

**INDIGENOUS KNOWLEDGE AND PEDAGOGY
IN FIRST NATIONS EDUCATION
A LITERATURE REVIEW WITH RECOMMENDATIONS**

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PURPOSE

This paper responds to the Government of Canada's working partnership with First Nations to improve the quality of Aboriginal life and education in Canada through the Education Renewal Initiative. It reviews the literature that discusses Indigenous¹ knowledge and how it is handed down from generation to generation, and it outlines for the National Working Group on Education and the Minister of Indian Affairs the educational framework and recommended steps required to improve and enhance First Nations educational outcomes.

First, a couple of points must be made about the effectiveness of conducting a literature review on Indigenous knowledge. The first point is that in the European (or Eurocentric) knowledge system, the purpose of a literature review is to analyze critically a segment of a published topic. Indigenous knowledge comprises the complex set of technologies developed and sustained by Indigenous civilizations. Often oral and symbolic, it is transmitted through the structure of Indigenous languages and passed on to the next generation through modeling, practice, and animation, rather than through the written word. In the context of Indigenous knowledge, therefore, a literature review is an oxymoron because Indigenous knowledge is typically embedded in the cumulative experiences and teachings of Indigenous peoples rather than in a library. The second point is that conducting a literature review on Indigenous knowledge implies that Eurocentric research can reveal an understanding of Indigenous knowledge. The problem with this approach is that Indigenous knowledge does not mirror classic Eurocentric orders of life. It is a knowledge system in its own right with its own internal consistency and ways of knowing, and there are limits to how far it can be comprehended from a Eurocentric point of view. Having said that, literature on the topic of Indigenous knowledge and pedagogy does exist, although it is limited in scope and depth, particularly in the Canadian context.² However, it does attempt to clarify the nature of Indigenous knowledge, its framework, and its contributions to educational reform and disciplinary research.

The objective of this paper is to describe and evaluate significant work done on Indigenous knowledge and pedagogy in First Nations education so policy makers may

understand the context of First Nations educational reforms. The paper also explains the ethics of and criteria for understanding and researching Indigenous knowledge and for integrating it into the classroom. The paper concludes by setting out the educational frameworks that are needed in First Nations education to provide a firm basis for action and guidance in relation to outcomes.

This paper offers three parts, an appendix and a bibliography. Part One seeks to clarify the theoretical frameworks that have been developed to understand Indigenous knowledge, to provide some insight into the reasons for the tensions between Indigenous and Eurocentric ways of knowing, and to point out the challenges these conflicts bring to educational systems. Part Two offers a discussion of educational pedagogy and innovative programming found to address the challenges of Indigenous knowledge; and Part Three summarizes the report and explores recommendations and future directions that the Minister may pursue in improving First Nations education and quality of life. Unfortunately, this paper cannot assess the innovative programs now using Indigenous knowledge in First Nations schools as this assessment requires extensive evaluative research at the local and national level; however, this paper does include an appendix that lists some of the limited materials and curricula available in print and on the internet that have had their content developed with input from elders. It also includes a comprehensive bibliography of literature reviewed.

PART I. INDIGENOUS KNOWLEDGE: THE COGNITIVE OTHER

Indigenous knowledge is a growing field of inquiry, both nationally and internationally, particularly for those interested in educational innovation. The question “What is Indigenous knowledge?” is usually asked by Eurocentric scholars seeking to understand a cognitive system that is alien to them. The greatest challenge in answering this question is to find a respectful way to compare Eurocentric and Indigenous ways of knowing and include both into contemporary modern education. Finding a satisfactory answer to this question is the necessary first step in remedying the failure of the existing First Nations educational system³ and in bringing about a blended educational context that respects and builds on both Indigenous and Eurocentric knowledge systems.

Whether or not it has been acknowledged by the Eurocentric mainstream, Indigenous knowledge has always existed. The recognition and intellectual activation of Indigenous knowledge today is an act of empowerment by Indigenous people. The task for Indigenous academics has been to affirm and activate the holistic paradigm of Indigenous knowledge to reveal the wealth and richness of Indigenous languages, worldviews, teachings, and experiences, all of which have been systematically excluded from contemporary educational institutions and from Eurocentric knowledge systems. Through this act of intellectual self-determination, Indigenous academics are developing new analyses and methodologies to decolonize themselves, their communities, and their institutions.⁴

Eurocentric thought asserts that only Europeans can progress and that Indigenous peoples are frozen in time, guided by knowledge systems that reinforce the past and do not look towards the future.⁵ Several strategies have been used to reinforce the myth that regions outside Europe contribute nothing to the development of knowledge, humanities, arts, science, and technology. These strategies include the blind reliance on and citation of Greco-Roman references despite the fact that the Greek alphabet is largely of Syrian/Lebanese origin; the manipulation of dates and demotion in importance of non-European knowledge such as Mayan, Hindu, and Arabic numerals, the concept of zero and algebraic notations, the use of decimals, and the solution of complex equations; the Europeanization of the names of outstanding scientists and their devices, scientific documents, and processes to undermine equal and fair assessment of the global history of knowledges (for instance, a comet identified by the Chinese as early as 2,500 years ago is attributed to Haley); and the classification and trivialization of non-European science and technological innovations and invention as “art.”⁶

These strategies have caused Indigenous peoples to be viewed as backward and as passive recipients of European knowledge. Indigenous knowledge became invisible to Eurocentric knowledge, to its development theories, and to its global science. Consequently, Indigenous knowledge was not captured and stored in a systematic way by Eurocentric educational systems. Indeed, in some cases there has been a concerted push to erase it. The persistent and aggressive assimilation plan of the Canadian government and churches throughout the past century, the marginalization of Indigenous knowledge

in educational institutions committed to Eurocentric knowledge, and the losses to Aboriginal languages and heritages through modernization and urbanization of Aboriginal people have all contributed to the diminished capacity of Indigenous knowledge, with the result that it is now in danger of becoming extinct.

The reversal of this process by Indigenous scholars was and remains a direct consequence of their extended experience of and learning in the condescending Eurocentric educational system. For as long as Europeans have sought to colonize Indigenous peoples, Indigenous knowledge has been understood as being in binary opposition to “scientific,” “western,” “Eurocentric,” or “modern” knowledge. Eurocentric thinkers dismissed Indigenous knowledge in the same way they dismissed any socio-political cultural life they did not understand: they found it to be unsystematic and incapable of meeting the productivity needs of the modern world. Yet, Indigenous scholars discovered that when they tried to use European knowledge to unravel the challenges faced by their people, they met with contradiction and failure, and they began to question the supremacy of Eurocentric thought. In their quest to help their people, Indigenous scholars and professionals turned to ancient knowledge and teachings to restore control over Indigenous development and capacity building. They sought answers within the rich treasure that has played such an important role in building their unity and dignity: the neglected knowledge and teachings of the elders.

Indigenous scholars discovered that Indigenous knowledge is far more than the binary opposite of western knowledge. As a concept, Indigenous knowledge benchmarks the limitations of Eurocentric theory -- its methodology, evidence, and conclusions -- reconceptualizes the resilience and self-reliance of Indigenous peoples, and underscores the importance of their own philosophies, heritages, and educational processes. Indigenous knowledge fills the ethical and knowledge gaps in Eurocentric education, research, and scholarship. By animating the voices and experiences of the cognitive “other” and integrating them into the educational process, it creates a new, balanced centre and a fresh vantage point from which to analyze Eurocentric education and its pedagogies.

