, and emphasize science and mathematics education. By the 1960s, these changes, along with shifting social and political climates, motivated a renewed focus on environmental awareness and advocacy. Rachel Carson's (1962) ground breaking book *Silent Spring* raised awareness not only of the devastating environmental effects of pesticides but also of the broader issue of human impact on the natural world. In academia, the environmental movement resulted in the publication of early papers in environmental education (for example, Swan, 1969), the founding of the *Journal of Environmental Education* in 1969, and Stapp's (1969/2001) early definition of environmental education as a discipline "aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution" (p. 34). Stapp emphasized the interconnectedness of all life on Earth, noting that "man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, and that man has the ability to alter [those] interrelationships" (1969/2001, p. 34).

National and international organizations soon echoed Carson's (1962) and Stapp's (1969/2001) calls for change. In 1972, the United Nations Conference on the Human Environment (commonly known as the *Stockholm Declaration*) called for children and adults to be educated in environmental matters and led to the creation of the UN's Environment Programme (UNEP) and, with UNESCO, the UNESCO/UNEP International Education Programme. As a result of this, the *Belgrade Charter* outlined the UNEP's goal for environmental education:

To develop a world population that is aware of, and concerned about the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions to current problems, and the prevention of new ones. (UENP, 1975, p. 3)

This was followed in 1977 by the *Tbilisi Report*, a result of UNESCO's First Inter-governmental Conference on Environmental Education, which presented a detailed list of guiding principles for environmental education that emphasized, among other objectives, a systemic, interdisciplinary, and participatory approach to environmental education, as well as define the key categories of environmental education (awareness, knowledge, attitudes, skills and participation) (UNESCO/UNEP, 1977). It called for an environmental education:

1) *to foster clear awareness of and concern about economic, social, political, and ecological inter-dependence in urban and rural areas;*
2) *to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;*
3) *to create new patterns of behaviour of individuals, groups, and society as a whole towards the environment (UNESCO/UNEP, 1977, p. 26).*

Ten years after the *Tbilisi Report, Our Common Future* (commonly referred to as the *Brundtland Report*) (United Nations, 1987) set out a global agenda that positioned discussions of the environment alongside sustainable development – "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (p. 16) – laying the roots of education for sustainable development (ESD). This was followed by *Agenda 21* (United Nations Sustainable Development, 1992), created at the 1992 Earth Summit in Rio de Janeiro (formally known as the United Nations Conference on Environment and Development). *Agenda 21* identified urgent environmental issues, including the loss of biological diversity, population growth, poverty, and inequality. It offered an action plan for sustainable development, calling for action at national and local levels and listening to the voices of those previously silenced, such as women, youth, indigenous peoples, farmers, local authorities). Of particular relevance to environmental education were the chapters on education, training and public awareness; in these, national responsibilities for the improvement of environment and development education for learners of all ages were outlined, and recommendations for infusing environmental education into all educational programs were made.

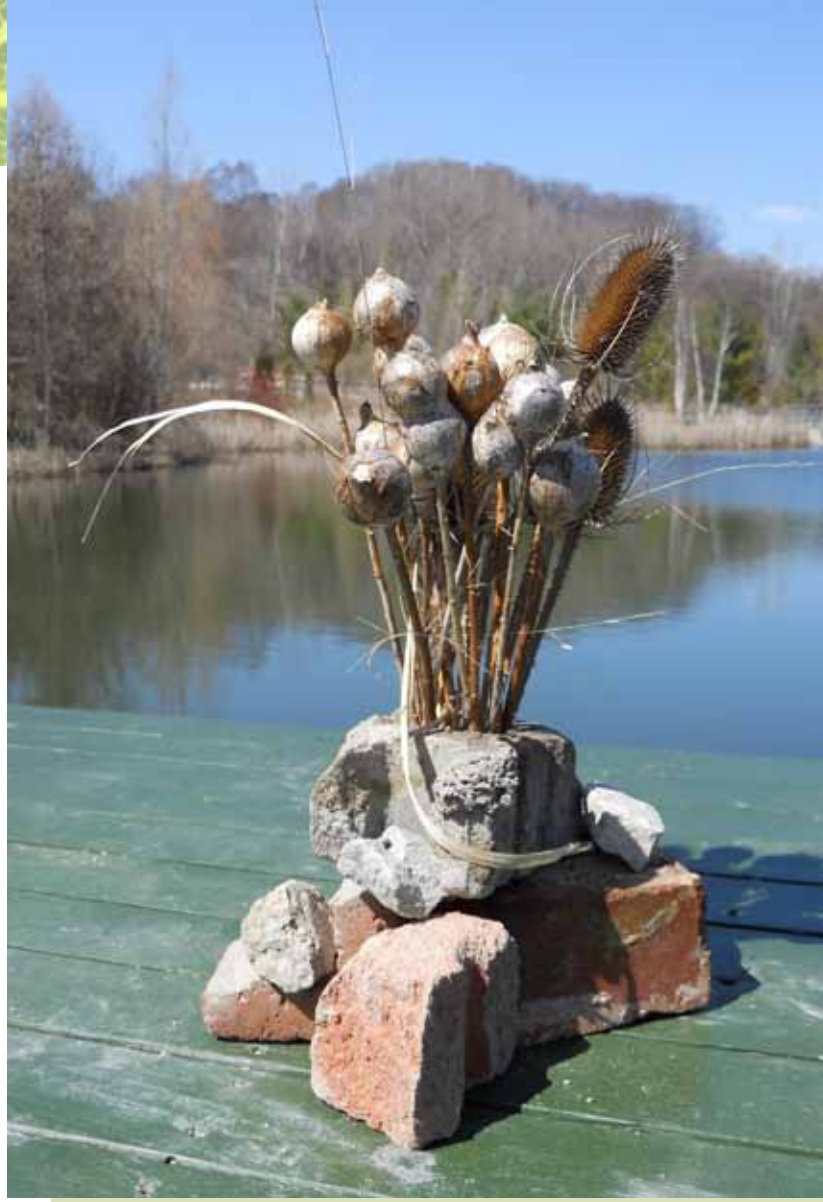
Sustainability was a key element in many chapters of *Agenda 21*, and education for sustainable development has been widely acknowledged as a valuable approach to environmental education. While definitions vary, ESD currently encompasses a range of interdisciplinary curricular and pedagogical approaches that aim to support the sustainability of environments, societies, cultures, and economies. However, like other approaches to environmental education, ESD is not without critics. Jickling (1992) poignantly argues that ESD is often embraced without a conceptual and philosophical analysis of what is meant by education and sustainable development and that by educating for something, educators are inferring a predetermined way of thinking. Instead, he calls for an education that "enable[s] students to debate, evaluate, and judge for themselves the relative merits of contesting positions" (Jickling, 1992, p. 8). Despite critiques of ESD, the United Nations declared the years 2005-2014 to be the *Decade of Education for Sustainable Development*, identifying the critical importance of education in achieving a sustainable future, and aiming to activate the world's resources on environmental learning in an effort to progress in this area.

The reports discussed above and other related publications, including the Principles of Environmental Justice (People of Colour Environmental Leadership Summit, 1991) and the *Earth Charter* (UNESCO, 1992), have helped inform a range of theoretical stances and practical approaches to environmental education in countries around the world. Sauvé's (2005) mapping of the last thirty years of environmental education is an excellent introduction to the many traditions in this field. Her identification of fifteen "currents" allows the philosophical and pedagogical landscape of environmental education to be mapped. These currents have manifested in a variety of new approaches. For example, the importance of local environmental understandings is reflected in place-based education (see, for example, Gruenewald & Smith, 2007; Sobel, 2004). Place-based education brings together experiential, environmental and inquiry-based learning with a community-based approach to education, grounding it in the local environment and students' own experiences of place. Outdoor education continues to advocate for the importance of learning in, about and through natural and built environments, drawing on the strengths of experiential and nature-based learning (see, for example, Foster & Linney, 2007; Linney, 2013; Louv, 2005). Eco-justice education (see, for example, Martusewicz, Edmundson, & Lupinacii, 2011; Tippins, Mueller, van Eijck & Adams, 2010) is a more recent approach, aligning the traditional tenets of environmental education with equity and social justice education through its recognition of the complex roles that inequity, exploitation, eco-racism and colonization play in the environmental crisis, and the need for environmental learning to address all of these areas. And sustainability education (Jones, Selby, & Sterling, 2010) aims for a better balance in learning about the environmental, economic, and social dimensions of environmental issues and their solutions.

Other relevant movements related to environmental education include global education, citizenship education, earth education, humane education, holistic education, and futures education. All of these approaches make unique and valuable contributions to the broader field of environmental education, and work to recognize the inherent interconnectedness of social, cultural, political, built, and natural systems as they address local and global issues and environmental concerns. It is important that these approaches not be viewed in isolation but rather as flowing into, informing, and diversifying the richness and depth of environmental education as a field.

ENVIRONMENTAL EDUCATION IN CANADA

In Canada, environmental education takes place across a range of contexts and diversity of sites: schools, universities, colleges, parks, community centres, museums, and summer camps all contribute formal and informal programs that focus on teaching and learning related to the environment. Like its international history, environmental education in Canada has been informed by many approaches, articulated well by Russell, Bell, and Fawcett (2000), that not surprisingly overlap with Sauvé's (2005) "currents." These approaches have drawn from the areas of critical pedagogy, popular education, feminism and eco-feminism, environmental justice, bioregionalism, holistic education, and indigenous knowledge.



Yet, over the past thirty years, Canada has lacked a shared understanding of environmental education. This has been attributed in part to the provincial responsibility of education in Canada, which has proven to be a stumbling block for developing a unified understanding of environmental education. Within the K-12 public school system in Canada, environmental education's history spans only a few decades; Hart (1996) notes that it has only been since the mid-1980s that environmental education has become a more common experience in schooling in this country. However, what environmental education entails has varied widely across contexts (schools, districts, provinces, and sites) in response to wider social, political, and cultural pressures. In 1992, the National Round Table on the Environment and Economy met to discuss environmental advocacy roles for post-secondary educators and researchers, outlining eight elements of environmental education to be emphasized: curriculum design and student projects; consulting; research; public involvement; co-management; non-government organizations; municipal government involvement; and media relations. The absence of a national journal of environmental education and federally funded network of environmental educators has also been considered a hindrance. In 1993 the Canadian Network for Environmental Education and Communication (EECOM) was established, and three years later, the *Canadian Journal of Environmental Education* was founded. While 20 years have passed since this meeting, the work of the round table remains relevant, and its identified elements of emphasis continue to be areas for growth in Canadian education.

The range of uptake of environmental education in the K-12 system varies from province to province and between school boards. Over the past two decades, cycles of curricular revisions have resulted in elements of environmental education being incorporated into provincial curricula at staggered intervals. For example, the *Ontario Curriculum, Grades 1-8: Science and Technology* (1998) reflected the inclusion of environmental topics in science curricula through the "Science, Technology, Society and Environment" (STSE) curricular focus. Alberta's and Saskatchewan's science curriculum revisions and inclusion of STSE came considerably later (Milford, Jagger, Yore, & Anderson, 2010). Though environmental education is often included within science,

The range of uptake of environmental education in Canada's K-12 system varies from province to province and between school boards. Though environmental education is often included within science, social studies, and/or geography learning outcomes, some provinces have created curricular guides and resources to support teachers as they bring environmental education into their teaching across the curriculum.

social studies, and/or geography learning outcomes, some provinces have created curricular guides and resources to support teachers as they bring environmental education into their teaching across the curriculum. British Columbia's (1995) *Environmental Concepts in the Classroom*, its follow-up *Environmental Learning and Experience* (2007) document, and related curriculum maps aim to help K-12 teachers infuse environmental education into all subject areas. Within disciplinary boundaries, provinces and territories have also approached environmental education in different ways. For example, Alberta's science curriculum integrates environmental education broadly by using outdoor, experiential, and interdisciplinary systems approaches. Alternatively, in Quebec, environmental awareness and consumer rights and responsibilities have been highlighted, and aim to foster students' active relationships with the environment and critical appraisals of environmental use, technological development, and consumerism.

ENVIRONMENTAL EDUCATION IN INITIAL TEACHER EDUCATION IN CANADA

Research on environmental education in Canadian pre-service teacher education programs is limited, but growing. Lin's (2002) survey of environmental education in Canadian pre-service teacher education programs suggests that little has changed since Towler's (1981) survey over twenty years earlier. Despite being widely acknowledged as an area of importance, environmental education's presence in teacher education programs has remained limited. According to Lin (2002), only 12 of 35 institutions offered environmental education methods courses at that time, and six others integrated environmental education into other methods courses. Those courses that included elements of environmental education tended to focus on ecology, conservation education, outdoor education, and biology. Most faculty members teaching environmental education courses participated minimally, if at all, in environmental education research and projects. Perceived barriers to teaching environmental education in teacher education programs included a lack of funding, time, space in the program, scheduling conflicts, interest, and teaching resources. Overall, environmental education continued to be viewed as a low priority in teacher education programs despite the growing interest in it in school boards and the wider community.

Currently, environmental education's inclusion in teacher education programs across Canada varies widely. For example, in Saskatchewan, environmental education has been identified as a major component of teacher education programs at both the University of Regina and the University of Saskatchewan. In British Columbia, Simon Fraser University offers an environmental education minor that focuses on skills in environmental and outdoor education. Many Canadian faculties of education do not offer any courses in environmental education at. (The inclusion of environmental education in Ontario's faculties of education is discussed in more detail later in this chapter.)

In 2008, the Education for Sustainable Development Working Group was founded as a committee of the Council of Ministers of Education, Canada (CMEC). Two years later the CMEC published *Background – Developing a Pan-Canadian ESD Framework for Action and Collaboration* (2010), which aims to improve collaborative efforts between jurisdictions and establish Canada as an international leader in ESD. It encourages action at the elementary and secondary levels through curricular integration of sustainable development topics, creation of ESD teaching and learning resources, and provision of pre-service and inservice teacher professional development in ESD.

More recently, the ESD Working Group notes that "for many jurisdictions, at the pre-service stage, ESD has yet to be included as a core component of teacher-education programs" (CMEC, 2012, p. 12) and asserts the importance of training and support for teachers as they begin and continue to use interdisciplinary and issues-based approaches to teaching and learning for ESD. In partnership with the International Institute for Sustainable Development and Learning for a Sustainable Future, the working group, as part of the CMEC, completed a study in 2012 that explored the inclusion of ESD in pre-service programs in Canada (CMEC, 2012). It found that faculties of education are making "modest but promising progress toward reorienting teacher education to address education for sustainable development" (p. 3), including both course-

specific and program-wide infusion. The United Nations' *Decade of Education for Sustainable Development* is identified as contributing to the legitimation of ESD discourse and action across faculties. Respondents note that ESD is often taken up by individual faculty members rather than as a faculty-wide movement. They identify factors that enabled ESD (e.g., partnerships, intersecting institutional and individual motivations) and those that hindered ESD (e.g., lack of communication between stakeholders, funding limitations); these are consistent with those found in similar international research (Hopkins & McKeown, 2005). The CMEC's (2012) study certainly confirms the need for faculties and ministries of education to consider their relationship and work together to strengthen ESD in pre-service teacher education programs.

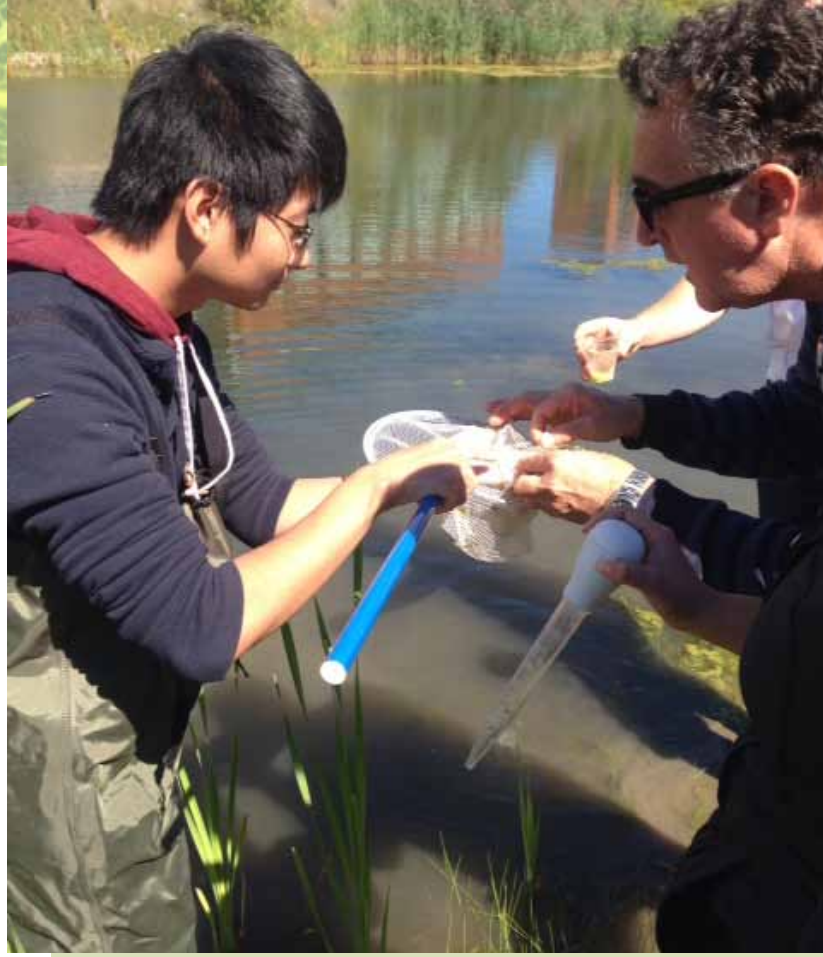
ENVIRONMENTAL EDUCATION IN ONTARIO

In Ontario, environmental education has been integrated unevenly across the curriculum over the past two decades. While courses were available in environmental science in some schools as far back as the 1960s, the Ontario Ministry of Education introduced environmental science courses in 1973 (Houghton et al., 2002). From 1988 to 2000, this was formalized in a secondary level elective course called *Environmental Science;* however, this was removed from the curriculum in 2000 in favour of infusing ecological concepts and topics across science and geography courses (inspired by the CMEC's (1997) *Common Framework of Science Learning Outcomes*). Research has suggested that this infusion model of ecological education has not been successful. For example, Puk and Behm (2003) found that secondary science and geography teachers spent little time on environmental topics and omitted outdoor learning opportunities. These authors contend that the infusion model has diluted rather than strengthened environmental science education and ecological literacy more generally in Ontario. One of their recommendations to counter this decline is to realign teacher education programs to better support ecological literacy.

Puk and Behm (2003) are not alone in criticizing the approach to environmental education in Ontario, as educator groups such as EECOM, Environmental Education Ontario (EEON), the Ontario Society for Environmental Education (OSEE), the Council of Outdoor Educators of Ontario (COEO), and the Ontario Association of Geography and Environmental Education (OAGEE) have also advocated for a more structured approach (see the Resources section on page 73 for a list of contacts for these organizations). Community-based organizations such as Learning for a Sustainable Future and Evergreen have helped bring environmental education to both community and school sites. Some school boards continued to develop and support environmental education throughout the 1990s and into the first years of the 2000s, despite a political climate and curriculum revisions that were not supportive of its inclusion in curricula. The Toronto District School Board, for example, instituted "Canada's first dedicated Department of Environmental Education in a public school board in 1999, supported by a board-wide environment policy and an EcoSchools Program" (Houghton et al, 2002, p. 22).

The call for a more focused approach to environmental education in Ontario was heeded in 2007 with the formation of the Working Group on Environmental Education, a panel of experts tasked with making recommendations on it for the OME. Their final report, *Shaping our Schools, Shaping our Future*, was published in 2007; it examines the environmental education policies and practices in Ontario, across Canada and around the world and presents a comprehensive list of recommendations to improve environmental education in Ontario schools. It highlights the fragmented presence of environmental learning across curricular disciplines, and articulated a new vision for Ontario students:

Ontario's education system will prepare students with the knowledge, skills, perspectives, and practices they need to be environmentally responsible citizens. Students will understand our fundamental connections to each other and to the world around us through our relationship to food, water, energy, air, and land, and our interaction with all living things. The education system will provide opportunities within the classroom and the community for students to engage in actions that deepen this understanding. (Working Group for Environmental Education, 2007, p. 4)



The report's 32 recommendations cover three critical domains – leadership and accountability, curriculum, and teaching and resources.

In response to *Shaping our Schools, Shaping our Future*, the OME took the unprecedented step of quickly accepting all of its recommendations and using them to inform the publication of *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools* (2009a). This policy describes a framework for environmental learning that: (a) is locally relevant and culturally appropriate; (b) develops understanding of the provincial, national, and global impact of local issues; (c) encourages community-based environmental decision making and stewardship; and (d) supports lifelong learning. Additionally, a set of strategies is identified for the OME, school boards, and schools to implement the framework, as well as a list of the knowledge, skills and attitudes that environmental education should develop in students. Perhaps it's most radical suggestion, however, comes in its recommendation for environmental education to be embedded "in all grades and in all subjects of the Ontario curriculum" (OME, 2009a, p. 12). This includes the acknowledgement that faculties of education need to include environmental education in their pre-service curricula. In support of this document, the OME produced a series of support documents to help educators implement environmental education in their classrooms (refer to page 72 for a list of these documents).

ENVIRONMENTAL EDUCATION IN INITIAL TEACHER EDUCATION IN ONTARIO

The trends identified by Lin (2002) in the context of Canadian initial teacher education programs are mirrored in Ontario. Beckford's (2008) review of environmental education in Ontario programs notes that there were a limited number of pre-service programs offering courses in this area; this continues to be true six years later. The brevity of some programs makes it challenging for environmental education to be included; often it is integrated as a topic in an existing course (typically science, social studies, or geography). The fundamental interdisciplinary nature of environmental education is often lost as the interconnectedness of environment, society, economy, politics, and culture is not acknowl-

The Bondar Report asserts that it is critical that faculties of education "make environmental education a teachable subject, providing all student teachers with training in environmental education, including the science behind environmental issues" (Working Group for Environmental Education, 2007, p. 15).

edged in many programs. When environmental education is included in pre-service programs, it is commonly because of the efforts of one or two motivated faculty members. For programs without such a 'champion', a lack of time, awareness, interest, and commitment are also identified as constraints to its inclusion (Russell, Bell, & Fawcett, 2000). Despite these constraints, many teacher candidates, along with faculty (Beckford, 2008; Puk & Behm, 2003), assert that some level of ecological literacy should be a mandatory part of pre-service education, as well as offered as an elective ecological education program for those who choose to take it.

The relative absence of environmental education in Ontario's initial teacher education programs is noted in the report of the Working Group on Environmental Education (2007). The report identifies the gap between the existing environmental education practices at all levels and a comprehensive approach to teaching and learning about the environment. It notes that "few faculties of education offer environmental education as a teachable subject, or offer specialized programs in environmental studies for teacher candidates" (p. 2) and asserts that it is critical that faculties of education "make environmental education a teachable subject, providing all student teachers with training in environmental education, including the science behind environmental issues" (p. 15). Specific recommendations pertaining to to faculties of education include:

22. Collaborate with Ontario teachers' federations and affiliates, school boards, the Ontario College of Teachers, faculties of education, subject associations, and other stakeholders to develop and implement a strategy for ongoing professional development for teachers.
25. Provide provincial/regional training sessions for educators to build capacity and share effective practices, in collaboration with school boards, teachers' federations, faculties of education, subject associations, and other stakeholders.
26. Develop and support workshops and summer institutes on cross-curricular environmental education
31. Establish a working group in collaboration with the Ministry of Training, Colleges and Universities, Ontario teachers' federations and affiliates, the Ontario College of Teachers, faculties of education, and other stakeholders to develop and implement a strategy for effective pre-service training in environmental education for all teacher candidates, including environmental education as a teachable subject. (Working Group on Environmental Education, 2007, p. 16)

Others have also recommended ways to integrate environmental education into pre-service programs in Ontario. Beckford (2008) proposes a number of elements to re-orient environmental education within pre-service education. He recommends moving towards a better integration of learning for sustainability by bringing together a systems view of economy, environment, and education with experiential and critical understandings. By using a critical pedagogy approach that utilizes democratic dialogue and action, teachers can become transformative thinkers who use critical, reflective, participatory, practice-based, and collaborative pedagogies to challenge the status quo in curriculum and instruction. He proposes using action research as a way to help teacher candidates better understand and challenge the reasons for their pedagogical actions by bridging the gap between practice and theory. And perhaps most importantly Beckford reminds us to embrace Aboriginal perspectives in environmental education to purposefully upset the dominant western anthropocentric understandings of the natural world, teach respect for the intrinsic value of the Earth and inform the roles we can all play in stewardship.

Currently, many faculties of education in Ontario are attempting to better integrate environmental education into their programs. Trent and UOIT have developed Eco- or Enviro-Mentor programs for their teacher candidates, Nipissing offers *Educating for Environment* workshops, and Brock offers an elective course in *Environmental/Outdoor Education*. Queen's students can take a special focus in Outdoor and Experiential Education as part of their degree; Lakehead has a rich program in Outdoor Education and Ecological Literacy. OISE has taken an infusion approach by embedding environmental education across many courses, and offers many co-curricular events as part of its *Environmental Leadership Certificate*. Likewise, Ottawa promotes an environmental education orientation in courses that are part of its *Developing a Global Perspective in Education* initiative, as well as through co-curricular events sponsored by the ECO-21 science research unit.

Researchers at these institutions continue to make valuable contributions to help deepen our understanding of the roles environmental education can and should play in initial teacher education (see, for example, Beckford, 2008; Chambers, 2010; DiGiuseppe, 2013; Fazio & Karrow, 2012; Greenwood, 2010; Inwood, Forbes, & Miller, 2013; Jickling & Wals, 2012; Karrow & Fazio, 2010; Korteweg, Gonzalez, & Guillet, 2010; MacEachern, 2011; Puk & Stibbards, 2011; Reis & Ng-A-Fook, 2010; Russell & Fawcett, 2012).

An informal group of Ontario pre-service environmental education advocates has been meeting since 2010 to discuss their progress and share strategies and best practices. This led to the DEEPER provincial roundtable in May 2013, and the collaborative writing of this resource guide in the autumn of 2013.

Chapter 3

A Vision for Environmental Education in Initial Teacher Education in Ontario

Initial teacher education in Ontario can and should empower teacher candidates to become responsible, knowledgeable, and active citizens who support and model positive social and environmental change in the communities in which they work and live. This requires a clear commitment on the part of the provincial government and faculties of education to environmental, sustainability and citizenship education as a mandatory component of all initial teacher education programs in the province. By studying how social, economic and environmental issues impact our world, teacher education programs should model a systems approach to learning that nurtures an understanding of the interconnections between knowledge, attitude and action in sustaining all forms of life on Earth.

All teacher candidates should have the opportunity to learn in, about, and for the environment as part of their initial teacher education program. They should learn with an emphasis on experiential, holistic, inquiry-based pedagogies in the natural and built environments in which they live. Their teaching and learning experiences should offer them opportunities to experience a sense of wonder and curiosity for the natural world, and remind them to offer the same to their future students. For this, teacher candidates need to engage in interdisciplinary study to explore the environmental challenges of contemporary society; develop collaborative problem-solving and creative and critical thinking skills to address these challenges; build on their sense of empathy and care; and practice modeling and applying these skills with their students. By reorienting initial teacher education to focus on a sustainable future for all, teacher candidates will have the knowledge, skills and attitudes necessary to provide environmental education for their students, schools, and communities, and work towards societal well-being locally and globally.

This vision for environmental education in initial teacher education, supported by the foundational work of ATST (OME, 2009a), grew out of of the DEEPER provincial roundtable that was held in May 2013. This event

By studying how social, economic and environmental issues impact our world, teacher education programs should model a systems approach to learning that builds an understanding of the interconnections between knowledge, attitude and action in sustaining all forms of life on earth.

brought together pre-service faculty from twelve Ontario universities, along with educators from school boards and NGOs, all of whom were focused on better embedding environmental education into initial teacher education programs across Ontario. The participants at this event shared their extensive expertise, deep knowledge, and broad experience in environmental education to formulate this vision and a corresponding set of core competencies for teacher candidates to achieve as part of their degree requirements. The foundation for this work is a shared set of essential understandings articulated by the North American Association of Environmental Education (NAAEE, 2010).

