Indigenous Environmental Education for Cultural Survival

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Abstract

Aboriginal Peoples are facing a number of serious and complex environmental issues within their territories. Post-secondary environmental education programs in Canada have been slow to adopt curriculum and develop programs to meet the needs of Aboriginal students and their communities. This manuscript outlines necessary components of successful Indigenous environmental education programs at the post-secondary level based on the author's participation in three such programs as a program developer/director, curriculum developer and instructor, the current literature, and, in addition, her experiences as an Anishinaabe student studying Western science.

Résumé

Les peuples autochtones font face, sur leurs territoires, à de sérieuses et complexes questions de nature environnementale. Les programmes d'éducation environnementale offerts au niveau postsecondaire au Canada tardent à concevoir des programmes et à adopter un programme d'enseignement qui soient en mesure de répondre aux besoins des étudiants autochtones et à ceux de leur communauté. Le présent manuscrit donne un aperçu des composantes nécessaires au succès d'un programme postsecondaire d'éducation environnementale pour les Autochtones. L'auteure se prononce en vertu de sa participation à trois programmes d'éducation environnementale (en tant que directrice et conceptrice de programme, conceptrice de programme d'enseignement et enseignante) et en vertu de la littérature actuelle publiée à ce sujet. Le manuscrit fait suite à l'expérience personnelle de l'auteure, une Anishinaabe ayant étudié la science occidentale.

Many Aboriginal Peoples face devastating environmental degradation impacting their ways of life, knowledge systems, traditional governance systems, foods, and cultures. While larger Aboriginal Nations and tribal council organizations are often able to hire personal to address and manage some of these issues, it is difficult for smaller communities to find the monetary resources and personnel to develop and fill such positions. Consequently, few communities are equipped with the necessary resources to effectively deal with the over-whelming number of environmental issues facing their people and their lands.

The root cause of many of the environmental issues facing Aboriginal communities lies in the process of colonization and subsequent colonial policies

that continue to grip our Nations in contemporary times. Aboriginal Nations still do not have control over their Traditional Territories. We are still not able to make decisions about how our land will be used, or not used, how we will govern, and to a large extent, how our children will be educated.

The Canadian government and Aboriginal leaders have often promoted education as the answer to injustices we face in our communities (Castellano, Davis, & Lahache, 2000). Currently, there are very few post-secondary educational programs in Canada that root their curriculum in Aboriginal languages, content, processes, perspectives, philosophies, knowledge, and Indigenous methods of teaching and learning (Royal Commission on Aboriginal Peoples (RCAP) Volume 3, 1996). Further, few programs are designed to enable students to address the issues of colonization and colonialism in their communities, effect healing and decolonization at the individual, community and national levels, facilitate resistance strategies in response to current injustice, and promote the building of healthy, sustainable Aboriginal communities and Nations based on traditional cultural values and processes. These skills are essential to enable Aboriginal students to return to Aboriginal communities and urban organizations and effect change. More often post-secondary educational programs are designed to prepare students to fully participate in the economic and academic life of the dominant society (RCAP Volume 3, 1996). This leaves Aboriginal students in a difficult position. Having been told that education is the key to their future, they are often keen and committed to programs that will better the social, environmental, and political conditions in their communities and for their children. Yet the vast majority of these programs are geared towards the learning needs of non-Aboriginal students, leaving Aboriginal students with little knowledge they can apply to the situations they face in their communities and few skills to ensure the cultural survival of their people. This situation is particularly real for Aboriginal students with the desire to become environmental problem solvers within Aboriginal communities, and Aboriginal political or urban organizations.