A generation of Indigenous graduate students has successfully exposed the Eurocentric prejudices against Indigenous ways of knowing and the Eurocentric biases

that associated Indigenous thought with the barbaric, the primitive, and the inferior. Along with Indigenous undergraduates, these graduate students have activated a renewed interest in Indigenous knowledge in every Eurocentric discipline and profession. For example, in Canadian law the courts' acceptance of concepts of Aboriginal rights and title are directly related to Indigenous students' and peoples' respect for Indigenous law. In the arts, sciences, and education, these same concepts are categorized into Indigenous knowledge and pedagogy.⁷

Since the 1970s, international and national fields of enquiry and innovation have validated the usefulness and significance of Indigenous knowledge. In Canada, the Royal Commission on Aboriginal Peoples, building on many studies that preceded it,⁸ has unequivocally stated the importance of Indigenous knowledge. Since the Royal Commission released its reports in the early 1990s, more and more literature has challenged the suppression of Indigenous knowledge and has underscored the importance of bringing it into the mainstream to establish a body of knowledge that can be drawn on for the common good. In the last decade of twentieth century, the acceptance of Indigenous knowledge by scholars and policy makers generated an explosive growth in the number of publications on the relevance of Indigenous knowledge in a variety of policy sectors and academic disciplines. International policy makers developed principles and guidelines for protecting Indigenous knowledge from predators and biopiracy,⁹ and Indigenous knowledge and its pedagogies have generated a decolonizing and rethinking of education for Indigenous peoples.¹⁰ The new theoretical and methodological paradigms that have been created to understand Indigenous knowledge have illustrated its role in creating shared capacities that can alleviate poverty and create sustainable development.¹¹ Today, the literature animates the fundamental theory and methods of Indigenous knowledge as a means to accord its protection and to raise its social value and its status as a system of knowledge, while Indigenous scholars generate the necessary intellectual space to create a conceptual and analytical framework for its development.¹²

All this activity has made Indigenous education a highly contested terrain. The traditional Eurocentric view of Indigenous peoples and their heritage as exotic objects that have nothing to do with science and progress now competes with a developing intellectual nexus of postcolonial and poststructural theories that underscores the

importance of Indigenous knowledge and languages. The renewed interest in Indigenous knowledge has sparked a reconsideration of the universal value of Eurocentric knowledge, which requires a reformulation of the legitimate conditions for Indigenous education.¹³ Such rethinking of education from the perspective of Indigenous knowledge and learning styles is of crucial value to both Indigenous and non-Indigenous educators who seek to understand the failures, dilemmas, and contradictions inherent in past and current educational policy and practice for First Nations students. The immediate challenge is how to balance colonial legitimacy, authority, and disciplinary capacity with Indigenous knowledge and pedagogies.

Indigenous knowledge has been exposed as an extensive and valuable knowledge system. According to the categories used by Eurocentric knowledge, it is a transcultural (or intercultural) and interdisciplinary source of knowledge that embraces the contexts of about 20 percent of the world's population. Indigenous knowledge is systemic, covering both what can be observed and what can be thought. It comprises the rural and the urban, the settled and the nomadic, original inhabitants and migrants. Other names for Indigenous knowledge (or closely related concepts) are "folk knowledge," "local knowledge or wisdom," "non-formal knowledge," "culture," "indigenous technical knowledge," "traditional ecological knowledge," and "traditional knowledge."¹⁴

The standards for respecting Indigenous knowledge are better developed internationally than they are in Canada. The international standards include the United Nations' *Principles and Guidelines for the Protection of the Heritage of Indigenous Peoples*,¹⁵ *Convention on Biological Diversity*¹⁶ (and the continuing efforts of its secretariat), and *Science for the Twenty-First Century: A New Commitment*.¹⁷ All of these instruments are central to helping to formulate Canada's agenda in First Nations education.¹⁸

Indigenous scholars and human rights experts in the United Nations Sub-Commission on the Elimination of Discrimination and Protection of Minorities have elaborated and ratified the *Principles and Guidelines for the Protection of the Heritage of Indigenous People*. These principles provide a holistic context and related research agenda for Indigenous knowledge. They acknowledge that the heritage of an Indigenous people is a complete knowledge system with its own concepts of epistemology, and its

own scientific and logical validity. They also acknowledge that diverse elements of an Indigenous people's heritage can be fully learned or understood only by means of the pedagogy traditionally employed by these peoples themselves.¹⁹ Indigenous knowledge comprises all knowledge pertaining to a particular people and its territory, the nature or use of which has been transmitted from generation to generation.²⁰ This knowledge includes “all kinds of scientific, agricultural, technical and ecological knowledge, including cultigens, medicines and the rational use of flora and fauna.”²¹ The principles elaborated by the UN sub-commission have been incorporated in the International Labor Organization Convention 169,²² by the educational sector of UNESCO,²³ in the *Indigenous Treaty on the Declaration of Indigenous Rights*,²⁴ in the proposed *American Declaration on the Rights of Indigenous Populations*,²⁵ and in the *Quebec City Summit of Americas Action Plan* (2001).²⁶

In the scientific arena, Indigenous scholars and advocates have stimulated an interest in the contribution of Indigenous knowledge to a better understanding of sustainable development. The United Nations Conference on Environment and Development, the Canadian International Institute for Sustainable Development (CIISD) and the Canadian International Development Agency (CIDA) have all entered this dialogue.²⁷ Knowledge of the environment is being lost in communities around the world, and there is an urgent need to conserve this knowledge to help develop mechanisms to protect the earth's biological diversity. The United Nations *Convention on Biological Diversity* recognizes the importance of Indigenous knowledge to the conservation and sustainable use of biological diversity, acknowledges the contributions of Indigenous knowledge as innovative approaches to environmental studies, and recognizes the validity of Indigenous science. It also recognizes the value of Indigenous knowledge, innovations, and practices to scientific knowledge, conservation studies, and sustainable development.²⁸ In 1999 the World Conference on Science, assembled under the aegis of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Council for Science (ICSU), urged governments to promote understanding of Indigenous knowledge systems. Conference participants requested the sciences to respect, sustain, and enhance traditional knowledge systems and recommended that

scientific and traditional knowledge should be integrated into interdisciplinary projects dealing with links between culture, environment, and development.²⁹

Canada has participated in, ratified, and affirmed most of the international obligations. However, Canada's educational institutions have largely ignored, and continue to ignore, Indigenous knowledge and pedagogy. In the educational crisis that has been articulated over the past thirty years, First Nations peoples have drawn attention to the value and importance of Indigenous knowledge in their Aboriginal and treaty right to education. The failures of the past have exposed the shortcomings of the Eurocentric monologue that has structured modern educational theory and practice. In forcing assimilation and acculturation to Eurocentric knowledge, modern governments and educational systems have displaced Indigenous knowledge. It is clear, however, that the exclusive use of Eurocentric knowledge in education has failed First Nations children.³⁰ Indigenous knowledge is now seen as an educational remedy that will empower Aboriginal students if applications of their Indigenous knowledge, heritage, and languages are integrated into the Canadian educational system.

Despite this realization, few universities across Canada have made Aboriginal education a mission or a priority. Few teacher training institutions have developed any insight into the diversity of the legal, political, and cultural foundations of Aboriginal peoples, often treating Indigenous knowledge as though it were a matter of multicultural and cross-cultural education. Consequently, when educators encounter cultural difference, they have very little theory, scholarship, research, or tested practice to draw on to engage Aboriginal education in a way that is not assimilative or racially defined, as opposed to being legally and politically shaped by constitutional principles of respect for Aboriginal and treaty rights.

Canadian courts have responded to the issue of Aboriginal rights by drawing on constitutional principles to reaffirm the right of Aboriginal people to have their rights respected and protected. It is time that educators did the same. The task, then, is to sensitize the western consciousness of Canadians in general and educators in particular to the colonial and neo-colonial practices that continue to marginalize and racialize Aboriginal students and to the unique rights and relationships Aboriginal people have in their homeland. If Indigenous knowledge and pedagogy are to be integrated effectively

into the national and provincial curricula, educators must be made aware of the existing interpretative monopoly of Eurocentric education and learn how the fundamental political processes of Canada have been laced with racism.

Recognizing the interpretative monopoly that Eurocentric thought reserves for itself is the key to understanding the new transdisciplinary quest to balance European and Indigenous ways of knowing. This academic effort seeks to identify relations between the two generalized perspectives of Eurocentric modernism (and postmodernism), and Indigenous knowledge (and postcolonialism). The contradictions, gaps, and inconsistencies between the two knowledge systems suggest that the next step needed in the quest is a deeper understanding of Indigenous knowledge. To date, Eurocentric scholars have taken three main approaches to Indigenous knowledge. First, they have tried to reduce it to taxonomic categories that are static over time. Second, they have tried to reduce it to its quantifiably observable empirical elements. And third, they have assumed that Indigenous knowledge has no validity except in the spiritual realm. None of these approaches, however, adequately explains the holistic nature of Indigenous knowledge or its fundamental importance to Aboriginal people.

