

Places of Knowing, Places of Learning:  
Indigenous Place-based Education in Canada

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Abstract:

This thesis reviews the literature on indigenous place-based environmental education in Canada. The concept of place is considered a starting point to localize, decolonize and integrate indigenous and non-indigenous knowledges (the culturally-situated subjective and intersubjective ways of knowing and meaning-making) in mainstream environmental education. Following a discussion of how a critical pedagogy of place can be situated in indigenous contexts, this thesis explores how indigenous and non-indigenous peoples and their knowledges can contribute to a place-based environmental education. While mainstream environmental education is conventionally considered the domain of Western sciences, knowledges of all cultural groups are needed to address the environmental challenges of the 21<sup>st</sup> century and enrich sustainability education. The inclusion of indigenous and other knowledges in mainstream curricula can foster intercultural understanding between indigenous and non-indigenous peoples. This can help to heal the relationship between indigenous and non-indigenous peoples in Canada after centuries of colonialism, assimilation, and discrimination against indigenous peoples. Transdisciplinarity and social learning theory can provide epistemological and methodological frameworks for the integration of indigenous and other knowledges in mainstream environmental education for an inclusive, place-based education.

## Preface

This thesis is inspired by my own experiences as a non-indigenous Canadian student and recent graduate of the K-12 education system. Looking back at my primary and secondary public school education, I recognize a significant gap in my learning about Canadian indigenous peoples and my local environment and community. For example, my secondary school and neighbourhood in the city of Vancouver is located on unceded indigenous Coast Salish territory. To acknowledge this, indigenous masks were prominently displayed in the school's auditorium and lobby. Yet this connection between local history and its relevance to the community today was never taught or mentioned in class. Instead, we read about indigenous peoples in our textbooks as if they only existed in the past, or as peoples living outside the city practising their own “traditional” way of life. I believe that the current education system perpetuates a lack of understanding between indigenous and non-indigenous peoples which must be addressed to achieve authentic reconciliation. This can start by grounding education in a sense of place and encouraging students to develop links with the local community.

I would like to thank all those who supported me as I worked on this thesis. First, I wish to thank my supervisor Elsa Coimbra for her profound and inspirational advice.

I am in deep gratitude to my mother, Mary Chipman, who first inspired me to pursue the topic of indigenous education during my undergraduate studies. Since then I have enjoyed our many discussions on the topics of education, sustainability, and indigenous issues in Canada.

I would like to thank my father, William Koty, for always encouraging me to explore, visit and live in different places around the world. Not only has this fostered my appreciation of place, but going places has inspired me to reflect on my own Canadian identity and roots.

Living abroad is not without its challenges, and during my studies at Lund my brother, Alexander Chipman Koty, and friends, Elyshia Eng and Erik Hanson, have given me tremendous support and encouragement. For this I am very grateful.

Finally, a heartfelt “thank you” to my fellow CPS students with whom I share a warm community based on common values and dreams for a better future. I wish all of us much success in our future work and studies.

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## 1. Introduction

Education has the power to shape the values, attitudes and beliefs of students, which may result in more sustainable behaviours. In recognition of the need for a sustainable future, reforms in education are urgently needed to address the environmental challenges of the 21<sup>st</sup> century. In Canada, mainstream environmental education is too often considered the exclusive domain of the natural sciences. While the contributions of the natural sciences are essential, many scholars argue that educating for sustainability requires the strengths of all disciplines to more fully comprehend the social, cultural, economic and environmental aspects of sustainability.

At the same time, scholars and educators are paying increasing attention to the concept of “place” in education, and the value it can bring to a deeper understanding of the environment. Place-based education re-orientates the school towards the local community and inspires students to develop an appreciation of the natural (other-than-human) world. Gruenewald's (2003) critical pedagogy of place encourages students to understand the links between and take an active interest in local social and environmental concerns. In Canada, many scholars and educators are beginning to recognize the value of place-based educational approaches in decolonizing mainstream education and integrating indigenous knowledge in the curriculum (for example: Johnston 2009; Kulnieks, Longboat and Young 2013; Lowan 2009; Scully 2012, Sutherland and Swayze 2012a; Swayze 2009). The concept of place in education can be a starting point to analyze Canada's history of colonization and contemporary relations between indigenous peoples and settlers. Additionally, including indigenous knowledge in mainstream education can enrich environmental education and enhance intercultural understanding between indigenous and non-indigenous peoples in Canada.

The aim in this thesis is to provide an overview of the literature on place-based education in Canada from a both theoretical and practical perspective. My research question is: What does the literature tell us about learning from indigenous and non-indigenous peoples' knowledges, and how can that inform an inclusive, place-based environmental education?

After providing a background of indigenous education in Canada, I give a theoretical framework for a critical pedagogy of place situated in indigenous contexts. Then, I explore the contributions of indigenous and non-indigenous knowledge to mainstream education in Canada. The inclusion of indigenous knowledge can strengthen mainstream education by enhancing students' understanding of how humans relate to the natural world, and by encouraging students to develop a critical understanding of Canada's colonial history and contemporary relations between indigenous and non-indigenous peoples. Indigenous knowledge can also teach students ethical principles connected to sustainability. However, while these and other benefits of integrating indigenous knowledge in mainstream education are well recognized, the strengths of Western knowledges are less examined in the literature on indigenous place-based education.

I argue that educating for sustainability will require the combined strengths of all scientific disciplines and knowledges, including indigenous knowledge, and other knowledges that historically have been suppressed in mainstream education. Transdisciplinarity, which seeks to move between, across and transcend scientific disciplines toward the structural integration of knowledge, can provide the epistemological framework for this transformation in mainstream education to take place. As there are many practical and methodological challenges involved in bringing together indigenous and Western knowledges, the involvement of the indigenous community is crucial for the successful integration of indigenous knowledge in mainstream education. Social learning theory can provide a methodological framework for indigenous and non-indigenous peoples to learn from each other with and through cultural difference and dissonance in the process of developing goals for the future. The concept of place can set the context for people to come together and learn from each other's knowledges and experiences, working toward achieving reconciliation between indigenous and non-indigenous peoples, while building a more sustainable society.

### *1.1 Terminology*

I use the categories Aboriginal, Indigenous, and Native interchangeably throughout this thesis. First Nations refers to Aboriginal peoples in Canada with the exception of the Inuit and Métis. The Métis trace their descent to mixed First Nations and European heritage. Settler refers

to the non-indigenous population of Canada to acknowledge the new arrival of peoples during or after the colonial period. I use “mainstream education” to signify primary and secondary education (termed “K-12,” kindergarten to grade twelve, in Canada) and university education as opposed to informal education programs or federal on-reserve First Nations education programs.

## **2. Background**

Traditionally, schools have served the purpose of reproducing social values and norms to create social cohesion. In Canada, as in many countries throughout the world, the school has been historically attached to the colonial enterprise and the project of nation building. The goal of indigenous education has been to “assimilate” indigenous peoples into settler society, subjugating indigenous knowledge, languages and ways of being in the process (Battiste 2005; Rich 2012). Canadian indigenous peoples have suffered tremendous emotional, psychological, physical and sexual abuse under the residential school system, which forcibly removed indigenous children from their families and placed them in Christian-administered schools, where they were taught that their knowledge, beliefs and ways of life were inferior (Marker 2009; Stewart 2010; Reconciliation Canada 2014; Ryan et al. 2013).

