

Indigenizing Environmental Education: Conceptualizing Curriculum that Fosters Educational Leadership

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In this article, we review recent environmental reforms in Canadian systems of public education as examples of curriculum that continue to perpetuate a gap between environmental education and Indigenous Knowledges (IK) in a conceptualization of environmental educational learning. Indigenous environmental education can bring together two worldviews through an infusion of shared intergenerational knowledge through a merger of storytelling, curricular inquiry, and numerous other focal practices including creative writing. We consider how ecologically centered identities can become developed through a desire to foster healthy relationships with the places that we live as a necessary and critical means of enabling and restoring ecological function and integrity. We consider how students can deepen their understandings about intact-ecosystems over a course of time and in particular, how poetic writing can help them to develop a deeper understanding of place.

INTRODUCTION

Ongoing and sustainable human interaction with natural environments is vital in healthy identity-formation. As students spend approximately 5-6 hours in classrooms each school day during their K-12 experience, we believe that there needs to be a re-conceptualization of curriculum in Canadian public systems of education and in particular, environmental educational curricula so that they include Indigenous perspectives. In recent years, there have been several texts devoted to the importance of the natural environment in the development of children's identities. For example, Louv (2008) writes: "When considering children in

nature, one hungers for a richer description, a definition with more breathing room – one that does not include everything as natural or restrict nature to virgin forests” (p. 8). Of course, a consideration of the need for natural spaces for children to play is not a new concept. As Cobb (1959) states: “The genius of childhood, in the sense of extreme personal originality and the creation of private worlds, is discontinuous and persists into adult life only as a specialized, highly cultivated condition (p. 538). Cobb’s inquiry into the genius of childhood led her to believe that “...what all children wanted to do most of all was to make a world in which to find a place to discover a self” (p. 540), and from a child’s perception, all relations are interconnected which include the natural world. Through an analysis of Ontario curriculum documents we build on our work regarding the importance of developing deep relationships with local places (Longboat D., Kulnieks, A., Young K. 2009) to outline ways in which using both Oral and Literary tradition can be used to foster in depth understandings about local places and intact ecosystems.

To be sure, the mindset that children can develop healthy identities without contact with the natural world has been challenged. For example, Louv (2008) notes research that outlines how “patterns of creative play in green versus built places, are consistent with the notion that green space supports healthy child development,” p. 87 As research continues to support the notion that green spaces in the natural world are important in the development of healthy identities, curricula needs to follow suit in order to truly meet the needs of students developing a deeper relationship with intact ecosystems. This deepening of knowledge should include oral forms of stories that comprise teachings coming from local places. Curriculum of public systems of education should include and be infused with a focus of environmental education that is informed by Indigenous Elders who have maintained ancestral stories since time immemorial so that there can be a dialogue between the story and the learner that moves well-beyond textual interpretations.

ENVIRONMENTAL EDUCATION AND THE CURRICULUM

An example of Indigenous perspectives not being respected is the removal of environmental education, among others, from the Ontario curriculum, during the conservative government in the mid 1990’s. Since then, attempts have been made to provide standards, policies and curriculum

expectations for environmental education infusion across all subject areas. The initial undertaking of such a large task began in 2006 when a working group on environmental education inquired into the ways in which environmental education could be infused into an existing curriculum. The report, *Shaping Our Schools, Shaping Our Future* (June 2007) included the following:

Environmental education is defined as:

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. (p. 6)

The bottom line is that it is up to faculties of education and eventually, teachers themselves to develop curriculum that leads learners towards developing a relationship with the places they live.

We use these recent curricular changes as an example of how expectations in one system of education can influence other dimensions of learning. What remains striking to us is that there is no mention of Indigenous Knowledge as part of 'the scientific and human dimensions of environmental issues'. Science takes the only seat in the framing of environmental education and hence perpetuates a disconnected societal worldview of nature. In addition, the report states that: "[r]esponsible environmental citizenship incorporates problem solving, hands-on learning, action projects, scientific inquiry, higher order thinking, and cooperative learning" (p. 6). Environmental education is once again aligned with scientific inquiry as "the" model without considering an Indigenous focus as outlined by Kulnieks, A. Longboat, D, & Young, K. (2010, 2011). It is difficult to develop a deep relationship with the places that people live in the space of time that teachers are expected to learn their trade and enter the classroom. It is even more difficult for teacher's who have not developed a deep relationship with places to help students develop that relationship without going outside – something which is not often supported in public systems of education.