Environmental Issues in Aboriginal Communities

Aboriginal Nations currently face some of the most devastating effects of environmental destruction in Canada. The Gwitch'in and First Nations in the Yukon are battling toxic contamination brought to their territories through long-range transport, industry, and government ignorance. Inuit Elders in Nunavut warn of the dire consequences of global warming as they witness accelerated climate change. The Mohawks of Akwesasne in southeastern Ontario continue to fight against industrial contamination of their waters, air, land, fish, and animals in addition to the human health impacts of that contamination. The Pimicikamak Cree Nation in northern Manitoba demand to be treated fairly and equitable by governments responsible for flooding 1.2 million hectares

of their land for hydroelectric development. The Innu Nation in Labrador confront low level military flight testing on their territory in addition to mining and forestry interests. Burnt Church First Nation in New Brunswick continue to exercise their Treaty Right to fish lobster despite non-Native violence and injustice on the part of the Department of Fisheries in Oceans. Traditional Métis farmers in Manitoba and Saskatchewan are concerned with the impact of biotechnology on their traditional seed stocks. In the west, the Haida and Gitsan Nations are working to protect their forests from unsustainable industrial clear cutting, while the Nuu-chah-nulth and Shuswap Nations try to protect their lands from the impacts of tourist development and deforestation and their waters from exploitation.

These struggles are not easy. Indigenous Peoples often find themselves challenging government-supported multinational corporations who exploit their territories for profit with no acknowledgment that their operations are on Indigenous lands, or that the industrial waste products they produce negatively impact local Aboriginal communities. Yet protecting our Traditional Territories is paramount for our cultures and Nations to flourish. Our spiritualities, identities, languages, and systems of governance come from the land. The sustenance of our wisdom, worldviews, philosophies, and values comes from the land. The source of our knowledge and our teachers themselves come from the land and the spirit-world it encompasses.

Arming Aboriginal students with the skills and knowledge to address these issues is a difficult task, particularly when they will often have to find funding and infrastructure within their communities to support their efforts upon graduation. Our continuance as peoples will be dependent upon the ability of our youth to protect traditional lands; reclaim, revitalize, and nurture our traditional systems of knowledge and language; and build sustainable local economies.

I come to this work as an Anishinaabekwe (Ojibwe woman) with training in both Anishinaabeg Knowledge and Western science. Throughout the completion of my PhD, I was repeatedly asked by different Aboriginal organizations to develop curriculum and courses around the environment that included both Western science and Indigenous Knowledge. This is a difficult task, and the following paper is a result of five years of curriculum and program development in addition to teaching in different post-secondary programs designed to deliver Indigenous environmental education to varying degrees.

I am involved in three different environmental education programs at the post secondary level. The first, Soaring Eagle (Gaa Bi Ombaashid Migizi), is a four-week community-based cultural immersion program for Aboriginal youth (18 to 30) concerning different environmental issues from both Western and Aboriginal perspectives. Much of the program takes place on the land and the curriculum is rooted both pedagogically and epistemologically in Anishinaabeg Knowledge. Western science is presented as a useful tool for Aboriginal communities to address particular issues within this context. I am involved with the program and curriculum development in addition to the delivery of the program.

I have also been an instructor and curriculum developer in the First Nations Environment and Education Training Program at the Centre for Indigenous Environmental Resources in Winnipeg for the past five years. This program promotes both Indigenous and Western scientific pedagogy and content to Aboriginal students from across Canada. Teams of instructors including an Elder, a Western scientist and an Aboriginal academic or community person teach each course. Over the 18 month program, there is an emphasis on hands-on learning, support for field trips onto the land and into communities, and scientists are encourage to adopt an issues based approach to their course material (Simpson, 1998; Sellers, McDonald, & Wilson, 2001).

Currently, I am the Director of the Indigenous Environmental Studies Program at Trent University. This program encompasses a two-year diploma program designed primarily for Aboriginal students in Indigenous Environmental Studies in addition to a special emphasis degree program for both Aboriginal and non-Aboriginal students. The program is taught within a university system presenting numerous barriers to realizing and employing elements of Indigenous education models. I attempt to expose these students to issues surrounding Indigenous Knowledge in academic and environmental management type situations and employ Indigenous ways of teaching and learning as much as the university environment permits.