Today, mainstream education is still considered alienating to indigenous students, who do not perform as well in schools compared to non-indigenous students (Aikenhead and Elliott 2010). According to the Royal Commission on Aboriginal Peoples (1996) “The majority of Indigenous youth do not complete high school and, rather than nurturing the individual, the present schooling experience typically erodes identity and self-worth” (quoted in O'Connor 2009, 415-416). In addition, the current mainstream education system often perpetuates stereotypes and misunderstandings about indigenous peoples (Battiste 2005; Calderon 2014; Friedel 2011; Hatcher 2012). History, for example, is rarely taught from Aboriginal perspectives, but rather through the lens of the colonizers (Scully 2012). This is a missed opportunity for students to engage in a critical examination of colonial history and the contemporary realities of indigenous Canadians. For that to occur, there is a need to decolonize mainstream education to



address the achievement gaps and the on-going discrimination against indigenous peoples in Canadian schools.

On the other hand, it would be wrong to ignore the important developments made in indigenous education in recent years. Since the Royal Commission of Aboriginal Peoples released reports in the 1990s stating the value of indigenous knowledge, many educators have emphasized the need to include indigenous knowledge in mainstream education to close the achievement gaps between indigenous and non-indigenous students as well as empower indigenous students (Battiste 2005). Since then, efforts have been made to include indigenous knowledge in mainstream education curricula.

Reforms have been made more quickly at the university level, through the creation of integrative science programs bringing together Western and indigenous knowledges, most notably at Cape Breton University and Trent University. There also has been movement towards integrating indigenous knowledge in the K-12 curriculum, though it is worth noting that since education in Canada is administered provincially with curricula overseen by each province, educational approaches vary throughout the country. The province of Saskatchewan has been especially successful in integrating indigenous place-based knowledge in the K-12 science curriculum (Aikenhead and Elliott 2010). The interest in indigenizing mainstream environmental education is reflected by the prominence of indigenous education studies in the *Canadian Journal of Environmental Education* (Root 2010).

Finally, many indigenous and non-indigenous educators have experimented with integrating indigenous perspectives in environmental education by incorporating place-based education methods in their own teaching (for example: Root 2010; Roth 2010; Scully 2012). However, it is important to note that these approaches are not common in mainstream education. The conversation on how to integrate indigenous and Western knowledges is only just beginning. Despite widespread recognition of the importance of teaching indigenous knowledge and perspectives at provincial and national levels, many educators either do not consider this a priority or lack professional and practical understanding of how to include indigenous knowledge in the classroom (Battiste 2005; Root 2010; Scully 2012).

Though there are many challenges involved in integrating indigenous knowledge and perspectives in mainstream education, I believe that education can play a vital role in addressing the lack of awareness, familiarity, and understanding between indigenous peoples and settlers. The word reconciliation is used to signal the healing that must be done between indigenous and non-indigenous peoples after colonialism, loss of land, the horrors of the residential schools, and discrimination over generations, which has had lasting negative effects in present-day society. For instance, while most major natural resource extraction projects are located adjacent to, or on, indigenous lands, the rights of indigenous people to sovereignty over their lands are often not recognized (Korteweg and Russell 2012). There is a need to build understanding and trust between indigenous and non-indigenous peoples. In the words of Dr. Robert Joseph, Ambassador of Reconciliation Canada, “Let us find a way to belong to this time and place together. Our future, and the well-being of our children rests with the kind of relationships we build today” (Reconciliation Canada 2014).

The role that education can play in the path towards reconciliation goes beyond the scope of this thesis. However, in this spirit of reconciliation, it is my hope that decolonizing, and grounding education in a sense of place, can play a part in the longer process of healing the relationship between indigenous and settler communities in Canada. According to the Truth and Reconciliation Chair Murray Sinclair, schools “are one of the best vehicles to create and sustain a change in the attitude of all Canadians to the nature of the relationship that must exist between Aboriginal and non-Aboriginal people in this country” (quoted in Stewart 2014). Just as there is a need for all Canadians to recognize and come to terms with Canada's legacy of colonialism, we are also commonly faced with the enormous environmental challenges of the 21<sup>st</sup> century, including climate change. In light of this, it is imperative that we initiate a dialogue across cultures to deepen our understanding of the relationship between humans and the Earth.

### **3. Research Methodology**

For this thesis, I have conducted a literature review on the topic of indigenizing environmental education through place-based approaches, with a focus on the mainstream

education system in Canada. I have selected recent texts (published after 2000) following a comprehensive search on these topics: Education for Sustainable Development, place-based education, and indigenous (ecological) knowledge and environmental sciences. Many articles belong to *The Canadian Journal of Environmental Education (CJEE)*, especially the recent (2012) volume *Indigenizing and Decolonizing Environmental Education*. My analysis of existing place-based integrative science programs in the Canadian mainstream education system is based on the province of Saskatchewan's K-12 science curriculum (Aikenhead and Elliott 2010), and the Two-Eyed Seeing integrative science degree program at Cape Breton University (Bartlett, Marshall and Marshall 2012; Hatcher 2012; Hatcher et al. 2009). My research approach is inductive: rather than testing a theory, I have explored these texts with open questions and found emerging patterns in the literature, which are discussed in Results and Analysis section.

### *3.1 Epistemology*

The call for an environmental education that integrates multiple ways of knowing and learning is based upon a pluralistic approach to knowledge that is inclusive of diversity. There are multiple ways of knowing that cannot be separated from the larger social context and are influenced by existing power structures (Moses and Knutsen 2012). Knowledge is socially constructed, and can be shared and obtained in interaction with other members of society. I recognize that while history, culture, language and politics influence the way individuals perceive the world, this may also be affected by individual characteristics such as a person's age, gender and ethnicity (idem). This is consistent with the philosophical principles that underpin transdisciplinarity and social learning theory.

### *3.2 Positionality*

I conducted my research with the concept of positionality in mind, which proposes that the researcher should consider how his or her own identity, social position, and frame of reference affect all stages of the research process, from problem selection to interpretation of findings (Hesse-Biber and Leavy 2006). This thesis has therefore prompted me to reflect on my own identity and position within society as a white, non-indigenous Canadian. With no direct

links to indigenous communities within Canada, I consider myself an “outsider” to the indigenous community. As such, I have had to ask myself why I have developed such an interest in indigenous issues, and more particularly in indigenizing mainstream education.

Upon self-reflection, I see that growing up near indigenous communities in the provinces of Quebec and British Columbia in Canada has led me to recognize the urgent need for reconciliation between indigenous and non-indigenous peoples to achieve indigenous sovereignty and social cohesion. I spent my early childhood in the town of Oka, Quebec, where in 1990 a land dispute between the town and the adjacent indigenous Mohawk community of Kanasatake led to a violent standoff with the Quebec government, and later the Canadian government, involving the military (the “Oka Crisis”). From this experience, I have witnessed first-hand how indigenous and non-indigenous Canadians, including myself and my own family and friends, continue to be adversely affected by Canadian colonialism to this day. This has prompted my own interest in indigenous education and directed my thesis research, as I investigate how education can help to heal the relationship between indigenous and non-indigenous communities in Canada in the move towards a more sustainable and equitable society.

### *3.3 Limitations*

While this thesis has been influenced by personal schooling experiences in Canada, unfortunately I was not able to conduct my own fieldwork for this thesis due to time and other practical constraints. My reliance on secondary research has its limitations. Although in the last two decades research on indigenous knowledge and place-based environmental education in formal education has grown considerably in Canada, it is still a relatively new field. Due to the limited availability of literature on this topic, I have had to rely on studies that range between formal K-12 programs, university science programs, informal outdoors education programs, and programs on Native reserves in various places across Canada. Some of these programs are geared toward indigenous and non-indigenous students, and some primarily toward indigenous students. Thus, I made the assumption that research stemming from informal place-based education or outdoors programs may be relevant in the context of formal mainstream education.

It also warrants mentioning that while my research is concerned with mainstream education reforms throughout Canada, there is no integrated national system of education in Canada. This makes it difficult to assess the mainstream education system on a national level. Furthermore, owing to the limited scope of this thesis, I have not examined the environmental education curriculum of each province and territory. Rather, I have based my analysis of current environmental education programs in Canada on the many studies across Canada that advocate for mainstream education reform to include indigenous knowledge and place-based approaches.