While the report's aim was to address the fact that environmental

education was dropped entirely from the curriculum in 2000 and provided 32 recommendations to the Ministry of Education in Ontario, its attempt, while well-meaning in its resurrection of the need to consider the environment in the development of healthy identities, does not consider the ways in which language serves as an immense barrier between humans and the natural world that is part of bringing forth an Indigenous view of holistic education. By aligning environmental education solely with scientific inquiry, the failure to address a non-Western view of the environment, leaves the question about the ways in which language carries forward analogues that frame particular views of human and non-human relationships out of the equation (Bowers 2003; 2006, Martusewicz, Edmundson & Lupinacci, 2011). So then, how can curricula begin to consider the importance of language and its role in the development of healthy ecologically-centered identities, or as Bowers (2011) suggests the development of “ecological intelligence” as patterns of thinking?

INVESTIGATING LANGUAGE IN THE CLASSROOM

Eco-justice education promotes a theoretical framework for a critical analysis of the cultural and linguistic roots of the environmental crisis that can support environmental education curricula (Bowers, 2003, 2006; Martusewicz, Edmundson, & Lupinacci, 2011). Young (2009) writes:

A deep analysis of dominant cultural narratives needs to be central for a transformative relationship to develop with the natural world. By addressing the environmental crisis, as a crisis of culture that, then, becomes a crisis of education... (p. 319)

As common practices that are not sustainable become educational practices, they perpetuate this cultural crisis and environmental crisis. Considering ways in which language carries forward mechanistic and technological root metaphors that create and perpetuate a divide between human and natural landscapes can help in the process of ‘greening’ the curriculum by enabling students to name the linguistic frameworks that they are using in day-to-day life (Bowers, 2003, 2006; Martusewicz, Edmundson & Lupinacci, 2011 & Merchant, 1980). While many of the initiatives that are undertaken in schools across Ontario to infuse the curriculum with environmental themes, such as planting and caring for gardens, continue to be important in the development of ecological intelligence, we believe that it is also necessary to involve students in an exchange of inter-generational knowledge. Inter-generational knowledge that is passed down from traditional knowledge holders and

Elders about the relationship between self and nature through expressive arts, songs and stories involves a deeper sense of understanding of the world as relational and interdependent. For Basso (1996) "If place-making is in a way of constructing the past, a venerable means of doing human-history, it is also a way of constructing social traditions and, in the process, personal and social identities. We are in a sense, the place-worlds we imagine" (p. 7). In addition to imagining, it is also important to connect more deeply through knowing its history, its being, and its spirit.

In developing a relationship that is sustainable, students would benefit (and probably be very interested) to find out how natural landscapes can provide them with opportunities to think about how traditional knowledge has been used since time immemorial to promote healthy ways of living within a particular place. It is also important to consider how science and technology are often based on traditional forms of knowledge without acknowledging or truly understanding it. The catastrophically non-sustainable ways of living that modern societies are plagued with (as demonstrated by oil spills, nuclear disasters and the carcinogenic toxic materials we are surrounded by) are not because of what traditional knowledges fail to teach us. However, a systematic inattention to sustainable practices and ecologically based traditions is the root cause of these issues.

INTEGRATING ENVIRONMENTAL EDUCATION IN CLASSROOM PRACTICE

Following the report, *Shaping our Schools, Shaping our Future*, the Ministry of Education in Ontario created a guide titled, "Standards for Environmental Education in the Curriculum" whereby four areas for environmental education foci were identified: community, knowledge, perspectives, and action that describe the "nature and scope of environmental education... the standards will help curriculum develop and incorporate environmental education expectations and opportunities across the curriculum". While these standards included "aboriginal points of view" under the category "perspectives", and concepts about "conserving that support sustainability" were included under the category "action", a linguistic analysis of the environmental crisis and inter-generational knowledge were not included. Understanding how language shapes what we are able to think about is crucial because language holds within it assumptions and understandings that are brought forward from the past.