ESSENTIAL UNDERSTANDINGS OF ENVIRONMENTAL EDUCATION

Environmental education builds from a core of key principles that inform its approach to education. Some of these important underpinnings are:

Systems*: Systems help make sense of a large and complex world. A system is made up of parts. Each part can be understood separately. The whole, however, is understood only by understanding the relationships and interactions among the parts…Organizations, individual cells, communities of animals and plants, and families can all be understood as systems. Systems can be nested within other systems.*

Interdependence*: Human well-being is inextricably bound with environmental quality. Humans are a part of the natural order. We and the systems we create—our societies, political systems, economies, religions, cultures, technologies—impact the total environment. Since we are a part of nature rather than outside it, we are challenged to recognize the ramifications of our interdependence.*

The importance of where one lives*: Beginning close to home, learners forge connections with, explore, and understand their immediate surroundings. The sensitivity, knowledge, and skills needed for this local connection provides a base for moving out into larger systems, broader issues, and an expanding understanding of causes, connections, and consequences.*

Integration and infusion*: Disciplines from the natural sciences to the social sciences to the humanities are connected through the medium of the environment and environmental issues. Environmental education offers opportunities for integration and works best when infused across the curriculum, rather than being treated as a separate discipline or subject area.*

Roots in the real world*: Learners develop knowledge and skills through direct experience with the environment, environmental issues, and society. Investigation, analysis, and problem solving are essential activities and are most effective when relevant to the real world.*

Lifelong learning*: Critical and creative thinking, decision making, and communication, as well as collaborative learning, are emphasized. These skills are essential for active and meaningful learning, both in school and over a lifetime. (NAAEE, 2010, p.3.)*

CORE COMPETENCIES IN ENVIRONMENTAL EDUCATION

There is some discussion in the relevant literature about the core competencies teacher candidates need to develop in environmental education as part of their initial teacher education program. Hopkins and McKeown (2005) suggest that teacher candidates need to "understand the interrelatedness of the environment, society, and economy and have this interrelatedness be evident in their teaching and lives as community members" (p. 43). They recommend achieving this through a focus on interdisciplinary coursework on sustainability, the development of higher-order thinking skills, self-awareness of values and attitudes, and an emphasis on citizenry in sustainable communities.

Building on these competencies, the NAAEE (2007) created a set of standards for educating environmental educators. Ambitious in scope, it recommends that teacher candidates learn about the nature of environmental education, develop an environmental literacy, learn about integrating environmental education into school curricula and assessment practices, and how to continue their professional development in this area. These have since been further developed in the *Guidelines for the Preparation and Professional Development of Environmental Educators* (NAAEE, 2010), a detailed and comprehensive list of themes and competencies for professional environmental educators.

More recently, the United Nations Economic Commission for Europe (UNECE, 2011) reframed the NAAEE (2010) guidelines by creating a set of competencies needed by educators to implement education for sustainable development. This list identifies four areas of competency (learning to know, learning to do, learning to be and learning to live together) as they are applied to three key strategies: taking a holistic approach, envisioning change, and achieving transformation. While comprehensive in its listing, these competencies are similar to those in the NAAEE guidelines in their breadth and ambitiousness. (Refer to Appendix C on page 79 for a summary of these and other core competencies.)

The Alberta Council for Environmental Education (ACEE, 2012) has offered its own set of competencies for students of environmental education; while intended for K-12 students, the suggested competencies are appropriate for teacher candidates as well. ACEE (2012) proposes that students should "have a positive relationship with the natural world," "an inner drive to make the world a better place," learn by "engaging in real-world collaborative projects," and be "active citizens" (pg. 9). It further notes that teachers and students need to develop the skills necessary to foster critical thinking, address environmental challenges, and take responsible action. This document especially highlights the importance of teachers as co-learners, researchers, and role models, with an understanding that their actions have an impact on the learning that occurs.

Using these documents as a foundation, and based on the need to focus discussion on the the Ontario education system, the participants of the DEEPER roundtable collaboratively constructed a list of core competencies to guide the implementation of environmental education in initial teacher education programs in Ontario. These place a strong emphasis on community engagement, active citizenship, experiential learning, critical thinking. and an active commitment to the environment.

CORE COMPETENCIES IN ENVIRONMENTAL EDUCATION FOR ONTARIO TEACHER CANDIDATES

By the end of an initial teacher education program in Ontario, teacher candidates should be able to demonstrate competency in environmental education in three main ways: knowledge, attitude and action.

Knowledge

Teacher candidates will:

- understand the essential uderstandings of environmental education, including: systems, interdependence, integration and infusion, roots in the real world, and the importance of where ones lives, and lifelong learning (NAAEE, 2010);
- know the foundations of environmental education including its main principles, goals, theories, and practices;
- recognize the effects of local and global environmental issues, human impacts and sustainability practices on all forms of life;
- acknowledge that the choices we make individually and collectively each day in relation to the environment affect our lives, our families, our communities, and the world around us;
- recognize the value and relationship of critical and creative thinking to support active and caring citizenship.

Attitude

Teacher candidates will:

- demonstrate empathy, respect, and care for all elements of the natural world;
- articulate and reflect on their personal values, beliefs, and understandings related to local and global environmental issues;
- recognize and embrace perspectives other than their own when teaching and learning about environmental issues;
- communicate a sense of urgency for positive environmental change;
- be comfortable critiquing and challenging unsustainable practices within the education system and beyond;
- maintain a sense of hope and optimism for the future.

Action

Teacher candidates will:

- utilize different bodies of knowledge, teaching methodologies, and curriculum areas, and apply these to their understanding of environmental issues and environmental education;
- facilitate student-centred, experiential learning in environmental education;
- integrate environmental education in and across the Ontario curriculum;
- demonstrate inquiry and critical and creative thinking skills to ask and investigate questions about the environments in which they live;
- collaborate with others to connect their own and others' lives to the broader communities in which they live and learn;
- locate, critically review, and adapt instructional materials in environmental education;
- develop and deliver developmentally, culturally and linguistically appropriate environmental education curriculum and instruction that meets the diverse needs of learners;
- apply authentic assessment strategies to support environmental education learning;
- engage in ongoing environmental education professional development opportunities.

These competencies are based in part on those found in the following documents:

Alberta Council for Environmental Education. (2012). *Advancing pre-service environmental education in Alberta: A discussion paper.* Retrieved from http://www.abcee.org/cms/wp-content/uploads/2011/02/Advancing-Pre-Service-Environmental-Education-in-Alberta-24-Jan-2012-draft.pdf

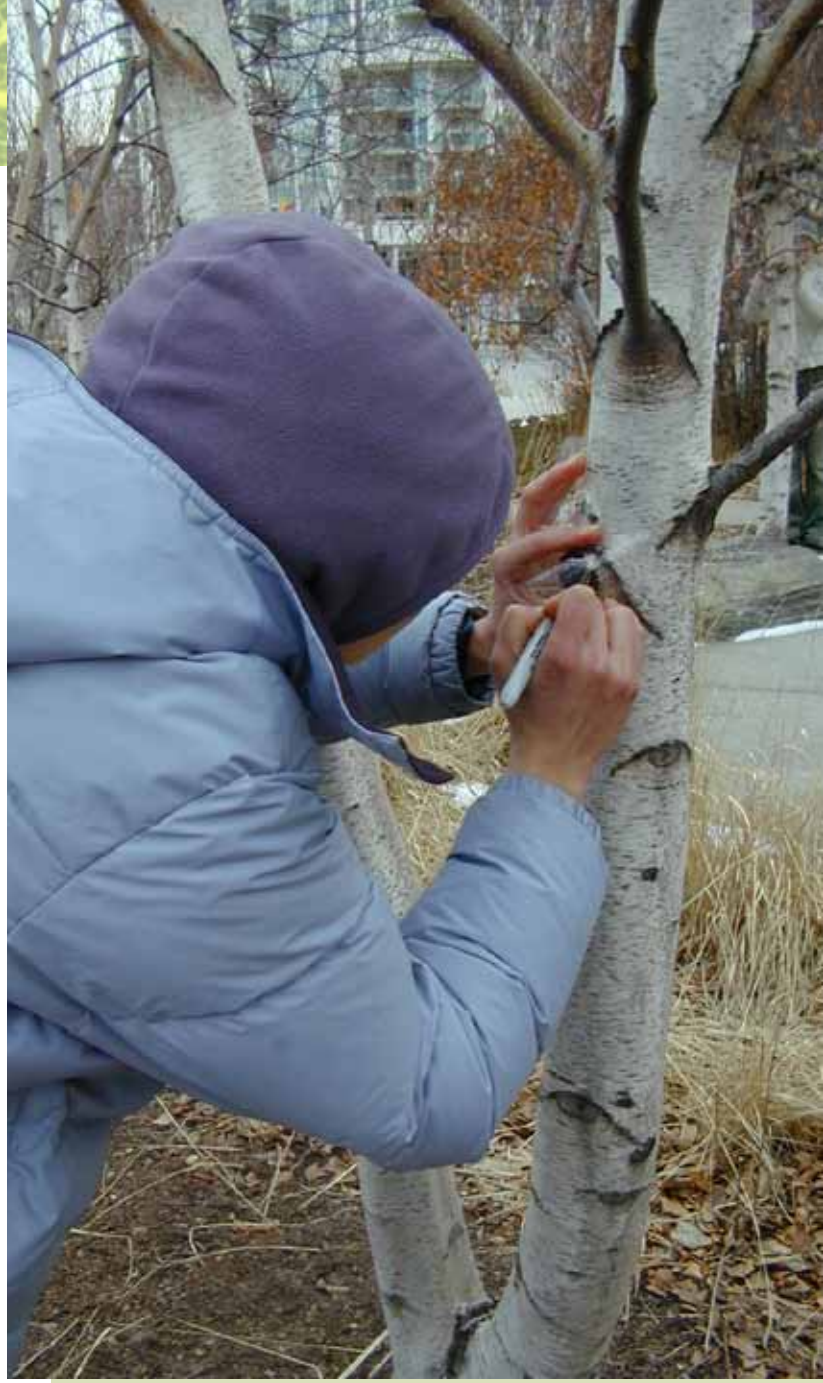
Hopkins, C., and McKeown, R. (2005). *Guidelines and recommendations for reorienting teacher education to address sustainability*. UNESCO Education Sector. Retrieved from http://unesdoc.unesco.org/images/0014/001433/143370e.pdf

NAAEE. (2007). *Standards for the initial preparation of environmental educators*. National Council for Accreditation of Teacher Education. Retrieved from http://resources.spaces3.com/aaee5f4a-2dd3-4dc2-aa2f-d1f0c32103e7.pdf

NAAEE. (2010). *Guidelines for the preparation and professional development of environmental educators*. Retrieved from http://resources.spaces3.com/5e156799-5cd9-406e-835d-748cce277ecf.pdf

Ontario Ministry of Education. (2009a). *Acting today, shaping tomorrow*. Retrieved from http://www.edu.gov.on.ca/curriculumcouncil/shapetomorrow.pdf

United Nations Economic Commission for Europe (2011). Learning for the future: *Competences in education for sustainable development*. Retrieved from http://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf



Chapter 4

Growing Strategies and Cultivating Practices

There are many ways to deepen the practice of environmental education in initial teacher education. This chapter focuses on a collection of practices and strategies used in pre-service teacher education programs across Ontario. Faculties should be selective in their approach, considering carefully the level of support available; the adage "start small, do it well" is recommended.

BUILDING SUPPORT FOR ENVIRONMENTAL EDUCATION

One of the greatest challenges in establishing environmental education in initial teacher education is planting the seeds for its growth within a faculty of education. This can be difficult when colleagues appear to be reluctant to participate. Yet, it is possible to build over time the support needed to broaden and deepen environmental education within your faculty. Case studies of faculties of education building environmental education programs at institutions in Canada and the US are available (see, for example, Alberta Council for Environmental Education, 2012; Council of Ministers of Education, Canada, 2012; Dippo, 2013; Fien, 1995; Powers, 2004). Cases such as these can be at once instructive and inspiring for both those starting to build environmental education programs as well as those wanting to extend and strengthen existing initiatives. The following are strategies for building support recommended by various pre-service educators in Ontario.

IDENTIFY PARTNERS

One way to begin the process of building support within a faculty of education is to collect information from faculty, staff, and students about their interest in environmental education and the work they may have already done in this field. Determine the degree to which instructors may already be addressing aspects of environmental education in their courses, and whether there is a sustainability 'champion' in the faculty. Identify which students are environmentally-attuned, and may be interested in partnering. Administrators looking to reduce costs, caretakers aiming to reduce garbage loads, or communication managers eager for positive

This chapter shares recommended practices and strategies for environmental education for initial teacher education programs, based on ones in use in faculties of education acrossOntario.

messages to share about the Faculty are all possible collaborators. Remember that support can come from unlikely places. While motivations for becoming involved in environmental education may differ, the collective momentum can be what is needed to start, or continue, environmental education in your faculty.

SUPPORT EXISTING VISIONS

Identify messages about the environment or sustainability communicated by your institution to the community. Often mention can be found about the environment or sustainability in a university's vision statement, institutional goals or mandate, master plans, policies, or reports demonstrating your university's commitment to advancing sustainability through its programs and infrastructure. These documents may provide support for developing an environmental education program in your faculty of education; administrators are often looking for ways of demonstrating their commitment to an institution's goals or mandate.

Since 1990 many institutions of higher learning have signed the Talloires Declaration, committing their university and colleges to advancing environmental/sustainability principles. See if your institution is registered at: ***http://www.ulsf.org/programs_talloires_signatories.html#Canada***

COLLECT BASELINE DATA

Another starting point for building support for environmental education can be through the collection of data on attitudes, expectations, and behaviours of faculty, staff, and students in terms of sustainability or environmental learning. Student surveys can provide baseline data on their needs, expectations, or starting points for environmental education. For example, a survey may help determine if students are aware of the Ministry of Education's policy on environmental education, and whether they want environmental education to be an integral part of their program. (Examples of assessments of teacher candidates' environmental or ecological literacy can be found in Esa, 2010; Puk & Stibbards, 2010; and Yavetz, Goldman & Pe'er, 2009). A better understanding of your faculty's physical site can also provide a motivating source of data: How many thousands of paper copies are made each year in your program or department? How many kilograms of garbage are being taken to landfill? How many kilowatt hours of electricity are being used annually? This type of information not only helps assess the level of environmental learning in your faculty but can also help motivate faculty and others into action.

BE THE CHANGE

The behaviour that you can most easily change is your own. Start by being an open and consistent advocate for environmental education in the areas that you have direct influence, ask questions or share ideas about sustainability in faculty and department meetings, and contribute meaningfully to key faculty and departmental documents. For example, include a statement on sustainability in all of your course syllabi, incorporate opportunities to take your students outside to learn, and highlight the sustainability measures you have taken in your classroom (e.g., location of recycling bins, working with only one set of lights, course readings on-line, etc.). Offer to give an extra-curricular workshop on environmental education for students, or design a new course in the area (refer Appendix E on page 89 for existing course syllabi). Ensure that environmental education and sustainability have a presence in your research projects in theory, practice, or both. By making environmental education explicit in your own work, you are more likely to find partners who share your interest or who would like your help to move in that direction.

The following statement is now found in most syllabi for initial teacher education courses at OISE: "OISE is committed to supporting the Ministry of Education's policy on Environmental Education, and creating a culture of sustainability in teaching and learning through paper and waste reduction, energy conservation and other initiatives. To learn more about Environmental and Sustainability Education at OISE, visit" ***http://www.oise.utoronto/ca/ese***

ESTABLISH A NETWORK

Locating even one colleague or staff member who shares your belief in the importance of environmental education is enough to start a committee or working group dedicated to environmental education. Be sure to include faculty, staff, and students; each partner will bring unique perspectives to the conversation, and will be able to contribute ideas specific to their areas of work or interest. While the length of initial teacher education programs can limit the duration of their involvement, students can be enthusiastic supporters of, and eager contributors to, environmental education when they are on campus. Collective student voices often resonate more loudly through faculties of education and universities than those of one or two faculty members. Also, be sure to look beyond your faculty of education for support; many universities now have sustainability committees to support projects and initiatives across campus.

BUILD CAPACITY OVER TIME

Even a small group can draw on its existing disciplinary expertise to raise environmental awareness and deepen support for environmental education in a faculty of education. This could translate into the integration of environmental education into courses, extracurricular events, or research studies. Promoting a systems-thinking approach to curricular planning and delivery is an excellent starting point, as every discipline connects to environmental education and all subject specialists can contribute in some way to the conversation. Establishing connections to existing curricular foci, such as social justice education and Aboriginal education, can be used to benefit both areas, simultaneously demonstrating support and modeling innovative entry points into these areas of learning. Offering professional development for faculty and staff in environmental education can enhance and deepen the infusion process. This might be as simple (and brief) as sharing useful resources or the results of successful learning activities, or more in-depth, for example, running a series of workshops or forming a Professional Learning Community to study environmental education together.

Building capacity over time can take on many different forms. Bringing in visiting scholars can be one way to highlight for faculty members the importance of environmental education; submitting a formal request that awareness and knowledge of environmental education be included in the hiring criteria of new faculty is another. Encouraging students to support your faculty's environmental education initiatives is critical to success. Creating opportunities for students to share their knowledge and take action is also important; acting as a mentor to individual students and student groups and clubs can be central to building community and momentum in the effort.

LOCATE FUNDING

Identifying sources of funding for environmental education projects and initiatives is key to building capacity within your faculty of education. Funding can come in many forms and often you will need to tap into multiple sources to support your environmental education plan. Once initial plans have been made, approach your department chair, chief administrative officer, or dean, for funding to support events, resources, or meetings. Furthermore, your campus sustainability office may be able to offer support or funding in some form. Ask for staff or student support to help with the workload; work study students or graduate assistants can be instrumental in running events, collecting baseline data, or maintaining a visible presence for environmental learning through social media. Look to external funders or partners to support specific projects or events, including environmental charities or foundations, local school boards, town and city councils, and local businesses.

CONNECT WITH EXTERNAL PARTNERS

Developing partnerships with community-based organizations will support you in capacity-building. Their expertise in specific environmental issues or approaches to environmental education can be instrumental in supporting your own learning and developing a supportive network. Many organizations are happy to offer workshops or teaching materials to teacher candidates as a means of introducing their organizations to them early in their careers. (For a list of potential partners, refer to the Resources Section on page 74).

SHARE YOUR SUCCESSES

From the outset, take every opportunity to document and share the work you and your partners are doing in environmental education within your faculty and the broader community. This may include photographing events, keeping minutes of meetings, and writing updates for your faculty's newsletter. Track your faculty's conservation efforts (such as reductions in paper use, waste loads or energy consumption), and, if possible, translate these observations into quantitative data for research purposes. Ask students to share their feedback or stories on how environmental education has impacted their work on campus and in schools. Over time, develop a communications plan to share environmental education events across the faculty and the institution, ensuring that the dean, administrators, and managers are on the distribution list. Also, be sure to use digital technologies to increase your environmental education initiative's profile; students can be instrumental in harnessing the power of social media to do this task. If possible, establish a web page or website to share information and resources, including event announcements.

GROWING SUPPORT FOR ENVIRONMENTAL EDUCATION AT OISE

Renewing a focus on environmental education has been ongoing in the Initial Teacher Education Program at OISE since 2008. It started simply with two OISE instructors sharing their ideas for improving learning opportunities in environmental education for teacher candidates over lunch, but quickly grew into the establishment of The Environmental and Sustainability Education (ESE) Working Group, which is currently a team of fifteen faculty and graduate students with common interests in this area.

Originally our focus was on providing workshops in environmental education to teacher candidates, but this grew over time to include the establishment of an elective course, partnerships with local school boards and community organizations, workshops embedded in methods courses, a full roster of co-curricular learning events, a graduate student conference, research studies, a growing collection of eco-art installations and professional development opportunities for faculty. Graduate and B.Ed. students have received training in environmental education program development through their participation in projects with the working group. Most of our teacher candidates now receive an introduction to environmental education as part of their general teaching methods course, and many have contributed to our sustainability campaigns on campus. This in turn has spawned a higher level of interest and support from across the OISE community, which now has three more groups that share a similar vision: the Sustainability Advisory Committee (working on sustainability across the institution), the Environmental Leadership Circle (a group for B.Ed. students), and the ESE Grad Student Group (which established a Community Learning Garden at OISE last year).

In 2012-2013 our team piloted an Environmental Leadership Certificate (ELC) with great success, demonstrating how keen teacher candidates are to have environmental learning as part of their B.Ed. experience. To obtain the ELC, teacher candidates must complete 36 hours of learning in environmental education by fulfilling three components: formal learning alongside an experienced environmental educator; co-curricular learning; and service learning in a school or community setting. Despite its rigorous requirements, over fifty students completed the ELC in its inaugural year.

When we started this work, we could not have predicted the breadth or depth that the ESE Infusion Initiative has taken in recent years. While it has not been all smooth sailing, it has been a rewarding endeavour that has been worth all of the effort put into it. Most rewarding of all is finding our alumni in environmental education leadership roles in schools and NGOs, and having them return to campus to share their initiatives with current teacher candidates.

For more info on OISE's environmental education initiative, please visit:
http://www.oise.utoronto.ca/ese

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University of Toronto

INTEGRATING ENVIRONMENTAL EDUCATION INTO INITIAL TEACHER EDUCATION PROGRAMS

Building support for environmental education across an entire faculty of education takes place over time, while integrating it into initial teacher education programs can have more immediate results. It only takes one faculty member to incorporate environmental learning into a pre-service course, and only one more to begin the integration of environmental education across a pre-service program. Modeling the integration of environmental education into your own courses is one of the best ways to demonstrate its connection to a variety of subject areas and big ideas, as well as embody a systems-thinking approach to teaching and learning (for more on this, refer to the Center for Ecoliteracy website http://www.ecoliteracy.org). Integration, whether done in one course or across an entire initial teacher education program, must be done thoughtfully and in meaningful ways; token references or last minute additions to existing courses and programs perpetuate the commonly held stereotype that environmental education is an add-on – a non-essential area of study. Eventually, environmental education needs to be integrated into all divisions of pre-service education, from primary through to secondary education, reflecting the Ministry of Education's policy framework (OME, 2009a) in this area.

Articulating your own perspectives about the environment and being clear about your political beliefs, values, and ethics can be an important part of curricular integration in environmental education, but it is equally important to open up a space for teacher candidates' voices, beliefs, and opinions. For some teacher candidates new to environmental education, this type of learning can be an eye-opening and emotional experience. Recognizing the role that the affective domain plays in environmental learning is important; fear, anxiety, and hopelessness are often experienced by students of all ages as they learn more about environmental degradation and crises. Teaching and learning from a place of optimism, empathy, and hope that includes positive and proactive environmental action can help to allay these fears and move teacher candidates and others towards further action and positive change. Discussing and modeling political agency and activism introduces them to the tenets of citizenship education, a core component of environmental education in the 21st century.

INTEGRATE WITHIN COURSES

In every teacher education course there are explicit and implicit connections to environmental learning. Curriculum and instruction courses in science and geography have a long history of including environmental education; other disciplines are still discovering ways to integrate environmental topics. For the latter, an easy way to begin integrating environmental education is to look for opportunities for teacher candidates to learn in, about, and for the environment (refer to Appendix D on page 88). This often-heard phrase reminds us to include positive pedagogical practices, such as experiential, community-based, and action learning in all courses. In addition, each disciplinary course has environmental topics that can be integrated into activities and discussions. In a business education course, for example, discussing the shift to triple-bottom line accounting (people, profits, and planet), or socially-responsible investing can be a starting point. In mathematics and economics education courses, life cycle analysis provides a fascinating glimpse into the real costs of consumer products (introduced by Leonard's (2007) engaging video *The Story of Stuff*.) Art education courses can include exploring the works of eco-artists (including Chris Jordan, Brian Jungen or Peter Menzel) to instigate critical thinking and inspire creative production.

In teaching methods courses, discussions of environmental education can be framed in terms of its frequently-used pedagogies (e.g., inquiry, experiential learning, or big ideas such as community, place, sustainability, or ecojustice), and contemporary issues (e.g., conservation, inequity, biodiversity, or quality of

life), all of which impact teaching practice. Educational psychology courses can delve into the importance of natural intelligence (Gardner, 1999) or the power of 'place' in learning, while sociology in education courses can draw upon citizenship education, environmental ethics, indigenous ways of knowing, and the importance of teaching respect for all life on Earth. Even practice teaching experiences can include environmental learning (refer to page 39 for a fuller discussion of this).

Sharing stories of teachers and students (from K-12) who have studied and addressed environmental issues can provide inspiring exemplars to encourage teacher candidates to include similar approaches in their practice teaching. (See the Resources section on page 69 for recommended videos, websites, and TED talks.) Mindful use of digital technology can be instrumental in sharing local and global stories about environmental education, and for capturing teacher candidates' successes and challenges. However, it is important to balance time learning through these technologies with time spent outdoors; learning in the natural environment is as full of wonders as the Internet, and allows for first hand, rather than a mediated, experience of the world.

At the University of Ottawa, primary/junior teacher candidates can choose to join the Global cohort to access the 'Developing a Global Perspective for Educators' program of study. This involves learning about environmental education, international development, social justice, and peace education in an integrated way in their teacher education courses. They are expected to do community-based service learning via a social action project as well, giving them hands-on learning as part of their program. For more information on this program, refer to: ***http://www.developingaglobalperspective.ca/category/headlines/***

INTEGRATE ACROSS COURSES

Ideally, all courses in an initial teacher education program include an environmental education component, thereby modeling the same practices recommended in the Ministry of Education's policy framework, and demonstrating environmental education's full integration. Yet, this is rarely the case; often it falls onto a few instructors to champion and model integration in their own courses. Some instructors are beginning to experiment with variations of integration by closely connecting learning from one course to another by sharing environmental education themes, concepts, learning activities and assignments across courses. Whether using multidisciplinary, interdisciplinary, or transdisciplinary models, this can be a powerful way to broaden and deepen teacher candidates' environmental learning, and model what full scale integration can look like. Although close communication and collaboration between instructors is required to support this type of learning, it offers advantages in terms of shared planning time, shared resources and co-assessment.

INTEGRATE WITH FACULTY INITIATIVES

Certainly one way to integrate environmental education more fully into initial teacher education is to make connections to the key initiatives of a faculty. For example, in many programs, one such initiative is the inclusion of Aboriginal education in pre-service education. Clear links with environmental education through explorations of indigenous ways of knowing about environment, place, and sustainability are epistemologically matched. In other programs, equity and social justice education is a primary focus; highlighting citizenship and eco-justice education (Martusewicz, Edmundson, & Lupinacii, 2011) in environmental education helps to add another layer to these areas of learning.

IMPLEMENT A VARIETY OF PATHWAYS

Currently, many faculties of education in Ontario are making progress towards a fully integrated environmental education program, but none have been able to reach full integration. Many faculties are designing and implementing a range of pathways into environmental education, including elective courses, integrated courses, co-curricular workshops, lectures, conferences and other events, certificate programs, and publications. (For an overview of current environmental education offerings in different faculties, see the chart in Appen-

dix B on page 78. For a more detailed description of these pathways into environmental education, refer to *Deepening environmental education across a faculty of education* on page 46.) While many of these activities can, and perhaps should, be encompassed within a mandatory core course in environmental education, this is not the current reality in Ontario's faculties of education. As it is, only a few faculties offer elective courses in environmental education, and in many programs this is a more feasible way to bring environmental education into teacher education.

One of the pathways OISE offers is an annual one day conference for graduate students in Environmental and Sustainability Education. It starts with a keynote speaker; representatives from Greenpeace, Evergreen and the Toronto District School Board have played this role in the past. There are many interactive workshops for students to choose from on topics such as food sustainability, school gardens, composting, biking, outdoor education, and eco-art education. The closing event features students from local Eco-teams sharing what they have accomplished in their schools - always an inspiring end! To learn more about this event, visit: ***http://www.oise.utoronto.ca/ese/ESE_in_Practice/OISE_Projects.html***

NURTURING CONNECTIONS WITH THE NATURAL WORLD

It is the first evening of classes in an undergraduate honours Early Childhood Education Program. The course, entitled *Investigation: Math, Science and Technology*, is traditionally anticipated with some trepidation by the students, precipitated by their own often not-so-positive early school experiences with math, science, and technology.