## **4. Theoretical Framework**

### *4.1 Education for Sustainable Development*

Educators today face a deep contradiction within mainstream education systems: the most educated countries in the world also leave the most devastating environmental impacts on the planet (McKeown et al. 2002). Yet at the same time, education is increasingly considered key for achieving sustainability. The need for education reform to address sustainability is recognized internationally by scholars and educators as well as by international organizations such as the United Nations. In recent decades, mainstream education systems worldwide are beginning to address the social, political, economic and cultural dimensions of environmental issues. The most internationally recognized term for this form of education (used by the United Nations) is Education for Sustainable Development (hereafter “ESD”).

ESD is based on the concept of sustainable development as outlined in the 1987 Brundtland Commission Report: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987). According to the UNESCO website, ESD “promotes efforts to rethink educational programmes and systems (both methods and contents) that currently support unsustainable societies” (United Nations Educational, Scientific and Cultural Organization 2014). Although ESD is implemented in different ways according to particular social, cultural, political and environmental contexts, some general characteristics include education that is “locally relevant and culturally appropriate” and “based on local needs, perceptions and conditions but acknowledges that

fulfilling local needs often has international effects” (idem). While ESD recognizes the importance of delivering an education that responds to students' local environments and cultural contexts, it also acknowledges the need to teach students connections between the local and the global. Furthermore, ESD “builds civil capacity for community-based decision-making, social tolerance, environmental stewardship, an adaptable work force, and a good quality of life” (idem). In this way, ESD fosters links between the school, the outside community and global society to promote social, cultural, economic and environmental sustainability.

In the context of mainstream education reforms, ESD should not be considered an “add-on” to existing curricula, such as an additional school subject like environmental sciences (Johnston 2009). Rather, “Every discipline, all teachers, and all administrators can contribute to ESD” and “all disciplines contribute both content and pedagogy” (McKeown and Nolet 2013, 8). Ultimately, the aim is to transform mainstream education so that ESD becomes, simply, education. However, mainstream education systems are slow in making this transformation, as in Canada's case, where ESD programs have been implemented unevenly throughout the country. Even in provinces that embrace ESD in their mission statements, education reforms are lagging, and there are several barriers to program implementation at the local level (Buckler and MacDiarmid 2013). For example, teachers in Ontario report a number of challenges to delivering environmental education such as lack of support amongst colleagues, lack of curriculum resources, and deficiencies in teacher education (Pedretti et al. 2012). Successful ESD implementation has often been the result of efforts made by a few passionate teachers, principals and parent volunteers (Hopkins 2013).

While Canada and several other countries have been involved with ESD over recent decades, some scholars and educators are critical of the goal to educate students about sustainable development. First, education that focuses on global issues may have little relevance to students' everyday lives (Gruenewald and Smith 2008). Though it is important for students to understand the connection between their local environments and global issues, the environment should not always be presented as a “problem” that needs solving. Students may find the complex nature of these global issues overwhelming and leave them with a sense of frustration, boredom and despair (McKeon 2012; Smith and Sobel 2010). By contrast, environmental

education programs that inspire students to develop a sense of awe and appreciation for the natural world may lead to positive changes in environmental attitudes and behaviours later in life (Gruenewald and Smith 2008; Sutherland and Swayze 2012a).

Second, many indigenous education scholars argue that environmental education programs do not always challenge the dominant cultural assumptions that have led to our current global ecological crisis, or adequately integrate indigenous and local knowledges into the curriculum (for example: Battiste 2005; Johnston 2009; Kapyrka and Dockstator 2012; D. McGregor 2004; McKeon 2012). As reforms in environmental education are being made to better educate for the environmental challenges that lay ahead, it is important not to overlook this opportunity to decolonize and indigenize environmental education as well (Korteweg and Russel 2012). Including indigenous knowledge in mainstream education can only enhance a collective understanding of the complex relationships and connections between humans and the natural world, and in this way, contribute towards ESD.

#### *4.2 Ecojustice Philosophy*

In light of the current global ecological crisis, mainstream environmental education must examine the dominant cultural assumptions in global society that are associated with “unsustainable” behaviours and practices. This includes a critical examination of Western science and mainstream education. Many advocates of environmental education reform are influenced by ecojustice philosophy, which equates environmental concern with social justice, and considers how humans know, relate to and interact with other humans and the non-human world (for example: Karrow and Fazio 2010; Kulnieks et al. 2012; Tippins and Mueller 2010).

Ecojustice philosopher Val Plumwood (2002) argues that in modern society, relationships between humans and the natural environment are often hidden. For example, in a commodity culture it is difficult to see and understand the relationships between everyday consumers, and the people and landscapes affected by the production of commodities. For Plumwood, this is connected to the dominant cultural assumption rooted in Eurocentric thinking that sees the separation of humans from nature. Plumwood writes about the need to overcome the

human/nature and other dualisms associated with Eurocentric thinking—including human/animal, male/female, and white/non-white—that have resulted in the domination of one over the other. Plumwood is especially critical of Western scientific and 'rational' thinking, which has sometimes played a role in justifying inequalities: “concepts of rationality have been corrupted by systems of power into hegemonic forms that establish, neutralise and reinforce privilege...Dualism and rationalism function together as a system of ideas that justifies and naturalises domination of people and lands by a privileged class identified with reason” (idem: 17).

Any attempt at education reform must include an examination of the role Western science has been playing to justify domination over other peoples and knowledge systems, some of which may be associated with “sustainable” environmental behaviours and practices (Bowers 2008; D. McGregor 2004). Ecojustice pedagogy encourages students to build relationships of care and respect with the human and non-human others (Gruenewald and Smith 2008). In this manner, it merges with the call by indigenous and non-indigenous scholars to decolonize and indigenize mainstream environmental education (Tippins and Mueller 2010; Kulnieks et al. 2012). This process can start by respecting and recognizing the value of indigenous knowledge.

#### *4.3 Indigenous Knowledge and Education*

Given the severity of the global ecological crisis, it is crucial to examine the limitations of and look beyond Western scientific knowledge (McKeon 2012). Indigenous knowledge is widely considered indispensable toward achieving sustainability (Battiste 2005). But what is indigenous knowledge?

While in recent decades the value of indigenous knowledge has been recognized across the globe, indigenous knowledge is difficult to define and is often a controversial domain. As indigenous scholars undertake important work to define and reconstruct indigenous knowledge, others are more wary of this attempt, arguing that outsiders have historically imposed such definitions on indigenous peoples (Battiste 2005; D. McGregor 2004). Defining indigenous knowledge is further complicated given the diversity of indigenous groups that fit within the



category “indigenous.” According to Battiste and Henderson (2000), it is important to recognize that indigenous knowledge is not “a uniform concept across all indigenous peoples” (quoted in D. McGregor 2004, 390).

Despite this, some common characteristics of indigenous knowledge stand out in the literature. Indigenous knowledge seems to rely more on direct, experiential modalities rather than in abstract structures (Rich 2012). It is inherently place-based as it is established on relationships that indigenous peoples have developed with particular local environments often spanning hundreds of years (Root 2010). According to Battiste, indigenous knowledge “embodies a web of relationships within a specific ecological context; contains linguistic categories, rules, and relationships unique to each knowledge system; has localized content and meaning; has established customs with respect to acquiring and sharing of knowledge...and implies responsibilities for possessing various kinds of knowledge” (Battiste 2005, 8).