In Eurocentric thought, Indigenous knowledge has often been represented by the familiar term “traditional knowledge,” which suggests a body of relatively old data that has been handed down from generation to generation essentially unchanged.³¹ Taking the immutability of Indigenous knowledge as a given, much Eurocentric research has focused on identifying knowledge, practices, and techniques used by Indigenous peoples, recording their local names, and cataloguing their reported uses.³² In this taxonomic approach, it is the categorizer who decides whether a teaching, technology, or practice is Indigenous and unique to a given heritage or society, adopted from Eurocentric knowledge, or a blend of local and introduced components. Using these taxonomic studies, Eurocentric scholars provided definitions of Indigenous knowledge based on their partial framework, methodologies, and perspectives. Much effort was expended highlighting the differences between Eurocentric and Indigenous knowledge in terms of their respective ideological underpinnings, substance, methods, and so forth.³³ In the literature, these differences were highlighted by underscoring the superiority of

Eurocentric knowledge and its classifications and the inferiority of Indigenous knowledge.

The taxonomic studies, however, did not generate any generally accepted definition of Indigenous knowledge. Many attempts were made, but most were confusing (or at least led to confusing applications) since not only did they tend to cast too wide a net, incorporating into the definition concepts that would not be considered part of Eurocentric knowledge, such as beliefs and value systems, but they also failed to recognize the holistic nature of Indigenous knowledge, which defies categorization. Indigenous knowledge is an adaptable, dynamic system based on skills, abilities, and problem-solving techniques that change over time depending on environmental conditions, making the taxonomic approach difficult to justify or verify. Most Indigenous scholars and educators have noted the practical and conceptual limitations of taxonomic categories posing as Indigenous knowledge. The subject is controversial, however, and cannot be resolved in this paper. What can be said is that focusing on the similarities between the two systems of knowledge rather than on their differences may be a more useful place to start when considering how best to introduce educational reform.

The second approach to Indigenous knowledge is illustrated by the Eurocentric definition of Indigenous knowledge as “the unique, traditional, local knowledge existing within and developed around the specific conditions of women and men Indigenous to a particular geographic area.”³⁴ There is no doubt that the commercial value of Indigenous knowledge to modern scientists is its empirical content, but to treat local knowledge as merely empirical trivializes its significance to Indigenous peoples. It is an increasingly common approach, however. Some relatively recent work by scientists and conservation biologists has employed Indigenous people as a source of quantitative wildlife population data.³⁵ This approach assumes that Indigenous or First Nations people are good field observers of biophysical phenomena—that is, that they can be reliable data collectors for modern scientists. Indigenous knowledge is presumed to have been assembled a long time ago by a process of trial and error, and is now reduced to an unwritten canon that can be elicited from any capable local informant.

Another modern example of this second approach to Indigenous knowledge can be found in the Netherlands Organization for International Cooperation in Higher

Education for Indigenous Peoples, which has created a “dossier” on Indigenous knowledge to provide news and information about the contribution of science and technology to the needs of developing countries.³⁶ This dossier is part of a series of in-depth guides that focus on key topical issues at the science-development interface with Indigenous knowledge and present the experiences and perspectives of those working in the field through analytical policy briefs and topical opinion articles. The organization also monitors the collection, application, and dissemination of Indigenous knowledge, ensuring the full participation of the local people involved. Although the aims of the organization are commendable, they are not evaluative.

A third approach to Indigenous knowledge has gone in the opposite direction, abandoning any concern for the empirical validity of Indigenous knowledge systems and treating them as purely normative or spiritual.³⁷ This approach, like the second approach discussed above, ignores the fact that within any Indigenous nation or community people vary greatly in what they know.³⁸ There are not only differences between ordinary folks and experts, such as experienced knowledge keepers, healers, hunters, or ceremonialists, there are also major differences of experience and professional opinion among the knowledge holders and workers, as we should expect of any living, dynamic knowledge system that is continually responding to new phenomena and fresh insights.

Unfortunately, this third approach to Indigenous knowledge includes many Indigenous scholars, who seem afraid that critical empiricism will somehow disprove or de-sanctify Indigenous knowledge and its pedagogy. Often, the argument is cloaked in the concept that Indigenous knowledge is “sacred,” thus in some sense immutable and inviolable. This approach can be self-defeating. Donning the protective cloak of sanctity and religious freedom is an admission that Indigenous people are the hapless victims of biophysical forces that they can endure only as awesome mysteries. In other words, they are as ignorant and superstitious as Eurocentric observers have long maintained.

These three approaches illustrate the challenges of placing Indigenous knowledge within Eurocentric frameworks and disciplines. None of these Eurocentric perspectives acknowledges the extent to which Indigenous communities have their own knowledge holders and workers. Indigenous peoples have their own methods for classifying and transmitting knowledge, just as they have Indigenous ways of deriving a livelihood from

their environment. Information, insight, and techniques are passed down and improved from one generation to another. Knowledge workers observe ecosystems and gather eyewitness reports from others so that they can continually test and improve their own systematic, predictive models of ecological dynamics. In the real world of changing ecosystems and changing diseases, knowledge holders and workers must adapt rapidly or lose credibility and status. To presume otherwise is to imply that the clients of such knowledge systems are either ignorant or very submissive: they are either incapable of recognizing an erroneous wildlife forecast or unsuccessful medical treatment, or they are unable to criticize their knowledge keepers.

Indigenous knowledge is also inherently tied to land, not to land in general but to particular landscapes, landforms, and biomes where ceremonies are properly held, stories properly recited, medicines properly gathered, and transfers of knowledge properly authenticated.³⁹ Ensuring the complete and accurate transmission of knowledge and authority from generation to generation depends not only on maintaining ceremonies, which Canadian law treats as art rather than science, but also on maintaining the integrity of the land itself.

Indigenous knowledge is constitutionally protected in Canada law as Aboriginal and treaty rights.⁴⁰ Indigenous knowledge is inexorable linked to Aboriginal and treaty rights under s. 35(1). As such, to ensure the continuity of Aboriginal customs and traditions, the Supreme Court of Canada has determined that a substantive Aboriginal right will normally include the incidental right to teach such a practice, custom and tradition to a younger generation.⁴¹ Similar reasonable incident rights exist in treaty interpretation that would apply to education provisions.⁴² Federal and provincial educational law, regulation, and practices have yet to implement or reconcile with the constitutional rights to teach Indigenous knowledge.

Indigenous knowledge is best protected under sections 35 and 52 of the *Constitution Act, 1982*. It cannot be adequately protected under Canadian copyrights and patents for intellectual or cultural property laws, which distinguish sharply between artistic works (with copyright and “neighboring rights” to artistic performances), commercially valuable symbols (with trademarks), and useful scientific knowledge (with patents). For example, a patent, a trademark, or a copyright cannot adequately protect a

ceremony that uses striking sacred-society symbolism to communicate empirical knowledge of medicinal plants. The medical knowledge may be patented, but the patent will expire in a matter of years. The text and music for the ceremony can be recorded (or “fixed”) and copyrighted, but only the recorded version will be protected and only for the lifetimes of the performers plus fifty years. The symbols can be protected as trademarks forever, but their significance will be diminished when they are taken out of context.

Indigenous knowledge thus 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 (not all Indigenous peoples equally recognize their responsibilities); and implies responsibilities for possessing various kinds of knowledge. In the context of the Education Renewal Initiative, the dissemination of Indigenous knowledge should be targeted towards current First Nations students and to the next generation, ensuring that the study and development of Indigenous knowledge and the skills of their ancestors are valued and available in both the sciences and the humanities. Young students must feel that it is rewarding to pursue careers based on the traditional knowledge of their forebears.

PART II INDIGENOUS KNOWLEDGE AND KNOWING

STRUCTURE AND DIVERSITY

As diverse as Indigenous peoples are in Canada and beyond, so also are their ways of knowing and learning. Their stories of Creation and their psychological connectedness to their cosmology play a determining role in how Indigenous peoples envision themselves in relation to each other and to everything else. Knowledge is not secular. It is a process derived from creation, and as such, it has a sacred purpose. It is inherent in and connected to all of nature, to its creatures, and to human existence. Learning is viewed as a life-long responsibility that people assume to understand the world around them and to animate their personal abilities. Knowledge teaches people how to be responsible for their own lives, develops their sense of relationship to others, and helps them model competent and respectful behaviour. Traditions, ceremonies, and daily observations are all integral parts

of the learning process. They are spirit-connecting processes that enable the gifts, visions, and spirits to emerge in each person.

Creation endows people with sacred gifts that emerge in different developmental stages of their lives, slowly enabling them to find their places in the great cosmos and in their national traditions and ethos. Individual development is not predetermined or based simply on cause and effect. Rather, inherent talents and capabilities are animated when people are faced with life decisions and situations. One Saulteaux Ojibwa story holds that when people are born, their spirits are in shock from leaving their loving world to come to this world, and they remain suspended until they receive nourishment from this life.⁴³ People must know their own gifts and capabilities, strengths and weaknesses, interests and limits to be able to develop their self-esteem and concept of self. Self-knowledge and transmitted teachings are equally important, and people cannot effectively learn their purpose and actualize that purpose unless they receive both.