The etymology of language is often overlooked in curriculum development because education is meant to get students ready for the workforce. Rather than promoting a connection with the land, many types of employment demand a disconnection from the places that our students live.

In 2009, a policy framework was developed based upon the 32 recommendations made by the report in 2007 with a mandate to ‘teach environmental literacy’ in response to the United Nations Decade of Education for Sustainable Development (2005-2014) call for environmental education infusion across the globe. The policy document is based upon the definition of environmental education as outlined in the 2007 report. A clear connection to Indigenous Knowledges (and by this we mean traditional knowledge shared inter-generationally by knowledge holders and Elders) is not included as a valuable or essential way of informing environmental education.

Recently, the standards and policy documents have been expanded to include the “Environmental Education Scope & Sequence of Expectations” document in 2011. The following is an excerpt from the document that is derived from the 2006 Language curriculum document:

Although no specific or overall expectations explicitly address environmental education, in each of the strands the learning context (e.g., a topic or thematic unit related to the environment) and/or learning materials (e.g., books, websites, media) could be used to foster in students the development of environmental understanding. Also, in each of the strands, there are some expectations that can provide opportunities for exploring environmental education – for example, expectations on making inferences, making connections, analyzing and evaluating texts, developing a point of view, and doing research. The example in the following expectation from the language document provides a context for environmental education. (p.18)

The document outlines suggestions for teachers and students and at times provides specific activities. The following suggestion is listed under the language section of the new full-day early learning kindergarten program:

Using digital photographs of the life cycle of the class butterflies, a child orally retells the sequence: “First the butterfly is an egg, and then it turns into a caterpillar. The caterpillar spins a chrysalis, and then it’s a beautiful butterfly.” (ibid)

There is little information about how the teacher can bring the butterflies into their classrooms. On the surface, these may sound like enticing ideas, when explored on a deeper level, the problem is that this type of learning is to take place in the school as part of a sedentary curriculum.

While learning about the life cycle of the class, butterflies may enable students to understand about how butterflies develop, it is suggested that this learning cycle involve 'class' butterflies that are in captivity, rather than butterflies living in their natural habitats. Learning about insects, birds, frogs, etc. in captivity fails to offers students an opportunity to see how wildlife depends on intact functioning ecosystems. Rather students learn about wildlife by examining DNA in a jar. Studying the lifecycle of a butterfly in its natural habitat is one method of bringing forth an Indigenous environmental approach to learning. Learning about the butterfly through stories that have been repeated by Indigenous Elders to children for thousands of years is another way that students can learn about and from animals, plants, insects and minerals in local ecosystems. Sharing intergenerational knowledge is vital in the process of environmental education. While there are many schools across Canada integrating forms of place-based environmental education such as gardening, greening of communities and recycling programs that we are all in favour of, we believe that inter-generational knowledge through storytelling and place-based poetic writing needs to be considered through an eco-justice framework.

INVESTIGATING INTERGENERATIONAL KNOWLEDGE

Storytelling and interpretive practices like poetic writing are aesthetic practices that can be used as vehicles for sharing inter-generational knowledge. As Barone (2000) notes, "For Dewey, aesthetic experiences are not confined to the contemplation of high art, but arise within the interaction of a human organism with her surroundings" (p. 121). It is the interaction with the aesthetic that enables the intergenerational knowledge to be passed along in songs, stories and poetics. As a teacher educator, Barone (2000) wants us to know "our students as poets and storytellers" (p. 131). Similarly, as Pinar (2011) suggests:

The character of curriculum studies is cosmopolitan, encouraging the ongoing understanding of the world as historical, as always changing and different, and as always unchanging and the same. Allegory conveys this simultaneity of the mythological and the

historical, the cultural and the individual, and the abstract and the concrete. (p. 20)