Indigenous knowledge is deeply connected to spirituality (Rich 2012). McGregor explains that knowledge “comes from the Creator and from Creation itself” and that knowledge is “gained from vision, ceremony, prayer, intuitions, dreams, and personal experience” (D. McGregor 2004, 388). Indigenous knowledge also encompasses an understanding of the interconnectedness of all things including people, the land, and the spirit world (Battiste 2005). Developed in relation to the land, indigenous knowledge inherently includes ecological knowledge and, many argue, knowledge of how to live sustainably. However, it is important to note that indigenous practices, which have been deemed “sustainable” by non-indigenous peoples, have not necessarily been identified as such by indigenous peoples themselves (D. McGregor 2004).

Just as indigenous and Western scientific knowledge possess different characteristics, there are also differences in the ways they are traditionally taught. For instance, many scholars stress that indigenous and Western education models have distinct objectives. In contrast to an education that focuses on outcomes, Cajete (2010) argues that indigenous ways of knowing are more about the journey than the destination. Moreover, indigenous knowledge is considered holistic: “Because traditional native education is holistically inter-relational, and not dualistic, it

does not intrinsically separate theory and practice, human beings and nature, or the classroom (or learning process) from the world” (idem: 1128). Therefore, Hatcher (2012) argues that indigenous knowledge cannot be fragmented into separate categories such as the arts, sciences and religion, nor can it be appropriately passed on in a “package” using books or videos. Yet, despite the many differences between indigenous and Western education models, scholars are increasingly examining the ways that indigenous and Western scientific knowledge may be brought together in the classroom (for example: Aikenhead and Elliott 2010; Bartlett, Marshall and Marshall 2012; Hatcher 2009; Hatcher et al. 2012; Lowan 2012; Rich 2012). According to many experts, the concept of “place” can be a useful starting point in working toward their integration in mainstream education (for example: Johnson 2012; Kulnieks, Longboat and Young 2013; Sutherland and Swayze 2012; Tippins et al. 2010).

#### *4.4 Place, Space, and Non-Place*

Before moving forward with a conceptualization of place-based education, it is worthwhile to consider, what is “place”? What does place mean as opposed to space, or non-place? It is difficult to provide a direct and unambiguous definition. Place is a very common word in the English language with many different meanings: “It is used variously as a physical location (what places did you visit?), a psychological state (I’m not in a very good place right now.), social status (people should know their place.), the location of something in one’s mind (I can’t quite place it.), a standard for evaluation (there’s a time and place for everything.), and on and on” (Steele quoted in Karrow and Fazio 2010, 196). The word itself derives from the ancient Greek *plateia*, referring to a central location for feasts, celebrations, events, and meetings (van Eijck 2010). van Eijck explains that “Plateia is not some position, not an empty space, but an area that becomes significant because of the events, meetings, feasts that ‘take place’ in the place, which thereby comes into existence as place by virtue of the event” (idem: 189). In places, as the word continues to be used today, events occur that are meaningful to people.

People and place are inseparable. As van Eijck writes, “When we identify with a place, it becomes part of ourselves and we become part of it” (190). More than just physical locations, “places originate from the interplay of the natural attributes of the place, and all the humanistic

and scientific ways that people can sense and understand it” (Semken and Brandt 2010, 288). Anthropologist Marc Augé (1995) explains how places are connected to individual and collective identity. Although he cautions that the idea of an indigenous people so intimately connected to place since time immemorial is an anthropologist's “indigenous fantasy,” Augé suggests that it does have some bearing on reality. Individual and collective identities are developed, over time, in relation to place.

Augé explains that collectivities, and their individual members, “need to symbolize the components of shared identity (shared by the whole of a group), particular identity (of a given group or individual in relation to others), and singular identity (what makes the individual or group of individuals different from another). The handling of space is one of the means to this end” (Augé 1995, 51). Augé thus defines places as historical, relational, and concerned with identity. By contrast, he argues that the current era can be described by the expansion of their opposite, “non-places.” By this he means airports, motorways, hotel chains, retail outlets, and so on. Space, meanwhile, Augé explains, is commonly used today to signify empty space, or the “non-symbolized surfaces of the planet” (idem: 82). In short unlike non-place or space, people form intricate attachments to place.

As place is connected to history, relations, and individual and collective identity, it is also bound up with questions of power. People often attribute different meanings and emotional ties to places, which can sometimes lead to conflict: for example, places “may be contested by competing rhetorics, public campaigns, advertising, political power, legal action [or with the threat of legal action] where appropriate laws exist, but can also escalate to sabotage, direct conflict, and even wars” (Semken and Brandt 2010, 294). Such conflict is sometimes evident in the act of naming a place. In designating formal names to places, it is often the case that local names given by indigenous inhabitants of that place are erased or forgotten (van Eijck 2010). In countries that have experienced settler colonialism, diverging conceptions of place held by settlers and indigenous peoples also frequently come into conflict (Tuck, McKenzie and McCoy 2014).

For example, the way place is often understood by non-indigenous Canadians today to signify a bounded physical area may differ from the indigenous concept of Land, “which includes a community of *all* [sic] relations and a deep spirituality that underlies indigenous ways of being” (McKeon 2012, 141). In Canada, this is evident also in the common conception of outdoor spaces as “wilderness,” which implies simultaneously a place of adventure and leisure, a place without people or history, and an escape from “civilization” (Newbery 2012). However, this understanding of wilderness may conflict with the perceptions of Aboriginal peoples, who may have lived in this “wilderness” for centuries (*idem*). As the next section will discuss, learning from place or the Land can uncover some of these histories, contested meanings, and struggles.

#### *4.5 Place-Based Education*

Place-based education (sometimes referred to as outdoors education or place-conscious education) encourages students to explore, learn from and build connections with their local environments or “places,” usually their immediate schoolyard, neighbourhood, town or community (van Eijck 2010). Although place-based education theories emerged in the 1980's, they can be traced back to Dewey (1910), who proposed that education should respond to students' local environments and engage with their home and community lives (Gruenewald and Smith 2008). In contrast to environmental education approaches that focus primarily on the global issues concerning sustainable development, place-based programs begin by encouraging students to build a “sense of place,” or in other words, “a feeling of being at home in and connected to one’s geographical surroundings” (Lowan 2009, 43). Though place-based programs do not always have sustainable development as their aims, they nevertheless educate for sustainability by inspiring students to build caring relationships with their local environments, in both urban and rural contexts.

Over the last decade, many scholars and educators have found that place-based education approaches are particularly well suited to environments that have been impacted by colonialism, and can contribute to larger efforts to decolonize mainstream education (for example: Johnson 2012; Karrow and Fazio 2010; Kulnieks, Longboat and Young 2013; Kulnieks et al. 2012;

Lowan 2009; Roth 2010; Scully 2012; Stewart 2010; Sutherland and Swayze 2012a; Swayze 2009). Many of these authors draw on the work of education theorist David Gruenewald, (2003) who has enormously influenced the field of place-based education by giving a conceptual framework for a critical pedagogy of place. Influenced by ecojustice philosophy, Gruenewald suggests that a critical pedagogy of place recognizes the inseparability of social and environmental justice and examines how particular places are affected by social and political decisions. While a critical pedagogy of place is grounded in the local, students also examine how global processes affect place, and thus gain an understanding of how the local is connected to the regional and global.

A critical pedagogy of place encourages students to understand how places are “politicized, social constructions that often marginalize individuals, groups, as well as ecosystems” (Gruenewald 2003, 7). As students build relationships with the natural world, nonhumans and others, they are also actively encouraged to improve the social and environmental conditions of places. This process is described as *decolonization* and *reinhabitation*: “If reinhabitation involves learning to live well socially and ecologically in places that have been disrupted and injured, decolonization involves learning to recognize disruption and injury and to address their causes” (idem: 9). In essence, a critical pedagogy of place is about learning to live well with others, which involves finding and creating more socially just and ecologically sustainable ways of being in the world.