The following paper outlines components of successful post-secondary Indigenous environmental education models as realized through my own experiences as a program/curriculum developer and instruction, interactions with Elders, and a review of the pertinent academic literature (that with the exception of one or two authors contains very little pertaining to Indigenous environmental education in Canada). The first section entitled, "Indigenous Knowledge in Indigenous Environmental Education Programs" outlines necessary components of programs designed to promote Indigenous Knowledge, traditional Aboriginal environmental philosophies, and Indigenous teaching and learning processes. The second section, "Western Science in Indigenous Environmental Education," outlines necessary program elements when including Western science in Indigenous environmental education programs. My perspectives are strongly informed by my experiences as an Aboriginal student studying science at Canadian universities for six years in addition to the traditional teachings of Anishinaabeg Elders.

Indigenous Knowledge as the Foundation of Indigenous Environmental Education

Founding Indigenous Environmental Education programs within Indigenous Knowledge systems is one of the most important ways of strengthening our cultures, promoting environmental protection, the realization of sustainable local economies, and supporting students through healing and decolonizing

processes. It requires the participation and leadership of the Elders in all aspects of the program, access to the land, the application of Indigenous education models and philosophies of education, the employment of Indigenous teaching and learning mechanisms, and a constant decolonization process for both instructors and students. It is a transformative process in its very nature. Ultimately, this approach requires not only consistent financial support but also a strong commitment to educating students in not just *culturally appropriate* ways, but *culturally inherent* ways. It requires flexibility and open-ness on the part of the post-secondary institutions that house these programs and a willingness to completely recognize Indigenous Knowledge and Indigenous education philosophies on their own terms, as valid ways of teaching and learning, equal to their Western counterparts. The following elements are necessary for programs attempting to promote Indigenous Knowledge as the foundation of Indigenous environmental education.

Including Elders as Experts

"Elders are keepers of tradition, guardians of culture, the wise people, the teachers. In Aboriginal societies, elders are known to safeguard knowledge that constitutes the unique inheritance of the nation" (RCAP Volume 3, 1996). As such, Elders must be included, supported and looked upon to provide guidance and direction for both instructors and students in post-secondary Indigenous environmental education programs. In order to do this, programs must consider Elders as valuable Gifts, not as "extras" or "guest speakers." Programs must adapt to provide teaching and learning environments that compliment Elders' cultural teaching styles and comfort levels in addition to the special needs of Elders. Programs must ensure that Elders are properly compensated for their participation, leadership and instruction. Our Elders provide us with the inspiration, knowledge, and guidance to face contemporary environmental issues and to assume our roles within our cultures, communities, and Nations. Promoting Indigenous Knowledge as the foundation of Indigenous environmental education programs necessitates our experts, the Knowledge-Holders, to be at the fore of program and curriculum development as well as course instruction.

Grounding Programs in Indigenous Philosophies of Education

Numerous Aboriginal researchers have written about the importance of grounding Aboriginal education in Aboriginal educational philosophies in order to promote healthy identities (Antone, 2000; Corbiere, 2000; Fitznor, Haig-Brown, & Moses, 2000; Castellano, Davis, & Lahache, 2000; Cajete, 1999; Graveline, 1998; RCAP Volume 3, 1996). While this is not disputed, it can be difficult to fully ground programs in Indigenous education philosophies

within post-secondary institutions in Canada because this requires programs and courses to be run in a fundamentally different way than what occurs in the majority of post-secondary education institutions. Indigenous education has been well documented in the literature and is generally described as wholistic education (RCAP Volume 3, 1996), education that is tailored to the person, and encompasses learning from emotional, intellectual, physical, and spiritual realms. Indigenous education philosophies also embrace hands-on-learning techniques where students are able to apply their learning to real-world situations. They promote life long learning, personal reflection and change, and flexible teaching and learning processes based on the needs of individual students. Developing programs and curriculum grounded in Indigenous philosophies of teaching and learning entails employing the processes of Indigenous teaching and learning encompassed in Indigenous pedagogies.