Understanding the *curriculum* in Pinar's (1995) terms from the Latin as *currere* - a course to be run is helpful when considering the educational significance of Indigenizing environmental education. It is the aesthetic that is the *tool*, if you will, in the making of ecologically aware minds through focal practices such as sharing stories about our relationships with landscapes (food, animals, plants, minerals and the ecosystem itself). Pinar (2012) is concerned with the "educational significance of orality" (p. 175) and it is orality that provides a pathway for stories to be passed along inter-generationally. Davis, Sumara and Luce-Kapler (2008) write: "...ecological theories tend to regard humanity as one species among many in a grand web of relations – that is, as part of a grander body whose cognitive processes are seen by humans as ongoing co-evolutions of species and habitats" (p. 107). As curriculum theorists we need to be concerned with environmental education in terms of the ways in which it is conceptualized in Eurocentric terms that excludes an immersion of humans in the natural world. For Bowers (2006):

The growing and preparation of food, the manner of greeting a guest, the use of medicinal plants, the ability to incorporate the knowledge of local ecosystems into the design and placement of a building, the knowledge of the cycles of plants and animal life in the bioregion, and so forth, are all dependent upon traditional knowledge being passed along – and modified over the generations. (p. 159)

Eco-justice educational reforms call for an infusion of traditional knowledge into mainstream curricula that is Eurocentric. In order to address Battiste and Henderson's (2009) call to naturalize Indigenous Knowledges in Eurocentric education, we believe that one step toward Indigenizing environmental education involves an infusion of traditional stories that are "legends told by the Indians to their children" (Seton, 1952, p. 7) into the curricula. These stories share intergenerational knowledge that is vital to an understanding of the need for natural environments in the development of healthy identities and establishing vital relationships with the world around us.

THE CURRICULA OF STORIES

In passing along traditional knowledge, it is not always easy to incorporate those understanding into curricula of public systems of education. For example, in her collection of "Indian Legends of Canada", Ella

Clark (1960) discusses the difficulties in sharing folktales that teach morals to children. These difficulties involve the need for Elders to orally pass the stories to younger generations of learners and that a) they may not always be able to spend time telling stories during class time, and b) they may not have had the opportunity to immerse themselves in the stories enough to share them in the ways in which they had originated or were intended.

Stories, from all cultures, have been used as a tool to think things through since time immemorial. The Oxford English Dictionary (online version 2011) defines "story" as; "a narrative, true or presumed to be true, relating to important events and celebrated persons of a more or less remote past; a historical relation or anecdote." Stories are a distillation of our understandings through language about life and our interpretations about the places that we live. Stories that are re-told provide a way to know ourselves and also help grow our understandings about the places that we live. Learners often tell the stories of where they are in their lives, where they are going, and why they are behaving the way they do. The differentiation between life stories and ancestral stories that are passed down through generations of storytellers are the teachings that are embedded in those stories. As McKeon (2012) writes: Everything humans do and experience revolves around some kind of story." (p. 137) There are many ways that we can distinguish how we name our stories. However, the oldest stories about Turtle Island are the stories that have been passed down by Indigenous storytellers since time immemorial.

It is time that the oldest stories that came from Canada, long before it was called that, once again become part of what people living in these territories think about. There are many sources where those stories have been collected into literary tradition. Those sources, while they are available, need to be interpreted, as to the nature of understanding and as to the nature of their story. Different perspectives about what the foci of those stories are depend on the perspective of the storyteller. There are collections of these stories by various writers. In considering which stories are important enough to be learned by students in Canadian public systems of education, we need to consider the purposes that these stories will be learned and thought about. Were these stories collected by Indigenous or non-indigenous writers? The collections may or may not be culturally representative. They could be the writer's interpretation of the story, which becomes a phenomenological question.

There are collections of stories from around the world that teach a variety of lessons and make us think about important concepts and ideas. In bringing forward stories written by Indigenous peoples about Indigenous peoples' stories it is important to consider cultural authority as well as cultural representation. Are the stories written by non-natives reflecting about Indigenous perspectives or are the stories by Indigenous authors reflecting on Indigenous perspectives?