Many indigenous and non-indigenous scholars and educators have worked toward grounding Gruenewald's critical pedagogy of place in indigenous knowledge and perspectives. Among other experts, Sutherland and Swayze (2012b) find that a critical pedagogy of place is well suited to indigenous learning environments. Johnson (2012) argues that place can be a “common ground” for integrating indigenous and Western knowledges in education. In the process of recovering place, she finds that “one might glimpse alternative economies, politics and environmental management methods; informed by alternative knowledge systems and epistemologies” (834). She also proposes that place-based education can aid in the indigenous political struggle for recovery of place, which includes the cultural histories that are attached to certain places. Recognizing the value and significance of oral histories and traditions to

indigenous communities, Johnson suggests that we can read our “storied landscapes” much like written texts. Finally, Scully (2012) sees the value of place-based education approaches in fostering intercultural understanding between indigenous and non-indigenous peoples, and adds reconciliation to Gruenewald's twin goals of decolonization and reinhabitation. For Scully, reconciliation represents recognition from both indigenous and non-indigenous peoples that they share land together in the present. Together, these authors provide a framework for decolonizing and indigenizing environmental education through place-based education approaches.

However, it is important to note that other scholars are more critical of the applicability of a critical pedagogy of place in indigenous contexts. The main criticism is that place-based education programs, even those attuned to indigenous knowledge, remain grounded in “Western” assumptions and conceptions of the environment (Calderon 2014; Lowan 2009; Friedel 2011; Tuck, McKenzie and McCoy, 2014). Bowers (2008) warns that a critical pedagogy of place carries many Eurocentric assumptions, for example, that change is an inherently progressive force, and that critical thinking “always leads to overcoming oppression and environmentally destructive practices” (326). He is especially critical of Gruenewald for perpetuating the modernist assumption that in undertaking education reform, everything must be transformed. Rather than focusing on the twin objectives of decolonization and reinhabitation, Bowers is more concerned with which local traditions ought to be conserved.

Other scholars argue that critical place-based pedagogies are based on Western conceptions of place as outdoor “green spaces,” which is at odds with indigenous understandings of the Land as deeply spiritual (Calderon 2014; Tuck, McKenzie and McCoy 2014). They suggest that pedagogies should centre on the Land, encompassing “all of the earth, including the urban, and as much more than just the material” to put forward indigenous understandings of land, as well as indigenous critiques of settler colonialism (Tuck, McKenzie and McCoy 2014, 8).

However, while early education theorists do suggest that place-based education is best suited to rural outdoor environments, it is increasingly understood that there is much to learn about human-environmental relations from both urban and rural environments, as well as the

connections between these spheres (Cronon 1991). Today, many place-based programs are adapted to urban contexts and involve projects such as urban gardening, composting, recycling programs, social action projects, and so on (Buckler and MacDiarmid 2013). Furthermore, as Augé and others have demonstrated, places have meaning for people beyond simply “green spaces,” as they are deeply intertwined with individual and collective identity. Rather than dismissing a critical pedagogy of place for carrying too many Eurocentric assumptions, perhaps these and other such assumptions should be uncovered and critically examined as part of the learning process.

Finally, some scholars are dismissive of place-based education theories for encouraging students to “reconnect” with nature based on the premise that humans have become disconnected with nature in modern society (for example: Calderon 2014; Tuck, McKenzie and McCoy, 2014). Place-based education theories respond to perceptions of modern society as characterized by “placelessness,” apparently as a result of processes of globalization and cultural homogenization (Gruenewald and Smith 2008; Johnson 2012; van Eijck 2010). According to environmentalist David Orr, “to a great extent we are a displaced people for whom our immediate places are no longer sources of foods, water, livelihood, energy, materials, friends, recreation, or sacred inspiration” (quoted in Johnston 2009, 153). Many place-based education theories are influenced by this notion, that rather than inhabiting places, most people in modern society only reside in places, and develop no strong attachment to their surrounding environments (Gruenewald and Smith 2008; Smith and Sobel 2010).

Furthermore, many place-based theorists claim that mainstream education systems encourage placelessness with standardized curricula, standardized testing and even standardized designs for school buildings. According to Gruenewald and Smith (2008), schools in the United States, with the overarching aim of preparing students to enter the global workforce, have become isolated from local community life:

in many places, a case can be made that the process of schooling actually encourages many youth to reject their home communities and look elsewhere for the good life depicted by media advertisers and the entertainment industry. [...] This pattern of uprooting means that many people simply do not live long enough in one place to develop intimate relationships to places. (xv-xvi)

The focus on Western scientific knowledge in schools, which is similarly called a “placeless” science as a consequence of its goal to generate universal and abstract knowledge, is also claimed to contribute to this phenomenon (see: Johnson 2012).

In the literature, placelessness is presented as something bad that can be ameliorated through place-based education. But this notion of placelessness is rather simplistic and steeped in moral arguments about modern society. As Nesor (2008) argues, even if mainstream education and Western science do contribute to patterns of uprooting, it is not always clear in the literature how this takes place, or why this is bad. Nesor points out that migration issues are complex and should be treated as such in the literature. Yet instead of analyzing patterns of mobility according to gender, ethnicity or class, he claims that many place-based theorists “work from what Linda Malkki calls a 'sedentary metaphysics' in which 'territorial displacement' is treated as 'an inner, pathological condition of the displaced' rather than as 'a fact about sociopolitical context'” (480).

In addition, making strong moral arguments about “Western placelessness” can have negative implications as it often leads to romanticized notions of indigenous peoples. As Nesor (2008) argues:

If we take as our basic moral and ontological division the supposedly growing distance between an ideal of people anchored in spatially bounded, long-inhabited communities, and the supposed reality of alienated people adrift in the placelessness of global capitalism, we end up defining cultural identity and differentiating groups according to what we judge to be their distance from the ideal. (482)

Instead of judging and emulating indigenous peoples as the ideal against Western placelessness, place-based approaches should give more respect and consideration to colonial history and the contemporary realities of indigenous peoples (Tuck, McKenzie and McCoy 2014).

Although place-based education theories are sometimes founded on idealized notions of indigeneity as opposed to “Western placelessness,” they also respond to important concerns. Of particular note is the role that Western scientific knowledge and mainstream education has played historically in suppressing indigenous and local forms of knowledge and marginalizing



students from “non-Western” cultural groups in schools. With the emphasis on Western scientific knowledge in schools, indigenous and local forms of knowledge are often ignored or cast aside. This is especially a cause for concern since studies have shown that most indigenous students, as well as those from other cultural groups, feel alienated by the teaching of science in schools (Aikenhead and Elliot 2010). Many students perceive science as a foreign culture, and for indigenous peoples, the “values, assumptions, and ideologies embedded in Eurocentric science content can conflict with [those] of Indigenous ways of living in nature” (idem: 325).

Others argue that since indigenous ways of knowing are holistic and encompass spirituality, indigenous learners can find the fragmentation and separation of knowledge into separate disciplines an impediment to learning (Hatcher et al. 2009). By contrast, students report feeling more engaged and perform better in schools with curricula that responds to their local cultural contexts (Aikenhead and Elliot 2010; Hatcher 2012; Hatcher et al. 2009). This further demonstrates a need for contextualized learning in schools, which place-based approaches can provide. But integrating indigenous knowledge and perspectives in mainstream education can provide a more enriching learning experience for non-indigenous students too. While there are many tensions and contradictions in adapting a critical pedagogy of place to indigenous contexts, there is also a rich opportunity for all students, indigenous and non-indigenous, to learn from these challenges and from each other in the process of decolonizing and indigenizing environmental education.

## **5. Results and Analysis**

### *5.1 Contributions from Indigenous and Western Knowledges*

The literature on indigenous and place-based education in Canada examines how both indigenous and non-indigenous students can benefit from the inclusion of indigenous knowledge in the classroom. First, teaching indigenous knowledge and perspectives can improve sustainability education. Indigenous knowledge can give students a greater understanding of the complex ways that humans are interconnected with others and embedded in the natural world. Furthermore, indigenous worldviews, which are based on relationship, responsibility, reciprocity,

and respect, can provide lessons on healing relationships with the Earth, and can foster a sense of responsibility for caring for others (Kapyrka and Dockstator 2012; Rich 2012; McKeon 2012).