Utilizing Indigenous Ways of Teaching and Learning

Employing Indigenous ways of teaching and learning, including ceremonies, dreams, visions and visioning, fasting, storytelling, learning-by-doing, observation, reflecting, and creating, not only allows students to share and learn in a culturally inherent manner, but also reinforces the concept that Indigenous Knowledge is not only content but also process (Simpson, 1999, 2000a; Graveline, 1998; Cajete, 1994; Peat, 1994). Incorporating a diversity of teaching methods amongst time for personal reflection and emotional, intellectual, physical, and spiritual support can re-focus post secondary education programs from content driven curriculum to process-oriented learning. Teaching Circles can be used to ensure students have the chance to participate in class discussions, while Sharing Circles can assist students in working through emotional aspects of the curriculum (Hart, 1996). All of these components promote Indigenous Knowledge as a process and support the essence of Indigenous education philosophies.

Language

Many Elders and Aboriginal academics have written about the importance of promoting Aboriginal languages as a means to ensure cultural survival (Corbiere, 2000; Antone, 2000). Aboriginal languages are the basic repositories of Aboriginal worldviews and thus contain within their grammatical structures the values and teachings of the people that construct them (Little Bear, 1998; Armstrong, 1995). Language instruction within post-secondary Indigenous environmental studies programs is virtually non-existent except in a very few university/college programs where students can take a language course as part of their larger program of study, yet language remains a vital link between the land, Aboriginal Peoples, and our knowledge. Promotion of

Aboriginal languages within Indigenous environmental educations programs is an essential skill for communication within Aboriginal communities and with Elders, it reinforces a deeper understanding of Aboriginal knowledge and it lays the foundation for cultural survival.

Connecting to the Land

Connecting to the land is critical if Indigenous ways of teaching and learning are to be employed and programs are to be grounded in Indigenous educational philosophies. "Being out on the land" is the place where Elders are often most comfortable teaching and interacting with students. Since Indigenous knowledge comes from the land, it is imperative that students are given the opportunity to connect to the land in an emotional, spiritual, physical, and intellectual way. This means instructors and programs must have the necessary resources and established relationship to enable instruction to occur outside of the classroom and often out of urban areas for extended periods. It can also mean that programs have to be willing to support students who are parents in either arranging child-care or bringing their children with them. The latter option usually works well with traditional education models (in which children were always included in daily life), as children are not only consider to be important teachers, but can remind students and instructors of their original motivation for engaging in a formal learning process.

Making a Space for Resistance

In addition to grounding the processes of teaching and learning in Indigenous Knowledge, and basing the curriculum in Indigenous content, students and instructors must also be encouraged to think about how our Ancestors have resisted the processes of colonization, colonialism, and assimilation in the past. This injects the learning process with power and hope with the recognition that our peoples have worked hard to protect our Traditional Territories, cultures, and knowledge in the past, and it counters the stereotype that Aboriginal Peoples were simply helpless victims in these horrific processes. It assists students and instructors in recognizing their responsibilities to the coming generations and allows students to develop the skills they need to engage in effective resistance strategies once they graduate. Engaging students in a community project or practicum component provides them with the opportunity to gain supported real-world experience in fund raising, proposal writing, budget making, project management, and decision-making. This can also link students together in a powerful support network that can continue well after programs end.

Supporting Decolonization

Decolonization is a personal process that involves a great deal of time and effort for each individual (Anderson, 2000; Graveline, 1998). At the same time we are encouraging students to critically analyze the processes and worldviews contributing to contemporary environmental issues in Aboriginal Territories, we must also work actively to revitalize cultural knowledge and positive alternatives for the future based on traditional Indigenous values. Theatre, singing, drumming, dancing, and storytelling, in addition to humour are all excellent culturally inherent ways of facilitating these processes. Elders can also provide appropriate ceremonies and counseling support. The theme of decolonization and cultural reclamation should be consistent and run throughout the program, rather than attempting to compartmentalize the process into a unit or learning module. These processes are intensely personal and emotional, so programs must ensure that appropriate support mechanisms are in place. Students should be encouraged to work through these issues at their own pace and must be given time and space their personal decolonization path. Instructors should be prepared to engage in a learning processes in a way that is much more intense and time consuming than mainstream university or college teaching.