Indigenous teachings provide that every child, whether Aboriginal or not, is unique in his or her learning capacities, learning styles, and knowledge bases. Knowledge is not what some possess and others do not; it is a resourceful capacity of being that creates the context and texture of life. Thus, knowledge is not a commodity that can be possessed or controlled by educational institutions, but is a living process to be absorbed and understood.

The first principle of Aboriginal learning is a preference for experiential knowledge. Indigenous pedagogy values a person's ability to learn independently by observing, listening, and participating with a minimum of intervention or instruction. This pattern of direct learning by seeing and doing, without asking questions, makes Aboriginal children diverse learners. They do not have a single homogenous learning style as generalized in some teaching literature from the 1970s and 1980s. Teachers need to recognize that they must use a variety of styles of participation and information exchanges, adapt their teaching methods to the Indigenous styles of learning that exist, and avoid over-generalizing Aboriginal students' capabilities based on generalized perceived cultural differences. To maximize participation of Aboriginal students in the educational process, teachers need to experiment with teaching opportunities to connect with the multiple ways of knowing these students have and multiple intelligences.⁴⁴

Western or modern education focuses on a cultural construction of knowledge built on Eurocentric origins and concrete science. Educational philosophy in contemporary education has focused on information to the masses, leading to standardized tests that draw out this information and those who can extract information are called educated and intelligent. What this approach ignores is the knowledge that comes from introspection, reflection, meditation, prayer, and other types of self-directed learning.⁴⁵ New pedagogical strategies in education are emerging but are often not taken up by mainstream educators, primarily as the learner's affective state is often not considered in the domain of educational philosophy. What is required in First Nations education is a research that moves beyond rule-based learning and considers life-long learning, learning how to learn in diverse contexts, and ability to apply knowledge to unfamiliar circumstances.⁴⁶

Educators who acknowledge the continuing problems of Aboriginal retention and recidivism in Eurocentric schools have been trying to determine why Eurocentric educational systems fail Aboriginal students. To solve the problem, they endeavour to providing a “culturally” responsive and integrated curriculum. They wrongly assume that the Eurocentric idea of “culture” is the same as the concept of Indigenous knowledge, and they apply cultural corrections to address problems that will inevitably arise in a system that teaches from within an exclusively western context. Provincial methods of teaching cultural content in a multicultural context suffer from this perspective.

Culture has itself been implicated in a process of postmodern deconstruction. Postmodernist scholars have noted that culture is often viewed as what the inferior “other” has. While some peoples have civilizations, philosophies, romance languages, or cultured societies; other peoples have cultures, dialects, worldviews, and tribal knowledge. Peoples with “civilizations” are regarded as inherently superior to peoples with “cultures.” Much literature in the last decade has focused on the importance of diverse cultural or multicultural methodologies to support diverse teaching methods to address the needs of Aboriginal students.⁴⁷ The studies, however, do not examine the culture of the schools themselves to see what counts as knowledge and truth and what does not. They do not study what, or whom, the curriculum and pedagogy represses, excludes, or disqualifies. Nor do they examine who continually benefits from education

and how these students are consistently rewarded and nourished in schools where white privilege is normalized.

The studies assume Eurocentric logic and reason are universal, timeless, and stable; thus, they are indifferent to the processes of Indigenous knowledge. These studies do not examine the asymmetrical structure of curricula that exclude Aboriginal knowledges, languages, and histories while affirming Eurocentric knowledges, languages, and histories. They do not study how the mandatory educational system, with its Eurocentric curriculum and teaching style, becomes a system of control and imposed superiority when it is forced on Aboriginal students and their lives. The studies do not reveal the irrational shadow of processes of oppression and repression in schools that do not animate the consciousness or abilities of Aboriginal students to be productive, but coercively sap those capacities into experiences of boredom, resignation, and despair. Recent studies affirm the impact that racism in schools continues to have on Aboriginal youth and on Aboriginal teachers. This is an issue that requires immediate resolution.⁴⁸

Language is by far the most significant factor in the survival of Indigenous knowledge. Indigenous languages and their symbolic, verbal, and unconscious orders structure Indigenous knowledge; therefore, educators cannot stand outside of Indigenous languages to understand Indigenous knowledge. Where Indigenous knowledge survives, it is transmitted through Aboriginal languages. Where Aboriginal languages, heritages, and communities are respected, supported, and connected to elders and education, educational successes among Aboriginal students can be found.⁴⁹ Aboriginal languages are irreplaceable resources in any educational reforms. Unfortunately, in Canada, Aboriginal languages have been so severely subjected to the oppressive and destructive effects of colonization and the assimilation policies of the federal government that only a few are destined to survive unless immediate measures are taken to prevent their destruction. Indeed, only three Aboriginal languages out of the seventy-two still clinging to life are predicted to have a long-term future.⁵⁰ Today, Aboriginal languages are suffering from the combined effects, past and present, of federal educational policy, monolingual English educational systems, dependence on provincial schools and curricula, and modern media culture. Elders and educators are rightfully anguished by the

lack of attention the youth are paying to their knowledge, heritage, and languages in antagonistic contexts of systemic racism and provincial educational systems.⁵¹

The first principle of any educational plan constructed on Indigenous knowledge must be to respect Indigenous languages. Modern educational policy has focused almost exclusively on English-language instruction, with regional concerns for the retention of French. Without the internal structures and functions of Aboriginal languages that value direct learning, however, Indigenous knowledge will struggle to survive. Elders speak to the important role languages play in building strong communities of social relationships and in storing the collected wisdom and knowledge that enables Aboriginal people to survive and flourish. Ceremonies and rituals help communities and individuals learn the relationships and values manifested in language. The fundamental prerequisite for educating Aboriginal peoples is comprehension of the inherent structure of the language as a model for understanding both how Aboriginal consciousness and rationality function and how they are manifested and renewed in Aboriginal knowledges, heritages, and relationships.⁵² This is more than learning to speak or read in an Aboriginal language. Aboriginal language education can no longer be considered merely a transitional approach to English or a token integration of culture to bolster self-esteem. Educational reforms need to redefine literacy to affirm Aboriginal languages and consciousness as essential to Aboriginal learning and identity.

THEORY OF KNOWLEDGE AND LEARNING PROCESSES

In Eurocentric thought, epistemology is defined as the theory of knowledge and pedagogy involving the processes by which children come to learn or know. The Aboriginal people of Canada have their own epistemology and pedagogy. Aboriginal epistemology is found in theories, philosophies, histories, ceremonies, and stories as ways of knowing. Aboriginal pedagogy is found in talking or sharing circles and dialogues, participant observations, experiential learning, modeling, meditation, prayer, ceremonies, or story telling as ways of knowing and learning.⁵³

The distinctive features of Indigenous knowledge and pedagogy are learning by observation and doing, learning through authentic experiences and individualized instruction, and learning through enjoyment. Indigenous pedagogy accepts students'

cognitive search for learning processes they can internalize, and Aboriginal teachers allow for a lag period of watching before doing. Indigenous knowledge is both empirical (that is, based on experience) and normative (that is, based on social values). It embraces both the circumstances people find themselves in and their beliefs about those circumstances in a way that is unfamiliar to Eurocentric knowledge systems, which distinguish clearly between the two. As a system, it constantly adapts to the dynamic interplay of changing empirical knowledge as well as changing social values. Caution is therefore advised before petrifying, oversimplifying, or mystifying Indigenous knowledge systems by stressing their normative content or “sacredness.”

Indigenous knowledge may be embodied in songs, ceremonies, symbols, and artworks that have commercial value in their own right, separate from the empirical models of the world they represent. Values are so deeply embedded within Indigenous knowledges that it is difficult to distinguish the empirical content from the moral message. Stories about animals are sometimes not about animals at all, but about proper human behaviour, and the most uproarious tales about the foibles and misdeeds of animals often contain wise insights about community ecology. Many stories are proprietary to particular families, clans, societies, and tribes. Gardening, for example, is associated with tobacco, which is a sacred-society concern. Grazing animals also belong to a sacred society and may be associated with a number of landmarks spread over several hundred square miles of a particular tribe’s territory. The specialized knowledge of water and water creatures is associated with ceremonial bundles. Individual elders and knowledge keepers carefully observe changes in their landscape and formulate hypotheses about how things are changing. The long-term ecological history of the land is a cloth woven from the threads of stories and ceremonies provided by many different members of the community.