As D. McGregor (2004) explains,

Aboriginal people in Canada understood their relationship with Creation and assumed the responsibilities given to them by the Creator. The relationship with Creation and its beings was meant to be maintained and enhanced, and the knowledge that would ensure this was passed on for generations over thousands of years. The responsibilities that one would assume would ensure the continuation of Creation (or what academics or scientists might call “sustainability”). (388-389)

Indigenous spiritual understandings can teach students the connectedness and responsibilities they have to others, and to the Earth, which can encourage more sustainable behaviours.

Second, teaching indigenous knowledge in the classroom can contribute to intercultural understanding. One study recommending the inclusion of indigenous knowledge in Ontario's environmental education curriculum states that for non-indigenous students, indigenous perspectives “provide intercultural knowledge and experiences and afford opportunities to explore and appreciate [indigenous] socio-cultural, economic and ecological contributions to Canadian society” (Beckford and Nahdee 2011, 1). Third, for indigenous students, the inclusion of indigenous knowledge in schools fosters student engagement, and can lead to increased self-esteem and better learning outcomes (idem). Since indigenous students are more likely to succeed with a culturally responsive curriculum, indigenous education is also often linked with youth empowerment (Aikenhead and Elliott 2010; Battiste 2005; Friedel 2011). Additionally, Rich (2012) finds that indigenous and non-indigenous students develop greater critical thinking skills when indigenous and Western knowledges are taught together. These are only some of the ways that all students can benefit from learning from indigenous knowledge and perspectives.

Though the literature on indigenous place-based education emphasizes the many ways that indigenous knowledge can enrich mainstream environmental education, the value of “Western” contributions is seldom discussed. Most studies outline the limitations of Western scientific knowledge to demonstrate how indigenous knowledge can enrich environmental education. But this emphasis in the literature can sometimes leave the reader wondering if there

is anything “good” about the “West.” While it is certainly important to investigate where scientific knowledge has its limitations, it might be worthwhile also to reflect on its strengths. After all, the authors argue for the equal integration of indigenous and Western scientific knowledge in environmental education.

Recognizing the importance of recent developments in the natural sciences, McKeon (2012) demonstrates how scientists recognize that reality is a network of relationships: “systems theory shows the world as nested systems: in which every living organism is a system, and that parts of living systems as well as communities of organisms including ecosystems and human social systems, are also living systems” (138). According to McKeon, this knowledge of interconnectedness not only forms the basis of education for sustainability, but also is already understood within indigenous knowledge systems. This point is echoed by Rich (2012), who claims that in environmental studies and sciences, “an increasing recognition of complexity in human/Earth interactions brings the field closer to the Indigenous view that the world is far more complex than a human can comprehend, necessitating some degree of humility regarding one’s role and actions with regard to the Earth” (309). Following the path of these authors, there should be more examination and appreciation of the role of Western scientific knowledge in educating for sustainability.

Additionally, with the focus on indigenous contributions in the literature, sometimes “Western knowledge” becomes treated as synonymous with “scientific knowledge.” However, this hides the diversity of cultures and knowledges that exist behind the category “Western.” Despite the best intentions of scholars who advocate for the integration of indigenous and Western knowledges in mainstream education, this often leads to generalizations in describing so-called “Western” institutions and knowledge systems. For instance, a two-worlds approach to environmental education is a conceptual framework that

acknowledges the differences between the knowledge systems of both Indigenous and Western perspectives—it upholds tenets of both methods of learning. A crucial aspect of this approach is that it does not merge two knowledge systems together, nor does it paste bits of Indigenous knowledges onto Western curricula, rather it avoids knowledge domination and assimilation by engaging in a learning philosophy based in equitable inclusion. (Kapyrka and Dockstator 2012, 106)

While this is certainly a worthy goal, one must be careful of definitions that do not examine the categories of “Western” or “Indigenous” more carefully.

Indeed, it should be pointed out that many other “Western” forms of knowledge might also have been suppressed over time in favour of scientific knowledge. As Root (2010) reminds us,

It can be quite tempting to create monolithic categories of what it means to be White/Western/Euro-Canadian or what it means to be Aboriginal. White people, as they decolonize, learn to recognize the multiplicities that exist within Aboriginal cultures. Yet, the refinement of their critical decolonizing lens can obscure the fact that multiplicities exist as well in Western culture. (115)

As much of the literature cited herein delves into the colonial history of Canada, one effect is that it can paint a picture of Canada as either “White” or “Aboriginal.” In reality, there is great diversity within these categories just as there are many other cultural groups living in Canada, and their roles in the process of decolonizing and indigenizing environmental education should be recognized and further researched.

However, there are some exceptions to this in the literature on indigenous place-based education. In the search for a common ground between indigenous and Western knowledges, some scholars have identified concepts within and beyond Western scientific knowledge that fit well with indigenous concepts. For example, many indigenous education scholars are critical of Western science for being value-free based on its premise of neutrality, and argue that indigenous knowledge, encompassing spiritual principles, can fill the ethical gaps left in Western scientific education and research (for example: Hatcher et al. 2009; Kapyrka and Dockstator 2012; D. McGregor 2004). But researchers in other fields have long questioned the neutrality of science, and in environmental education studies, many have explored the role of emotion and spirituality in scientific education and research.

In the 1970s, just when the value of indigenous knowledge was beginning to be recognized within academic settings, other environmental education researchers turned to the ideas of scientist and environmentalist Aldo Leopold, especially his influential 1949 *A Sand*

*County Almanac* (Longboat et al. 2013). Questioning the utilitarian ideology behind scientific forestry and wildlife management, Leopold developed an ecological ethic that involved an appreciation and respect for other-than-human living beings, and proposed to dedicate science to understanding the ecological impacts of human activities (Walter 2013). This scientific concern is guided by an emotional and spiritual attachment to land and other members of the ecosystem (idem). Since then, Leopold has been influential in the philosophy of deep ecology, which advocates for the inherent worth of all living beings. Leopold's techniques in coming to know, respect, and love the land has also influenced experiential outdoors and place-based education theories (Knapp 2005).

Many of these ideas are compatible with indigenous knowledge and perspectives. Recognizing this point, Greg Lowan (2012) looks beyond Western scientific knowledge and sees that other Western knowledges share similarities with indigenous knowledge. In particular, he argues that the philosophical traditions of deep ecology and bioregionalism can expand an understanding of Western knowledge

to include tenets such as respect and recognition of cultural and ecological diversity, the inherent value of all beings, spiritual forces, long-term multi-generational thinking, the embedded and relational position of human beings in the circle/web of life, locally-focused and responsive living, practical application of principles, local traditions, and acknowledging Indigenous territories and sacred landmarks. (75)

In the search for commonalities between indigenous and Western knowledges, indigenous education scholars are starting to explore other forms of knowledge outside established scientific disciplines.

For example, Bartlett, Marshall and Marshall (2012), are developers of the integrative science program at Cape Breton University and authors of the frequently cited Two-Eyed Seeing conceptual framework. Two-Eyed Seeing refers to “learning to see from one eye with the *strengths* of Indigenous knowledges and ways of knowing, and from the other eye with the *strengths* of Western knowledges and ways of knowing, and to using both these eyes together, for the benefit of all” (335). But the authors also acknowledge that “all of the world’s cultures (which we take to include mainstream/western [sic] science) have understandings to contribute in

addressing the local to global challenges faced in efforts to promote healthy communities” (idem: 336). They therefore suggest that the concept of Two-Eyed Seeing can be expanded to Four-Eyed Seeing, or Ten-Eyed Seeing (idem). However, no further details are provided to show how this concept may be expanded methodologically and in practice. While the importance of learning from diversity is starting to be acknowledged, more attention must be paid to the various contributions that can be made from non-indigenous groups to an environmental education that equally values, respects and integrates multiple knowledge systems. As the next section will discuss, transdisciplinarity can provide the epistemological framework for the integration of scientific knowledge, indigenous knowledge, and other knowledges that have not conventionally had a place in mainstream education.