The nature of stories is a topic that also needs to be considered in thinking about what stories should be included in the curriculum that all teachers are expected to address in their classrooms. Stories are a manifestation of place and to have an authority or representation of stories they have to be "done" in a particular context. The challenge is creating the context to make the stories authoritative. Stories are tied to practice or experience and it is the necessity of replicating the experience of that practice in creating the authenticity for those stories.

It is important to understand the distinction between learning about stories and learning from stories. Stories are relevant to providing perspective on the human condition. For example, they can teach us about morals. Stories that provide teachings can inform learners about acceptable behaviors. On the other end of the spectrum there are deep sacred stories. Accessing the role of language is an essential element of understanding all things. To really appreciate those stories, they need to be recited in a proper way. They also need to be recited at a proper time, in a proper place, and in a proper language. A deepened awareness of the intricacies of these stories reveals the multi-level and multi-dimensional nature of stories. Some stories can be told to children and listeners throughout the years of their learning, and even to Elders. However, the understandings that listener's who are at different ages and stages of life experience, will obviously be very different. Understandings about the world will depend on your connection with all things. Edward Benton-Benai's *The Mishomis book: The Voice of the Ojibway* (1988) is an example of Indigenous storytelling from an Indigenous perspective. It is not the only perspective but it can be used to get learners to think about Indigenous ways of thinking.

DEVELOPING INTERGENERATIONAL RELATIONSHIPS WITH LANGUAGE AND PLACE

What do we mean by intergenerational knowledge? Wendell Berry's (2000) rich description is helpful in understanding about 'landscapes as archive'

that is passed down through storytelling and Nature centered learning:

Over a long time, the coming and passing of several generations, the old farm had settled into its patterns and cycles of work-its annual plowing moving from field to field; its animals arriving by birth or purchase, feeding and growing, thriving and departing. Its patterns and cycles were virtually the farm's own understanding of what it was doing, of what it could do without diminishment. This order was not unintelligent or rigid. It tightened and slackened, shifted and changed in response to the markets and the weather... the farm had endured. Its cycles of cropping and grazing, thought and work, were articulations of its wish to cohere and to last. The farm, so to speak, desired all of its lives to flourish. (p. 182)

Berry's description of the old farm that flourishes through its patterns and cycles of work is steeped in an Indigenous land based perspective about knowledge of conservation, renewal, reciprocity and sustainability. This understanding was shared and passed down from farmer to apprentice from generation to generation through inter-generational knowledge.

Inter-generational knowledge is something that Berry writes about eloquently in his book *Jaber Crow* (2000) as he describes the relationship between Athey, an elderly farmer who tends to the old farm and his apprentice Troy who is much younger and eager to learn about how to farm faster with less effort. Athey understands the importance of a 'conserving principle' and tried to teach it to Troy who believes that 'bigger is better'. He writes:

The law of the farm was in the balance between crops (including hay and pasture) and livestock. The farm would have no more livestock that it could carry without strain. No more land would be plowed for grain crops than could be fertilized with manure from the animals. No more grain would be grown than the animals could eat... This was a conserving principle; it strictly limited both the amount of land that would be plowed and the amount of supplies that would have to be bought. (p 185)

Athey understands that such knowledge, that is, knowledge about conserving, "ought to be passed from Athey to Troy as a matter of course, in the process of daily work and talk" (p. 184). Troy however, believes that more is better and that Athey's old pattern of farming ought to modernize in favour of progress. Athey was in favour of using mules and keeping the farm to a size that was in balance whereby he never had to borrow funds to maintain the land, whereas Troy could not wait to bring in a tractor and use

machinery as a way to enlarge the farm, work faster, replace farm hands who were moving into factories for work, and rely on credit. Berry writes:

This process would build up and go ever faster, until finally it would unravel out the entire old fabric of family work and exchanges of work among neighbours. The new way of farming was a way of dependence, not on land and creatures and neighbours but on machines and fuel and chemicals of all sorts, bought things, and on the seller of bought things - which made it finally a dependence on credit. (p. 183)