Having decided to start the course with a provocation to explore wonderings and curiosities about everyday familiar objects, the course teaching team, composed of three educators, invites the students to wander to the one of two tables on opposite edges of the room and to pick out a natural object (from collections of shells, rocks, seeds, nuts, insects, a bird's nest crafted from both natural and human-made materials, etc.) that interests them in some way. Invited to use their senses and the variety of tools and technologies at their avail (strings, magnifying glasses, rulers, jewellers' loupes, paper, writing utensils, etc.), they generate questions they are curious to investigate further. Some students choose objects they are unfamiliar with.

Others choose familiar objects, and their "challenge is to see with new eyes, to look as through [they're] seeing it for the first time" (Pelo, 2008, p. 127).

The teaching team quietly photographs these moments and takes notes, in anticipation of later offering these observations back to the group in the form of pedagogical documentation. Selections are made quickly but with care, and the room then becomes quite hushed. Magnifiers and measuring tools are used, sketches made, questions recorded, and theories formed. Nearly a half-hour passes in this state of mindful investigation and curiosity. Time. Quiet time. To nurture our sense of connection.

A student remarks with wonder:
"I've seen shells before. The beach is covered with them. But I've never really looked at one closely. It's amazing. It's so different when you see them somewhere else. I am learning so much about them by feeling them and looking at them closely. I want to bring some in for the kids in my class to look at."

Early childhood educator Ann Pelo (2008) remarks:
"Children's worlds are small, detailed places—the crack in the sidewalk receives their full attention, as does the earthworm flipping over and over on the pavement after rainfall. They have access to elements of the natural world that many adults don't acknowledge. When we, like the children, tune ourselves more finely, we find the natural world waiting for us" (p. 124).

We are working to create conditions that illustrate how, "embodied, sensual encounters with the natural world matter" (Pelo, 2013, p. 123). Context matters. In the daily lives of adults, time – and curriculum expectations– can be tyrants. We can become accustomed to rushing past items in our context without pausing to consider their nuances. If we do this often enough, might we lose the ability to really look, really investigate these things that have almost become invisible? As educators, if we stop wondering, stop noticing, stop developing relationships with the substances and objects in our world, might we also stop children's wondering, noticing, and relationships with the world?
To (re)-awaken this sense of curiosity takes time – time that invites us to (re-)build relationships in a "more-than-human" world (Abram, 1996). As the title of our course suggests, to nurture that sense of curiosity, it may be time to foreground the investigation and in its service, draw on the maths, science and technology - turning curiosity into emergent curriculum.

Randa Khattar, Karyn Callaghan and Will Letts, Charles Sturt University

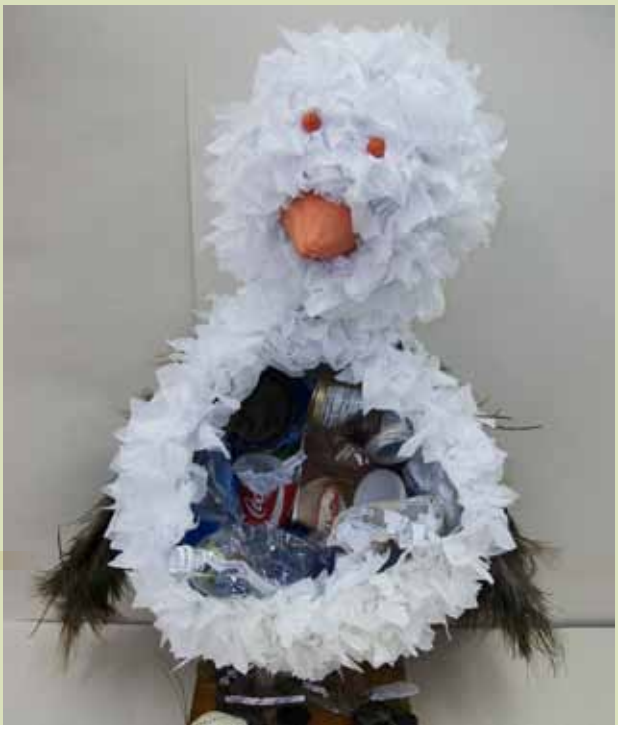
ART AND SCIENCE AND THE ENVIRONMENT

About three years ago a few education members of the School of Education at Nipissing University discovered that they were giving similar integration assignments to the same Junior/Intermediate teacher candidates; these assignments involved not only blending subjects, but also making constructions using recycled materials to support environmental education. In an effort to combine assignments and incorporate sustainable practices, the instructors created an ArtSci integration project for them. Each group chose a science topic for which they created an STSE (Science, Technology, Society, and Environment) organizer, built an art construction based on the science topic out of recycled materials, and wrote a collaborative reflection about the experience.

The groups chose a range of topics suitable for Junior/Intermediate learners, and created delightful constructions that not only helped teach each topic but also included the STSE organizer details. Some of the constructions focused on human impacts on the environment from the grade 4 science curriculum. The bird in this construction in this construction (pictured on the right is made from recycled materials and its belly is full of 'garbage'; learners can retrieve bits of 'garbage' that contain information about STSE issues related to this topic. Other teacher candidates focused on more general environmental phenomena, such as light and sound; one project involved the construction of a telescope to demonstrate their learning in this area. Learners could look through an aperture near the bottom of a re-used milk carton and view STSE information on each of the four detachable spinning disks. Another construction demonstrated an innovative way of looking at the food chain, using various re-usable containers to take a 'nesting doll' approach to the topic. (The first step was a small food tub representing the sun; it was housed inside a larger tub decorated to look like grass. These were found inside of an even larger tub that looks like a deer. The deer was found inside of a shoebox built to look like a bear and the final stage was a human depicted in a paper storage box, thus illustrating the food chain. The STSE info for this construction was found underneath the lids of each compartment.)

In their group reflections, teacher candidates included comments about integration in general, blending art and science specifically, and shared ideas about the practicalities of doing a similar project in a school setting. Regarding environmental education specifically, most mentioned the challenges, and enjoyment, of creating their constructions with as many recycled materials as possible, and stated they would strive to continue that practice in their future classrooms. Overall, this assignment impacted our practice and program positively; the teacher candidates learned a great deal from this experience, and colleagues approached us to implement similar projects in the future.

Liz Ashworth and Astrid Steele,
Nipissing University



USING THE COMMUNITY AS CLASSROOM

Much has been written in recent years about the power of expanding learning beyond the four walls of a classroom; this applies to adult learners as well as it does to K-12 students. Often encompassed within community-based or place-based education (Gruenewald & Smith, 2007; Sobel, 2004; Stone & Barlow, 2005), it advocates for taking learners out of the classroom and into their own communities to learn in and about the natural and built environments that both frame and inform their lives. This provides a pedagogical space within which to integrate different subject areas and ground learning in real-life experiences and challenges. Place-based education provides students with unique opportunities to learn how to identify and work towards solutions to relevant and real world problems, and become active citizens in their own communities. Many universities are recognizing the power of this approach by establishing service learning opportunities for students in all disciplines (Seifer & Connors, 2007). The following strategies can be used in pre-service courses to incorporate the main principles of community-based and place-based education to deepen environmental learning.

Teacher candidates at the University of Ottawa have the opportunity to do an optional practicum at the Kitigan Zibi First Nations community in Quebec. During this time they are immersed in indigenous ways of knowing in relation to education and the environment. Amongst other teachings, elders help them learn about their respect for nature, their relationships with the land, and sustainable food practices. In exchange the teacher candidates have helped native students with science learning, and created learning resources that feature indigenous perspectives on the environment.

MODEL COMMUNITY-BASED LEARNING

One of the best ways to encourage teacher candidates to take a community-based approach is to follow such an approach in your own courses. Aim to take teacher candidates outside to learn on a regular basis. Community-based teaching-learning activities may include: a math learning trail around the campus; photographing, painting, or drawing historic buildings; discussing community concerns with elders in places of significant indigenous heritage; walking the bank of a local river to learn its stories. The community-based approach also provides opportunities for instructors to listen to teacher candidates' questions about the environment, and to plan and take action on pressing local environmental issues.

MAKE ENVIRONMENTAL EDUCATION EXPERIENTIAL

Elementary and secondary students are not the only ones who enjoy an experiential approach to learning; many teacher candidates prefer it as well. This approach involves learning from direct experience, often as part of real world learning activities. Including experiential forms of learning in initial teacher education models how to reach a wider range of learning styles, and takes a more holistic approach that involves "the heart, the hands, the head and the spirit" in learning (elements identified by the Center for Ecoliteracy (n.d.) as the competencies for sustainable living). Combined with reflective practice, experiential learning is a powerful pedagogical approach that makes environmental education come alive.

Natural Curiosity (The Laboratory School at the Dr. Eric Jackman Institute for Child Study, 2011, OISE/UT) is a guide written to support experiential, inquiry-based, and integrated approaches to environmental education. Full of relevant and real-world examples of environmental learning from elementary schools, it is an excellent resource to share with teacher candidates to demonstrate the power of environmental education in connection with community-based learning.

FOCUS ON INQUIRY

Inquiry-based learning is a hands-on, minds-on approach to education in which students observe and explore the world around them; should be formulate questions; investigate phenomena; reflect on their investigations; and critically assess their findings.

Teacher candidates in the Intermediate/Senior Biology course at Trent University use inquiry-based learning as a way to learn that observation of nature leads to questions, and questions lead to inquiry. Photography is used to observe and record one feature of the natural world that they encounter on a daily basis; their photos are complemented by textual and image-based observations, comments, and questions. Their questions drive individual research into the living thing, ultimately informing the basis for a unit plan.

As an active, student-centred form of learning, inquiry-based learning brings together an integrated curriculum with collaborative and community-based learning, and creative and critical thinking, all of which contribute to teacher candidates becoming reflective, lifelong learners. Inquiry-based learning can be a meaningful way to engage and immerse teacher candidates in any subject area and begin building connections to the communities in which they live.

TAKE IT OUTSIDE

Making initial teacher education community-based and experiential is a natural way to get teacher candidates outside, itself an integral part of environmental education. Outdoor experiential education and nature-based learning should be incorporated through all subject areas so that teacher candidates are able to apply it with their own students in practicum. Many pre-service educators believe that teacher candidates are just as susceptible as children to *nature-deficit disorder* (Louv, 2005) resulting from a lack of connection to the natural world, and therefore need a better balance of time spent learning outside with that spent inside a lecture hall or classroom. Sharing stories of the successful integration of nature-based learning into classrooms and bringing natural elements into your classroom (Weston, 2004) are useful ways to introduce the value of this approach in environmental learning (Back to Nature Network, 2013) and it is ideal to model outdoor experiential education by taking your teacher candidates outside. Working towards a combination of shorter but repeated local experiences around campus or the community and extended field trips to outdoor education centres or nature areas is ideal, as it provides opportunities to learn outdoors in both built and natural environments. Working with outdoor education specialists to design and facilitate field trips can help to align these activities with curricular topics and pedagogical principles, and ensure a quality experience for your students. Outdoor learning can take place year round – it is a wonderful way to observe change over time in natural systems. As always, be mindful of accessibility issues to ensure that all learners can participate fully in environmental education.

Brock teacher candidates frequent the Bruce Trail, only a 150 metre walk from the Faculty of Education, to learn how to conduct a simple nature walk; they learn how to facilitate ecological learning and model eco-pedagogy while attending to some of the practical challenges of taking children outdoors. Teacher candidates at OISE enjoy the opportunity to go outside as part of their art education classes to draw, photograph, and interpret public art with environmental themes, all in the heart of the city.

FACILITATE ACTIVISM

In order to fully model environmental education in a teacher education program, awareness about and opportunities for environmental stewardship and activism should be included. This requires an awareness of the relationship between education and advocacy, as described by Jickling (2005). Making space for multiple perspectives, controversy, complexity, and ambiguity is important, as are discussions about the assumptions, ethics, values, inclusions, and exclusions of local and global environmental activism. Learning from the actions of others can be both inspiring and instructional; examples of age-appropriate advocacy and activism can be discussed and analyzed, from letter-writing, eco-poetry, and artwork to fundraising and protesting for environmental causes. Involving teacher candidates

in culminating projects related to environmental advocacy can be one way of introducing the challenges of an activist praxis; this could involve raising awareness about a local or global environmental issue, ameliorating environmental degradation in the local community, or being involved in a service learning project with community partners. Working with community organizations to support environmental activism can be one way to get teacher candidates involved in contributing to existing projects, and provide much-needed support to the sponsoring organization. Discussing and reflecting individually and as a group at the end of an activist project is a valuable means of sharing learning with others and working through the challenges of praxis as an environmental educator.

LEARNING GARDENS: A PRE-SERVICE EDUCATIONAL LEADERSHIP INITIATIVE

The School of Education and Professional Learning at Trent University offers teacher candidates a seventy-five hour learning garden alternative practicum program designed to help them become leaders of environmental initiatives in schools. The program was devised and is delivered in collaboration with the Peterborough Garden Network and Ecology Park, non-profit organizations committed to environmental education. Several partner schools provide sites for teacher candidates to conceptualize and build learning gardens. The program was offered for the first time in the spring of 2013 and it represents the latest development in an on-going effort to infuse environmental education into Trent's consecutive B.Ed. program.

The program was devised to support teacher candidates who are passionate about the natural world and looking for guidance on how to engage and inspire teachers and students as it involves several workshops about how to build capacity for constructing and sustaining gardens in local schools. To complete the alternative practicum, teacher candidates participate in the workshops, review current research in the field, develop curriculum, and provide leadership in local schools that are partners in this initiative.

The first time we ran the practicum, we recruited a cohort of fourteen teacher candidates who were placed in local schools. In addition, several faculty members used the alternative practicum as a subject for research. Approval to use the participating students as research subjects has been approved by the university's ethics committee.

Through this work we hope to better understand the motivations and expectations of participants and the choices they make and challenges they face when trying to implement learning gardens. For example, a teacher candidate noted that: "You do not need gardening skills or knowledge about food to do this placement. You can learn a lot about food and gardening in a short period of time through research, curriculum development, and volunteering!" Another participant stated that: "through the research I did, I now understand how important it is to teach children where the food they eat comes from and how we can contribute to what we eat, how we eat and growing our own food." A teacher candidate commented about their role in teaching about food sustainability: "It's important that students know where their food comes from and the role it should play in their everyday lives. They also need to learn that they can contribute and control how they eat, what they eat and how gardening can enhance their lives - both at school and at home."

Ultimately the program blends theory with practice and offers participants placements where they can enact educational leadership. A participant commented on their practicum experience: "It is an excellent learning experience for teachers. You get to be very independent with the program and take it in any direction you want to. There are so many different things you can do/practice." Faculty are offering the learning garden practicum again in 2014.

Kelly Young,
School of Education at Trent University

CONNECTING WITH PLACE IN INITIAL TEACHER EDUCATION

Brock University offers an elective in outdoor/environmental education which surveys various currents of environmental education including place-based education; we use this current to explore the relationship between place and being. Teacher candidates complete an activity that requires them to interrogate the interpretive stances they use to understand the world, and in doing so, explore the complex and interconnected relationship between place and being which sets the foundation for becoming an ecologically literate citizen. As an antidote to teacher education courses where they are bombarded with the more technocratic aspects of becoming a teacher, this course allows for a more contemplative approach, and in doing so cultivates a more creative and poetic way of teaching and being human.

Early during the term, teacher candidates are taken on a field trip to Spenser Falls, one of many beautiful waterfalls punctuating the Niagara Escarpment. We take an hour-long hike along the Bruce Trail, examining some of its geological, biological, and ecological features. They are surprised and amazed such beauty can be found so close to the industrial heartland of Canada. One activity requires them to focus intently on a natural entity, such as a tree, insect, or river, developing what is referred to as a phenomenological stance. They are invited to describe the entity using as many of the senses as possible and record these descriptions in written, auditory and embodied forms, sharing narratives, poems, artworks, and even dances as a way to reflect deeply about this encounter with another entity.

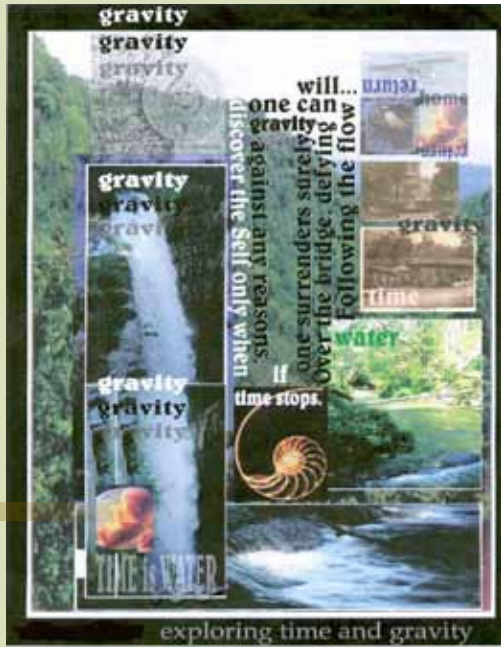
"The way we connect with places can be a mystery. The shore of big water is my healing place--my place where I come to think, to discard the stuff that isn't important, to find out my true feelings. Water is my sense of place and being." Brock teacher candidate.

Later in the term, teacher candidates share their developing senses of place and being with their classmates. For many, this is a challenging experience, requiring them to interrogate how they come to know, how their interpretive and perceptual frameworks shape their understandings and experience, and ultimately who they are as human beings.

Toward the end of the term, they are required to share their Developing Sense of Place and Being presentations with their peers. As part of this they are required to step back and ask how it is they came to understand and know their entity, and what assumptions they had about it initially. How did they come to be attracted to their natural entity, and what remains mysterious about it? They are asked to consider the interpretive frameworks at play in their understandings, and come to appreciate that they have multiple ways of knowing at their disposal, and that these affect who they are as human beings.

The experience is profound on many levels. It is not uncommon for students to experience strong emotional feelings as a result of the course and this activity. They develop lasting friendships and begin to appreciate a more poetic way of being in place.

Douglas D. Karrow,
Brock University



OUTDOOR AND EXPERIENTIAL LEARNING IN INITIAL TEACHER EDUCATION

Queen's University has been running the Outdoor & Experiential Education (OEE) program since the late 1960s when our Faculty was established and began offering a Bachelor of Education Degree. The OEE program consists of three courses that must be taken amidst other required courses in the initial teacher education program. Acceptance the OEE program requires teacher candidates to apply and be chosen from a dedicated group of students who are committed to pursuing some avenue of outdoor or environmental education in their future teaching career. Once chosen for the program, they arrive early in the school year to complete a field camp where they begin to form a learning community. Over the course of the year, teacher candidates typically form into a strong learning community that continues even after graduation.

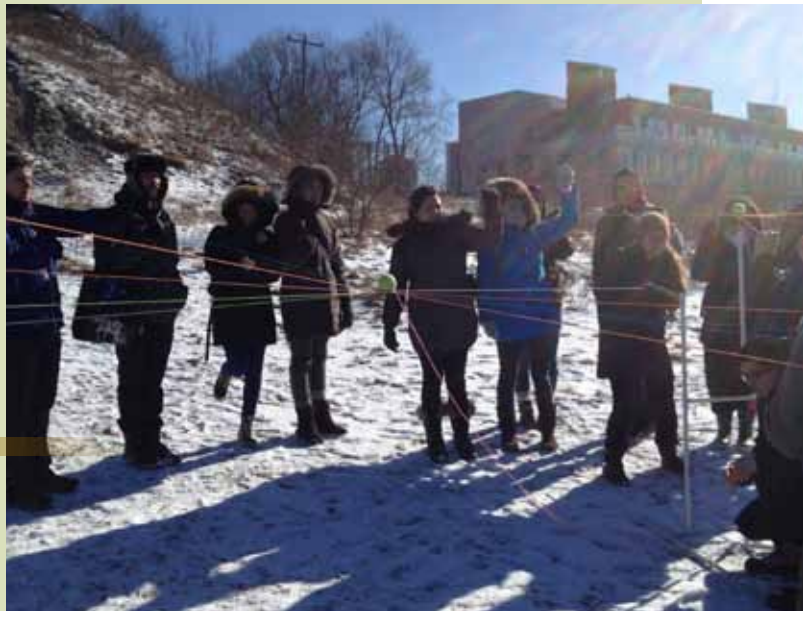
EDST 417 – Modeling an experiential approach, this course consists of a field camp and two related practicum experiences. Typically one practicum experience is held at an outdoor education centre or integrated program within a public school system, while the other practicum is more varied in scope; sometimes teacher candidates travel abroad for this alternative experience.

EDST 442- This course is based upon exploring the various approaches that can be used to introduce outdoor/environmental and experiential education. Approaches range from integrated programs to forest schools; from expedition-based curricula to Earth Education curricula and Project Wild; from Waldorf education to private schools to clubs with outdoor programming. This course is rooted in exploring the theory and context of the various approaches environmental-based programs have taken at different times in history.

FOCI 260 – Teacher candidates visit various experiential education centers and programs in this course. Half of the classes are organized by the instructor, and the other half by the teacher candidates, allowing for their interests to take precedence. In the past the course included visits to water and waste treatment facilities, organic farms, heritage seed sanctuaries, and Native sweat lodges. Food is often shared as part of the classes, allowing teacher candidates to experience the importance of bonding through food preparation and consumption.

Other courses related to environmental education can be taken by teacher candidates who are not in the OEE program. These courses have held various foci over the years, like Open Country Exploration and Out of Classroom Learning. Both of these courses, as well as those of the OEE program require teacher candidates to become involved in practica and extra curriculum activities that focus on providing first hand experiences with nature and teaching in outdoor settings.
For more information on the OEE program and alumni comments please see: http://educ.queensu.ca/oee

Zabe MacEachern,
Faculty of Education, Queen's University



ROOTING ENVIRONMENTAL EDUCATION IN PRACTICA

One of the frustrations of environmental learning (and arguably all learning) for many teacher candidates is the perceived disconnect between what they learn in their courses on campus and what they experience in classrooms during their practicum placements. Many will be excited about the possibilities for environmental education in schools and teaching, and then be disappointed when little evidence of this is seen in their host classrooms. Giving teacher candidates a realistic idea of what they may (or may not) find in schools before they leave campus is one way to prepare them to advocate for environmental education; connecting them with community partners like Ontario Ecoschools, Learning for a Sustainable Future, or the Canadian Wildlife Federation, for example, can help them find the support and resources they need to introduce associate teachers to environmental learning. Having a practicum-related assignment, such as teaching an environmentally-related activity or lesson, built into a course syllabus can help to provide many teacher candidates with the motivation they need to include environmental learning experiences in their teaching placements.

Developing specific placements with an environmental education focus is optimal, as these can provide invaluable mentorship in community-based, age-appropriate environmental learning. To build a network of these teachers, ask principals in host schools to identify their environmental 'champions' or 'Ecoteam' leaders. Contacting local school boards or Ecoschools program coordinators to identify teachers or curriculum leaders who are exemplary environmental educators is a good way to start building your network. Teaming key educators with keen teacher candidates who can support the development of environmental curriculum and instruction will strengthen these networks. While in their practicum placements, teacher candidates may, among other activities, lead a school's EcoClub, organize Earth Day events, or design new units on environmental themes.

Inviting associate teachers back to campus to share their environmental education expertise and experiences with a larger group will support the development of their leadership skills. Building a master list of these associate teachers, and communicating with them regularly to encourage and support their work, and share news and best practices will develop over time their capacity as environmental education mentors.

The Ontario Ecoschools program has over 1200 schools certified as Ecoschools as of 2012/13, signalling these schools' active involvement in environmental education and sustainability initiatives. This non-profit organization can provide introductions to schools across the province interested in partnering with faculties of education on environmental education programs or placements. For more information, visit ***http://ontarioecoschools.org/***

LEARNING FROM THE LAND AND INDIGENOUS PEOPLE

As an Indigenous educator (Anishinaabe – Bear Clan from Kitigan Zibi First Nation), I often have teacher candidates approach me about including Indigenous knowledge in their curriculum plans. Since all teacher candidates in the School of Education at Trent University, where I teach, are required to find a site for an alternative learning opportunity for three weeks in May, I felt this would be a great opportunity for in-depth learning. *The Learning From the Land and Indigenous People* alternative practicum placement was born in 2007, and has been delivered every spring since then.

Since the worldview of Indigenous peoples is connected to the environment and since there is a global/universal need for all students to learn about the state of the planet, I felt a land-based program would serve the dual purpose of learning about Indigenous people while instilling an ecological consciousness in teacher candidates. This placement provides them with the knowledge, motivation, and skills to facilitate the transmission of an environmental consciousness to their future students. They spend seventy-five hours in my home community of Burleigh Falls and Lovesick Lake to experience land-based activities and develop a connection to the environment and an awareness of Indigenous culture (specifically Anishinaabe). The placement assists teacher candidates in establishing inclusive learning spaces by being better able to teach to and about Indigenous people. These objectives assist teacher candidates in implementing the *First Nation, Metis, Inuit Education Policy Framework* (2007b), and the *Acting Today, Shaping Tomorrow: Environmental Education in Ontario Schools Policy Framework* (2009).

Through an intensive evaluation process that includes daily student reflections and a pre/post-evaluation questionnaire, teacher candidates indicate that this placement is immensely enjoyable and valuable as a learning experience. Many define it as the highlight of their teacher education program. They identify connections made on multiple levels: within themselves, with the land/environment, within the teaching and learning group, with their teaching practice, and with Indigenous culture. Perhaps the experience can be summed up by one who wrote: "I came away with a better understanding of Anishinaabe culture as well as a new yet familiar approach to teaching and learning. This was a rich experience – a lot was accomplished in a short time. I feel full of possibility with respect to future teaching. I also feel connected with local Anishinaabe culture and the land. I now have new skills so that I can teach about Anishinaabe and First Nations peoples to my classes in a respectful and engaging way."

Nicole Bell,
School of Education, Trent University

COLLABORATIVE ENVIRONMENTAL LEARNING BENEFITS ASSOCIATE TEACHERS AND TEACHER CANDIDATES

In 2012-13 two OISE faculty members partnered with the Ecoschools Instructional Leader from the Toronto District School Board to conduct research investigating the potential of using school-university partnerships as a form of professional development in environmental education (Inwood, Forbes, & Miller, 2014). A mixed methods approach was used to better understand the collaborative learning that takes place between partners of associate teachers and teacher candidates during practicum placements and internship; OISE was looking for ways to support the Ministry's environmental education policy and the TDSB was struggling to provide professional development in environmental education to teachers in their four hundred Ecoschools. As part of the study, data was collected and analyzed over a year about the partners' curricular planning, activities, and pedagogical strategies for learning in, about and for the environment, both locally and globally.

From the perspective of both novice and experienced educators, collaborative professional development proved to be an excellent means of enhancing their knowledge and encouraging their practice of environmental education, resulting in more frequent delivery and richer environmental learning experiences for their students. A range of lessons and learning activities took place over the four weeks of the project. For example, primary students learned about the lives of animals and trees; junior classes studied food production and security, upcycling, resource extraction, marine biodiversity, and community gardening. Intermediate and secondary classes investigated consumerism, globalization, life cycle analysis, the impacts of oil and gas production and their own ecological footprints. Learning about local and global impacts was balanced in age-appropriate ways; for example one grade six class learned about the biological richness of the world's oceans in relation to local wetlands, all before broadening their understanding of human impact on these bodies of water.

It was not surprising that the teacher candidates learned much from their mentors. According to one B.Ed. student, "My associate teacher's strong passion and commitment to environmental and sustainability education and social justice education provided me with an amazing opportunity to learn about different issues, and different strategies to facilitate environmental education learning in the classroom." However the associate teachers were just as clear that their partnerships were a highly satisfactory form of environmental learning. On this topic one teacher wrote: "Being involved in environmental education has refined my pedagogy in distinct ways...the spring internship was instrumental in making me seek out strategies and skills to deal with complex environmental issues in the classroom." Many associate teachers commented on the positive effects of the partnerships on their teaching practice, such as a greater impetus to include environmental education in their classes, an increased frequency of taking their students outside, or an enhanced level of enthusiasm for supporting students' environmental activism.

The research team learned that the strategies that best support environmental learning between these partners include ensuring adequate planning time for curricular development; providing resources in environmental education; encouraging co-teaching and co-reflection between partners; and modeling content and pedagogies that have been introduced on campus. The team also learned about the important role that school board leaders and university faculty can play in encouraging these relationships, and plan on implementing more partnerships in future.