President Eber Hampton of the Saskatchewan Indian Federated College has stated: “The recognition of Indian education as distinctive indicates a legitimate desire of Indian people to be self-defining, to have their ways of life respected, and to teach their children in a manner that enhances consciousness of being an Indian and a fully participating citizen of Canada or the US.”⁵⁴ The representation, renewal, and legitimation of Aboriginal languages and knowledges involve changing the nature of

instructional activities. In the past, reading and writing centered on decoding, spelling, grammar, and literal comprehension. They were treated as mechanistic processes instead of as active, constructive processes. Among students, especially Aboriginal students, this approach to language made direct experience irrelevant, caused critical faculties to retreat, and suspended creative thought. Today, students are encouraged to find meaning in the text by relying on their prior knowledge and experience. There are many benefits for Aboriginal students to this learning model. First, making meaning helps students with the critical thinking and action-based skills they need to solve their own problems and the problems facing their communities. Second, it recognizes that literacy is not abstract but embedded in social contexts, and that underlying meanings are to be found in the social world of individuals, families, and communities. Third, it teaches that people read and write because they are motivated to do something with print, which allows students to explore the functions of literacy. This means that the content used to develop literacy must be rethought as an inclusive realm in which Indigenous knowledge and learning are integral elements. Fourth, literacy taught from constructivist models allows students to pursue literacy through highly individual paths. Finally, the constructivist model calls attention to the important roles that different life experiences and cultural schemata play in the process of making meaning.

As teachers begin to confront new pedagogical schemes of learning, they will need to decolonize education, a process that includes raising the collective voice of Indigenous peoples, exposing the injustices in our colonial history, deconstructing the past by critically examining of the social, political, economic and emotional reasons for silencing of Aboriginal voices in Canadian history, legitimating the voices and experiences of Aboriginal people in the curriculum, recognizing it as a dynamic context of knowledge and knowing, and communicating the emotional journey that such explorations will generate.⁵⁵

Under most funding agreements in Canada, First Nations schools have had to follow provincial or territorial curricula, and provincial educational authorities have begun an uneven process of curriculum adaptation. Each province has direct control over curricula for schools in their province, and through tuition agreements over public schooling of First Nations students; yet none has undertaken a broad survey of the

curricular needs of Aboriginal people. Saskatchewan is one of the few that has initiated a curriculum review for public schools, but the priorities the province has articulated have largely been add-on processes that have not affected core learning. Some of these add-on materials are general and intended for integration in all curricula and some, such as those dealing with integrating Aboriginal knowledge into the sciences or legends into literature, are very specific. None of the provincial initiatives taken so far have integrated the expertise of the Aboriginal peoples in ways that are truly transformational.⁵⁶

Canadian educational institutions should view elders, knowledge keepers, and workers who are competent in Aboriginal languages and knowledge as living educational treasures. These individuals comprise a functioning Aboriginal university based on Indigenous knowledge and pedagogy. Just how their experience can be adequately conveyed and nationally appreciated as expertise that should be included in education is the challenge at the heart of this paper. In some regions across Canada, their expertise has become an important resource for the development of educational materials. Elders have contributed their knowledge to and conditionally endorsed its development in some curricula, audiovisual materials, and books directed at improving the success of Aboriginal students in school and life. The appendix to this paper offers an annotated bibliography of printed and electronically distributed materials that Aboriginal elders have been identified as significant contributors. Provincial departments of education, with the exception of the Territories, offer similar materials, but most are not included in this list as they do not identify the contributions of any elders or acknowledge their assistance. Where elders have been the primary sources for these materials, they are profound and transformational. The most notable examples are the works of the *Dene Kede* and *Inuuqatigiit: The Curriculum from the Inuit Perspective*, both prepared for use in curricula in the Northwest Territories and include elders in their preparation and implementation.

Blending Knowledge Systems in Educational Institutions Canadian administrators and educators need to respectfully blend Indigenous epistemology and pedagogy with Euro-Canadian epistemology and pedagogy to create an innovative Canadian educational system. As Nishga First Nations Rod Robinson has insightfully noted: “Today the Aboriginal people and other Canadians stand on opposite shores of a wide river of

mistrust and misunderstanding. Each continues to search through the mist for a clear reflection in the waters along the opposite shore. If we are truly to resolve the issues that separate us, that tear at the heart of this great country ... then we must each retrace our steps through our history, to the source of our misperception and misconception of each other's truth."⁵⁷ The pedagogical challenge of Canadian education is not just reducing the distance between Eurocentric thinking and Aboriginal ways of knowing but engaging decolonized minds and hearts.⁵⁸

Blending Indigenous knowledge with Eurocentric knowledge raises the continuing issue of whose knowledge is validated in educational enterprises. The politics of knowledge production and dissemination are at the heart of the matter, as scholars reveal the tainted, culturally imperialistic manner in which academic knowledge has been legitimated, produced, packaged, and disseminated in government-sanctioned curricula and school policies. In 1989, a United Nations seminar on the effects of racism and racial discrimination on the social and economic relations between Indigenous peoples and the states in which they live concluded that a new form of global racism in the guise of state theories of cultural, rather than biological, superiority that was resulting in the rejection of the legitimacy or viability of Indigenous peoples' values and institutions.⁵⁹

In order to remedy the colonial mentality that predominates in Canadian educational curricula and erodes Indigenous knowledge and its linguistic base, the federal government needs to provide a clear policy statement about Canada's new constitutional vision. This constitutional vision acknowledges treaty and Aboriginal rights, including Indigenous knowledge. Indigenous knowledge must be validated fairly and in good faith as an equal partner in the building of the future of Canada, and all institutions should assume responsibility for articulating and teaching the principles of rights' protection embedded in the Constitution of Canada. In Saskatchewan, elders have contributed to at least one curriculum model of teaching students in grades 7 to 12 about treaties within Saskatchewan boundaries. Developed by the Office of the Treaty Commissioner and elders, this treaty curriculum has now been distributed to and is being in-serviced in school districts in Saskatchewan. The fact that it is still a choice of the schools and not mandatory leaves this curriculum as an add-on option, not fully integrated. This is but a small first step in validating previously excluded Indigenous knowledge within the

educational system, but, with clear direction from the government, it is to be hoped that this is just the beginning of what will ultimately be a long and rewarding journey between equal partners in education. These partnerships among federal, provincial, territorial and First Nations organizations and nations must be encouraged.⁶⁰

The federal government needs to reconsider its requirements for First Nations schools, or the provinces that are educating Aboriginal children may compromise Indigenous knowledge, languages, and communities. Vastly under-funded, First Nations communities are being left with the immense problem of restoring and revitalizing their communities, heritages, languages, and economies. The most pressing challenges have been how to free from people from the colonial legacy of self-doubt, and how to deal with the feelings of inferiority and confusion created by public and federal schooling according to Eurocentric assumptions and fallacies.

The Mi'kmaw Kina'matnewey agreement in Nova Scotia is a notable innovation and historical first in First Nations education. Nine Mi'kmaw First Nations communities have joined together to assume jurisdictional responsibility for the education of their people. This initiative acknowledges the capacity of First Nations to generate an educational system that is "comparable" to provincial schooling. Comparability can be an enabling concept if it is understood that Mi'kmaw pedagogy must be developed in ways that make Indigenous knowledge accessible, transferable, and generative either by itself or within other knowledge systems or technologies as appreciated by the reserves or communities. The agreement facilitates educational reform that meets Mi'kmaw capacities and goals. It enables Mi'kmaq to evaluate the old structures, to adopt sustainable new foundations, and to find alternate structures and timeframes for learning that are tailored specifically to their own goals and requirements. Although the new system is still evolving, its accomplishments have already been felt in Mi'kma'kik.⁶¹

In the United States, the Alaskan Native Knowledge Network has also successfully set standards that have been adopted by all relevant educational bodies in that state. The *Alaskan Standards for Culturally Responsive Schools* have received much attention among Aboriginal educators as democratic, inclusive, and comprehensive guidelines that articulate ways in which Indigenous knowledge may be adapted to local needs. Each school, community, and related organization must review these standards to

determine their appropriate application and to devise new standards to fit local circumstances. The newly devised standards are not an attempt to standardize or homogenize heritages, but a means to nurture and build upon rich and varied cultural traditions.⁶² Such standards operate as a starting point for communities and schools to achieve seven core purposes: The standards may be used by local communities (1) to review school or district-level goals, policies, and practices with regard to curriculum and pedagogy; (2) to examine home environments and parenting support systems for the upbringing of the community's children; (3) to devise locally appropriate ways to review student and teacher performances and how they relate to nurturing and practicing culturally healthy behaviour, including serving as potential graduation requirements for students; (4) to strengthen the community's commitment to revitalizing the local language and heritage and fostering the involvement of elders as an educational resource; (5) to guide the preparation and orientation of teachers in ways that help them attend to the cultural well-being of their students; (6) to guide the formation of state-level policies and regulations and the allocation of resources in support of equal educational opportunities; and (7) to evaluate educational programs intended to address the cultural needs of students.⁶³

While several provinces and territories in Canada have attempted to articulate standards for teaching Indigenous heritage in the classroom, few have articulated standards for teaching Indigenous knowledge. In provincial and territorial educational systems, blending Indigenous knowledge into the curricula involves three processes. First, is respecting the diversity of Indigenous knowledge's protocols, preparations, and purposes. Second, is understanding the multi-levels of preparation and purpose in transmitting Indigenous knowledge. Third, but not least, is developing constitutional and ethical responsibilities for those researching Indigenous knowledge.