Grounding programs in Indigenous Knowledge provides students with some of the wisdom and many of the skills needed to facilitate change in their communities and in the field of the environment. It is also important for students to gain Western scientific literacy and competency. This allows Aboriginal environmental problem solvers to use knowledge and skills from both knowledge systems in addition to enabling students to deconstruct and critique scientific evidence used to justify environmental destruction in their territories. Western scientific literacy can assist students in hiring scientists, co-ordinating community-based scientific research, and in becoming a liaison between the community and Western scientific experts once they graduate.

Western Science in Indigenous Environmental Education

Western science has been closely linked to imperialism and colonialism throughout history (Tuhiwai-Smith, 1999). In Aboriginal communities, Western science is often perceived as the primary tool governments and industry use to nullify environmental impacts created by unsustainable industrial and resource development, particularly in impact assessment proceedings. Western scientific literacy however, is also often seen an important and necessary tool for Aboriginal Peoples working in the field of the environment at the community and tribal organization level, yet mainstream science education has failed miserably at attracting and retaining Aboriginal students (Cajete, 1999). Despite advances made in the past decade in graduating

Aboriginal students in post-secondary education programs, the lowest participation rates for Aboriginal students at universities in Canada occur in agriculture, biological sciences, mathematics, and the physical sciences. The reasons for these low participation rates are complex. Much university science education focuses on theory and is taught in the lecture/lab format, teaching styles and philosophies that run contrary to Indigenous traditions in education. Aboriginal students are concerned with the relevance of this approach, particularly when their educational decisions are based on the real-world needs of their communities and nations (Simpson, 2000b). Other Native students become frustrated with the lack of Aboriginal content in science programs, particularly when much of mainstream Western scientific education is in direct contrast to traditional Aboriginal worldviews, knowledge, philosophies, and values. Little room is made to accommodate Aboriginal students who need to work through these contradictions and controversies.

Gregory Cajete, a Tewa educator writes:

> Teaching the basic concepts forming the foundations of modern science, students are led to believe that:
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> - Time is uniform and flows in a single linear direction from a past to a present and on to a future;
> - Matter is made of particles that obey universal laws which never change;
> - Our mind is our brain;
> - Only the fittest survive through the process of natural selection;
> - Modern science will eventually solve all major mysteries of the universe; and
> - Scientists are totally objective and scientific knowledge is universally applicable [Hayward, 1984, p. 66]. (1999, p. 37)

Aboriginal worldviews directly contradict each of the above statements. So unless time, space, and guidance is give to Aboriginal students as they come to terms with these inherent differences, science can serve either to assimilate Aboriginal students into its framework or further alienate them by undermining their own knowledge systems. The situation is only made worse given that Western science is so dominant in Euro-Canadian society, and that it is often used to support and maintain oppressive power relationships between Indigenous Peoples and the state. These realities must be acknowledged. Challenging the popular scientific assumption that science is the *only* way of knowing is also important and Western science can begin to become more palatable to Aboriginal students if it is presented as another tool they can use to advance the agendas of their people and the environment. Presenting case studies of communities and Nations that have employed science as part of a resistance or environmental justice strategy can also spark student's interests in the value of science. However, instructors must be very cognizant of the exclusionary nature of the discourse around science and actively promote Western science as just another way of knowing, not one

that is more valid, or more reliable than Indigenous systems. Again, Aboriginal students need time to discuss these issues, express themselves emotionally, and they need space to reflect. Elders can be most helpful in these situations, because they can assist students coming to an understanding of these apparent dichotomies and contradictions within their own cultural philosophies, theories and knowledge systems.