Hilary Inwood, OISE, University of Toronto

GROWING PARTNERSHIPS

Developing partnerships with other organizations committed to environmental education can be an excellent means of expanding opportunities in this area for teacher candidates, as well as bringing in expertise to share with faculty. For those working with limited budgets, it is also a way to diffuse the costs associated with designing and implementing environmental education in a faculty of education. Potential environmental education partners can be located in your community by talking with others engaged in environmental education, joining a support organization (refer to the Resources section on page 74 for a list of pre-service partners and Ontario support organizations in environmental education), or by simply conducting an Internet search for groups in your region.

PARTNERING WITH SCHOOL BOARDS

School board partners can provide expertise and exemplars in environmental education to share with teacher candidates. School board instructional leaders, curriculum consultants, and facilities managers in environmental education, outdoor experiential education, or sustainability are excellent contacts for exchanging ideas, sharing resources, or co-developing workshops or events. Inviting these leaders into your courses to share their expertise and experiences with teacher candidates is one way to start, and it might provide possible networking opportunities for them. Offering to host board meetings or events in environmental education at your faculty of education in exchange for invitations for teacher candidates is an excellent way of expanding your range of co-curricular events. Co-sponsoring keynote speakers and conferences with school board colleagues helps defray their costs. In your courses, highlight exemplary local schools and teachers doing environmental education. Keen teacher candidates can be paired with host teachers active in environmental education to accomplish similar aims; each can support the work and learning of the other and in doing so grow professionally. And if possible, use local schools as the basis for research studies into environmental education, deepening all participants' understanding of environmental education theory and practice.

PARTNERING WITH NGOs

Working with non-governmental organizations (NGOs) specializing in environmental education can also offer benefits for faculties of education. There are many local, regional, provincial, national, and international NGOs with expertise in different aspects of environment-related learning. Examples include NGOs focused on nature-based, adventure, and outdoor experiential education; schoolyard greening; citizenship education; food pedagogy; conservation; and sustainability (refer to the Resources section on page 74 for a list of organizations working in environmental education). Some of these organizations have wonderful learning field sites and centres with a range of unique facilities. Field trips to these sites can present meaningful and memorable ways to integrate experiential learning into your program. There are also NGOs that offer access to environmental education via websites, digital applications, and online learning. These organizations provide myriad text and multimedia-based resources accessible to teacher candidates while on campus or during practica. Digital learning technology can be of great benefit in this regard, allowing all teacher candidates to access websites and collaborate with other learners from around the world. Most organizations are happy to partner with faculties of education as a way to share their expertise with teacher candidates, and if invited, will often bring their workshops, talks, or events to campus. While some organizations may provide their services to faculties of education free of charge, others may request an honorarium.

PARTNERING WITH SPONSORS

Collaborating with sponsors can be advantageous for initial teacher education programs given the reduced budgets that faculties of education have experienced over the last decade. Sponsors can provide much needed funds to support existing programs and develop new initiatives in environmental education. Sponsorship can come from charitable organizations, foundations, individuals, or businesses for environmental programming, field trips, sites or research and can take many forms, whether it is fiscal, material, site-based, or extra sets of hands. Sharing the faculty's interests with potential sponsors can be beneficial in getting the support you require, as is ensuring that your colleagues and administrators are on side with creating partnerships. Carefully consider your partnerships as some may view getting corporate support, particularly from large corporations, as a form of green-washing.

Learning for a Sustainable Future (LSF) works with faculties of education and teacher candidates across Ontario delivering professional learning sessions to explore ways to evolve teaching practice from the dominant, traditional paradigm shaped by teacher driven knowledge transfer to transformative learning strategies informed by an understanding of how people learn best. These workshops build on LSF's Connecting the Dots document modelling the 7 key learning strategies that support environmental education, citizenship and sustainability, as well as the Resources for Rethinking database (www.r4r.ca) of over 1,000 peer-reviewed, curriculum connected classroom resources.

ECO-MENTORING PROGRAM AT TRENT UNIVERSITY

Trent University is home to a rich partnership involving Camp Kawartha and Fleming College. With support from the Gainey Foundation, a new Environment Centre has been built on Trent's campus by the *Sustainable Building Program* at Fleming College. The Centre is run by Camp Kawartha staff and provides training to Trent teacher candidates as well as programming to regional schools and the broader community. The building is one of the most sustainable in Canada.

Since 2011 teacher candidates in the consecutive B.Ed. at Trent University have been offered the opportunity to participate in an extracurricular eco-mentoring program. This is a collaborative initiative involving members of faculty, staff from the Camp Kawartha Education Centre, and partners from the local community and beyond. By drawing on the collective expertise and enthusiasm of members of faculty, camp staff, local teachers, an elder from a nearby First Nations reserve, and experts in the greening of school grounds, the program offers teacher candidates a rich variety of experiences. The involvement of partners from outside of the School of Education and Professional Learning gives the program a distinctive flavour and models the opportunities available to teachers when they reach out to local experts.

The program comprises four, three-hour workshops held on Saturdays during the autumn. Each workshop has a theme:

• *Nearby Nature* - One of the most important ways to help students develop a sense of advocacy for the environment is to provide them with rich encounters with the natural world during childhood by exploring biodiversity. In this workshop, we review a variety of hands-on strategies and techniques for using nearby nature areas as venues for environmental education. The intent of this workshop is to explore ways to inspire students to adopt an ethic of care and stewardship for their local environment.

• *Removing Barriers* - Finding the time to teach environmental education as well as meeting all other curriculum commitments can be overwhelming. This workshop examines how to reduce/remove some of the barriers to delivering effective environmental education. We also discuss how to obtain administrative support for outdoor excursions, where to access funding and what local resources may be available to help teachers deliver environmental education in their own community.

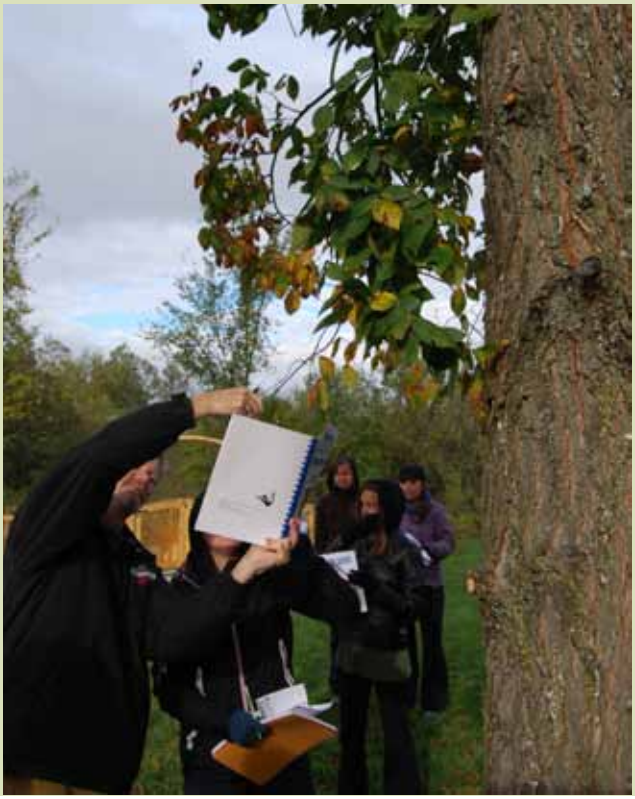
• *Inspiring Hope* - The challenges facing the planet can be both frightening and daunting to children. This workshop explores how we can provide learning opportunities that are both age appropriate and inspire hope for action.

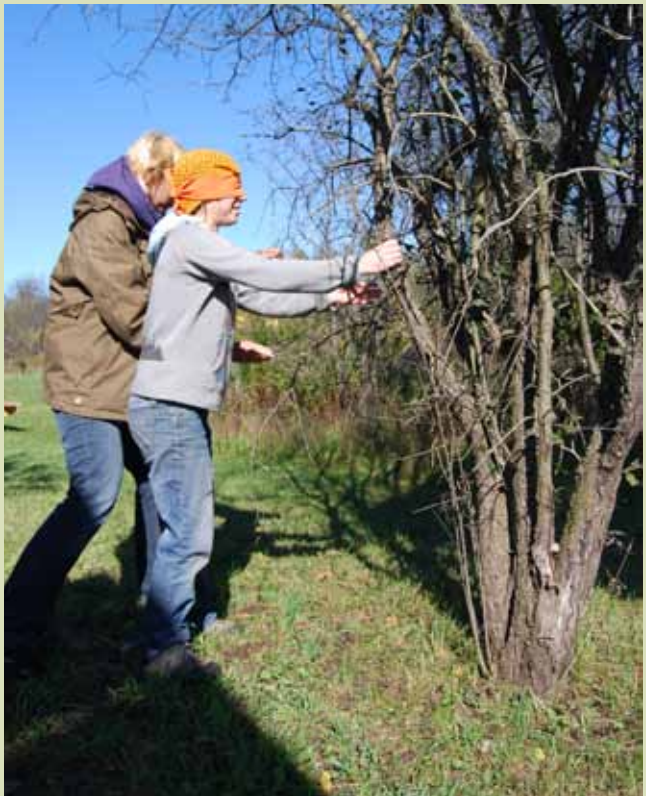
• *Cross-curricular Connections* - With a jam-packed curriculum, it is not surprising that teachers often say: "I'd love to do environmental education but I just don't have the time." This workshop shows how an integrat ed approach to environmental learning can effectively cover a number of expectations in a variety of subject areas. As a specific example, we show participants that a combining Indigenous and environmental education perspectives can enrich both.

To receive a certificate in eco-mentoring from the School of Education and Professional Learning and Camp Kawartha, participants have to demonstrate that they have implemented ideas from the program. They may do this during their final school-based practicum or during the three-week Alternative Practicum that comes at the end of the B.Ed. program. An honour-based system simply requires participants to submit a short report on how they have infused environmental perspectives into their teaching, involved themselves in extra-curricular activities with an environmental theme, or designed a suitably themed teaching resource.

The program was developed in response to an urgent perceived need. The program is not credit-bearing and, by working outside of the confines of normal university planning procedures, it was possible to start running it soon after it was first conceived. Faculty contribute to the program voluntarily and receive no teaching hours for it. The director of Camp Kawartha gives his time freely and his staff and other contributors receive a modest honorarium for their involvement. The program has been funded by small grants from the School of Education and Professional Learning and the Biodiversity Education Awareness Network. In addition, The Frost Centre for Canadian and Indigenous Studies funded a graduate research assistant in 2013 to help gather research data on the program.

Paul Elliott,
Trent University
For more info on this program, refer to Bell, Elliot, Rodenburg and Young (2013).





DEEPENING ENVIRONMENTAL EDUCATION ACROSS A FACULTY OF EDUCATION

Many faculty members in Ontario's initial teacher education programs are designing and implementing a variety of pathways into environmental education as a means of deepening environmental learning throughout their programs. This approach provides different ways of bringing a presence for environmental curriculum and instruction into programs already at capacity. The following outlines some of the different pathways used by initial teacher education programs in Ontario over recent years.

OFFER ENVIRONMENTAL EDUCATION COURSES

Some faculties of education in Ontario have chosen to create and offer elective courses in environmental education as part of their initial teacher education programs. This approach has proven to be an effective means of offering environmental learning to teacher candidates with an interest in developing their expertise in this area. (At the time of this writing, there are no Ontario faculties that offer a mandatory course in environmental education, however this may change with the revised initial teacher education curriculum in 2015.) These electives are offered in a variety of formats - in person and on-line, on campus and off, for credit or personal interest. Some of these electives focus more closely on a specific approach, such as outdoor experiential education, while others offer a broader range of approaches.

There are a range of innovative and important elective courses in environmental education offered in Ontario's faculties of education. For example, Lakehead University is offering an elective course in Climate Change Pedagogy in the winter of 2014. For sample syllabi from other elective courses in environmental education offered by Ontario faculties of education, refer to Appendix E on page 89 for the first time.

COMPLEMENT WITH CO-CURRICULAR LEARNING

Many of Ontario's faculties of education offer a variety of co-curricular, or extracurricular, events, workshops, lectures, and talks on environmental education in addition to elective courses as a means of engaging teacher candidates. These can provide an enriching way to learn about environmental education from diverse perspectives and allow for a broad introduction to contemporary practices in the field. Co-curricular learning events can be an excellent means of highlighting the work of local teachers, students, or community-based environmental educators. The establishment of reciprocal partnerships with environmental educators can present a low-cost of way of bringing in guest speakers to campus as well.

Balancing theoretical and pedagogical aspects of environmental education is an important part of co-curricular learning. Many teacher candidates want to learn strategies that can be directly applied during their placements. Asking workshop leaders to model the pedagogies they are recommending is one way for teacher candidates to experience the high level of engagement that is characteristic of environmental education. As you plan events over the course of the year, remember that these types of co-curricular activities are often attended by those teacher candidates keen to learn about environmental education, but can be missed by those who most need an introduction to this subject. Therefore, every effort should be made to actively include those learners new to environmental education; as well as those who may already be competent in this area.

DEVELOP AN ENVIRONMENTAL EDUCATION CERTIFICATE PROGRAM

Providing incentives that encourage teacher candidates to participate in co-curricular learning in environmental education programs is important if credit courses are not available. These incentives can help teacher candidates to document their learning and demonstrate their dedication to environmental education as part of their studies. Certificates can be tailored to align with faculty of education priorities and can

involve a range of course-based, co-curricular, or community-based activities which can help to develop students' environmental/ecological literacies and stewardship skills. Support from NGOs, school boards, and environmental organizations may help in the delivery of a certificate program and, in exchange, students can be asked to volunteer for these organizations as part of the certificate's requirements.

Inspired by Trent University's Eco-Mentor Program, UOIT's Faculty of Education has instituted the Enviro-Mentor Program in which teacher candidates engage in a number of seminars, workshops, practicum activities, and action projects focused on environmental education. This program was developed in conjunction with members of UOIT's Aboriginal Resource Centre and includes environmental education activities focused on Traditional Ecological Knowledge and Wisdom.

FACILITATE FACULTY PROFESSIONAL DEVELOPMENT

Urging faculty and staff members to engage in environmental education and sustainability practices is an important part of deepening environmental learning across a faculty of education. Certainly raising awareness about climate change and other environmental issues is part of this, as is encouraging faculty to integrate discussions about issues and environmental education more generally into all courses. Professional development activities may help to shift attitudes attitudes, and hopefully will lead lead to the implementation of sustainable practices in teaching and learning. Raising environmental awareness and providing opportunities for faculty and staff to adopt sustainable teaching practices can be one way to begin this process. Following up these activities by asking teacher candidates to do the same in their classes may encourage faculty members and staff to learn more about environmental teaching and learning.

BUILD ENVIRONMENTAL EDUCATION INTO THE FACULTY'S INFRASTRUCTURE

Ensuring that sustainability practices are in place and accessible to all members in a faculty of education is central to embedding environmental education; teacher candidates need to see that faculty are practicing what they preach. Working in conjunction with a university's facilities department is important in this, as staff should support or extend existing practices. Ensuring that recycling bins are in classrooms and public areas is just a start; supporting their proper and consistent use can be taken on as a project for a student eco-club. Bike racks, water bottle filling stations, battery recycling, composting, sustainable purchasing, and environmental artworks can all help to make sustainability more visible and effective. While changes to physical infrastructure can be costly, running campaigns to encourage more sustainable behaviours doesn't have to be. Posters, Twitter campaigns, or contests can be used to encourage faculty and staff to conserve water and energy, use sustainable transportation, protect local wildlife, or consume locally-produced food, to name but a few. Working with your institution's administrative staff to establish more sustainable purchasing practices may help increase the success of campaigns; for example, ensuring that copy paper is made from Forest Stewardship Council sources or recycled content, or that reusable plates and cutlery are used for meetings and events.

Ultimately universities need to move towards more innovative and ecologically sound models, examples of which are being realized at campuses around the world. One Canadian example of this can be found at the University of British Columbia. Through regenerative sustainability, UBC is attempting to improve environmental quality and produce net benefits for human and natural systems through its approach to physical infrastructure and curricular changes. (Refer to their website for more info: ***http://www.publicaffairs.ubc.ca/ 2012/01/03/regenerative-sustainability-from-damage-control-to-improving-the-environment/***

Some faculties of education are taking steps to demonstrate a fuller commitment commitment to embedding environmentally-friendly practices into teaching and learning at all levels. Some are creating outdoor classrooms that recognize the benefits of moving beyond the four walls of classrooms or lecture halls. Others are supporting the development of learning gardens which emphasize the role of plants, animals, and ecological systems in the environment. Still other institutions are designing and installing green roofs to simultaneously conserve energy, provide habitats for plants and animals, and inspire learning. While each of these activities can be viewed as small steps for a faculty of education, when taken together they can have a wider effect in the community.

SUPPORT ENVIRONMENTAL EDUCATION THROUGH CONTINUING EDUCATION

Developing a presence for environmental education in continuing education departments is important in expanding its presence in a faculty of education; this provides ongoing learning opportunities for alumni and other educators. Additional Qualification (AQ) courses can serve this purpose. In 2014, the Ontario College of Teachers intends to release the framework for a new series of AQ courses on environmental education that providers can choose to offer. Ensuring that these AQ courses are being offered at your university not only raises the profile of environmental education in a faculty of education, but can help to develop a network of active environmental educators in your local school board and community. AQ courses can be taught in person or on-line, further widening the potential audience for environmental education.

Digital learning environments provide myriad types of continuing education opportunities for teacher candidates and alumni to engage in environmental education. *Green Teacher Magazine* offers a series of free webinars on environmental education open to the public (and archived for subscribers; please refer to http://greenteacher.com/webinars/ for more info). Massive Open Online Courses (MOOCs) on topics such as sustainability and environmental studies are starting to emerge around the world; offering a MOOC can be a unique opportunity for a faculty of education to gain recognition as a leader in the field.

INVESTIGATE ENVIRONMENTAL EDUCATION THROUGH RESEARCH

To complement the deepening of environmental education across a faculty of education, faculty researchers may incorporate aspects of environmental curriculum, teaching, and learning into their research program. Since integration of environmental education into initial teacher education is still a relatively new area of study, there are many aspects that need investigation, analysis, and documentation. Keeping a journal of your progress can be the starting point for a case study of a faculty's deepening engagement with environmental education; contrasting this with others' work in this area in Ontario can help faculties better understand which strategies and practices are most effective. (For a brief introduction to some of the work currently being done by Ontario educational researchers in environmental education, refer to page 17.)

INTEGRATING ENVIRONMENTAL EDUCATION AT LAKEHEAD UNIVERSITY

Lakehead has a number of faculty members strongly committed to environmental education and the survival of the planet. We include environmental education across the program in a number of ways, and we are using the planning process for the revised initial teacher education program to formalize our commitment and work on including it more explicitly and in more places.

Lakehead offers a number of courses with an explicit environmental education focus. Our flagship offering is OE3 – *Outdoor Experiential Ecological Education* – the Intermediate/Senior Environmental Science teachable. This consists of a full course that must be taken with two quarter courses – *Authentic Group Project* and *Community Service Project*. For many years now 30 to 50 students have completed this course each year, which includes two to three trips, hiking or paddling in the fall and trips to the Kingfisher Outdoor Education Centre in the winter. Students enrolled in this course may complete one of their practicum placements at an outdoor education centre. Many enthusiastic graduates are teaching in classrooms and in alternative settings across Canada and around the world.

Teacher candidates who are not able to take the OE3 teachable can take one of three quarter-course (18 contact hours) electives. Several sections of *School Based Outdoor Education* always run in the fall, along with a section of *Outdoor Experiential Environmental Education* – an open elective for students from any division. In the winter of 2014 the elective *Climate Change Pedagogy* will be taught for the first time. These courses give students, who may have no background in environmental education, the inspiration and some beginning tools to help bring it into their future classrooms. (For some of the syllabi for these courses, please refer to Appendix E on page 89.)

Many Lakehead teacher candidates get some exposure to environmental education that is integrated into other courses, especially in Aboriginal Education, science, and multicultural education. A few years ago in preparation for OCT accreditation, we asked all faculty via an online survey to tell us if, and how, they integrated environmental education into their courses. We were heartened by the response, which showed a myriad of ways it is being integrated, large and small, from a focus on place, to explicit teaching about the science of climate change. There was an especially fertile overlap between many courses focused on Aboriginal Education and environmental education, with significant Indigenous perspectives in many of the environmental education courses and a strong land component in many Aboriginal Education courses. For example, an in-depth course on *Indigenizing Perspectives* emphasizes Indigenous knowledge integration and land-based pedagogy.

In our work we are lucky to have a Canada Research Chair in Environmental Education, a Centre for Place and Sustainability Studies, and a thriving graduate program that attracts master's and doctoral students with expertise in environmental education. Most of these students in turn hold graduate assistantships and enrich the initial teacher education program through their contributions to the planning and teaching of classes. Plans are afoot to have an outdoor classroom; in the meantime some of the graduate and OE3 students have painted three wall-sized environmentally themed murals in a hallway and two classrooms, disrupting the otherwise institutional feel of the main education building.

We can and want to do more. We have some evidence that most students, despite awareness that climate change is a 'problem,' have no idea of its depth or breadth – and this may be true for most faculty members as well. We are pleased with the good things that are happening at both the Thunder Bay and Orillia campuses, and we look forward to the work ahead.

Paul Berger,
Lakehead University

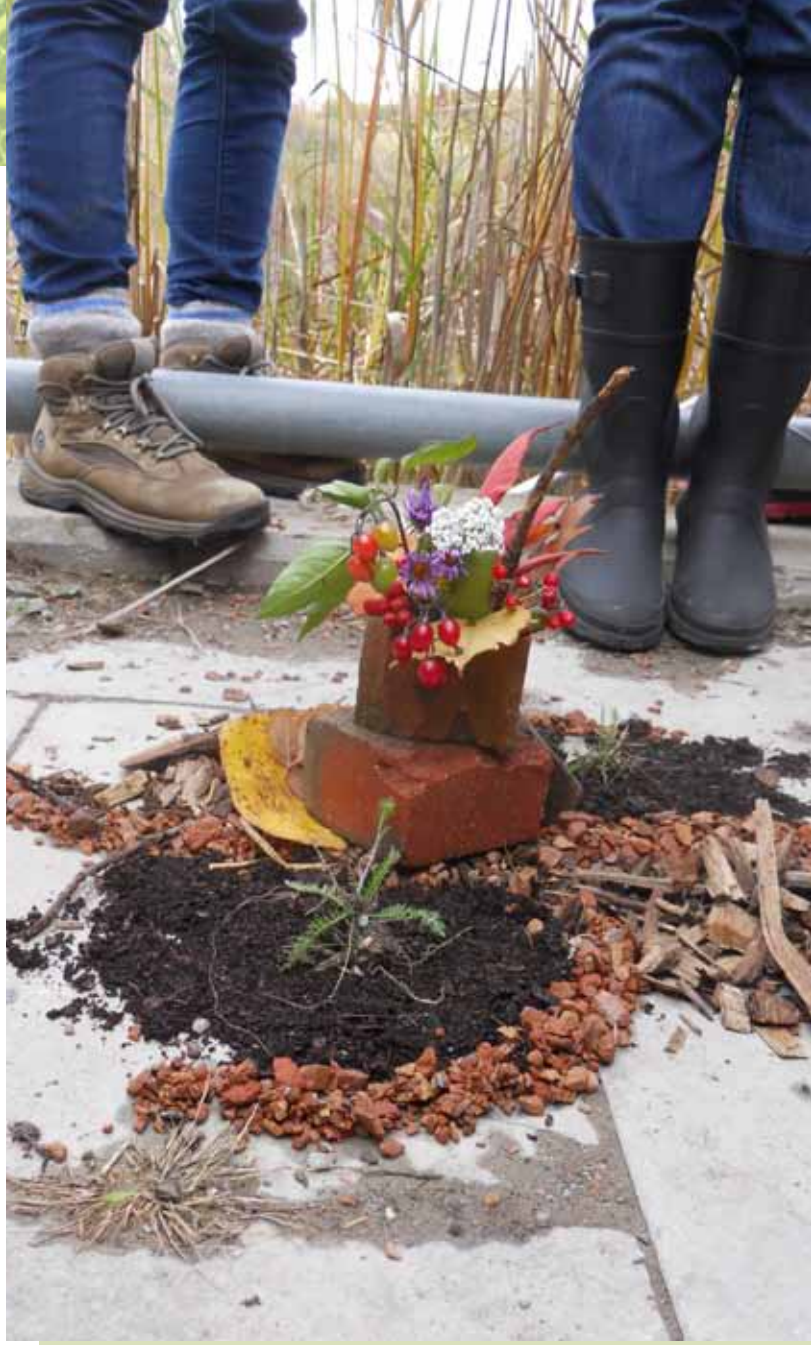
DOES TEAMWORK IN ENVIRONMENTAL EDUCATION MATTER?

A cursory review of sustainability activities in York University's Faculty of Education would give the impression that our Faculty is among the world's leading institutions in sustainability education, advancing the project on multiple fronts simultaneously. We have in the Faculty of Education at York a *Graduate Diploma in Environmental and Sustainability Education*; the Sustainability and Education Academy (SEdA) for school system leaders and the Sustainability and Education Academy-Subject Area Associations (SEdA-SA) for secondary school curriculum leaders (see Chap. 6 in this volume); in-service courses in *Environmental Science, Environmental Studies*, and *Outdoor Education*; an Indigenous Teacher Education Program; a compulsory, full-year course in the consecutive teacher education program focused on equity, social, and environmental justice; elective courses that address a range of sustainability issues including indigenous knowledge, urban education, globalization, and forced migration; practicum placements with community-based organizations including environmental NGOs; and multiple, multidisciplinary research initiatives focused on equity and social justice.

This number and variety of sustainability related initiatives begs the question(s): If collectively we are doing so much in terms of curriculum and program, why does environmental/ sustainability education have such a low profile within the Faculty as a whole? And does this matter?

Part of the answer to the question about profile is that, at York, those of us who are initiating or participating in the activities listed above are doing these things largely independent of one another. We are not "a force" or "a movement" or even "an emerging field of interest and expertise." That is, we are not metaphorically walking together, arm-in-arm, under the banner of education for sustainable development; we are not looking to "ESD" as a source of intellectual vitality, leadership, funding, solidarity, or conceptual coherence. We seem content or satisfied to be able to do our work, to create courses, and to develop programs, without expecting or even aspiring to fundamentally change the way the faculty thinks about or carries on its teacher education work. Does this fragmentation or "relative project autonomy" matter? Is it something to be concerned about?

Don Dippo,
York University
Quoted with permission from Dippo, 2012, pg. 37



Chapter 5

Indicators of Growth

The DEEPER guide aims to support Ontario's faculties of education as they seek to embrace the theories and practices of environmental education within their initial teacher education programs. Although each faculty's level of engagement with environmental education will be different, ranging from emerging to well-established, assessing the status and strength of a faculty's achievements in environmental education can help to determine areas for growth and improvement.

There are frameworks that have attempted to establish benchmarks for environmental education generally (OME, 2009a; NAAEE, 2007; NAAEE, 2009; NAAEE, 2010; UNECE, 2011); however, there are no specific indicators of success or standards for teaching and learning about environmental education in initial teacher education programs in Ontario. This chapter starts this conversation by describing a number of growth indicators that align with the core competencies outlined in chapter three of this guide.

The unique and situated nature of environmental education is recognized at the outset of this exercise. There is a recognition that there is no "one size fits all" approach to assessing the growth of environmental education in faculties of education. The growth indicators described here may be used by faculties of education to initiate discussion, establish benchmarks, and assess progress over time. However, each faculty will need to select its own set of indicators, drawing on both quantitative (e.g., survey, questionnaire, count) and qualitative (e.g., observation, interview, focus group, artefact, journal, content analysis) data.

The following list of potential growth indicators aims to catalyze collaborative efforts to assess, expand and strengthen environmental education programs in faculties of education. Working towards a provincial system of assessment, similar to the Ecoschools certification program, could be useful in tracking and recognizing progress in environmental education for faculties of education in Ontario.

This list of potential growth indicators, used alongside the proposed core competencies in chapter three, can be used by faculties of education to initiate discussion, establish benchmarks, and assess progress over time.