The federal government can support the dissemination of Indigenous knowledge in schools by encouraging First Nations communities in arriving at their own Aboriginal customary protocols so that teachers, administrators, and others on staff can develop respectful relations in their communities. First Nations reserves and urban communities all have their own protocols for proper learning and teaching. These protocols, however, have not been documented in writing, and they do not include appropriate processes for

acquiring Indigenous knowledge under existing protocols or methods. As Aboriginal educators have stressed, it is only by following appropriate and consensual protocols that teachers can enter into and animate the second process of Indigenous knowledge, which requires appropriate preparations for comprehending the multiple layers of Indigenous knowledge. For example, Aboriginal educator Cora Weber Pillwax writes about the protocols for telling Aboriginal stories:

“Stories may be for and about teaching, entertainment, praying, personal expression, history and power. They are to be listened to, remembered, thought about, mediated on. Stories are not frivolous or meaningless; no one tells a story without intent or purpose. A person’s word is closely bound up with the story that she or he tells. A person’s word belongs to that person and in some instances can be viewed as being that person, so words—in particular some words in some contexts—are not carelessly spoken. These are the old ways, and they are still practiced and observed today by many people in many places.”⁶⁴

Preparation for teaching Indigenous knowledge and languages is the most pressing issue for teachers. Many administrators assume Aboriginal teachers are richly endowed with Aboriginal knowledge, language, and relationships, but the reality is that Aboriginal teachers feel equally as unprepared as the non-Aboriginal teachers who are required to build Aboriginal content into their classrooms.⁶⁵ All teachers have been educated in Eurocentric systems that have dismissed Indigenous knowledge and pedagogy. What Indigenous content these systems do offer – in the disciplines of anthropology, linguistics, or history, for instance – has been developed in the contexts of culturalism or racism.⁶⁶ Similarly, Aboriginal language teachers have been trained to analyze Aboriginal language structures according to Eurocentric linguistic structural models instead of according to the epistemological foundations of the language itself. In addition, teachers are not provided with models of teaching or instruction that are appropriate for their own Aboriginal languages, or for different age groups, or for diverse learners of different dialects.⁶⁷ Elders, knowledge keepers, and workers are indispensable to the process of appropriate Aboriginal language education in schools and in teacher-training institutions.

The preparations, ceremonies, and rituals required for teaching certain parts of Indigenous knowledge will confront the existing tension about teaching religion in

secular public schools. Public schools today seek to balance church and state over issues such as teaching evolutionary theory and disallowing prayer or spiritual ceremonies in the classroom. The preparations required for teaching some parts of Indigenous knowledge represent a categorization dilemma for administrators or educators. If they approach Indigenous knowledge as a way of knowing, this problem may be resolved. If they approach it as a religion, then this will create obstacles to the dissemination of Indigenous knowledge in the public school system.

Recent losses to Indigenous knowledges, heritages, and languages caused by Eurocentric methods of research and categorization are very real. Before further research is done, ethical guidelines on research practices must be set in place. Vetting research on Indigenous knowledge, either through a constitutional and legal duty to consult or through a generalized central ethics committee, is a necessary prerequisite to protecting Indigenous knowledge for the future. The way that Indigenous knowledge is presented in the school system must also be subject to ethical guidelines. Even though the commodification of knowledge in books, marketing, and institutions is a seemingly normal aspect of education, the commodification of Indigenous knowledge without consent, consideration, or compensation is another form of exploitation and marginalization and must be avoided.

The ethical aspect of introducing Indigenous knowledge into the classroom is of paramount importance. Research into educational reform must not only examine the Eurocentric foundations of the current educational system, but also develop ethical standards for research in Indigenous knowledge to develop partnerships of trust to achieve equity. In the Atlantic provinces, the Mi'kmaq Grand Council has sanctioned a process to vet both Mi'kmaq and non-Aboriginal researchers in their communities. Those who seek to do research involving Mi'kmaw people must have their research approved by the Mi'kmaw Ethics Watch.⁶⁸ The Mi'kmaw Ethics Watch has established protocols for research after consulting extensively with Mi'kmaq elders, leaders, educators, and people. The federal government can support this endeavour by providing funds to assist First Nations organizations and other communities in arriving at their own research protocols and in their continued consultations, use, and dialogues with their appointed representatives of their communities.

Similar guidelines for the protection of Indigenous knowledge and pedagogies are presented in the Royal Commission on Aboriginal Peoples' Research Ethics and discussed in *Protecting Indigenous Knowledge and Heritage: A Global Challenge*.⁶⁹ The book asserts the following main principles for research practice. Indigenous people should control their own knowledge and do their own research. If others should choose to enter into collaborative relationships with Indigenous peoples, the research should empower and benefit their communities and heritages rather than the researchers, Canadian institutions, and society. The purpose of these guidelines is to protect communities' current resources, knowledge, ideas, expressions, trade secrets, and teachings from tourism and other forms of commodification.

The Canadian government has a vital constitutional role to play in protecting the country's remaining Aboriginal knowledge, languages, and heritage. It has demonstrated some measure of good will, good intention, and commitment to completing the research process. Ethical guidelines for responsible research into Aboriginal peoples must now be developed from within Aboriginal and constitutional law. Any guidelines put in place must respect Aboriginal protocols in the exchange of information, and must ensure that benefits from federally or provincially funded grants accrue to Aboriginal peoples and not exclusively to researchers, their careers, or their institutions. The guidelines must respect the fact that Indigenous knowledge can only be fully known from within Aboriginal languages, pedagogies, and communities. They must also respect the limitations placed on who can receive knowledge and in what contexts it can be widely shared.

As the process of educational reform continues, it is imperative that researchers understand the structure of doubt the Canadian educational system has generated among Aboriginal people. Every Aboriginal student has been contaminated by an educational system built on false colonial and racist assumptions that target Aboriginal people as inferior. The self-doubt it has generated within Aboriginal students has made them discount their inherent capacities and gifts. No educational system is perfect, yet few have a history as destructive to human potential as Canada's with its obsession with assimilating Indians. In this coercive system, more than three out of every four Aboriginal students fail. The random achievement of the few who do succeed, however,

does not directly relate to success in life nor in parenting nor in caring for others. The racism inherent in the system drains students of their capacity for achievement in all aspects of their lives. It is time to change the educational outcomes for Aboriginal youth by fully integrating their knowledge and heritage into an educational system that values and respects Indigenous ways of knowing and allows Aboriginal students to embrace and celebrate who they are instead of making them doubt themselves. Indigenous knowledge is not a singular concept. No single Indigenous experience dominates other perspectives, no one heritage informs it, and no two heritages produce the same knowledge. Therefore, homogenous methodologies for disseminating knowledge in schools are not helpful in the current educational crisis. Schools that attempt to impose homogeneity by standardizing domesticated curricula are a problem, for they are often at loss as to how to integrate local content into their prescribed standardized curricula. Any reforms taken under the Education Renewal Initiative must take into account the fundamental diversity of Indigenous knowledge and must create structures and guidelines that are capable of accommodating this fundamental concept.

Part III CONCLUSIONS

Indigenous knowledge reveals the assumptions that drive Eurocentric thought and education. It demonstrates that there is nothing new about the “postmodern” attempt to reject the paradigms at the maddeningly paradoxical and biased Eurocentric centre. Longing for genuineness, Eurocentric scholars are now struggling to respect Indigenous knowledge. Their struggle testifies to their honest recognition that in these times it is imperative to search for a comprehensive theory of our terrestrial ecologies so that we – Aboriginal and non-Aboriginal alike – may preserve them for the future.