Oftentimes, Aboriginal students have negative first encounters with Western science either within their own communities or within the public school system. The historic (and often contemporary) relationship between Western science and Indigenous Peoples has been laden with racism, power imbalance, and oppression (Tuhiwai-Smith, 2000). Aboriginal students need to be afforded the opportunity to express these experiences, seek validation, and heal from pain this has caused them.

Based on my experiences as an Aboriginal science student at the undergraduate and graduate level, and six years of teaching and developing curriculum for Aboriginal environmental education programs, of which at least a part are grounded in Western science, I have found the following to be necessary elements of successful programs:

- The use of Aboriginal instructors and scientists as much as possible is important to provide students with role models, and people who can answer their questions about perceived/actual conflicts between Western science and Aboriginal knowledge and culture;
- The employment of scientists who have experience working with Aboriginal Peoples and in Aboriginal communities, and who are sensitive to the needs and realities of Aboriginal communities ensures that Aboriginal students understand that there are concerned sensitive individuals working within scientific fields;
- Students must be able to personally identify with course content and the real-world applications of that content. This means designing courses and programs with substantial Aboriginal content, issues, and case studies at the fore in addition to using Aboriginal teaching and learning methods to present Western ideas;
- Curriculum must be used that acknowledges science as one knowledge system, not the only system. It must also acknowledge explicitly and implicitly that Aboriginal Peoples have been employing complex technologies, engineering knowledge, mathematics, and methods of experimentation for thousands of years, that both knowledge systems have their benefits and weaknesses;
- Curriculum must also include a critical evaluation of Western science from Aboriginal perspectives including the negative impacts of science on Aboriginal communities in the past and in contemporary times. This analysis must make space for students' personal reactions to the content in addition to providing positive examples of how contemporary communities are using science as a tool to advance their agendas;

- Content should be useful and applicable to the situations students will find themselves in the future—i.e. working on environmental issues for communities and Aboriginal organizations, not just preparing students for post-graduate programs;
- Space must be made for students' concerns, anger, confusion, and conflict between science and Aboriginal knowledge. This is often a necessary part of coming to terms with Aboriginal knowledge and Western science. This will require culturally based methods of healing, conflict resolution and the leadership of Elders;
- Programs and curricula that employ applied and issues based approaches must not be viewed as being less academically rigorous simply because they present science in a different way than traditional science courses; and
- Effort needs to be channeled into modifying curriculum so that it is process-oriented rather than content and theory driven. This means letting go of many of the standard evaluation techniques used in post-secondary science programs (quizzes, tests, multiple choice exams) and embracing appropriate alternatives (community reports, critiques, field reports, journals, etc.)

Looking to the Ancestors to Prepare for the Future

Over the past five years, a few post-secondary Indigenous environmental education programs in Canada have begun to address the needs of Aboriginal students and Aboriginal communities with regard to environmental education. By grounding programs in Indigenous education philosophies and Indigenous knowledge students are better prepared to take on their responsibilities in their communities and Aboriginal organizations upon graduation. By modifying mainstream Western scientific instruction, students can also successfully gain the necessary scientific literacy to assist in becoming environmental problem-solvers.

Our Elders teach us that the Earth is sick, and that when the earth is sick we will all suffer the consequences. The philosophical foundations of Aboriginal education have been well documented in the literature. Post-secondary institutions are eager to attract Aboriginal students to their institutions. Approaching the development of Indigenous Education programs with the needs of Aboriginal students and communities at the fore, and with cultural prosperity as the goal, can produce programs that promote Indigenous Knowledge, Indigenous processes of teaching and learning, and the appropriate use of Western science to counteract the environmental destruction in Indigenous Territories. Protecting the land and building healthy, sustainable local economies will provide future generations of Aboriginal Peoples with the wisdom and tools to strengthen their relationships to the land and to continue to decolonize their communities and Nations.

Notes on Contributor

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