POTENTIAL GROWTH INDICATORS

Teacher candidate engagement in environmental education could be assessed by:

- the number of teacher candidates enrolled in environmental education courses, co-curricular events, initiatives, and certificate programs, on or off-campus
- the quality and depth of teacher candidate involvement in environmental education courses, events, initiatives, and campaigns
- the number of teacher candidates involved in teams or groups related to environmental education
- evidence of teacher candidate learning of the essential understandings of environmental education: systems, interdependence, integration and infusion, the importance of where one lives, roots in the real world, and lifelong learning (NAAEE, 2010)
- articulation and demonstration by teacher candidates of their understanding of the foundations of environmental education
- evidence of teacher candidates' involvment in environmental education in practicum schools
- evidence of teacher candidates' attitudinal or behavioural shifts toward sustainability practices
- self-assessment, articulation, and reflection on teacher candidates' growing ecological literacy, environmental awareness, environmental responsibility, and environmental action
- evidence of teacher candidates finding, critically reviewing, and adopting or adapting instructional materials in environmental education
- evidence of teacher candidates incorporating learning in, about, and for the environment in their practica through inquiry-based, experiential, and integrated teaching and learning
- evidence of teacher candidates' use of outdoor learning spaces (e.g., schoolyards, gardens, parks) on campus or in their practica
- evidence of teacher candidates' development of environmental education curriculum, instruction, and assessment practices in their practica
- evidence of teacher candidates identifying opportunities to integrate environmental education across the curriculum
- evidence of teacher candidates identifying opportunities to draw on Indigenous teachings to support environmental themes in their teaching
- evidence of teacher candidates' acquisition and application of different bodies of knowledge and teaching methodologies to enhance their understanding of environmental issues and environmental education
- teacher candidates' satisfaction levels of learning in, about, or for environmental education and involvement in environmental action on or off campus
- the number of requests from teacher candidates for ongoing or further learning in environmental education
- teacher candidates choosing to respond to assignments through environmental education perspectives
- evidence of teacher candidates' comfort level with critiquing and challenging unsustainable practices within the education system and beyond.

Faculty involvement in environmental education could be assessed by:

- the amount and/or quality of faculty involvement in teaching and learning in environmental education (courses, clubs, events, teams, programs, certificates, etc.)
- the amount and/or quality of faculty involvement in their own professional development in environmental education
- the number of faculty and/or their comfort level using outdoor learning activities in their courses or extra-curricular events

- evidence of a broadening and deepening of faculty's ecological literacy, environmental awareness, and environmental responsibility
- evidence of faculty engagement in research, leadership, or action in environmental education
- the number of faculty publications, conference presentations, and professional association leaderships in environmental education
- evidence of faculty involvement in local and global environmental issues and their sustainable solutions
- evidence of faculty's attitudinal or behavioural shifts toward more sustainable practices.

Staff involvement in environmental education could be assessed by:

- the amount and/or the quality of staff involvement in environmental education initiatives (clubs, events, teams, programs, certificates, etc.)
- the amount and/or the quality of staff involvement in professional development to enhance staff's ecological literacy, environmental awareness, and environmental responsibility
- evidence of staff's attitudinal or behavioural shifts toward more sustainable practices (e.g., purchasing sustainable products, leading sustainability campaigns, etc.)
- evidence of staff involvement in local and global environmental issues and their sustainable solutions.

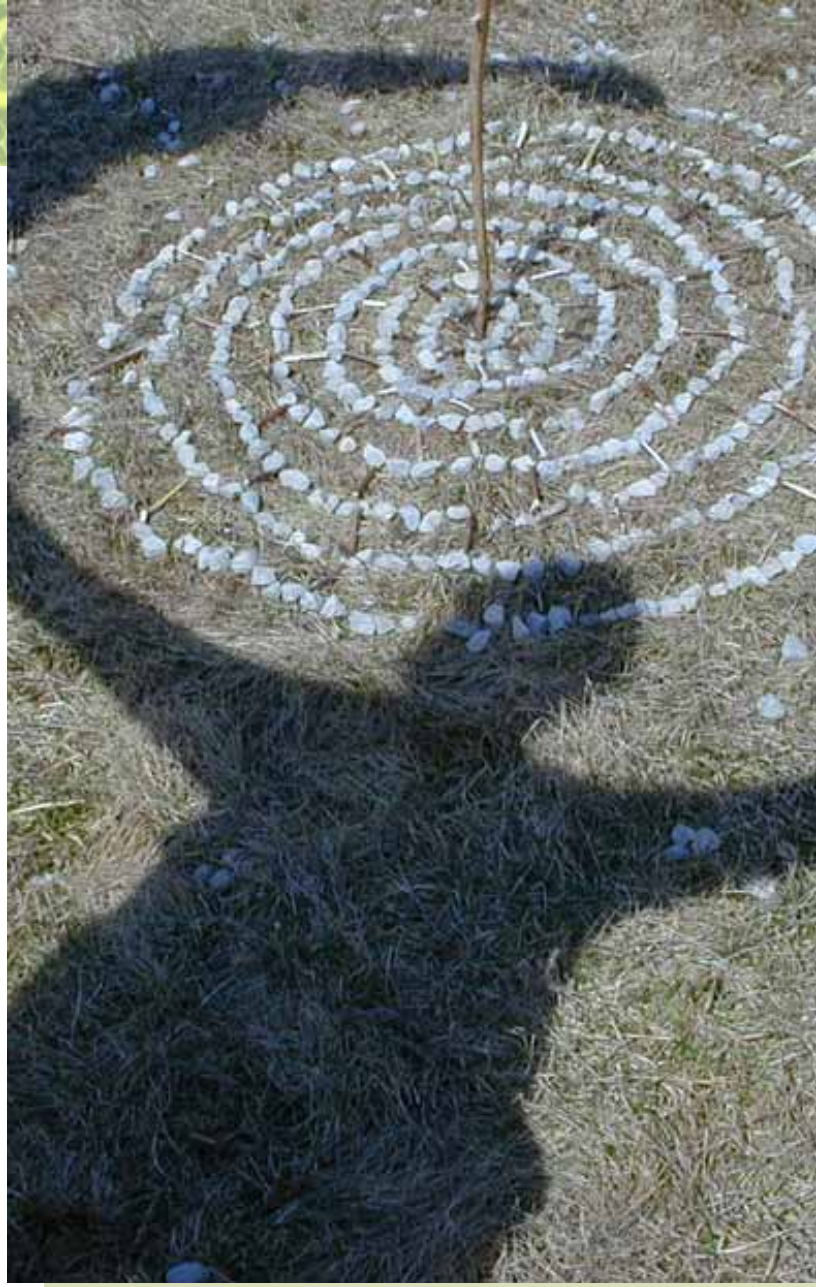
Initial teacher education program support for environmental education could be assessed by:

- the number of teacher candidates, faculty, and staff and/or the quality of their involvement in environmental education initiatives (clubs, events, teams, programs, certificates, etc.)
- the number and/or quality of mandatory or elective courses that focus on or integrate environmental education
- the number and/or quality of practicum placements related to environmental education
- the supports and time allocated for teacher candidates to experience inquiry-based, nature-based, place-based, outdoor, experiential, and community-based education
- promotion of and support for the use of outdoor learning spaces both on and off campus
- support for the integration of environmental education across subject areas and disciplines
- number and/or quality of professional development opportunities for faculty and staff in environmental education
- level of funding and/or support for environmental education courses, events, initiatives, and programs (e.g., stable budgets, work-study students support, administrative support)
- amount of short and long term planning for environmental education (e.g., action plans, annual report)
- evidence of nurturing leadership in environmental education by teacher candidates, faculty, and staff
- support for and inclusion of environmental education in program priorities, outcomes documents, policies, events, etc.
- celebration of environmental education and sustainability achievements of faculty, staff, or teacher candidates (e.g., certificates, eco-awards)
- level of support for maintenance and continuity of environmental education courses, initiatives, and programming over time
- identification of ongoing steps needed to deepen environmental education across the program.

Faculty of education and university support for environmental education could be assessed by:

- ongoing support and/or funding for the planning and implementation of environmental education courses, events, initiatives, and projects
- hiring of faculty with experience, teaching, and research expertise in environmental education

- the establishment of a specialty and/or diploma program in environmental education
- support for the establishment of outdoor teaching and learning spaces related to environmental education (learning gardens, green roof, outdoor classroom, etc.)
- the number and/or quality of Additional Qualification courses related to environmental education for B.Ed. alumni
- the establishment of a permanent position to support sustainability practices across the faculty or university (e.g., a Sustainability Officer)
- the quantity and availability of sustainable processes, supports, and practices (e.g., recycling, composting, double-sided printing, eco-friendly cleaning supplies, bike racks, water bottle filling stations, reusable plates and cutlery, sustainable purchasing, etc.)
- planning, implementation, and evidence of an ongoing deepening of sustainable practices in the operation of the buildings (e.g., a reduction in electricity, water, and energy consumption; installation of LEED standard alternative energy systems, such as solar panels or wine turbines; installation of green roofs)
- completion of short and long term planning done for environmental education with multiple stakeholders at the institution (an action plan, annual report)
- fund raising campaigns and social events promoting local, national and international initiatives that support environmental education and sustainability
- support for the documentation, communication and celebration of environmental education initiatives or campaigns in the faculty, across campus, and in the community.



Chapter 6

Going DEEPER

This guide in intended to support the practice of environmental education in initial teacher education programs in Ontario. As such it provides a new vision for environmental education, a suggested list of core competencies for teacher candidates, and a comprehensive list of strategies for better embedding environmental education across teaching and learning in faculties of education. But is this enough? Could the recommendations of this guide go deeper still?

As authors of this guide, we know the answer to the latter question is a resounding 'YES!' There are many aspects of environmental education that have not been touched on or fully explored in this guide – environmental philosophy, environmental ethics and values, environmental stewardship, eco-pedagogy, social and eco-justice, and citizenship education, to name but a few. Our goal in the DEEPER project is to offer a practical set of strategies for implementing environmental education in initial teacher education programs, and to share more broadly those practices already in use in hopes of inspiring others to deepen their own practices. We recognize the limitations of this approach, and therefore want to conclude this guide by encouraging readers to consider four ways to broaden and deepen their practice of environmental education in initial teacher education programs moving forward.

QUESTION

Some of the most critical questions about environmental education have not been addressed in the practical recommendations of this guide. For example, what are your assumptions about teaching environmental education? What ways of knowing are central to your approach, and which ones are absent? How do your values influence your teaching practices in environmental education? Reflecting on the assumptions, values, and ethics that underlie our approaches to environmental teaching and learning is an important way of ensuring that we are engaged in an ongoing examination of the foundations that support the work we do as educators. This requires honesty and humility, is highly personal, and can be emotionally charged. Look to writings on environmental ethics for more on this (Leopold, 1949; Evernden, 1985; Rolston III,

Reflecting on the assumptions, values, and ethics that underlie our approaches to environmental teaching and learning is an important way of ensuring that we are engaged in an ongoing examination of the foundations that support the work we do as educators.

1988; Hargrove,1989; Cheney & Weston, 1999; Schmidtz & Willott, 2002; Jickling et al, 2006).

Other questions demand a deeper consideration of those very foundations. How can environmental education be successfully implemented in educational systems when it contradicts the culture of consumption, consumerism, inequity, and globalization often promoted in those systems? Can environmental education be taught in a transformative way if our education systems are still mired in transmission-based approaches? Can environmental education exist within the current educational structures that are often more supportive of economy over ecology? How can we teach in a way that is profoundly educational, yet challenges prevailing cultural norms?

Some environmental philosophers have argued that that we are actually limited by the way we think about rationality (see, for example, Plumwood, 1991, 1993; Næss, 2002). They claim that a new vision for rationality needs to be constructed that includes empathy, emotions, and feelings. In his last book, the venerable philosopher Arne Næss (2002) said that any conception of rationality that was without feelings was a "petty rationality." Against such challenges, how can educators make room for serious consideration of emotions? What acts of resistance are required by educators to make room in their teaching for rationality that is inclusive of feelings? Can we rethink the relationship between ethics, feelings and knowledge (see, for example, Cheney & Weston, 1999)?

With such challenging questions in mind, how can environmental education be re-imagined? David Orr's (1991) influential article "What Education is For?" is an excellent starting point in examining this reconceptualization, as are the contributions of Bob Jickling (see, for example, 2005, 2013). For others, the growing discourse in eco-pedagogy can also be of use in addressing the critical nature of these questions; refer to Kahn (2010) for more on this topic.

Certainly examining the ways in which teacher education is constructed must be part of this. What are the criteria used to accept teacher candidates into programs or hire faculty for initial teacher education? Do the criteria align with qualities that are conducive to teaching environmental education? How is our curriculum constructed, and who makes the decisions for what counts as core concepts, essential skills, and mandatory learning? What learning needs to be assessed in these programs, and in what ways? All aspects of teacher education need to be carefully explored if we are to catalyze positive social and environmental change in educational systems and in their broader communities.

SHIFT

A careful and honest critique of our assumptions, core values, attitudes, and beliefs as educators should lead to shifts in these attributes. Such shifts can help us to better align what is taught in environmental education (the curriculum) with how and why it is taught (the pedagogy), and what we value (the philosophy). For many educators, this reflexive examination has shifted these considerations towards a more inquiry-based, knowledge-building, student-centred approach to teaching and learning that takes into account multiple ways of knowing. This includes grounding learning experiences in students' questions, allowing space for them to play and actively explore, and following personal pathways to the answers to their questions. In this, teacher educators shift from the role of being provider of expert knowledge to that of facilitator and co-learner, moving the locus of control to teacher candidates. This requires shifts in pedagogy, certainly, but also a shift in the dominant, and often unspoken, culture of higher education (refer to Bowers, 1997 for more on this.) What counts as quality teaching needs to be re-defined, as do the ways in which it is assessed by students and administrators.

A transformative environmental education also requires a shift in how we define ourselves as educators (refer to Thomashow (1995) for guidance in this). We need to step outside of our separate knowledge silos and work towards the more interdisciplinary, 'big ideas' nature of environmental education. We need to consider the contributions of a variety of disciplines and perspectives to environmental education, including the arts, humanities, and indigenous ways of knowing. This entails a shift towards embracing complexity, ambiguity, mystery, and contro-

versy, and an acknowledgement that we do not know all of the answers to our own, or our students', questions.

WALK THE TALK

As shifts occur in our theories about environmental education, there needs to be related shifts in our teaching practices. Learning to 'walk the talk', or model what you espouse, is an important process for inspiring others to move from attitudinal to concrete changes in their own lives. Teacher candidates need to see environmental values, beliefs, and attitudes manifested in action. What their mentors do, counts. This can range from embracing systems thinking, complexity, and connectedness in teaching and learning activities (refer to Davis & Sumara (2006/2008) for more on this) to modelling reflective practice as a teacher/co-learner, to getting involved in local environmental stewardship or activist projects.

Walking the talk also requires engaging in sustainability practices beyond the classroom. Identifying associate teachers who are strong mentors in environmental education to partner with teacher candidates is one way to model this; encouraging staff to adopt sustainable purchasing practices is another. Lobbying university administrators or school board officials for improvements to the sustainability of physical plants and campuses also needs to become part of our teaching and learning duties in environmental education. As we model these practices for our teacher candidates, the perceived boundaries between campus and community will blur, as will our roles as teachers and learners, theoreticians and practitioners, stewards and activists.

At this point, we must also confront the role of activism in teaching. Is it enough to provide, co-construct, or otherwise acquire new knowledge, or should teacher candidates have to do something with this new knowledge? Do they need opportunities to take the next step, and apply their new knowledge to issues that they care about? Do we need to create space for them to become activists? And, if we enable them to take action, do we expect them to make change, or is it more important that we expose them to types of learning and understanding that only arise through the embodied experience of doing something? How can we pursue this path in an educational way, without coercion or imposing our own ideas and priorities? And how do we best support teacher candidates who experience negative outcomes or pushback, despite their best efforts?

ADVOCATE

Advocacy, seen in terms of promoting and developing environmental education, must be an integral part of bringing about deeper levels of change to environmental education. Substantive policy changes in initial teacher education are necessary for this work to become a significant, mandatory part of pre-service education. This requires champions in each faculty of education to advocate for embedding environmental education into course syllabi, program structures, and faculty of education policies. This is possible to do; Lakehead University has recently passed a new requirement for all of its teacher candidates to take a mandatory course in environmental education starting in September 2015. Lobbying efforts aimed at the Ontario Association of the Deans of Education and the Ontario Principal's Association, for example, may help smooth the way for this type of change to happen more broadly across Ontario.

It will require collaborative advocacy efforts across Ontario to get policy and administrative structures in place to create an environment that encourages the deepening of environmental education in initial teacher education. Changes to the accreditation process for initial teacher education programs, currently administered by the Ontario College of Teachers, are needed which use environmental education and sustainability practices as a requirement for ongoing accreditation. Modifications to provincial policies and legislation related to initial teacher education programs (currently under the jurisdiction of the College and the Ministry of Colleges, Training and Universities) will also be necessary; many voices will be needed to make this a reality.

These strategies, if taken up by teacher educators across Ontario, will no doubt radically transform environmental education in Ontario. However, profound changes are needed for environmental education to continue to grow

and adapt in a rapidly changing landscape. Ontario provides a fertile ground within which to cultivate this type of growth thanks to its many teacher education programs and ongoing movement towards contemporary education praxis. This guide hopes to motivate educators and education system administrators to become champions of environmental education who ask critical question, shift their views, values, beliefs, and practices, walk the talk, and proactively advocate for environmental education in their places of work and the broader community. What is most needed are initial teacher educators who can be courageous, reflective, active, and optimistic in their role in inspiring teacher candidates to deepen environmental education in their professional and personal lives, ensuring a sustainable future for all learners in Ontario.

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Resources for Environmental Education

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http://www.ted.com/talks/edward_burtynsky_on_manufactured_landscapes.html

Stephen Ritz
http://www.ted.com/talks/stephen_ritz_a_teacher_growing_green_in_the_south_bronx.html

Majora Carter
http://www.ted.com/talks/majora_carter_s_tale_of_urban_renewal.html

Janine Beynus
http://www.ted.com/talks/lang/en/janine_benyus_shares_nature_s_designs.html

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Tbilisi Declaration (1977) – UNESCO
http://unesdoc.unesco.org/images/0003/000327/032763eo.pdf

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http://unesdoc.unesco.org/images/0001/000177/017772eb.pdf

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http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf

Caring for the Earth (1991) – IUCN, UNEP, WWF
http://heapro.oxfordjournals.org/content/7/2/135.full.pdf

Principles of Environmental Justice (1991) – First National People of Colour Environmental Leadership Summit
http://www.ejnet.org/ej/principles.pdf

Agenda 21 (1992) – United Nations Sustainable Development
http://sustainabledevelopment.un.org/content/documents/Agenda21.pdf

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http://www.unesco.org/education/tlsf/mods/theme_a/img/02_earthcharter.pdf

Common framework of science learning outcomes (1997) – CMEC
http://publications.cmec.ca/science/framework/

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http://resources.spaces3.com/aaee5f4a-2dd3-4dc2-aa2f-d1f0c32103e7.pdf

Non-formal environmental education programs (2009) - North American Association for Environmental Education
http://resources.spaces3.com/b85e2c0a-f321-40c2-9857-19a5f29d750b.pdf

Excellence in environmental education: Guidelines for learning (K-12) (2010) - North American Association for Environmental Education
http://resources.spaces3.com/47edc444-7bd4-4093-918b-7964644cce75.pdf

Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability. (2005) - UNESCO
http://unesdoc.unesco.org/images/0014/001433/143370e.pdf

Education for sustainable development in Canadian faculties of education (2012) – Council of Ministers of Education, Canada
http://www.cmec.ca/Publications/Lists/Publications/Attachments/279/ESD_Dean_reportEN.pdf

ENVIRONMENTAL EDUCATION ASSOCIATIONS

Provincial

Ontario Society for Environmental Education (OSEE)
http://home.osee.ca/

Council of Outdoor Educators of Ontario (COEO)
http://www.coeo.org/

Ontario Association of Geographic and Environmental Educators (OAGEE)
http://www.oagee.org/

Science Teachers Association of Ontario (STAO)
http://stao.ca/Home/

Environmental Education Ontario (EEON)
http://www.eeon.org/

National

Canadian Network for Environmental Education and Communication (EECOM)
http://www.eecom.org

International

North American Association for Environmental Education (NAAEE)
http://www.naaee.net/

United Nations Environment Programme (UNEP)
http://www.unep.org/

WEEC International Environmental Education Network
http://www.environmental-education.org/

ENVIRONMENTAL EDUCATION ORGANIZATIONS AND NGOS

Acorn Naturalists
http://www.acornnaturalists.com/

Canadian Wildlife Federation - Education
http://www.cwf-fcf.org/en/discover-wildlife/education/

Center for Ecoliteracy
http://www.ecoliteracy.org/education/exemplars.html

Center for Green Schools
http://centerforgreenschools.org/home.aspx

Earth Day Canada
http://www.earthday.ca/

Evergreen
http://www.evergreen.ca/en/programs/

Green Teacher Magazine
http://greenteacher.com/

EcoJustice Education
http://www.ecojusticeeducation.org

Foodshare
http://www.foodshare.net/

Indigenous Environmental Network
http://www.ienearth.org/

Learning for a Sustainable Future
http://www.lsf-lst.ca/en/projects/teacher-resources

Natural Curiosity
http://www.naturalcuriosity.ca

Planet in Focus - Environmental Documentary Film Festival -
http://planetinfocus.org/

Resources for Rethinking
http://www.r4r.ca/

FUNDING ORGANIZATIONS FOR ENVIRONMENTAL EDUCATION

TD Friends of the Environment Foundation
https://fef.td.com/

Evergreen
http://www.evergreen.ca/en/funding/

Learning for a Sustainable Future
http://lsf-lst.ca/en/projects/teacher-resources/action-project-funding

Ontario Ecoschools
http://www.ontarioecoschools.org/forms&resources/school_funding&awards.html

Earth Day Canada
http://www.earthday.ca/envirofund/default.aspx

Appendix A

Definitions of Environmental Education Traditions

Environmental Education (EE)
"Environmental education is education about the environment, for the environment, and in the environment that promotes an understanding of, rich and active experience in, and an appreciation for the dynamic interactions of:
- the Earth's physical and biological systems;
- the dependency of our social and economic systems on these natural systems;
- the scientific and human dimensions of environmental issues;
- the positive and negative consequences, both intended and unintended of the interactions between human created and natural systems"

Working Group on Environmental Education. (2007). ***Shaping our schools, shaping our future: Environmental education in Ontario schools***.
http://www.edu.gov.on.ca/curriculumcouncil/shapingschools.pdf

Education for Sustainable Development (ESD)
"Education for Sustainable Development (ESD) encourages us to explore the profound interdependencies of ecological, societal, and economic systems. ESD is about respecting and preserving our histories, valuing culture and community, caring for others and the environment, and taking action to create a fair, healthy, and safe world for all beings. ESD also supports flexibility, creativity, critical reflection, and fosters a sense of personal responsibility for the economy, society, and environment"

Learning for a Sustainable Future
http://lsf-lst.ca/en/what-is-esd

Outdoor Experiential Education
"Outdoor education directly exposes participants to our natural environment in ways that engender personal connections, knowledge, skills and a lifelong environmental ethic. Outdoor education powers the realization that this ethic is applicable to the very life support systems of this planet, be they found in urban, rural or remote settings... The experiential nature of outdoor education relates curricula to real life situations and the complexities of our natural surroundings. In so doing, it provides a unique means of developing critical thinking skills and stimulating desirable attributes such as innovation and imagination. Outdoor education also broadens and deepens the knowledge base of all subject areas, and it can do so in integrated ways."

Council of Outdoor Educators of Ontario,
http://www.coeo.org/

Environmental and Sustainability Education
"Environmental and sustainability education (E&SE) is about healthy relationships between humans and the Earth's living systems. It includes the many and varied forms of education that help us appreciate and maintain the integrity of the biosphere....the transmission, growth and application of environmental knowledge across all sectors of society."

Environmental Education Ontario,
http://www.eeon.org/pdf/greeningsummaryint.pdf

Place-based Education
"Place-based education takes us back to basics, but in a broader and more inclusive fashion. Desirable environmental education, or what we're calling place-based education, teaches about both the natural and built environments. The history, folk culture, social problems, economics, and aesthetics of the community and its environment are all on the agenda....one of the core objectives is to look at how landscape, community infrastructure, watersheds, and cultural traditions all interact and shape each other"

Sobel, D. (2004). ***Place-based education: Connecting classrooms and communities***.
Great Barrington, MA: Orion Publishing.

Sustainability Education:
"The goal of sustainability education is to develop...new knowledge and new ways of thinking needed to achieve economic prosperity, participate democratically, secure justice and equity, and all the while regenerate the health of the ecosystems, the gift upon which all life and all production depend."
Madeson, F. (2009). *Spotlight On: The Cloud Institute for sustainability education*.
http://cloudinstitute.org/

Eco-justice Education:
Ecojustice education "is connected with the need to reduce the impact of the industrial/ consumer dependent culture on everyday life while at the same time ensuring that people are not impoverished and limited in terms of equal opportunity; the five aspects of ecojustice ... include (1) eliminating the causes of eco-racism, (2) ending the North's exploitation and cultural colonization of the South (Third World cultures), (3) revitalizing the commons in order to achieve a healthier balance between market and non-market aspects of community life, (4) ensuring that the prospects of future generations are not diminished by the hubris and ideology that drives the globalization of the West's industrial culture, (5) reducing the threat to what Vandana Shiva refers to as "earth democracy" – the right of natural systems to reproduce themselves rather than to have their existence contingent upon the demands of humans."

Ecojustice Education
http://www.ecojusticeeducation.org

Appendix B

Environmental Education Practices in Ontario Faculties of Education

Faculty of Education	EE Core Course	EE Elective Course	EE Cohort	EE Co-curricular Workshops	EE Conference or Events	EE Focused Practica	EE Certificate	EE Partners	EE Research or Publications
Brock		X		X		X			X
Charles Sturt				X	X		X	X	
Lakehead		X	X		X	X			X
Laurentian				X	X			X	X
Nipissing		X		X		X		X	X
OISE			X	X	X	X	X	X	X
Queen's		X	X	X		X		X	
Trent				X	X	X	X	X	X
UOIT		X		X	X	X	X	X	X
Ottawa			X	X	X	X	X	X	X
Laurier				X		X	X	X	
York		X	X		X	X		X	X

Note: Only those Ontario initial teacher education programs with faculty engaged in environmental education have been included.

Appendix C

Summaries of Core Competencies in Environmental Education for Teacher Candidates

GUIDELINES FOR THE PREPARATION AND PROFESSIONAL DEVELOPMENT OF ENVIRONMENTAL EDUCATORS.

North American Association for Environmental Education (NAAEE). (2010). Retrieved from http://resources.spaces3.com/5e156799-5cd9-406e-835d-748cce277ecf.pdf

Theme One: Environmental Literacy
Educators must be competent in the skills and understandings outlined in Excellence in Environmental Education—Guidelines for Learning (K–12).
1.1 Questioning, analysis, and interpretation skills
1.2 Knowledge of environmental processes and systems
1.3 Skills for understanding and addressing environmental issues
1.4 Personal and civic responsibility

Theme Two: Foundations of Environmental Education
Educators must have a basic understanding of the goals, theory, practice, and history of the field of environmental education.
2.1 Fundamental characteristics and goals of environmental education
2.2 How environmental education is implemented
2.3 The evolution of the field

Theme Three: Professional Responsibilities of the Environmental Educator
Educators must understand and accept the responsibilities associated with practicing environmental education.
3.1 Exemplary environmental education practice
3.2 Emphasis on education, not advocacy
3.3 Ongoing learning and professional development

Theme Four: Planning and Implementing Environmental Education
Educators must combine the fundamentals of high-quality education with the unique features of environmental education to design and implement effective instruction.
4.1 Knowledge of learners
4.2 Knowledge of instructional methodologies
4.3 Planning for instruction
4.4 Knowledge of environmental education materials and resources
4.5 Technologies that assist learning
4.6 Settings for instruction
4.7 Curriculum planning

Theme Five: Fostering Learning
Educators must enable learners to engage in open inquiry and investigation, especially when considering environmental issues that are controversial and require students to seriously reflect on their own and others' perspectives.
5.1 A climate for learning about and exploring the environment
5.2 An inclusive and collaborative learning environment
5.3 Flexible and responsive instruction

Theme Six: Assessment and Evaluation
Environmental educators must possess the knowledge, abilities, and commitment to make assessment and evaluation integral to instruction and programs.
6.1 Learner outcomes
6.2 Assessment that is part of instruction
6.3 Improving instruction
6.4 Evaluating programs

Essential Approaches to Environmental Education Reform
Environmental educators employ many instructional strategies—ranging from lecture and discussion to action research, and from reading assignments to panel discussions and debates. While many methods are useful in environmental education, there are some instructional methods that are particularly well suited to environmental education content. Educators should be familiar with these and be able to put them into action.
They include:
- Hands-on observation and discovery in the environment
- Inquiry
- Cooperative learning
- Community-based action research and problem solving
- Investigating environmental issues
- Service learning
- Simulations and models
- Problem-based learning
- Project-based learning

STANDARDS FOR THE INITIAL PREPARATION OF ENVIRONMENTAL EDUCATORS.