President Hampton of Saskatchewan Indian Federated College speaks eloquently of this longing:

The Europeans took our land, our lives, and our children like the winter snow takes the grass. The loss is painful but the seed lives in spite of the snow. In the fall of the year, the grass dies and drops its seed to lie hidden under the snow. Perhaps the snow thinks the seed has vanished, but it lives on hidden, or

blowing in the wind, or clinging to the plant's leg of progress. How does the acorn unfold into an oak? Deep inside itself it knows--and we are not different. We know deep inside ourselves the pattern of life.⁷⁰

The autumn seed lingers on among Indigenous peoples, and it will emerge in the spring to nourish nations, languages, heritages, and communities. Indigenous knowledge is that autumn seed. Within the mind and spirit of every child, it lies inherent and latent. The autumn seed requires only a nourishing educational system and direct experience with the good road to unfold its ancient wisdom and teachings.

The central purpose of integrating Indigenous knowledge into Canadian schools is to balance the educational system to make it a transforming and capacity-building place for First Nations students. Learning about Indigenous knowledge enables communities and students to feel authentic, connected, and prepared. It is important, however, to understand the distinction between the outer structures of education--programs, policies, and practices--and the inner consciousness of Indigenous knowledge. The educational structures will change only if we are willing to first do the inner work and engage directly with Indigenous knowledge and consciousness. Education for First Nations students can and should help them get more in touch with their Indigenous consciousness and the traditions that inform and animate their intimate and spiritual selves.

On the road to educational reform, there are three important questions that need to be answered: (1) How do First Nations people transform educational institutions to allow the individuals within them to restore Indigenous knowledge and their inner selves? (2) How do we create spaces in education for making meaning and achieving respect for Indigenous knowledge? And (3) How do we bring a better balance in our lives? These questions explore and sustain Indigenous knowledge, spirituality, authenticity, and wholeness.

Every First Nations student recognizes the dilemmas and fragmentations in his or her educational experience. We talk freely and openly about them. A major obstacle to educational achievement has been finding the courage to live what we believe. This quest for wholeness, authenticity, and spirituality is embedded in the educational reforms urged by Indigenous knowledge. Indigenous knowledge presents several goals for educational reform: acknowledging the sacredness of life and experiences; generating the spirit of

hope based on experience as a connection with others in creating a new and equitable future; generating the meaning of work as a vocation and as a mission in life; and developing the capacity to do everything to open a new cognitive space in which a community can discover itself and affirm its heritage and knowledge in order to flourish for everyone. In the dynamics of Indigenous knowledge, purposeful, meaningful lives are dignified and spiritual. This is what we strive for and hope that educational reform will help us achieve.

The relationship of Indigenous knowledge to the establishment and maintenance of individual and community wholeness is a primary precept of Indigenous education. Much Indigenous education can be called *endogenous* as it revolves around a transformational process of learning that animates students' inherent talents and capacities.⁷¹ This imperative of Indigenous education is embodied in the aphorisms "seeking life" and for "life's sake," understood in Cree as *mawitowinsiwini*. Inherent in this approach is the realization that ritual, myth, vision, art, and learning the art of relationships in particular environments all facilitate the health and wholeness of individuals, families, and communities. Education for wholeness, which strives for a level of harmony between individuals and their world, is an ancient foundation for the educational processes of all heritages. In its most natural dimension, all true education is transformative and Nature centered. Indeed, the Latin root "educare," meaning "to draw out" embodies the transformative spirit and performance quality of education. Educational reforms must end the fragmentation Eurocentric educational systems impose on First Nations students and facilitate the goal of wholeness to which Indigenous knowledge aspires.

In the context of the Education Reform Initiative, the most important educational reform is to acknowledge that Canadian schools teach a silent curriculum of Eurocentric knowledge by the way teachers behave and the manner in which they transmit information. To affect reform, educators need to make a conscious decision to nurture Indigenous knowledge, dignity, identity, and integrity by making a direct change in school philosophy, pedagogy, and practice. They need to develop missions and purposes that carve out time and space to connect with the wisdom and traditions of Indigenous knowledge. They need to teach holistic and humanistic connections to local and

collective relationships. They need to generate educational space that allows them to be challenging, caring, inspiring, and alert to their students' intellectual travails and attuned to their inner conditions. They need to make educational opportunities for students to come together in community with people who bring out their holistic better selves. Only when these changes in thought and behaviour are made can we create an educational system that is a place of connectedness and caring, a place that honours the heritage, knowledge, and spirit of every First Nations student.

Schooling has begun to move towards a new environment and concept of education. In Saskatchewan, this new educational concept is called School Plus.⁷² School Plus represents a new holistic environment to meet the needs of youth, not just as a cognitive exercise but as an experience that embraces the psychological, physical, emotional, and cultural needs of children who have been entrusted to public education as a service and a sacred trust. First Nations education must be envisioned to support and develop First Nations children, and the new structures and relationships put forward in this paper all support this goal. What is needed is a national policy that affirms Indigenous knowledge, establishes and supports Indigenous knowledge learning centres, and remunerates knowledge holders and workers as national resources. There must be government acknowledgement of and support for virtual Aboriginal colleges in Aboriginal and treaty areas. These virtual colleges will consist of elders, knowledge holders, workers, and knowledge specialists. These Aboriginal colleges will be able to decide matters relating to curriculum, instruction, the promotion of Indigenous knowledge, and the stabilization and preservation of Indigenous languages. These virtual colleges will be systems to honour and reward elders, knowledge keepers, teachers, and workers who have developed their expertise through traditional education or self-learning. These experts will be recognized at the same level as certified school teachers, and they will be encouraged to set up their own learning centres within existing Indigenous educational systems to transmit their Indigenous knowledge to the young generation in the community.

The existing education principles for educating Indigenous children found in the international "Principles and Guidelines for the Protection of the Heritage of Indigenous Peoples", Convention on Biological Diversity and its continuing efforts of its Secretariat,

the World Conference on Science for the Twenty-First Century: A New Commitment, Human Rights Covenants, the International Labor Organization Convention 169, by the educational sector of UNESCO, and the Indigenous Treaty on the Declaration of Indigenous Rights, the proposed American Declaration on the Rights of Indigenous Populations, and the Quebec City Summit of Americas Action Plan (2001) act as framework for Canada's agenda in First Nations education system. Articles 28 –30 of the Principles and Guidelines for the Protection of Heritage of Indigenous Peoples define the role of national legislation and government which is worth repeating here:

National laws for the protection of Indigenous peoples' heritage should be adopted following consultations with the peoples concerned, in particular the traditional owners and teachers of religious, sacred and spiritual knowledge, and wherever possible, should have the consent of the peoples concerned.

National laws should ensure that the use of traditional languages in education, arts and mass media is respected and, to the extent possible, promoted and strengthened.

Governments should provide Indigenous communities with financial and institutional support for the control of local education, through community-managed programmes, and with use of traditional pedagogy and languages.

These principles are fully discussed in *Protecting Indigenous Knowledge and Heritage*⁷³.

Part IV Recommendations

Prime Recommendation

Affirming Canada's Commitment

1. Canada should affirm that Indigenous knowledge is an integral and essential part of the national heritage of Canada that must be preserved and enhanced for the benefit of current and future Canadians. INAC should work together to ensure that Indigenous knowledge is respected and promoted in all funded education programs and in an appropriate range of documents and contexts.

Substantive Implementation of the Prime Recommendations

Affirming Traditional Lifestyles and Intergenerational Use of IK

2. Canada recognize and affirm that Indigenous knowledge requires the protection of the lifestyles that permit intergenerational use of the lands, traditional ecological practices, and maintenance of cycles of interaction with species and land forms in a traditional lifestyle of hunting, fishing, trapping, and foraging for foods and medicinal plants.

Affirming Traditional Teachings of Next Generations

3. Canada affirm that First Nations children are invaluable sources of intergenerational transmission of traditional knowledge; and therefore, education needs to encourage the development and survival of that knowledge and science within educational sites as sources of knowledge for environmental sustainability which also needs to be supported by way of school structures and distance education to enable families to continue their traditional lifestyles.