Berry is describing the economic cycle of consumerism that challenged inter-generational knowledge to a point that much of the farming industry moved away from sustainable practices toward a 21st century model of farming as 'production'. Progress became the focus and conserving seemed somehow backward (in most parts of North America). The stories about the land and the need to consider a balance were rarely shared. Whether it be stories about the loss of the family farm or forest degradation, as Orr (1994) suggests, we, "...need a different manner of thinking about forests that acknowledges forthrightly the limits of our knowledge and our inconsistency in using what knowledge we do have" (p. 68). Similarly, Capra (1996) understands that "all members of the ecological community are interconnected in a vast and intricate network of relationships, the web of life." (p. 298). What we have learned is that stories play an important role in learning about landscape and its importance in the development of ways of knowing and being. Wendell Berry (1987) writes:

People cannot live apart from nature; that is the first principle of the conservationists. And yet, people cannot live in nature without changing it. But this is true of all creatures; they depend upon nature and they change it. What we call nature is, in a sense, the sum of the changes made by all the various creatures and natural forces in their intricate actions and influences upon each other and upon their places. (p. 7)

Understandings about the natural world should be part of a curricula that can be shared through storytelling and poetry that teach about ecological relationships.

DEVELOPING A RELATIONSHIP WITH TIME AND PLACE

Summer solstice

shortest night entwines longest day
ancestral songs celebrate their sacredness
seed sprouts blend earth and air
energy courses beyond shells toward the flesh of fruits

shared powers of healing in interaction
teach desires to understand plants as medicine
envelop perspectives between time and space
uncover a pedagogy of places

as parents move from box to box
learning about life continues in classrooms
dizzying beats threaten irreparable damage
beyond unintended meanings

hear voices as you gaze at sunsets and stars
among clouds that demonstrate nature's breath
Feel sun's warmth
beyond letters rhyme through the touch of land

raspberry bushes mingle, browned through seasons
green shoots along last years stems
sap pulse through branches to meet leaves
days blend into nights

your work echoes along the landscape of bushes and trees you planted
perennials resonate lessons of time
soil lifted mix of garden root designs join us
apple trees and rhubarb resonate efforts

red currents echo your histories named in seasons they ripened
so we would know what wild strawberries tasted like
tiny red drops full of flavour connected
with garden spaces left as a beacon

there are medicines here

most vibrant before the longest day of the year
in herbs, perennials, trees and grasses
remembered along stories and songs that move us through lives

Summer Solstice is an example of poetics that engage us in an exploration of humans, natural worlds and intergenerational knowledge. The work captures the ways in which the knowledge archived in landscape is passed down through inter-generation knowledge. For example, when people live in a particular place over a course of time, a relationship with that place develops out of a sense of necessity. Historically, clear and understandably relevant reasons for developing practices and rituals evolved human understandings of the inter-connectedness of life is due to a dependence on the gifts that the land provided. North-American cultures are quite distanced from the understanding that how we interact with the land that “gives us life” is reflected in the lives we lead. Our research explores the role of language in promoting eco-literate awareness or as Bower’s (2011) suggests ecological intelligence through a radical ideological shift of knowledge in the course of a critique of modernism followed by suggestions for educational reform. We investigate how literary tradition has also been part of the problem in the development of non-sustainable cultures and why it is essential to re-engage with traditions that involve developing understandings about being part of the intricate processes of the food we eat.

In the past, one of the practices that went along with working in the forests and fields was the inter-generational knowledge that was passed on through song and story. Songs then, were a condensation of stories as stories were too difficult to tell and stay in tune with in the midst many forms of work. In addition, singing songs while working facilitated the work. Songs are one of the most essential parts of pre post-modernist cultures, though modern listeners are often quite distanced from the messages that are passed on through the songs due to the luxury of not having to memorize the song or even ever having been on the same continent as the performer. This distance makes it pertinent for educators to bring attention to the hidden and not so hidden messages songs can represent. It is also important to think about how songs, poems, and other stories can contribute to ecological understandings about the life-giving world and our connection to it. Inviting Indigenous Elders into classrooms to share their stories and can help teachers enrich their literacy curriculum through the Oral Tradition from which all curricula originated. Our rumination on the need for Indigenizing environmental education through engagements with intergenerational stories, songs, and practices are examples of curricula that teach about the need for healthy relationships with the natural world to ensure the continuation of All Life.

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