North American Association for Environmental Education (NAAEE). (2007) and the National Council for Accreditation of Teacher Education. Retrieved from
http://resources.spaces3.com/aaee5f4a-2dd3-4dc2-aa2f-d1f0c32103e7.pdf

STANDARD 1. Nature of Environmental Education and Environmental Literacy
Candidates demonstrate knowledge of the evolution, purposes, defining characteristics, and guiding principles of environmental education, as well as the fundamentals of environmental literacy.

1.1 Candidates demonstrate an understanding of how environmental education has evolved over time and continues to change.
1.2 Candidates demonstrate an understanding of the defining characteristics and guiding principles of environmental education.
1.3 Candidates demonstrate an understanding of the components of environmental literacy.

STANDARD 2. Environmental Literacy of Candidates.
Candidates demonstrate the knowledge, skills, and dispositions associated with environmental literacy.

2.1 Candidates demonstrate environmental inquiry skills, and use technology as a tool to answer their own questions.
2.2 Candidates demonstrate an understanding of the processes and systems that comprise the environment, including Earth as a physical system, the living environment, and human social systems and influences.
2.3 Candidates identify, select and investigate environmental issues and use technology as a tool when conducting these investigations.
2.4 Candidates demonstrate an understanding of the importance of exercising the rights and responsibilities of environmental citizenship.
2.5 Candidates identify and evaluate the need for action on specific environmental issues, identify possible action projects, and evaluated potential outcomes of those action projects.
2.6 Candidates use the results of their investigations to plan, carry out, and evaluate action projects designed to address selected environmental issues.

STANDARD 3. Learning Theories and Knowledge of Learners.
Candidates demonstrate an understanding of theories of learning and human development, learning processes, and individual differences.

3.1 Candidates impact diverse students'5 learning by applying theories of learning and development when planning, delivering, and improving environmental educationinstruction.
3.2 Candidates impact diverse students' learning by applying an understanding of learning processes when planning, delivering, and improving environmental education.
3.3 Candidates impact diverse students' learning by applying an understanding of ability levels and cultural and linguistic backgrounds when planning, delivering, and improving environmental education instruction.

STANDARD 4. Curriculum: Standards and Integration
Candidates demonstrate an understanding of how the unique features of environmental education can be used in the design and enrichment of standards-based curricula and school programs.
4.1 Candidates align NAAEE's Guidelines for Learning (PreK- 12) and associated environmental literacy components with national, state, and district content standards.
4.2 Candidates use alignment results to select, adapt, and develop environmental education curricular and instructional materials.
4.3 Candidates seek opportunities to integrate environmental education into standards-based curricula and school programs.

STANDARD 5. Instructional Planning and Practice.
Candidates identify and differentiate among a variety of instructional strategies and tools, including instructional technology that enhance environmental learning.
5.1 Candidates describe and critically review a range of instructional materials, resources, technologies, and settings for use in environmental education.
5.2 Candidates impact students' learning by selecting and implementing instructional strategies and technologies that meet diverse students' needs and lead to the development of environmental literacy.
5.3 Candidates develop technology- rich environmental education instructional plans that address diverse students' needs.
5.4 Candidates impact diverse students' learning by delivering developmentally, culturally and linguistically appropriate and effective environmental education instruction.

STANDARD 6. Assessment.
Candidates possess the knowledge, abilities, and commitment to make assessment integral to curriculum and instruction in environmental education, thereby fostering continuous intellectual, social, emotional, and physical development of each student.
6.1 Candidates integrate assessment that meets the needs of diverse students into environmental education instruction.
6.2 Candidates impact diverse students' learning by using assessment data, collected and analyzed with the aid of technology, to inform environmental education instruction.
6.3 Candidates impact diverse students' learning by communicating assessment results and achievement to appropriate individuals.

STANDARD 7. Professional Growth in Environmental Education.
7.1 Candidates identify the benefits and recognize the importance of belonging to a professional environmental education community.
7.2 Candidates engage in environmental education professional development opportunities, including technology- based opportunities.
7.3 Candidates provide accurate, balanced, and effective environmental education instruction.
7.4 Candidates develop a rationale for environmental education and understand the need to advocate for the field of environmental education.

LEARNING FOR THE FUTURE: COMPETENCES IN EDUCATION FOR SUSTAINABLE DEVELOPMENT.

United Nations Economic Commission for Europe (2011). Retrieved from http://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf

The essential characteristics of ESD:

a. A holistic approach, which seeks integrative thinking and practice;
b. Envisioning change, which explores alternative futures, learns from the past and inspires engagement in the present; and
c. Achieving transformation, which serves to change in the way people learn and in the systems that support learning.

The clustering of competences in the table rows is inspired by the report of the International Commission on Education to UNESCO. The following framework was chosen as it is comprehensive and presents a meaningful set of categories that reflect a wide range of learning experiences:

a. Learning to know refers to understanding the challenges facing society both locally and globally and the potential role of educators and learners (The educator understands....);
b. Learning to do refers to developing practical skills and action competence in relation to education for sustainable development (The educator is able to....);
c. Learning to live together contributes to the development of partnerships and an appreciation of interdependence, pluralism, mutual understanding and peace (The educator works with others in ways that....);
d. Learning to be addresses the development of one's personal attributes and ability to act with greater autonomy, judgement and personal responsibility in relation to sustainable development (The educator is someone who....).

GUIDELINES AND RECOMMENDATIONS FOR REORIENTING TEACHER EDUCATION TO ADDRESS SUSTAINABILITY.

Hopkins & McKeown (2005). UNESCO Education Sector. Retrieved from http://unesdoc.unesco.org/images/0014/001433/143370e.pdf

3A. Recommendations on change within institutions of higher education:

3A.1 Promote reorienting education as a viable avenue for research and teaching in higher education institutions.

3A.2 Gain support of upper administration in the forms of mandates and resources to assist those who are working in ESD at lower levels.

3A.3 Involve faculty, support staff, researchers, and managers from across the institution to support interdisciplinary changes that reflect sustainability and reward participation in such efforts.

3A.4 Allow interdisciplinary courses in sustainability to fulfill degree requirements across disciplinary faculties.

3A.5 Create a sustainable-campus policy and conduct highly visible events that reinforce campus efforts to implement that policy (e.g., signing of the Talloires Declaration, reaching energy savings targets, and achieving diversity goals).

3A.6 Engage student groups and organizations.

3B. Recommendations on change within faculties of education:

3B.1 Make the administration and faculty leaders aware of the need for reorienting the teacher-education program.

3B.2 Provide educational opportunities to ensure that every member of the faculty of education understands the need for ESD, how it is relevant to teacher education in both improving quality basic education and reorienting existing education, and how each faculty member can contribute to the overall effort.

3B.3 Set up a participatory and democratic process involving every part of the faculty of education (i.e., faculty, staff, administration, research faculty, school liaisons, students, etc.) to reorient teacher education to address sustainability.

3B.4 Move quickly to institutionalize new ESD projects, so the progress will continue in spite of frequent changes in faculty, administration, or funding that endanger new projects and innovative undertakings.

3B.5 Lobby within the faculty for ESD at times of program review and renewal.

3B.6 Recognize and reward academic effort and administrative leadership, especiallywhen it is voluntary and above and beyond the regular requirements.

3B.7 Describe for the teaching faculty the contribution that the reorienting process can make to their graduates.

3C. Recommendations on change related to engaging pre-service and in-service teachers.

3C.1 Require interdisciplinary coursework on sustainability for student teachers and make materials available for student teachers on local and global sustainability issues.

3C.2 Demonstrate pedagogical techniques that foster higher-order thinking skills, support decision-making, involve participatory learning, and stimulate formulation of questions.

3C.3 Emphasize to student teachers that citizenry in a sustainable community requires active participation and decision-making; challenge them to create ways to incorporate participation and decision making into their classroom procedure andcurriculum.

3C.4 Discuss social equity (e.g., gender, racial, ethnic, and generational) with student teachers and identify ways in which the local community exhibits social tolerance, societal intolerance, equity, and discrimination.

3C.5 Request that student teachers analyze the mandated curriculum they will be teaching to identify topics and themes related to sustainability and those that are linked to local sustainability issues.

3C.6 Provide student teachers with opportunities to explore their own values and attitudes towards local sustainability problems and those of the surrounding region.

3C.7 Promote understanding of global sustainability in order to encourage critical thinking and decision making that influence personal lifestyle and economic choices.

3C.8 Develop specialized ESD programs for student teachers (e.g., mini-courses) with certificates of completion, so that student teachers can include them in their resumes for seeking employment.

3C.9 Promote graduates with ESD specializations, who are knowledgeable in ESD and its contribution to society.

3C.10 Place graduates who have completed courses in ESD in key schools and ministerial positions to help influence and bring about change.

3D. Recommendations at the individual faculty level:

3D.1 Begin by working within your own sphere of influence; change the things within the areas that are under your individual authority.

3D.2 Build partnerships; work closely with at least one colleague to ensure continuity and mutual support.

3D.3 Document work for ongoing reflection and evaluation.

3D.4 Attend ESD conferences with colleagues, student teachers, and graduate students to update knowledge and maintain enthusiasm for ESD projects.

3D.5 Learn basic grant writing skills.

ADVANCING PRE-SERVICE ENVIRONMENTAL EDUCATION IN ALBERTA: A DISCUSSION PAPER.

Alberta Council for Environmental Education. (2012). Retrieved from http://www.abcee.org/cms/wp-content/uploads/2011/02/Advancing-Pre-Service-Environmental-Education-in-Alberta-24-Jan-2012-draft.pdf

By 2030, the Alberta Council for Environmental Education would like to see the following competencies in their education system:

Students:
- Have a positive relationship with nature and the natural world, as a result of meaningful outdoor experiences.
- Demonstrate that they understand and care deeply about the world around them.
- Have an inner drive to do something to make the world a better place.
- Learn by doing, engaging in relevant and collaborative real-world project-based learning.
- Are competent in their public action skills, and have excellent communication skills.
- Are active citizens.

Teachers:
- Inspire, engage and empower their students to become environmental citizens.
- Give students hope about the environment by engaging them in environmental projects that help make a difference.
- Have a personal relationship with nature and are able to create powerful and positive outdoor learning experiences.
- Create classrooms that are safe places for important conversations that help students find, fine-tune, and focus their passion.
- Honour students' commitments, and hold students accountable to them.
- Challenge students with statements like "There are problems in this world, what are you going to do about it?"
- Create authentic inquiry-based learning experiences.
- Understand how to teach about controversial issues.
- Use the environment as an integrating context for cross-curricular teaching and learning.
- Facilitate student-centred learning, and are partners in the learning process.
- Teach through doing.
- Have opportunities, support, and resources to create these learning experiences.

Schools:
- Identify environmental education as a priority, and environmental citizenship as an essential learning outcome.
- Reduce barriers to environmental education and citizenship.
- Encourage both outdoor education and locally developed environmental education courses.
- Create a culture of environmental citizenship throughout the school.
- Support relevant teacher professional learning.
- Allow teachers time to plan and develop partnerships and relationships between school and community.
- Strive to reduce their environmental footprint.

The Alberta public and decision-makers recognize that:

- Environmental education and citizenship is an essential feature of education.
- Environmental education doesn't just occur in the formal education system.
- Policy must ensure that children receive abundant time in nature.
- We need to do more if we are to create a generation of Albertans who can develop a sustainable future.
- Communities, families, and individuals play an important role in supporting environmental education and citizenship.

The Curriculum:

- Allows teachers the space they need to create meaningful learning experiences, including cross-curricular approaches.
- Contains content, skills, and attitudes that all contribute to creating environmentally literate students.
- Assessment and accountability policies also support this environmental literacy goal, and emphasize environmental education and citizenship competencies.

Appendix D

Learning in/about/for the Environment Overview

Learning in the Environment
- direct observation of and interaction with different environments, both natural and built
- experiential (hands on) learning in every season, in a variety of local environments
- making connections to and between local environments
- learning about and respecting all forms of life on earth
- to learn more refer to the work of Richard Louv, Joseph Cornell, Herbert Broda, David Sobel, Rachel Carson

Strategies:
- take students outside the classroom as often as possible, building time into your weekly schedule to make it routine
- implement place-based learning by using your campus as a learning resource
- explore natural and built aspects of the local community
- engage with local community members, experts and other forms of life (e.g., animals, insects, plants, etc.)

Learning About the Environment
- focus on how nature works in systems (life webs, energy flows, matter cycles)
- explore ecosystems in urban and rural settings
- discover the interdependence of all life forms on this planet
- introduce and reinforce the concept of systems-thinking
- to learn more refer to the work of Art Sussman, the Center for Ecoliteracy

Strategies:
- integrate learning about ecosystems into all parts of the curriculum (beyond science)
- study local ecosystems to see examples up close, in action and firsthand
- use drawing, photography, mapping, video and journals to record and share what is found

Learning For the Environment
- examine human impact on a range of local and global environments (positive and negative impacts)
- advocate and act for positive environmental change (letters, performances, artworks, essays, actions)
- implement local, age-appropriate actions with students
- discover how to reduce negative impacts through conservation, adaptation, innovation
- to learn more refer to the work of Free the Children, WWF, Greenpeace, Alice Waters, David Suzuki

Strategies:
- focus on local issues to see the effects of eco-actions immediately (e.g., litter removal)
- keep it hopeful by focusing on the positive of what can be done (e.g., tree planting, energy conservation, waste reduction, vermi-composting)
- use the arts to get the message across creatively (e.g., murals, exhibits, plays, videos)

Appendix E

Syllabi from Pre-service Environmental Education Courses in Ontario

Note: What follows are the core components of a selection of syllabi from pre-service environmental education courses in Ontario; information about grading policies, dates, and other general information have been omitted.

EDUC 8Y15: ENVIRONMENTAL EDUCATION/OUTDOOR EDUCATION

Brock University

Dr. Douglas Karrow, Ph.D (OISE/UT)
Email: Doug.Karrow@BrockU.CA

INTRODUCTION

Environmental/Outdoor Education is the planned use of out of classroom environments and situations to enrich students' learning experiences about the "natural" world around them. These sites may include the school yard, urban and rural environments, outdoor education centers, private for profit facilities, and public facilities such as conservation areas and provincial parks. Environmental/Outdoor Education has its roots in the Science and Social Studies but also addresses the objectives and outcomes of many other subject areas. It is truly an inter-disciplinary field.

In a highly urbanized culture such as ours opportunities for children to interact with the natural world become all the more important. Through personal experience we come to know, respect and develop an appreciation for the mystery of that which we are part of. While the stimulus for learning is the "outdoors", several sessions will demonstrate how to bring the outdoors into the classroom. As well, although Environmental/Outdoor Education is broadlyconceived to include a variety of learning situations in many contexts, the focus is the environment and our relationship with it (ecology).

Becoming ecological literate--citizens possessing knowledge, skills, dispositions, and actions of and for the environment--is a major course objective. Concepts such as sustainability, interconnectedness and interdepen-dency will be introduced through theoretical readings and practical activities. Sustainability, a concept fre-quently maligned by other agenda, is foundational to the course, despite its varied definitions. For our purposes and context these three concepts are interwoven into what has been referred to as ecopedagogy—the practices we employ as teachers to prepare the next generation of children to live carefully, respectfully, receptively, and thoughtfully with the earth.

MEET TIME AND LOCATION

We meet Wednesdays from 3:00pm-5:00pm in Room 16. When field trips have been organized we will meet at those sites. To allow for travel time, off-campus sessions will begin at 3:30pm. Directions will be provided in advance. Please consider, where feasible, environmentally friendly ways of getting to these sites.

COURSE AIMS AND OBJECTIVES

- to provide teacher candidates with rudimentary theory on ecological literacy; themes of interconnectedness, interdependence, and sustainability, in turn to become ecopedagogues.
- to model effective EE/OE education teaching strategies;
- to familiarize students with some of the history of environmental education within the province of Ontario;
- to provide teacher candidates with opportunities to explore our relationship with place and being and thereby, begin to develop other ways of being a teacher;
- to acquaint teacher candidates with the wealth of teaching and curriculum materials available to support EE/OE;
- to provide opportunities for teacher candidates to teach elementary/secondary students to become ecologically literate;
- to acquaint and familiarize students with the major provincial and federal environmental education organizations;
- to orient students toward the breadth and depth of currents comprising a topography of EE/OE.
- to expose teacher candidates to alternative teaching experiences and contexts, and where possible to provide a two-week EE/OE Practicum Placement experience toward the end of May (please consult the Department of Teacher Education's Teacher Candidate Handbook, p. 36 and ask your Faculty Advisors for further information.

COURSE OUTLINE

Session 1: Introduction

- Welcome and introductions; course outline
- What is environmental education?
- The status of Environmental Education in Ontario: Shaping our Schools, Shaping our Future
- Calculating our ecological footprint

Session 2: Ecological Literacy: Developing a Sense of Place and Being

- Field trip to Spencer Gorge/Webster's Falls
- Assignment B: Developing a Sense of Place and Being.

Session 3: Great Canadian Shoreline Cleanup

- demonstration of a service learning project through participation in the TD Great Canadian Shoreline Cleanup.
- Christie Lake/Conservation Authority.

Session 4: Ecoschools Program

- modeling an environmental school audit;
- Richard Christie of the TDSB Ecoschools program will provide an overview of the program and explain how your school could become and ecoschool

Session 5: Sharing our Developing Senses of Place and Being

- Student presentations of developing work introduced during Session 2.

Session 6: Conducting a Simple Nature Walk
- Field trip to Hamilton's Arboretum at the Royal Botanical Gardens;
- Conducting a Simple Nature Walk at Cootes Paradise and a tour of the Hamilton Arboretum Interpretive Centre with Ian Hendry: issues of safety, content, and class management.

Session 7: Conservation Education—Bluebird Houses/Bat Boxes
- former instructor, Bert Murphy, will demonstrate how to construct bluebird boxes/bat houses;
- students will take home a sample of one of these habitat conservation projects.

Session 8: Environmental Education's Greatest Challenge—Climate Change
- how do we educate about Climate Change?
- The Climate Project (TCP): Experiences over a weekend with Al Gore

Session 9: Presentation of Assignment—
Developing a Sense of Place and Being
- Students present/share assignments.

Session 10: Presentation of Assignment—
Developing a Sense of Place and Being
- Student presentations continued.

[Note: Final Assignments due
Monday, December 13 @ 3:00pm Rm. 16]

COURSE EVALUATION:
A. Participation in class and field excursions: 25%
As this is an EE/OE course, participation in all its aspects is critical.

B. Developing a Sense of Place and Being: 25%
This assignment will be introduced during our excursion to Spencer Gorge/Webster's Falls next week and will be developed during the course of the term. The assignment will involve developing an intimate sense of place ("natural" location) to explore other ways of being. On Wednesday, October 6 preliminary understandings of this Sense of Place will be explored with your colleagues in a seminar. A final presentation of your Sense of Place and Being will be made to the group during the weeks of November 3 and 10. Details of this assignment will be given during our second session.

C. Environmental Education/Outdoor Education Action Plan: 50%
The Environmental/Outdoor Education Action Plan is an activity you select and perform involving a learning experience with students in the outdoors, or where you bring the "outdoors" into the classroom. Again, an environmental or ecological theme should permeate the action plan. This experience can take place within a school during your first practicum, or in a completely different context. For example, volunteering at an outdoor center, nature park, museum, or hobby farm. It can be with an organized group such as cubs or scouts, a church youth group or a nature club. The nature of the activity is broadly conceived. It may be something that we've explored in our group, or something entirely original. The activity must take six (6) hours to complete in total. A written report must be submitted. Details of this assignment will be provided just prior to your November practicum.

REQUIRED READING
In most cases, required readings will be completed during class meeting times.
Bowers, J. & McEwan, S. (1989). *Where is the Environment in Ontario's New Curriculum? Interactions: The Ontario Journal of Environmental Education*, 11(1), 1-3.

Ministry of Education. (2007). *Shaping our schools, shaping our future: Environmental education in Ontario's schools*. (Report of the Working Group on Environmental Education). Toronto, ON: Queen's Printer.
Sauvé, L., (2005). *Currents in environmental education: Mapping the complex and evolving pedagogical field. Canadian Journal of Environmental Education*, 10(spring), 11-37.

OPTIONAL READING
Bowers, C. (1993). *Critical essays on education, modernity, and the recovery of the ecological imperative*. New York, NY: Teachers College Press.

Bowers, C. (1993). *Education, cultural myths, and the ecological crisis: Toward deep changes*. Albany, NY: State University of New York Press.

Bowers, C. (1997). *The culture of denial: Why the environmental movement needs a strategy for reforming universities and public schools*. Albany, NY: State University of New York Press.

McRae, K. (1990). *Outdoor and environmental education diverse purposes and practices*.
Australia: MacMillan.

Orr, D. (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany, New York: State University of New York.

Orr. D. (1993). *The dangers of education. In R. Miller (Ed.). The renewal of meaning in education*. Brandon, VT: Holistic Education Press.

Orr, D. (1994). *Earth in mind: On education, environment, and the human prospect*. Washington D.C: Island Press.

O'Sullivan, E. (1999). *Transformative learning: Educational vision for the 21st century*. Toronto: University of Toronto Press.

COURSE ED 3700 OUTLINE: EDUCATING FOR A SUSTAINABLE FUTURE: A MULTIDISCIPLINARY APPROACH

York University, Faculty Of Education

Course Director: Dr. Don Dippo
Email: ddippo@edu.yorku.ca

COURSE DESCRIPTION

Education has been identified by leaders at all levels as a key tool in the move towards a more sustainable future. In order to solidify and give substance to this effort the UN has declared 2005 to 2014 as the UN Decade of Education for Sustainable Development. Amongst other suggestions, education for sustainable development (ESD) calls for the reorientation of education at all levels. However, few models of ESD have been created or implemented at any level. To complicate matters, few processes for reorienting education to address sustainability exist to date. This course will help students gain background knowledge related to the complex concept of sustainability and issues related to its major components. The course will also deal with issues central to the concept of sustainability (e.g., globalization, development, poverty, violence, gender relations, and climate change). In addition the course will also focus on developing education-based skills, values, perspectives and knowledge to address these urgent issues.

This course provides an introduction to the role that education plays in creating a more sustainable future for all. The course aims to explain the emergence of the concept of global sustainability, global citizenship, and the anticipated contributions of education at various levels (e.g. elementary, secondary, postsecondary, adult education), various global scales (e.g. bioregional, national, international) and in various contexts (e.g. classroom, nature, intercultural). It begins with a critical and historical analysis of sustainable education, and then shifts to an examination of various different approaches to thinking about and practicing sustainable education. The course ends with the contemplation of questions concerned with 'educating for a sustainable future.' Students will have an opportunity to consider ways of bringing these issues into a school curriculum context, both through in-class group work and in their research topic. Finally, the course will provide students with opportunities to become skilled in the practice of teaching and learning outside.

COURSE MANAGEMENT – TEACHING AND LEARNING PHILOSOPHY

In this course, all of us (instructor and students) are teachers and learners, and to be involved in the class discussions requires an active engagement with course readings, lectures, discussions, and the on-going assignments. These activities act as touchstones for students to teach the instructor and each other about their understanding of the material and their questions. The instructor is responsible for preparing lectures and exercises that are meant to facilitate points of entry into these issues within a safe and challenging learning environment. Students are expected to do all readings, attend classes, engage appropriate practices/methods for assignments, think critically, and allow inspiration and imagination to infuse individual research and collective discussion.

PURPOSE & OBJECTIVES OF THE COURSE:
The purpose of this course is to encourage students to think about how issues of environmental sustainability can be incorporated in their pedagogical practice. There are four specific objectives:

1) To survey concepts of sustainability in relation to education, while recognizing that this survey is by no means comprehensive;
2) For students to pick one environmental issue and do a theoretical analysis of how one can pedagogically address the issue.
3) To be prepared to enter into dialogues and share knowledge with the instructor and other students in the class, such that different perspectives and approaches to sustainable education can provide insight to our future work.
4) To work outside in groups and attempt to formulate ways of integrating sustainability education into various outdoor learning environments (e.g. elementary, secondary, informal nature education).

ORGANIZATION OF COURSE:
The course is largely designed in a seminar format that requires each student lead two discussions of the weekly readings. The course director will supplement these seminar discussions with some lectures over the term that provide context for upcoming readings, or deepen issues that have been presented with specific case studies. Multi-media may also be used in some classes. The class will also include presentations of sample lessons that students have developed collaboratively that make use of outdoor learning environments.

EVALUATION:
The grades for the course will be based on the following percentages for each activity:

Assignment	**Percentage and Due Date**
Lead Small Group discussions of Readings	20% (students self-organize dates on which to lead)
Group Lesson Plan Project/Presentation	30% (groups will start presenting in week 2)
Research Paper Project: (2 components)	40% (2 components)
• Research Paper/Unit Plan Proposal • Research Paper/Unit Plan	• 10% due class 4 • 30% due class 9
Self-Evaluation (in-class, small/large group; GLPP/P)	10% on-going

Small Group Discussions of Readings: (20%)
Each student will have one opportunity to lead the weekly small group discussions during class. Students can use the following questions as a guide for what is expected:

- Briefly outline what one of the readings is about (what is the main point of the reading?) and identify common theme(s) in the reading and their importance. Consider ways to incorporate aspects of the other weekly readings, previous discussions, and personal experiences that seem relevant to and expand your discussion.
- Is there a line or quote that resonates with you? What is it and why?
- Are there perspectives, approaches, questions left out of this reading which are important for understanding the topic?
- How has this article caused you to think about your role as a teacher?
- Connect one or more of the themes to an educational issue or experience that resonates with you (i.e., Where/when did the learning happen for you?) and/or connect the reading(s) to a current media event (How does the reading help to inform the media event and how does the media event inform the reading?).
- Identify one burning question the reading raises for you (e.g., What are the most important questions remaining unanswered?)

Students leading the discussion are expected to:

- Prepare a brief outline (using above guideline) of their response to the reading along with their discussion questions (1-2 page maximum double spaced). (Due: the week when the discussion is lead)

Students not leading the discussion for the week are expected to:

- Prepare by doing readings and sketching out responses to the above questions.

Research Paper/Unit Plan Proposal 10% (Due: Class 4)
This assignment entails preparing a 2-3 page proposal for the final research paper/unit plan. The proposal should include an introduction to the topic/question and a bibliography.

Research Paper/Unit Plan 30% (Due: Class 9)
The critically researched paper is to be approximately 6-7 pages in length. In this paper, students will do a critical analysis of sustainability education as it pertains to either a particular sustainability issue (e.g. social, economic, environmental) or to a particular approach to sustainability education (e.g. global education, environmental education, wilderness/nature activities, indigenous thought). The paper will make explicit connections to schooling and will be expected to draw on course readings. The unit plan should include at least five linked lessons focused on a sustainability issue that make use of the outdoors as a teaching and learning environment.