### *5.2 Transdisciplinarity*

The authors of indigenous and place-based education recognize that the focus on Western scientific knowledge in mainstream environmental education is not adequate in addressing complex issues such as sustainability (Rich 2012; Hatcher 2012; Hatcher et al. 2009). However, for many of these authors, an epistemological framework is missing that can demonstrate how indigenous knowledge can be integrated in the curriculum. But new epistemological approaches are being formulated that integrate complexity, uncertainty, and values. Transdisciplinarity is an emerging philosophy that considers how to build connections across, between and beyond scientific disciplines and work towards the structural integration of knowledge. Unlike interdisciplinary approaches which only tend to involve communication between two or more disciplines, transdisciplinarity transcends disciplinary boundaries, to collaborate with other members of society outside academia (S. McGregor 2004). Indigenous education scholars should turn to transdisciplinary approaches in considering mainstream environmental education reform.

Transdisciplinarity recognizes that the increasing specialization and fragmentation of knowledge has not only made it more difficult to communicate between disciplines, but may also have harmful impacts on society (Max-Neef 2005). One problem is that a single discipline cannot be expected to adequately grasp a complex issue. As an example, pollution is a concern that needs to be addressed from the perspectives of many disciplines. But when a problem is only

considered from one perspective, there is the risk of not understanding possible negative side effects (Hirsch Hadorn et al. 2008). Moreover, it has been argued that much harm has been caused in the application of scientific knowledge “by ignoring the uncertainty of scientific knowledge, by neglecting the users’ knowledge, and by failing to consider contextual conditions of applications” (Hoffmann-Riem et al. 2008, 4).

Transdisciplinarity tries to overcome this, by seeking “(a) to grasp the relevant complexity of a problem (b) to take into account the diversity of life-world and scientific perceptions of problems, (c) to link abstract and case-specific knowledge, and (d) develop knowledge and practices that promote what is perceived to be the common good” (Pohl and Hirsch Hadorn quoted in Hoffmann-Riem et al. 2008, 4). This means also that values and biases should be made clear in the research process, to consider the context of the research project, and what is perceived by actors to be the “common good” (Hoffmann-Riem et al. 2008). Transgressing disciplinary boundaries also means opening the door to explore the roles of emotion, intuition, and imagination in education and research (S. McGregor 2004). Finally, for many thinkers, transdisciplinarity encompasses the greater theoretical challenge of working toward the unity of knowledge (for further reading, see: Hoffmann-Riem et al. 2008; Max-Neef 2005).

Transdisciplinarity offers many opportunities for future research. The need for transdisciplinary approaches is already recognized by many proponents of ESD, who argue that environmental education must move beyond the discipline of environmental sciences in mainstream curricula. More recently, scholars are beginning to link transdisciplinarity with attempts to include indigenous knowledge in mainstream education (see: Bartlett, Marshall and Marshall 2012; Kulnieks 2012; Kulnieks, Longboat and Young 2013). For example, Bartlett, Marshall and Marshall (2012) connect features of transdisciplinary research in their own research and experiences with their Two-Eyed Seeing integrative science program. The authors argue that Two-Eyed Seeing fits within emerging transdisciplinary research since, following Pohl's Concept B criteria, it “relates to socially relevant issues,” “transcends and integrates disciplinary paradigms,” and “includes non-academic actors” (337). But these authors are only beginning the conversation on transdisciplinarity within indigenous education studies. More research is needed in this area, and others involved in integrating indigenous knowledges in mainstream

environmental education should consider the usefulness of these approaches. It is the eventual hope that engaging in transdisciplinary research can help to heal the disconnection between scientific disciplines, between scientific and other forms of knowledge, and between indigenous and non-indigenous Canadians.

### *5.3 Practical and Methodological Challenges*

As discussed above, many scholars argue for an indigenous place-based education that incorporates the strengths of indigenous and Western knowledges. However, less is known about how integrative programs can be implemented in the classroom. There are a number of practical and methodological challenges in bringing together indigenous and Western ways of knowing, which, while sometimes complementary, are also often at odds with each other. One difficulty is that there are few place-based resources, textbooks and materials that educators can use as a starting point to integrate indigenous knowledge in the classroom, although more resources are being developed (Michell 2009; Ryan et al. 2013).

Furthermore, Educators face a number of barriers in implementing indigenous place-based approaches in mainstream education. One deficiency lies in teacher education. Although teacher education institutions across Canada are increasingly requiring instruction in indigenous education, many teachers find that they lack the education needed to implement such curricular reforms (Scully 2012). Additionally, it may not be easy for educators to confront the reality that mainstream education has been historically associated with policies of assimilation and cultural erasure, or that it perpetuates forms of discrimination to this day. While this may be uncomfortable for many, decolonizing mainstream education requires that all educators, indigenous and non-indigenous, examine the Eurocentrism that exists within mainstream education today, which includes reflecting on their own worldviews and teaching practices (Kapyrka and Dockstator 2012; Michell 2009; Root 2010; Scully 2012).

Teaching indigenous content in mainstream education can be a delicate issue, especially when non-indigenous educators are put in charge, as lessons can easily reproduce stereotypes or misunderstandings about indigenous peoples if they are not taught with cultural awareness and



emotional sensitivity. Particularly in environmental education, there is the danger of reproducing myths of the Ecological Indian, which is the belief held by many Europeans and “Westerners” that indigenous peoples are inherently closer to nature and possess innate environmental knowledge. Friedel (2011) finds that these myths were prevalent in an informal place-based learning program geared towards Aboriginal students in Ontario where, despite the best intentions of the non-indigenous educators, students were assumed to have inherent access to traditional ecological knowledge. But to assume that indigenous students have innate knowledge about or practice a “traditional” way of life is to forget how indigenous peoples have been in contact with, and assimilated into, settler society for centuries. In the process of decolonization, these and other such assumptions that stem from ignorance about indigenous peoples should be openly discussed and critically examined in order to move towards an education that is respectful of indigenous peoples and knowledges (Hatcher 2012).

A further challenge is that indigenous concepts cannot always be well understood within non-indigenous languages or education frameworks. For indigenous concepts to be best understood, they should be instructed in indigenous languages (Rich 2012). However, this is not usually feasible in practice. Some ask how, or even if, indigenous knowledge can be taught appropriately in English or French, the colonial languages. Cole (2012) explores some of these tensions and constraints of language, by playing with the structure of the English language: “there is no way of putting together ideas like those pervading mainstream environmental education theories—calling forests rivers and mountains fish and medicines 'resources' they were always family but this is being lost or misplaced...in our language everything has spirit is spirit” (20). Furthermore, non-indigenous educators may be unwilling or uncomfortable with teaching spiritual concepts, which have not conventionally had a place in mainstream education.

While more research is needed to investigate how indigenous knowledge and perspectives can be implemented in the classroom, scholars and educators suggest certain pedagogical methods to deliver indigenous content in a culturally appropriate and respectful manner. In particular, scholars have highlighted the importance of teaching through storytelling, as is appropriate given the oral traditions of Aboriginal peoples. In indigenous education models, lessons are given through legend and stories, and students are expected to draw conclusions from

them on their own (Hatcher et al. 2009). This also reflects the goal of teaching within indigenous education models to guide the learning spirit, rather than the direct transmission of knowledge (McKeon 2012).