Group Lesson Plan Project/Presentation &
Handout 30% (Due: weeks when presentations are made)
Small groups (3–5 students) will be asked to do a 30 minute lesson presentation starting on class 6. Dates will be arranged on class 2 when the groups will be formally put together and given time to brainstorm ideas and explore the campus as an outdoor learning environment. Each group will be asked to develop a lesson for a particular sustainability concept/issue that makes use of the outdoors as a teaching and learning environment. The presentation will take place outside and will include four components: 1) identify a particular sustainability concept/issue and explain its relevance for education; 2) identify the big idea or enduring idea they are trying to address (the big idea is usually not written in the curriculum documents, but is such that it is the major idea

that the teacher is trying to get across); 3) explain what the lesson is about, what ages it is targeted for, and what kinds of accommodations they might consider; and 4) use the different age group specialties in the group (e.g. elementary, secondary) as a way for highlighting different age-specific exercises and why they are useful for elaborating the sustainability concept/issue.

Self-Evaluation 10%

- In-class participation (due ongoing) – attendance, in-class small group/large group participation, outdoor activities.

**Parts of the above adapted from Timothy B. Leduc, Education for a Sustainable Future, Winter term, 2009, York University and Randa Khattar, Education for a Sustainable Future, Winter term 2011, York University*
Required Reading:

1. Orr, David (2004). Earth in Mind: On Education, Environment, and the Human Prospect. Washington: Island Press.
2. Shiva, Vandana (2005). Earth Democracy: Justice, Sustainability, and Peace. Boston: South End Press.

WEEKLY READINGS/ACTIVITIES

Class 1: Introduction to Education for Sustainability (and to course purpose and to each other)

- Course introductions – Origins of Sustainable Development – What is Sustainability anyhow and what does it have to do with education?
- Understanding the assignments
- Student Groups (discussion groups of 8 and teaching/learning groups of 4)
- Sign-up for leading weekly small group discussion and outdoor lesson
- Campus tour -- York University as an outdoor learning environment

Class 2: Earth Democracy

- Readings to be discussed: Shiva, Introduction and Chapter One, "Living Economies"
- Group leader:
- Learning Outside: Exploration #1.

Class 3: Earth in Mind

- Readings to be discussed: Orr, Introduction and Part One, "The Problem of Education
- Group leader:
- Learning Outside: Exploration #2.

Class 4: Earth Democracy

- Readings to be discussed: Shiva, Chapter Two, "Living Democracies"
- Group leader:
- Learning Outside: Exploration #3
- Due In Class: Research Paper/Unit Plan Proposal

Class 5: Earth in Mind
• Readings to be discussed: Orr, Part Two, "First Principles"
  - Group leader:
• Learning Outside: Exploration #4

Class 6: Earth Democracy
• Readings to be discussed: Shiva, Chapter Three, "Living Cultures"
  - Group leader:
• Learning Outside: Group Lesson Plan Presentations (3 groups)

Class 7: Earth in Mind
• Readings to be discussed: Orr, Part Three, "Rethinking Education"
  - Group leader:
• Learning Outside: Group Lesson Plan Presentations (3 groups)

Class 8: Earth Democracy
• Readings to be discussed: Shiva, Chapter Four, "Earth Democracy in Action"
  - Group leader:
• Learning Outside: Group Lesson Plan Presentations (3 groups)

Class 9: Earth in Mind
• Readings to be discussed: Orr, Part Four, "Destinations"
  - Group leader:
• Learning Outside: Group Lesson Plan Presentations (3 groups)
• Course-Evaluation; Self-Evaluation
• Due in Class : Research Papers/Unit Plans

ELECTRONIC RESOURCES

Shaping Our Schools, Shaping Our Future (a.k.a, The Bondar Report)
www.edu.gov.on.ca/curriculumcouncil/shapingschools.pdf

Ecological Footprints of Nations:
http://www.ecouncil.ac.cr/rio/focus/report/english/footprint

ESD Toolkit: www.esdtoolkit.org

Frameworks for Applying Sustainability in the City of Toronto:
http://www.utoronto.ca/envstudy/INI498/Salsbergf.htm

International Journal of Sustainability in Higher Education:
http://wwwmcb.do.uk/ijshe.htm

The International Council for Local Environmental Initiatives:
http://www.iclei.org

Learning for a Sustainable Future: www.lsf-lst.ca
The Natural Step Web site: http://www.naturalstep.org

Revisiting Carrying Capacity: Area Based Indicators of Sustainability:
http://dieoff.org/page110.htm

Seventh Generation Initiative and the Canada Well-Being Measurement Act: http://www.cyberus.ca/choose.sustain/7GI/election3.html

The Sustainability Report: The issues and Trends Shaping Canada's Health, Economy, and Environment: http://www.sustreport.org/home.html

Toronto's Ecological Footprint:
http://www.city.toronto.on.ca/energy/howbig.htm

United Nations Educational, Scientific and Cultural Organization (UNESCO)
www.unesco.org/education/desd

Why Sustainability is Wrong:
http://web.inter.nl.net/users/Paul.Treanor/sustainability.html

World Resources Institute:
http://www.wri.org/wri/enved

EARTH CHARTER RESOURCES:

The Earth Charter Initiative
www.earthcharter.org

Earth Charter in Action
www.earthcharterinaction.org

Earth Charter Community Action Too
www.earthact.org

Canadian Earth Summit Coalition
www.earthsummit.ca

DOCUMENTARIES:
Vandana Shiva on the Problem with Genetically-Modified Seeds
http://billmoyers.com/segment/vandana-shiva-on-the-problem-with-genetically-modified-seeds/

The documentary "I AM"
http://iamthedoc.com/

The documentary "The Great Milk Robbery"
http://www.grain.org/article/entries/4426-the-great-milk-robbery

EDU 5508H: EXPLORING ENVIRONMENTAL & SUSTAINABILITY EDUCATION

Ontario Institute for Studies in Education, University of Toronto

Instructor: Hilary Inwood, MA, M.Ed, Ph.D
Email – hilary.inwood@utoronto.ca

Supplementary Course Information: http://www.oise.utoronto/ca/ese

Course Description:
This course is an introduction to teaching and learning in environmental and sustainability education (ESE) in school and community settings. As an overview, it will introduce theory and practices from a range of related fields, including environmental education (EE), education for sustainable development (ESD), outdoor education, sustainability education, and ecojustice education. Through lectures, readings, experiential activities and assignments, you will develop/deepen your own environmental literacy as well as your individual perspective on ESE, and experiment with strategies for bringing environmental learning to school and/or community settings.

Expectations:

Course Expectations	OISE Learner Document Capacities	OCT Standards of Practice
• demonstrate a basic understanding of the Ontario Ministry of Education curriculum policies & expectations for Environmental Education	Subject Matter and Pedagogical Content Knowledge	Professional Knowledge Professional Practice
• begin to select instructional strategies for ESE to suit the developmental stages of children and youth	Knowledge of the Learner; Subject Matter and Pedagogical Content Knowledge	Commitment to Students and Student Leaning Professional Knowledge
• identify some of the best practices of curriculum design and instructional methods for ESE Learning and Teaching in Social Contexts	Learning and Teaching in Social Contexts	Professional Knowledge Professional Practice
• gain a basic understanding of ESE history & theories and begin to apply these to practice in environmental and sustainability education	Subject Matter and Pedagogical Content Knowledge	Professional Knowledge Professional Practice
• practice developing and implementing cross-curricular ESE components (eg. activities and/or lesson plans) Professional Practice	Subject Matter and Pedagogical Content Knowledge	Commitment to Students and Student Leaning Professional Practice
• begin to understand how to connect teaching and learning to student's lives and positive social/environmental change	Transformative Purposes of Education Learning and Teaching in Social Contexts	Commitment to Students and Student Leaning
• understand how (and why) to continue professional development in environmental and sustainability education	Teacher Identity; Learning and Teaching in Social Contexts	Ongoing Professional Learning Leadership in Learning Communities

Course Assignments and Evaluation

1. Environmental Self-Portrait – describe your connection to an environmental issue (eg. water pollution, habitat destruction, food production, overpopulation, etc.), summarize your learning about that issue, identify three key readings that have influenced your understanding of the issue, and relate it to two environmentalists/artists/scientists/musicians/etc whose work in this area inspires you. Detailed instructions are provided.
   • *Four to six pages, word-processed*
   • *Weight: 30%*

2. Experiential Learning Activity Assignment – working in groups of 5, lead an experiential, outdoor learning activity for the class, connecting it to an environmental learning, issue or concept. (Can be integrated with other subjects as desired.)
   Verbal report in class; summary posted on Blackboard (dates tba)
   • Weight: 10%

3. Resource Sharing – share a print or digital resource in ESE with your colleagues in class that you consider valuable.
   Brief verbal report in class; posting on Blackboard • • • (dates tba)
   • Weight: 5%

4. Action Learning Project – design and pilot a learning experience or resource for children or adults in environmental, sustainability or ecojustice education for a school, university or community setting. Working individually or in small groups (max. 3), it must incorporate strategies to develop learners' environmental literacy about a specific issue and encourage them to take action on it, drawing from a balance of learning in, about and for the environment. A one page proposal will outline your plans, a presentation in class will share your experience with your peers and a final paper will summarize the project.
   • Detailed instructions are provided.
   • Weight: 40%

5. In-Class Assignments and Professionalism - Your active participation is an essential requirement for the course. You are expected to display the same qualities as a professional educator: commitment to excellence, honesty and integrity, respect for others, dedication and responsibility (see the Teacher Candidates and Professionalism brochure for more detail.) It means attending class punctually and regularly, participating in and contributing to in-class activities, doing the readings and assigned homework, and accessing and contributing to the digital discussions on Blackboard.
   • Ongoing
   • Weight: 15%

A detailed description of each assignment and the criteria used for its assessment will be posted on the course Blackboard site in the 'Assignment Info' area.

COURSE SCHEDULE & READING LIST
These readings are to be done in advance of each class as we will discuss them each class. Links and PDFs for all readings are available in the 'Readings' section on the course Blackboard site.

Session 1: Starting Points
Ontario Ministry of Education. (2009). *Acting today, shaping tomorrow: A policy framework for environmental education in Ontario schools*. Retrieved from
http://www.edu.gov.on.ca/eng/teachers/enviroed/action.html

Scope and Sequence of Expectations Grades 9-12
http://www.edu.gov.on.ca/eng/curriculum/secondary/environment.html

Scope and Sequence of Expectations Grades 1-8
http://www.edu.gov.on.ca/eng/curriculum/elementary/environment.html

Session 2: Roots of EE: History, People, Events and Policies
Orr, David. (1991). What is education for? Six myths about the foundations of modern education and six new principles to replace them. *The Learning Revolution, Winter* 1991, (p. 52-57)

Palmer, J. (1998). *History and Development of Environmental Education* (chap. 1). Environmental Education in the 21st Century. New York: Routledge, pp. 3-31.

Check out your own ecological footprint at: Ecological Footprint: Center for Sustainable Economy
http://myfootprint.org/en/

Individual Reading on an ESE-connected person, event or organization (as assigned in class 1)

Session 3: Theories and Practices of ESE
Sauvé, L. (2005). Currents in environmental education - Mapping a complex and evolving pedagogical field, *The Canadian Journal of Environmental Education*, 10, (pp. 11-37).

Martusewicz, R. Edmundson, J. and Lupinacii, J. (2011.) Intro: The purposes of education in an age of ecological crises and worldwide insecurities (Ch. 1). *In Ecojustice Education: Towards diverse, democratic and sustainable communities*. New York: Routledge (pp. 1-20.)

Session 4:: Learning 'in' the Environment /Field Trip to EBW
Louv, R. (2007). No Child Left Inside: *The Growing Movement to Reconnect Children with Nature*. Orion Magazine, April/May issue (n.p.).

Sobel, D. (2004). *Place-based Education: Connecting Classrooms and Communities.* Great Barrington, MA: Orion Publishing, (pp. 1-12).

Session 5: Learning 'about' the Environment: Connecting to Ecological literacy
Capra, F. (2005). "Speaking Nature's Language: Principles for Sustainability". In M. Stone and Z. Barlow (ed), *Ecological literacy : educating our children for a sustainable world.* San Francisco: Sierra Club Books, (pp. 18-29).

Weston, A. (2004). *What if teaching went wild?* Canadian Journal of Environmental Education 10, pp. 31 – 46.
View the TED Talk by Janine Benyus on Biomimicry: sharing nature's designs:
http://www.ted.com/talks/lang/en/janine_benyus_shares_nature_s_designs.html

Session 6: Learning 'for' the Environment: Intro to Student Activism
TDSB's *Ecoschools Certification Toolkit* 2012-13. Toronto: Toronto District School Board.
TED Talk: Stephen Ritz – A Teacher Growing Green in the South Bronx
http://www.ted.com/talks/lang/en/stephen_ritz_a_teacher_growing_green_in_the_south_bronx.html

Session 7: Working Towards Change in ESE
Martusewicz, R. Edmundson, J. and Lupinacii, J. (2011.) Teaching for the commons: Educating for diverse, democratic and sustainable communities (Ch. 9). In *Ecojustice Education: Towards diverse, democratic and sustainable communities*. New York: Routledge (pp. 275-315.)

Beckford, C. and Nadhee, R. (2010). Teaching for Ecological Sustainability: Incorporating Indigenous Philosophies and Practices. Research Monograph #36. What Works? *Research into Practice*. Toronto: Literacy and Numeracy Secretariat and Ontario Association Deans of Education.
Excellence in Environmental Learning and Student Engagement. Retrieved from
www.green-street.ca/files/TenPrinciplesofExcellentEnvironmentalEducation.pdf

Session 8-9: Student Presentations
No class readings; individual readings will be done in preparation for the Action Learning Project.

SUSTAINABILITY
OISE is committed to supporting the Ministry of Education's policy on Environmental Education, and creating a culture of sustainability in teaching and learning through paper and waste reduction, energy conservation and other initiatives. This module is a certified Green Course, that not only explores Environmental and Sustainability Education concepts but also models appropriate sustainability strategies for classrooms. To learn more about Environmental and Sustainability Education at OISE, visit http://www.oise.utoronto/ca/ese

EDU 3239: CLIMATE CHANGE PEDAGOGY

Lakehead University

Instructor: Natalie Gerum
Email: ngerum@lakeheadu.ca

COURSE DESCRIPTION

Climate Change Pedagogy is a special topics course. This course explores climate change as a defining issue for educators and students. It inquires into how educators can most effectively engage with climate change as an environmental, political, and social justice issue.

FOUNDATIONS OF PROFESSIONAL PRACTICE

A commitment to a clear vision of what it means to be a teacher is at the core of teacher professionalism and is the foundation for this course. The principles of the Ontario College of Teachers' (OCT) Foundations of Professional Practice have been embedded in the learning expectations for this course.

COURSE OBJECTIVES

This course explores how we might develop our capacities as engaging and effective climate change educators. Bringing together theory and practice, the course will consider questions such as: Why should climate change matter to the students in our classrooms, fellow educators in our schools, and the schools in our communities? What responsibility do educators have to engage with climate change? How can teachers most authentically educate around issues of politics, science, and ethics in our classrooms? What role can educators play in shaping a more resilient future?

I don't believe that I, as a single instructor, can dictate to all of you wonderfully diverse people what your learning objectives should be for the course. I want this course to hold real meaning for you, both as educators and as citizens alive at this moment on the planet. I want for this course to be relevant to the educational contexts where you envision yourself working. Therefore, I do not wish to attempt to tell you what your objectives for the course should be. Throughout the course, we will share many conversations around your learning objectives and I'm excited to learn about what you're most excited to learn about.

I do, however, step into this experience with some of my own objectives around what I hope to teach and how I hope to teach. These will surely evolve over the course of our experience, but I want you to be aware of the principles that are guiding my participation in this experience. They include the following objectives:

- To develop understandings of climate change as a defining issue of our lives and the lives of our students
- To develop understandings of climate change as being political, systemic, and intersectional
- To develop understandings of education as being political, systemic, and intersectional
- To recognize the ways in which systems of education can make us complicit in climate change while simultaneously positioning us as being able to take meaningful action on climate change
- To nurture a sense of responsibility, commitment, and excitement for acting on climate change as educators and as citizens
- To facilitate learning experiences that transform classrooms into communities of action
- To have courage, to be vulnerable, to make mistakes, to learn, and to be a part of creating a classroom community for change

TEXTS/READINGS
There is no textbook or course package to purchase. All course readings will be handed out in class or emailed to you, or they are available at the URLs listed.

ASSIGNMENTS AND EVALUATION
NOTE: Please submit a printed copy of all of your assignments, unless otherwise indicated. Please double-space your assignment, as this is extremely helpful for me when providing feedback. As well, all assignments are due at the beginning of class, unless otherwise indicated – thanks!

1. Climate Change Pedagogy, according to YOU
(500 word max) (10%)
Following our first class, please write a personal reflection that responds critically to the following questions:
- How did you come to choose to take this course? • • • Why are you here?
- What, if any, is your past experience with climate change education, or related topics? Is this brand new material for you?
- What do you hope to learn during this course?
- What are some of the big questions you have about climate change pedagogy?

2. Climate Myth-Busting!
(facilitation session – 20 min) (25%)
In our second class, we will work to name some of the key concepts and key misconceptions that come up in climate change education. Then, in groups of 4 or 5, you will take on one of these key climate myths to bust – using an experiential activity, workshop, facilitated experience, etc. Each week, one group will lead the class through their myth-busting exercise. The purpose of this assignment is to give you an opportunity to develop, lead, and reflect upon an activity you could take with you to the contexts in which you will work as educators. So, do something that is relevant to your pedagogical goals.

PART A: Proposal (5%) - as a group, please prepare a single-sided one-page outline of your proposed myth-busting experience. This outline can be in point form, however it must provide sufficient detail for me to understand what you are going to do. Please highlight what myth you are working to bust, what objectives you have as facilitators for the session, what activities/experiences you are planning to facilitate, and how you are going to engage the active participation of the class. The proposal is due one-week prior to your facilitation session.

PART B: Myth-Bust! (15%)

PART C: Personal Reflection (5%) – following your facilitation session, each member of your group is asked to submit a reflection on their personal experience of the activity. In this reflection, please briefly outline your particular contributions to the group. As well, please consider what worked well, what you found challenging, what you might do differently, and how you would go about integrating this (or a similar) experience into wherever you see yourself teaching (school, outdoor educational centre, NGO, etc.) This reflection should be 500 words max. and is due 2 weeks following your session.

3. Reading & Classroom Responses - your choosing (20% - 2 x 10%)
These responses are intended to deepen your engagement with course material, as well as to develop your ability to critically and creatively respond to course readings and classroom experiences. The first response will pertain to the readings from Week 2 (January 16th), however it will be due on January 30th, 2014 to give you a chance to respond to the evaluations from your first assignment. For the second response, please either select a reading from another week in the course OR you can choose to respond to a significant learning moment you have experienced in class. This second response will be due by the last day of class – March 13th. However, you are welcome to submit this second response earlier in the course. Each response will be worth 10% of your final grade.

In terms of form, you may choose to complete written responses. For written responses, please briefly summarize the readings, and then introduce your perspective on the main ideas in the piece. Please also respond to how the themes in the readings relate to your classroom experiences (in climate change pedagogy or other courses) to date. Written responses should be 500 words max.

You may also choose to submit alternative responses. These could be artistic, musical, experiential … interpretive dance anyone?! Really, an alternative response can take just about any form, and I'm excited for you to pursue something that is meaningful, and maybe even a bit out of your comfort zone. If you are going to pursue an alternative response, please check-in with me about your idea so we can collaboratively establish some objectives for the response.
Please note: you may submit two written responses, two alternative responses, or one of each – it's up to you!

4. Final Project 45%)
This is an opportunity to pursue a project that is exciting for you. The project can be based around a course topic you find particularly interesting, a skill relevant to climate change pedagogy you wish to further develop, a toolkit you wish to develop to bring with you into your future teaching experiences, or a big question pertaining to climate change pedagogy you wish to explore in some depth. I want to provide you with lots of latitude to find something in which you are willing to invest time, effort, and energy. We will talk more about the final project in class as you work to define your own initiative. For now, know that you are being absolutely encouraged to pursue something that speaks to who you are as a climate change educator. There are two parts to this assignment:
PART A: Project Proposal (10%)

750 word max. to describe the project you are pursuing. In this proposal, please outline what you are proposing to do (the more detail the better to help me understand), why you are interested in this project, your objectives for the project, and how you will accomplish it (it's helpful to outline the steps you will take and personal due dates for each step). Parts of the proposal may be in point-form or chart, however please compose complete sentences on what you are proposing to do and why you are interested in the project. I will provide feedback on your proposal by February 13th. Please note: I may ask to meet with you to further discuss your proposal, as needed!
PART B: Final Project (35%)

The final project! If your project is a wee bit out of the ordinary, and therefore requires a different submission structure (e.g. – it's a presentation or performance that you're going to show me, etc.), we will establish an alternative submission date at the proposal stage.

COURSE SCHEDULE - Flexible and subject to change!
Please note: Class discussion is at the core of this course. Doing the readings is respectful of the time and efforts of the whole community.

WEEK ONE: Glaciers Are Melting Faster Than Education Is Changing

WEEK TWO: Climate What?! An Introduction to Climate Change

DUE: Climate Change Pedagogy According To You
Greenwood, D. A. (2012). Afterword: Can higher education take climate change as seriously as the CIA and the Stratigraphy Commission of the Geological Society of London? In Samuel Day Fassbinder, Anthony J. Nocella II, & Richard Kahn (Eds.), Greening the academy: Ecopedagogy through the liberal arts (pp. 217-219). Rotterdam: Sense Publishers.Robinson, Z. (2011). Teaching Climate Change in Higher Education: Barriers and Opportunities. In Simon K. Heslett, Derek France, and Sharon Gedye (Eds.), Pedagogy of Climate Change. (pp. 36-50). London: The Higher Education Academy, Geography, Earth, and Environmental Sciences.

WEEK THREE: From Individual, to School, to City, to ... A Systems View of Climate Change
Eisner, E. (1985). The three curricula that all schools teach. In The Educational Imagination, 2nd Ed, pp. 87 – 107. New York: Macmillan. Orr, D. (1991). What is education for? In Context: A Quarterly of Humane Sustainable Culture. http://www.context.org/ICLIB/IC27?Orr.htm

WEEK FOUR: Let's Get Political! Teaching Climate Change as a Political Issue

DUE: Response #1
Clarke, P. (1992). Teaching controversial issues: A four-step classroom strategy for clear thinking on controversial issues. Green Teacher (31) 9-13. PF Pictures (Production Company), & Nyks, K. & Scott, J. P. (September 22, 2013). Do The Math [Motion picture]. U.S.A. Sterling, S. (2002). Yaya' and the firbough: A philosophy of respect. Canadian Journal of Environmental Education, 7(1), 43-53.

WEEK FIVE: Canada: A Fossil Fool? An Exploration of Canadian Climate (in)Action and Climate Justice
McKibben, B., & Levant, E. (2012, March 5). Bill McKibben And Ezra Levant Debate Keystone XL Pipeline Pros And Cons. Huffington Post Green.
http://www.huffingtonpost.com/2012/03/05/bill-mckibben-ezra-levant-debate_n_1321682.html
Cheadle, B. (2013, November 18). Canada's Climate Policy Worst in Developed World: Report. Huffington Post Business. http://www.huffingtonpost.ca/2013/11/18/canada-climate-policy-worst_n_4296396.html
Panetta, A. (2013, December 2). Mark Jaccard, Ex-Harper Appointee Calls Canada a 'Rogue State' on Environment. Huffington Post Politics.
http://www.huffingtonpost.ca/2013/12/02/mark-jaccard-canada-environment_n_4373266.html

WEEK SIX: No Crying Allowed? Teaching Climate Change as an Emotional Issue
Macy, J. & Johnstone, C. (2012). Chapter Four: Honoring Our Pain for the World. In Joanna Macy & Chris Johnstone. Active Hope: How To Survive the Mess We're In Without Going Crazy (pp. 57-84). Novato, California: New World Library.

READING WEEK

WEEK SEVEN: Caped Climate Crusaders! Teaching as Activism
Klein, N. (2013, October 29). How Science Is Telling Us All To Revolt. NewStatesman. http://www.newstatesman.com/2013/10/science says-revolt Hansen, J. (presenter). (February 2012). Why I Must Speak Out About Climate Change. TED Talks. Podcast retrieved from:
http://www.ted.com/talks/james_hansen_why_i_must_speak_out_about_climate_change.html
Jensen, D. (2004). Chapter Fifteen: Revolution. In Derrick Jensen. Walking On Water: Reading, Writing, Revolution (pp.13-25). White River Junction: Chelsea Green Publishing.

WEEK EIGHT: Climate Change According To You, Part 2

WEEK NINE:
DUE: Response #2 and Final Project
Hawken, P. (2009). Commencement address to the class of 2009 at the University of Portland [Speech Transcript]. Retrieved from University of Portland commencement website:
http://www.up.edu/commencement/default.aspx?cid=9456

EDU 3219: OUTDOOR ECOLOGICAL & EXPERIENTIAL EDUCATION (GROUP PROJECT)
Lakehead University

Instructor: Bob Jickling
Email: bob.jickling@lakeheadu.ca

COURSE DESCRIPTION
An introductory first-hand examination of knowledge, skills and values necessary to develop and implement an outdoor experiential education program. The focus will be interdisciplinary, including science, geography, history and art perspectives, as well as the more traditional outdoor education focus.

FOUNDATIONS OF PROFESSIONAL PRACTICE
A commitment to a clear vision of what it means to be a teacher is at the core of teacher professionalism and is the foundation for this course. The Standards of Practice for the Teaching Profession and the Ethical Standards for the Teaching Profession have been embedded in the learning expectations for this course.

COURSE EXPECTATIONS
This course extends the work begun in EDUC 3218 FA: OUTDOOR, ECOLOGICAL, AND EXPERIENTIAL EDUCATION (INDIVIDUAL ACTION PROJECT). We will, thus, continue to explore theoretical and practical relationships between education and action.

In this instance the community action will take the form of a group project. Class participants must imagine how they might collectively make a contribution to their community—how they might make a difference socially and environmentally—and reach a consensus about what action should be taken. This project should also involve active engagement with the broader Thunder Bay community on an ongoing basis.
In general the course will deepen our explorations of questions like: What is the relationship between citizen action and education? Should we enable student action projects? If not, then what might be the consequences? What do we do when action projects become controversial? And, is it the educator's role, or even responsibility, to be a citizen too—enact his or her own actions?

More specifically, this course will, through readings and actions, give additional focus to the following themes: reconnecting humans and the more-than-human, relationships between citizens, ideological influences, democracy, ethics, and teaching as activism.
It is expected that, by the end of the course, learners will have:
- become involved in a group action project and provided a service to the community;
- engaged with the theoretical questions posed in readings and through discussions;
- considered these questions and themes in light of their community service experiences, and
- begun to re-imagine roles and responsibilities of professional educators relative to community service and action.

READINGS

Papers from the book: ***Teaching as activism: Equity meets environmentalism***,
Tripp, P., & Muzzin, L. (2005). Overview. In Peggy Tripp & Linda Muzzin (Eds), Teaching as activism: Equity meets environmentalism, pp. 3-21.

Menzies, H. (2005). The seedlings mattered. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 25-33. McGill-Queen's University Press.

Jickling, Bob. (2005). "The wolf must not be made a fool of": Reflections on education, ethics, and epistemology. In Peggy Tripp & Linda Muzzin (Eds.), ***Teaching as activism: Equity meets environmentalism***, pp. 35-45. McGill-Queen's University Press.

Tripp, P. (2005). Teaching sustainable science. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 65-79. McGill-Queen's University Press.

Matthews, Ann. (2005). Mainstreaming Transformative teaching. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 95-105. McGill-Queen's University Press.

Battiste, M. (2005). You can't be the global doctor if you are the colonial disease. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 121-133. McGill-Queen's University Press.

Muzzin, L. (2005). The brave new world of professional education. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 149-166. McGill-Queen's University Press.

Abergel, E.. (2005). Working in the field of biotechnology. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 167-177. McGill-Queen's University Press.(2005).

Eichler, M. (2005). The Illiteracy of social scientists with respect to environmental sustainability. In Peggy Tripp & Linda Muzzin (Eds.), ***Teaching as activism: Equity meets environmentalism***, pp. 35-45. McGill-Queen's University Press

Frize, M. (2005). Teaching engineering as if the world mattered. In Peggy Tripp & Linda Muzzin (Eds.), ***Teaching as activism: Equity meets environmentalism***, pp. 35-45. McGill-Queen's University Press

Battiste, M. (2005). Post-colonial remedies for protecting indigenous knowledge and heritage. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 121-133. McGill-Queen's University Press.

Fawcett, L. (2005). Bioregional teaching: How to climb, eat, fall and learn from porcupines. In Peggy Tripp & Linda Muzzin (Eds), ***Teaching as activism: Equity meets environmentalism***, pp. 35-45. McGill-Queen's University Press.

Readings from the ED 4284 Reading Pack

Jickling, Bob. (2005). Education and advocacy: *A troubling relationship. In E. A. Johnson & M. Mappin (Eds.), Environmental Education and Advocacy: Changing Perspectives of Ecology and Education*, (pp. 91-113). Cambridge, U.K.: Cambridge University Press.

McLaren, M. & Hammond, B. (2005). Integrating education and action in environmental education. In E. A. Johnson & M. Mappin (Eds.), *Environmental Education and Advocacy: Changing Perspectives of Ecology and Education*, (pp. 267-291). Cambridge, U.K.: Cambridge University Press.

Handouts

Jickling, Bob, & Wals, Arjen E. J. (2008). *Globalization and environmental education: Looking beyond sustainability and sustainable development*. Journal of Curriculum Studies, 40(1), 1-21.

Niblett, B. Integrating Advocacy and environmental education: A response to Burns & Norris. Unpublished manuscript submitted to Paideusis.

ASSIGNMENTS AND DUE DATES

General comments

Some worthwhile educational activities defy measurement and evaluation. Indeed, they can even be hard to talk about, especially when the learning is experientially driven. The action project largely fits this description. One way to look at this aspect of an experientially based course is to think of it, at least in part, as something of a pass/fail experience. So this is along the lines of what I suggest we do with portions of the grade. The expectations that we have for students here is to achieve a standard right at the border between Level 3 and Level 4 on the faculty rubric—80 %.

Group Action Plan (5%)

Early planning is essential for a course like this and you will need to come up with one overall plan for the group. A summary of this group-action project plan, including specific contacts and phone numbers as appropriate, is required. This will be viewed as a pass/fail item (See General Comments.). That is, you collectively need to work out, write, and submit one plan. Due on January 19.

Review of Reading (20%)

You are asked to read and report, in the form of a panel discussion, on one text from the suggested list. This discussion and report should provide a thoughtful exploration of:

- The central thesis or message the author(s) is (are) developing,
- How this reading contributes to your ongoing understating about relationships between education, community action, and your own life, and
- Why someone else should or should not read this work.

In preparing your thoughts you may wish to draw from your own experiences, other course readings, or readings from EDUC 3218. An evaluation rubric is provided. Written report due: February 16, 2011.

Final In-class essay (30%)
This essay will require learners to provide a thoughtful exploration of relationships between education and community action in light of their emerging understanding of education through the readings, and through their own experiences—during this course and before. The essay will be framed by choosing one of several questions provided at least one week beforehand. This will be evaluated with aid of the faculty rubric.
Date: February 23, 2011.

Final Report (45%)
When the project is finished we should have a thoughtful, professional, report that is available for those involved in, or affected by, your project, and for the benefit of those that follow. In terms of workload, each individual is expected to contribute about 1000 words, but it is up to you to decide how you want to distribute the work. For example, larger sections (say 3000 words or so) could be written by a team of three and shorter sections written by individuals. In the end, though, it should all hang together as a coherent report. The report structure will be determined, at least in part, by the nature of your project, but for start consider that reports often include some or all of the following:

- An introduction outlining the rationale for the project and a sense of the issue that you want to address.
- A sense of the work that precedes you—the history that you are building on. This might be called a literature review.
- A description of how you approached the problem. In some kinds of reporting this might be called the methodology,
- A description of what you did and the outcomes. Sometimes this looks like "results."
- Recommendations.
- A discussion about how the project helped you to consider questions raised in the course description and the course expectations.
- Conclusion.

Collectively, you will need to decide how to have your project evaluated, and how to organize and structure the report writing. Here are 3 options for evaluation of the project. As a group you need to choose one of them:

1. Pass or Fail in which the grade for this portion of the course would fall at the border between Level 3 and Level 4 on the faculty rubric—80 %,
2. Evaluation as a whole group using the faculty evaluation rubric. You must be clear about the implications of this though as there are sometimes difficulties around the way work load is perceived (sometimes folks feel that s small group of people is doing most of the work). If you are okay with this then we can proceed this way.
3. Evaluation, using the faculty rubric, of the contributions of smaller sub-groups—or committees—of the whole project. Again there can be workload issues that you need to be clear about.

The presentation of this report should be in the form of a "camera ready" document prepared as if for publication. This means that consistent formatting and referencing have been employed throughout and that it has been copy-edited.

Assignment Summary		Due date
Group Action Plan	5%	January 19
Review of Reading	20 %	February 16
In-class essa	30%	February 23
Action Project Report	45%	March 1

ATTENDANCE, ASSESSMENT AND EVALUATION
In general terms, evaluation of written material in this course will be based on the student's: depth of engagement with the course activities, questions, and readings; their clarity of thought, intellectual curiosity; and their intellectual generosity, self-reflexiveness, and critical thinking as reflected in the Faculty of Education assessment rubric. All assignments are due at the beginning of class on the prescribed date. Grades will be determined by the quality of the assignments as applicable to a professional educator. All written assignments must be typed and all late assignments will receive a late penalty of 10% per calendar day (excluding weekends), unless accompanied by a medical certificate. Anyone requesting an assignment extension for a legitimate reason will be required to complete a late submission contract one week (7 calendar days) in advance of the due date.

SYLLABUS
Week One:
Introduction. OE3 Community Action. Finalize project selection.

Week Two:
Community Action Planning Lab. Readings as identified in the course outline.

Week Three:
Community Action Planning Lab. Readings as identified in the course outline.

GROUP ACTION PLAN DUE
Week Four:
Community Action Planning Lab. Readings as identified in the course outline.

Week Five:
Panel Discussion and Seminar Based on course readings (The ordering of presentations might vary):

Week Six:
Panel Discussion and Seminar Based on course readings (The ordering of presentations might vary):

Week Seven:
Community Action Planning Lab. Review of reading due.

Week Eight:
Community Action Planning Lab. In Class Essay

Week Nine:
Group reporting on Community Action Project.
Final report due.

Culminating Week activity
Prepare message for next year's class. TBA

EDU 3218: OUTDOOR ECOLOGICAL & EXPERIENTIAL EDUCATION (INDIVIDUAL PROJECT)

Lakehead University

Instructor: Bob Jickling
Email: bob.jickling@lakeheadu.ca

COURSE DESCRIPTION

An introductory first-hand examination of knowledge, skills, and values necessary to develop and implement an outdoor experiential education program. The focus will be interdisciplinary, including science, geography, history, and art perspectives, as well as the more traditional outdoor education focus.

FOUNDATIONS OF PROFESSIONAL PRACTICE

A commitment to a clear vision of what it means to be a teacher is at the core of teacher professionalism and is the foundation for this course. The principles of the Ontario College of Teachers' (OCT) Foundations of Professional Practice have been embedded in the learning expectations for this course.

COURSE EXPECTATIONS

This course explores, both theoretically and practically, relationships between education and action.

In practical terms, this course takes place in the community. Students must first imagine how they might make a contribution to their community—how they might make a difference socially and environmentally. They must then research organizations and/or sites where they can enact their contribution by providing a strong environmentally-based service. In this context they must then provide 15 - 20 hours of service prior to the last class.

Theoretically, the course will examine questions like: What is the relationship between education and citizen action? Should we enable student action projects? If not, then what might be the consequences? What do we do when action projects become controversial? And, is it the educator's role, or even responsibility, to be a citizen too—enacting their own actions?

It is expected that, by the end of the course, learners will have:

- become involved in an action project and provided a service to the community,
- engaged with the theoretical questions posed in readings and through discussions,
- considered these questions in light of their community service experiences, and
- begun to re-imagine the roles and responsibilities of professional educators relative to community service and action.

COURSE CONTENT (see attached syllabus)

TEXTS

Required readings

A collection of readings is assigned. Some readings may be provided by instructor; the balance will be available at the Bookstore.

Supplemental reading

Tripp, P. & Muzzin, L. (Eds), Teaching as activism: Equity meets environmentalism. McGill-Queen's University Press. Ontario College of Teachers, Foundations of Professional Practice: http://www.oct.ca/standards/foundations.aspx

ASSIGNMENTS AND DUE DATES

General comments

Some worthwhile educational activities defy measurement and evaluation. Indeed, they can even be hard to talk about, especially when the learning is experientially driven. The action project largely fits this description. One way to look at this aspect of an experientially-based course is to think of it, at least in part, as something of a pass/fail experience. So this is along the lines of what I suggest we do with portions of the grade. The expectations that we have for students here is to achieve a standard right at the border between Level 3 and Level 4 on the faculty rubric—80 %.

Individual Action Plan (5%)

Early planning is essential for a course like this. A summary of the action project plan, including specific contacts and phone numbers, is due on September 16. This will be viewed as a pass/fail item (See General Comments.) Late plans will be reduced by 1 mark/ day that they are late.

Action Project (50% total)

I expect you to complete 20 hours of community service to meet this standard. So to summarize:

- completion of 20 hours of community service will result in Level 4/3 assessment (pass/fail) as outlined above, and
- completion of 15 hours of community service will result in Level 3/2 assessment.

Service evaluation (5%)

Submit an evaluation completed by the organization you served (stating that you fulfilled the required hours). A letter template will be provided. This, too, will be viewed as a pass/fail item.

Experiential dialogue (10%)

Ongoing participation in class dialogue is critical and is thus recognized.

This essay will require learners to provide a thoughtful exploration of relationships between education and community action in light of their emerging understanding of education through the readings, and through their own experiences—during this course and before. The essay will be framed by choosing one of several questions provided at least one week beforehand. This will be evaluated with aid of the faculty rubric.

Summary		Due date
Individual Action Plan	5%	September 15
Action Project	50%	Ongoing
In-class essay	30%	October 20
Submitted service evaluation	5%	October 27
Experiential dialogue	10%	Ongoing

ASSESSMENT AND EVALUATION

In general terms, evaluation of written material in this course will be based on the student's: depth of engagement with the course activities, questions, and readings; their clarity of thought, intellectual curiosity; and their intellectual generosity, self-reflexiveness, and critical thinking. Assessments, where appropriate, will be made using the 4-level rubric scale.

All assignments are due at the beginning of class on the prescribed date. Grades will be determined by the quality of the assignments as applicable to a professional educator. All written assignments must be typed and all late assignments will receive a late penalty of 10% per calendar day (excluding weekends), unless accompanied by a medical certificate.

ATTENDANCE

Active participation is always a critical component of field-based or discussion-oriented courses. There is important learning that takes place through experiences that lie outside of evaluation practices. The expectation is that your absences should not exceed (for important appointments, etc.) 1 class per semester. Missing 30 % of classes in a course during a semester is unacceptable and will result in a failing grade.

SYLLABUS

Week One: Introduction. Individual Action: When School and Community Meet.

Week Two: The virtues of controversy.

Thomashow, M. (1989). The virtues of controversy. Bull. Sci. Tech. Soc., 9, 66-70.
Clarke, P. (1992/93). Teaching controversial issues. Green Teacher, 31, 9-12.

Week Three: Alternatives that may involve less controversy.

Weston, A. (1996). *Deschooling environmental education. Canadian Journal of Environmental Education*, 1, 35-44. Spencer, D. The Gayngaru land rehabilitation project. In J. Andrew and I. Robottom, Environmental Education Across Australia, Case study 3, pp. 1-6. Geelong: Australian Association for Environmental Education.
Individual Action Plan Due. Share project ideas.

Week Four: Respect.

Sterling, S. (2002). Yaya' and the firbough: *A philosophy of respect. Canadian Journal of Environmental Education*, 7,(1), 43-53. Wren, L., Jackson, M., Morris, H., Geddes, C.. Tlen, D., Kassi, N. (1996). In a panel discussion: What is a good way to teach children and young adults to respect the land? In B. Jickling (ed.), A colloquium on environment, ethics, and education.(pp. 32-48). Whitehorse: Yukon College.

Week Five: Ethics as an everyday activity.
Naess, A. & Jickling, B. (2000). Deep ecology and education: A conversation with Arne Naess. *Canadian Journal of Environmental Education*, 5, 48-62. Kaza, S. (2002). Teaching ethics through environmental justice. Canadian Journal of Environmental Education, 7(1). 99-109.

Week Six: Education, advocacy, and action.
Jickling, Bob. (2005). Education and advocacy: A troubling relationship. In E. A. Johnson & M. Mappin (Eds.), *Environmental Education and Advocacy: Changing Perspectives of Ecology and Education*, (pp. 91-113). Cambridge, U.K.: Cambridge University Press.

McLaren, M. & Hammond, B. (2005). Integrating education and action in environmental education. In E. A. Johnson & M. Mappin (Eds.), *Environmental Education and Advocacy: Changing Perspectives of Ecology and Education*, (pp. 267-291). Cambridge, U.K.: Cambridge University Press.

Week Seven: No Class.

Week Eight: Group Action Project, brainstorming and planning.
In class essay.

Week Nine: Report on action projects. Service evaluation due.

EDU 4284: CURRICULUM & INSTRUCTION IN OUTDOOR, ECOLOGICAL & EXPERIENTIAL EDUCATION: I/S ENVIRONMENTAL SCIENCE

Lakehead University

Instructor: Bob Jickling
Email: bob.jickling@lakeheadu.ca

COURSE DESCRIPTION

This course will examine the knowledge, skills, and values necessary to develop and implement outdoor education in school programs and in programs outside regular schooling for students at the Intermediate-Senior level as specified in the Ministry of Education and Training Documents. Education 4284 I/S will lead to credit for a first or second teachable subject in Environmental Science. Note: An additional fee is required for this course.

FOUNDATIONS OF PROFESSIONAL PRACTICE

A commitment to a clear vision of what it means to be a teacher is at the core of teacher professionalism and is the foundation for this course. The principles of the Ontario College of Teachers' (OCT) Foundations of Professional Practice have been embedded in the learning expectations for this course.

COURSE EXPECTATIONS

The focus of this course is interdisciplinary. Using field experiences and readings, students also examine the value systems, or stories, that affect these issues, and how these values affect lifestyle choices and political decisions. Participants should expect to go outside in any weather, work experientially and collaboratively, and think about important issues.

There will be three weekend field trips. In some cases these trips will begin on Friday at 11:00 (possibly earlier) and in all cases will end at 4:00 on Sunday. The additional fee is charged to help defray costs of the field trips.

It is expected that, by the end of the course, learners will have:

- engaged with the content—the stories—presented through readings and discussions and enacted through outdoor activities,
- considered these stories and experiences in light of their own prior experiences and assumptions, and
- begun to re-imagine experiences, assumptions, and stories to live and teach by.

TEXTS/READINGS

Weston, A. (1994). *Back to Earth: Tomorrow's Environmentalism*. Philadelphia: Temple University

Tripp, P. & Muzzin, L. (Eds), Teaching as activism:
Equity meets environmentalism. McGill-Queen's University Press.

Government of Ontario. (2009). *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools*. http://www.edu.gov.on.ca/curriculumcouncil/ShapeTomorrow.pdf
Ontario curriculum, Gr. 11 & 12: Science
http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11_12.pdf
Ontario College of Teachers, Foundations of Professional Practice:
http://www.oct.ca/standards/foundations.aspx

Sierra Club of B.C. (No date) Barefoot Mapping (at the website the whole guide is delivered in 6 parts).
http://www.sierraclub.bc.ca/education/files/barefoot-mapping-guidebook

Additional Readings will be found in a Course Reader and in material provided by the professor.
At least one curriculum or curriculum supplement of your choice.

Supplemental Reading (No need to purchase):
Brooks, K. & McIllfaterick, E. (2003). *The Deep Ecological Handbook*. Thunder Bay: Lakehead University.
Project WILD Activity Guide. (1993). Ottawa: Canadian Wildlife Federation.

Jickling, Bob, Lotz-Sisitka, Heila, O'Donoghue, Rob, Ogbuigwe. Akpeizi. (2006). *Environmental Education, Ethics, and Action: A Workbook to Get Started*. Nairobi: UNEP.

REQUIRED SUPPLIES
Everyone is required to have a journal with blank (unlined papers). I would also encourage you to have a few art supplies; a small box of watercolour pencils and a paintbrush can be an excellent choice.

ASSIGNMENTS AND DUE DATES
Seminar Presentation (10%)
You are asked to give a 10-minute class presentation introducing a seminar based on weekly course readings. A written summary (about 1000 words) is to be submitted within a week of the seminar. The presentation should:
- Introduce the major elements the author is presenting in the chapters discussed. What point does the author want to make? Does the author justify his/her claims? Is there adequate support for these claims?
- describe what this reading selection means to your own thoughts, ideas, and experience. And, how do these readings relate to the roles of professional educators and community action projects?
- Suggest discussion points and questions for the seminar.
- You may be asked to lead a second seminar, but only one written summary is required.

Lesson Plan (10%)
You are asked to teach one short lesson to your colleagues. This will be accompanied by a lesson plan that is due as you present your lesson. The grade will involve a combination of instructor and peer evaluation. Due immediately following the presentation.

Two Short Assignments (40% - 20 marks each)
At intervals we will focus our work in the form of workshops on particular topics. You are asked to prepare a coherent and thoughtful response to each of these workshops in about 1000 words. Specific details about preparation of these assignments will be supplied during the workshops. The workshops and, hence assignment, topics are:
- A curriculum critique — Due October 28
- Self-validating reduction OR Reimagining the world — Due March 2

A Variation
As an alternate to the self-validating reduction or reimagining the world assignment, you may choose to:
- develop a unit plan for a school activity day that integrates Ministry's Policy Framework for Environmental Education in Ontario Schools and the Ministry Curriculum documents for Environmental Science.
- create 18 detailed journal entries (2 per week) that focus on connecting, or re-connecting, with place.
- create an interpretive story that you could use while teaching in formal and/or informal settings.

Creative Journal (10%)
You are asked to complete at least two creative journal entries per week for a total of 18 entries in the first term. One should be a reflection on the questions raised in anticipation of the weekly readings, the other should explore other creative mediums of expression. The grade will involve a combination of instructor and self-evaluation.

Quiz (10%)
There will be one short quiz in the semester after Christmas. Details TBA. February 17.

Experiential learning (out of 20%)
Some worthwhile educational activities defy measurement and evaluation. Indeed, they can even be hard to talk about, especially when the learning is experientially driven. The experiential learning components of this course—especially the field trips, fit this description. One way to look at these aspects of an experientially-based course is to think of them as a pass/fail experience. So this is along the lines of what I suggest we do with this portion of the grade. The expectations that we have for a pass is to a achieve a standard right at the border between Level 3 and Level 4 on the faculty rubric—80 %. This evaluation, then, is divided into 4 parts, one for each of the field trips and one for the balance of your experiential learning opportunities.

Assignment Summary	Weight	Due date
Seminar Presentation	10%	One week following presentation
Lesson Plan	10%	Immediately following presentation
Creative Journal	10%	October 21st
Curriculum critique assignment	20%	October 28
Quiz	10%	February 17
Self validating reduction assignment, or Reimagining the world assignment	20%	March 2
Experiential Learning	20%	Ongoing

ATTENDANCE, ASSESSMENT AND EVALUATION

Evaluation of written material in this course will be based on the students': depth of engagement with the course activities, questions, and readings; their clarity of thought, intellectual curiosity; and their intellectual generosity, self-reflexiveness, and critical thinking. Assessments will be made using the Faculty of Education 4-level rubric scale. All assignments are due at the beginning of class on the prescribed date. Grades will be determined by the quality of the assignments as applicable to a professional educator. All written assignments must be typed and all late assignments will receive a late penalty of 10% per calendar day (excluding week-ends), unless accompanied by a medical certificate. Anyone requesting an assignment extension for a legitimate reason will be required to complete a late submission contract one week (7 calendar days) in advance of the due date.

Attendance
Active participation is always a critical component of field-based or discussion-oriented courses. There is important learning that takes place through the experiences that lies outside of evaluation practices. The expectation is that your absences should not exceed (for important appointments, etc) 1 class per semester. Missing 30 % of classes in a course during a semester is unacceptable and will result in a failing grade.

SYLLABUS

Week One: Introduction. OE3
Initiative tasks
Trip Planning

Week Two: Field Trip.
Introduce journal making.
Creative journaling
Hammond, B. (2002). The creative journal: A powerful tool for learning. Green Teacher, 69, 34-38.
Leslie, C.W. & Roth, C.E. (1998). *Discovering nature journaling. In Nature journaling: Learning to observe and connect with the world around you* (pp. 3-15). Pownal, Vt: Storey Books.

Hinchman, H. (1997). *A trail through leaves: The journal as a path to place* (pp. 17-21). New York: W.W. Norton & Company.

Natural History I
Menzies, H. (2005). The seedlings mattered. In Peggy Tripp & Linda Muzzin (Eds), *Teaching as activism: Equity meets environmentalism*, pp. 25-33. McGill-Queen's University Press.

Fawcett, L. (2005). Bioregional teaching: How to climb, eat, fall and learn from porcupines. In Peggy Tripp & Linda Muzzin (Eds), *Teaching as activism: Equity meets environmentalism*, pp. 35-45. McGill-Queen's University Press.

Week Three: Local field trip. Destination TBA.
Cultural Assumptions I Evernden, N. (1993). *The Natural Alien*. Toronto: University of Toronto Press. Chapter 1 Creative Journal making

Week Four: Local field trip. Destination TBA.
Cultural Assumptions II Evernden, N. (1993). *The Natural Alien*. Toronto: University of Toronto Press. Chapter 2 Trip Planning An Introduction to Lesson/Unit planning

Week Five: Field Trip. (3 days) Departure time to be determined.
Lessons/Examine activities from: Brooks, K. & McIllfaterick, E. (2003). *The Deep Ecological Handbook*. Thunder Bay: Lakehead University.

Cornell, J. (1979). *Sharing Nature with Children*. Nevada City, CA: Dawn Publications. Natural History II

Jardine, D. (1998). *Birding lessons and the teachings of cicadas*. Canadian Journal of Environmental Education, 3, 92-99.

Bell, A. *Natural history from a learner's perspective*. Canadian Journal of Environmental Education, 2, 132-144.

Week Six:
Project WILD workshop This will be a long session. Perhaps we can conclude with an informal social session—To be discussed.

Week Seven: No Class Scheduled

Week Eight:

Curriculum Critique workshop Eisner, E. (1985).The three curricula that all schools teach. *In The Educational Imagination*, 2nd Ed,, pp. 87-107. New York: Macmillan. Jickling, Bob, Lotz-Sisitka, Heila, O'Donoghue, Rob, Ogbuigwe. Akpeizi. (2006). *Environmental Education, Ethics, and Action: A Workbook to Get Started*. Nairobi: UNEP. Pages 4-11. Bring sample curricula Creative Journal assignment due.

Week Nine:
Share critiques, debrief. Jickling, Bob. (2009). Sitting on an old grey stone: Meditations on emotional understanding. In: McKenzie, M., Bai, H., Hart, P., Jickling, B. (Eds.) *Fields of green: Restorying culture, environment, and education* (pp. 163-173). Cresskill, NJ: Hampton Press.

Greenwood, D. (2009). Chocolate, Place, and a Pedagogy for Consumer Privilege. In J. Sandlin & P. McClaren (Eds.), *Critical pedagogies of consumption: Education in the shadow of the "Shopocalypse"* (pp. 193-200). N. Y.: Routledge. Celebrate the end of the first semester. Curriculum critique assignment due.

Week Ten:
Weston, A. (1994). ***Back to Earth: Tomorrow's Environmentalism***. Philadelphia: Temple University. Chapters 1, 2, 3. Snow art Video. Making snow art. Dress very warmly. Bring a shovel.

Week Eleven:
Introduce community mapping project: Identify special places Reimagining possibilities Introduction
Profeit-LeBlanc, L. (1996). Transferring wisdom through storytelling. In B. Jickling (ed.), ***A colloquium on environment, ethics, and education***.(pp. 14-19). Whitehorse: Yukon College.

Wren, L., Jackson, M., Morris, H., Geddes, C.. Tlen, D., Kassi, N. (1996). In a panel discussion: What is a good way to teach children and young adults to respect the land? In B. Jickling (ed.), ***A colloquium on environment, ethics, and education***. (pp. 32-48). Whitehorse: Yukon College.
Related activity: Dress very warmly!

Week Twelve:
Weston, A. (1994). Back to Earth: Tomorrow's Environmentalism. Philadelphia: Temple University. Chapters 4, 5. Mapping project. Dress very warmly. Prepare Base Map, Identify special places Trip Planning

Week Thirteen: No Class. Building Futures Workshop

Week Fourteen:
Weston, A. (1994). B***ack to Earth: Tomorrow's Environmentalism***. Philadelphia: Temple University.
Chapters 4, 5. Jickling, Bob, Lotz-Sisitka, Heila, O'Donoghue, Rob, Ogbuigwe. Akpeizi. (2006). ***Environmental Education, Ethics, and Action: A Workbook to Get Started***. Nairobi: UNEP. Pages 12–15 and 29-34.

Jickling, Bob. (2008). Privileging prospecting, staking and mining is a breach of trust! Yukon News, January 11, 2008. Self–Validating Reduction, Self-Validating Invitation Workshop Introduce Re-Imagining the World/ Self-Validating Invitation Assignment Identify Self validating reduction sites on campus. Add Self–Validating Reduction Sites to Map Prepare for field trip.

Week Fifteen: Field Trip (3 days)
In Class: Self-validating invitation exercise. Depart for field trip at 3:00 pm. Kingfisher Lake Outdoor Education Centre. Reimagining winter Bastedo, J. (2003). Being snow. ***In Falling for Snow: A naturalist's journey into the world of winter*** (pp. 39-69). Calgary: Red Deer Press. Activities from: Below Zero
Natural History II McLean, S. (1998). Burd. In Home from the Vinyl Café: A year of stories (pp. 81-97). Toronto: Penguin. Jardine, D. (1998). ***Birding lessons and the teachings of cicadas***. Canadian Journal of Environmental Education, 3, 92-99.

Week Sixteen:
Quiz
Complete map

Week Seventeen:
Teaching about Place Curthoys, L. (2007). *Finding a place of one's own: Reflections on teaching with and in place*. Canadian Journal of Environmental Education, 12, 68-79. Greenwood, D. (2010). *Why Place Matters: Environment, Culture, and Education*. In S. Tozer, B. Gallegos, A. Henry, M. B. Greiner & P. Groves-Price (Eds.), *Handbook of Research in the Social Foundations of Education*. New York: Routledge.

Week Eighteen:
Reimagining the world assignment/ Self-validating invitation assignment due. Culminating activity: Share final assignments Course Celebration

March 3: Sleeping Giant Loppet
This is not a course activity. But, in the past some have enjoyed working towards this as another culminating activity.

For Consideration in January and February

Thunder Bay Winter Birds

Northern Goshawk	Spruce Grouse	Ruffed Grouse
Great Grey Owl	Great Horned Owl	Hairy Woodpecker
Downy Woodpecker	Pileated Woodpecker	Blue Jay
Gray Jay	Common Raven	Black-capped Chickadee
Boreal Chickadee	Red-breasted Nuthatch	Rose-breasted Grosbeak
Slate-coloured Junco	Common Grackle	Evening Grosbeak
Pine Grosbeak	Purple Finch	Common Redpoll
Pine Siskin	American Goldfinch	

This list won't cover every bird that might turn up in our area—feel free to add other possibilities. But it isn't a bad list to work from as an experiment in learning a little more about the boreal forest—in the spirit of Leesa Fawcett's wish that someone would have taught her about porcupines, or something from the natural world.

So, thinking of this as an experiment, imagine ways that you can become more engaged with learning winter birds. Perhaps find locations of some feeders in your neighbourhood? Map bird sightings on your community map? Compare sighting locations with habitat types? What else can you do?

Finally, try to come up with one story about one of these birds that you can share at Kingfisher. It can be learned through natural history literature—including bird books—and/or it can have a personal component.

Finally, as an experiment, I'd like to develop a collective handbook for these birds with one person responsible for each bird. In addition to finding a colour picture (flickr site perhaps), and identifying features, try to include one good story. Please limit your handbook entry to one page and prepare one colour copy for inclusion in a binder. Also, we will work towards producing a collective electronic version.