To provide examples of how storytelling can be implemented in an integrative science class, a unit on electricity can be complemented with stories of how hydroelectric dam projects have disrupted indigenous communities (Aikenhead and Elliott 2010), or a lesson on climate change can include stories of changing ice conditions on hunting, trapping, fishing and ecosystems (Beckford and Nahdee 2011). At the same time, however, it is important to recognize that stories are highly ritualized and not always intended for public consumption, signifying the need for the involvement of indigenous peoples in delivering indigenous knowledge in a culturally respectful manner.

Similarly, works of art, traditional crafts, song, dance, ceremonies and rituals can provide rich opportunities for learning if they are taught in a way that is culturally appropriate and with the consent of indigenous communities. Scholars have also emphasized the value of project-based and experiential learning to reflect indigenous ways of knowing, which fits well with place-based education approaches (Hatcher et al. 2009; Sutherland and Swayze 2012a). Since the classroom is not always an appropriate context to deliver indigenous content, field trips to places of historical and cultural significance to indigenous communities are encouraged. For example, Restoule, Gruner, and Metatawabin (2013) document a successful ten-day river trip in Fort Albany Nation that brought indigenous youth together with adults and Elders as they explored sites and routes of historical significance. The excursion involved community mapping of cultural and historical sites and gave students the opportunity to learn original place names and concepts in the Cree language.

As programs across Canada increasingly integrate indigenous knowledge in the curriculum, particularly in K-12 and university integrative science classes, there is growing research on this topic as issues and challenges arise on how indigenous place-based approaches can be implemented in mainstream environmental education. Whichever methodological and pedagogical approaches are adopted, one theme that stands out in the literature is the need for

students and educators to develop links with local indigenous communities—and especially indigenous Elders as the “experts” in indigenous communities—so that indigenous content is integrated appropriately. The involvement of indigenous peoples in curriculum development and program delivery responds to concerns of cultural appropriation when non-indigenous educators are responsible for delivering indigenous education (Korteweg and Russell 2012). Additionally, indigenous Elders and community members can help to create a classroom environment where all students, indigenous and non-indigenous, feel safe and validated as human beings (Hatcher et al. 2009).

Sutherland and Swayze (2012b) find that in an informal place-based education program geared towards inner-city youth in Winnipeg, Elders enriched students' learning experience by providing an opportunity for sharing intergenerational knowledge, for students to practice “respect” using protocols for working with Elders, and for strengthening Aboriginal pride and kinship (90). Similarly, based on their experiences with university-level integrative science classes, Hatcher et al. (2009) discovered that students feel more engaged in learning when involved in projects of interest to students, to Elders and to the community. Others have noted the essential role of indigenous peoples and Elders in developing resources and learning materials (Ryan et al. 2013). While many indigenous people may be distrustful of attempts to indigenize mainstream education in light of assimilative education policies and practices of the past, this only furthers the need for involvement of the indigenous community members in delivering a culturally responsive place-based education. Social learning provides techniques to involve all peoples concerned in collaborative change processes.

#### *5.4 Social Learning Theory*

The collective involvement of people from different cultural backgrounds is essential in bringing about change to mainstream education and, many argue, in moving towards a more sustainable society. This first requires an understanding of how to work with, and learn from, cultural difference. Techniques for social change have been developing rapidly in the last decade. In particular, the value of social learning theory in realizing social change toward sustainability is increasingly being recognized. While definitions of social learning are

numerous, according to Wals, van der Hoeven and Blanken (2009), social learning essentially involves bringing people from diverse backgrounds together to find solutions to complex problems, such as environmental concerns. Rather than considering the diverse backgrounds, interests and perspectives of participants as a hindrance to goal-setting and problem-solving, social learning celebrates and utilizes the diversity of knowledges, experiences and perspectives to develop more creative solutions to complex problems (*idem*).

For these authors, recognizing the enormous environmental and social challenges that lay ahead, social learning is also “a way to arrive at a 'learning system' in which people learn *from* and *with* one another and collectively become more capable of withstanding setbacks and dealing with insecurity, complexity and risks” (Wals, van der Hoeven and Blanken 2009: 8). This is a process that requires building trust and acceptance among participants. Conflict and dissonance are put to constructive use to better understand one another, to uncover any underlying values, norms and assumptions that may lead to divergence, and to develop more innovative solutions to problems. Through this, it may be possible to develop a shared vision and frame of reference needed to begin a collaborative change process (*idem*).

Social learning, which can be understood within the wider framework of transformative learning, is about challenging our everyday assumptions about ourselves and the world. This is a necessary step both in moving toward a more sustainable society, and for building social cohesion. Mezirow, one of the foundational thinkers of transformative learning theory, explains this type of learning as “a process by which we transform our taken-for-granted frames of reference [...] to make them more inclusive, discriminating, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action” (Mezirow quoted in Walter 2013, p. 7-8). According to Wals, van der Hoeven and Blanken (2009), by uncovering our hidden assumptions, and learning about the deconstructed frames of others, it becomes possible for participants in social learning processes “to rethink their own ideas” and “jointly create new ones” (41).

While some of the literature on indigenous environmental education in Canada already recognizes the need for transformative learning (for example: Hatcher 2012; Hatcher et al. 2009),

more attention should be paid to social learning theory for the design and implementation of place-based education programs. If collaboration with indigenous communities is what is needed to ensure the respectful integration of indigenous and other knowledges toward a transdisciplinary education, social learning can provide techniques to facilitate this. This will surely involve bringing together participants from diverse backgrounds, including representatives of indigenous communities and other cultural groups, educators and researchers, students and parents, and so on. The concept of place can help set the context for social learning processes to begin in various parts across Canada. In this way, people can start to collectively engage in the challenge of transforming mainstream environmental education to better educate for sustainability, while moving toward reconciliation between indigenous and non-indigenous peoples of Canada.

## **6. Conclusion**

The mainstream education system in Canada, which has historically played a role in assimilating indigenous peoples into settler society, can no longer overlook indigenous knowledge and perspectives in the curriculum. Education is considered essential both for building a sustainable future, and for achieving reconciliation between indigenous and non-indigenous peoples. An education centred on indigenous concepts of place can inspire students, both indigenous and non-indigenous, to understand each other as implicated individually and collectively in a colonial history that has ramifications in present-day Canadian society. Learning from place and from each other enriches an understanding for all students of the natural world in which humans are embedded. Integrating indigenous knowledge in mainstream education helps fill the gaps left by an over-emphasis on Western scientific knowledge in the curriculum and facilitates a deeper learning of the complex issues surrounding sustainability.

However, moving toward a sustainable future will require the knowledge, experiences and perspectives of people from all cultural groups. Transdisciplinarity can provide the epistemological framework needed to transform mainstream environmental education and integrate indigenous knowledge, scientific knowledge and other knowledges that may also have been suppressed over time. More research in this area is needed to understand how this may be

carried out methodologically and in practice. In the process of decolonizing and indigenizing mainstream environmental education, there are bound to be tensions and contradictions between indigenous and non-indigenous knowledge systems and education models. The involvement of people from diverse cultural backgrounds is essential to bringing about mainstream education reform, to ensure that it is carried out in a way that is culturally appropriate and respectful to all people.

Scholars and educators concerned with integrating indigenous knowledge (and other knowledges) in mainstream environmental education should consider social learning theory, which provides techniques to involve people in processes of social change. Social learning entails bringing people together to learn from each other, working with diversity and dissonance to find more innovative solutions to complex problems. These techniques may provide clues on how to develop and work toward achieving long-term goals together, such as building social cohesion, committing people to sustainability processes, and expanding our collective knowledges. Learning from and with others who share our “place” in the world may be the first step in the healing journey to achieve reconciliation between indigenous and non-indigenous peoples, and between ourselves and the natural world.

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