Developing and Supporting IK Innovations in Educational Institutions

4. Canada develop effective and enriched First Nations education to provide choice to First Nations parents and children, using multiple approaches and customized interventions related to First Nations language, knowledge and heritage. This might include identifying five targeted 'model' schools that are fully funded, and developed in a

model similar in theory to the Kaupapa Maori schools of New Zealand. This calls for developing a 'best practice models' approach and creating the examples for other schools to follow.

Developing Opportunities to Learn in order to Teach

5. Canada ensure all teachers have opportunities to learn Indigenous knowledge in appropriate contexts and in multiple ways, especially in First Nations excellence sites. They should be able to explore and develop Indigenous knowledge in a rich dynamic educational context that combines both Aboriginal and Eurocentric knowledge systems.

Creating New Certification and Standard Setting for First Nations Schools

6. First Nations schools need to have their own certification requirements for their schools which embrace national and local competencies in Indigenous knowledge, not merely provincial standards. Provincial certification builds typically on two levels of academic specializing and professional skill building. First Nations schools need to identify standards for their schools and appropriate knowledge and skills for teachers working in their schools.

Encouraging Research and Innovations in Classroom Work

7. Canada identify teachers who are IK keepers and provide support through financial incentives for creative and innovative works as well as working with Centres of Excellence such that they may form a working network among these teachers and with other educators for collaborative work, research, development and support in their classrooms. Teachers should be eligible for awards to support creative and innovative work by the way of reduced teaching loads, orientations and support networks, internet communication systems to assist others in developing and sharing best practices and new programming.

Developing and Adopting Principles and Guidelines for Respectful Protocols

8. Canada and INAC accept the principle that any social, cultural or educational initiative for First Nation student that is proposed to use, develop, or support IK be accompanied

by signed authorities or otherwise appropriately acknowledged Aboriginal and treaty signatories who accept and sanction use of those traditional practices and protocols. At minimum, Canada and INAC should adopt the United Nations Working Group on Indigenous Populations' *Principles and Guidelines for the Protection of Indigenous Heritage* as foundational to current and future use of Indigenous knowledge.

Protecting Indigenous Knowledge and Heritage

9. Canada, in collaboration with First Nations peoples, review its legislation on the protection of intellectual property to ensure that First Nations interests and perspectives, in particular collective interests, are adequately protected.

Supporting First Nations Capacity to Oversee Use of IK

10. Canada provide development funds to First Nations schools to support local dialogues and talking circles among local elders and knowledge keepers that will have as their outcome the development and dissemination of local protocols, practices, and procedures for accessing First Nations knowledge for schools and universities, as well as for researchers seeking Indigenous knowledge for other research purposes. Mechanisms for overseeing the vetting process of research proposals must be developed. As well, all research proposals must be developed in consultation with First Nations peoples and supported and supported with appropriate funds for administering this process over time

Developing Research and Capacity Building in Indigenous Knowledge and Pedagogy

11. Canada support First Nations Centres for Aboriginal Knowledge to develop pedagogy; conduct language research; review, produce, and disseminate educational materials; and provide technical support for production of materials to First Nations communities. At minimum, 7 centres should be established across Canada and positioned in proximity to the major Aboriginal language families, e.g. British Columbia, Prairies Central, Eastern, Atlantic, and two in northern territories for Inuit and Dene nations. Drawing on the innovations of Alaska's Indigenous Network at the University of Fairbanks, these centres may establish priorities for their areas, but capacity building be

staggered over a period of time up to 10 years to ensure each objective and priority has had sufficient time to develop its capacity.

Developing New Theory and Innovative Practices

12. Whereas Eurocentric education with its assimilative strategies and cognitive and cultural monopoly in education has had persistent long term negative consequences on First Nations students and peoples, Canada declare support for new models for decolonizing and revitalization in the education of First Nations students.

Indigenizing Post-secondary Education

13. Canada promote Indigenous knowledge and languages as learning assets in post-secondary funding schemes, scholarships, and programs that support pre-service teacher education.

Supporting Professional Capacity Building for First Nations Education

14. Whereas decolonizing theory and research are required for First Nations communities, Canada should identify and target incremental indigenous graduate student and professional development of 1000 Ph.D.s in the next five years. This is aimed at changing the 'top' and maintaining the usual approach of making change from early childhood up. In this way, educational transformations occur from two directions and theoretically should take half the time to make change in a community – not a full generation as the current model of 'bottom up' suggests. These targets of funding and support should be directed to First Nations graduate and professional students who develop a consciousness of developing their credentials to benefit First Nations people and to contribute to First Nations development. This is to produce individuals working with communities, not careerist or remote academics.

Encouraging Publication of Aboriginal Resources

15. Canada provide curriculum development funds to First Nations publishers or enhance publishers with a history of commitment to Aboriginal education to encourage them to work in partnerships with, and support First Nations in their knowledge and language

initiatives that will enable them to print at relatively low costs educational materials written, electronically produced, or audio and visual representations using First Nations languages.

Inspiring and Motivating Change at Post-secondary Level

16. Canada sponsor the development of national sites of excellence in First Nations education. These may be also in university sites where federal funds be provided where universities change internal structures and demonstrate excellence in First Nations education and accommodate and promote Indigenous knowledge. In light of such accomplishments, these sites would receive program funding to support their efforts in developing leadership in Aboriginal education, but they must show a track record first of internal funding in these universities and commitments of developing significant research, leadership, and promotion of Indigenous knowledge.

Fostering Growth of First Nations Arts in Partnerships

17. Canada co-operate with First Nations to enhance Aboriginal arts to foster the revitalization and development of Aboriginal arts and heritage such that First Nations children may be inspired and motivated to contribute regularly to it.

Legislation and Policies

Affirming Traditional Ownership of Indigenous Knowledge

18. Canada affirm in policy and regulation the constitutional principle that Indigenous knowledge belongs to Indigenous peoples and Indigenous knowledge shall be delivered in a manner in keeping with the Aboriginal laws, practices and protocols of the Aboriginal peoples concerned.

New Legislation an/or Policies to Recognize First Nations Knowledge Keepers

19. Canada enact policies or new legislation that authorize, upon the recommendation of First Nations peoples and treaty right holders, the Minister or a special Aboriginal commission to designate Elders, knowledge holders, or individuals as masters of traditional knowledge or arts. This would have the purpose of validating the national

importance of these individuals and to increase the interest of youth in learning these skills these designated authorities possess and preserve.

Affirming Role of Aboriginal Languages

20. Canada declare the protection of Indigenous knowledge is integrally tied to Aboriginal languages; therefore, the federal government affirm, adopt and support Aboriginal languages and knowledge with a First Nations Education Act as a core responsibility of s. 35(1) of Constitution Act of 1982, which affirms aboriginal and treaty rights to education in Canada. In this legislation, Canada, with the consent of First Nations people, establish provisions, requirements, and mechanisms to support and develop Indigenous knowledge and the remaining First Nations languages in First Nation schools, as well as develop their capacity to monitor, measure, and collaborate with researchers on their own terms or conduct any research into the knowledge they want to pursue in public domains or within their educational systems.

Fiscal Responsibilities of the Prime Recommendations

Reaffirming Canada's Obligations with Funds

21. Canada statutorily affirm its constitutional fiduciary obligation to protect and conserve First Nations knowledge and heritages by designating future dollars in budget allocations at the highest level attainable to the development of Indigenous knowledge for educational purposes. One means of achieving this is through a strategy of 'designated dollars'.

Ensuring Diversity and Flexibility in Policy and Practice

22. Canada recognize the great diversity and local variations in language, knowledge, customs, and traditions of Aboriginal communities and cultures across Canada and ensure that any federal program initiative and its funding requirements be flexible enough to accommodate local variations and local self-definition.

Funding a Network of Indigenous Education Scholars

23. Canada should fund a consortium of Indigenous scholars and educators to dialogue with elders and leaders in education and thus create an innovative forum for developing indigenous best practices models, theorizing and proactive engagement with the universities such that new theories of transformation connect with educational practices which also have the support of the communities they are purporting to serve.

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Appendix A

Annotated Aboriginal Education Resource Materials

KINDERGARTEN – GRADE 12 RESOURCES

ATLANTIC CANADA

The Peopling of Atlantic Canada: Teachers Guide and Resource. A CD-ROM and resource guide intended for grade nine social studies: Atlantic Canada in the Global Economy. Written by Laurianne Sylvester with Dr. Jeff Orr and Joanne Tompkins. Incorporating the history of the First Peoples together with that of their descendants, a culturally diverse history of Atlantic Canada is presented in this kit. <http://www.folkus.com/cat.html>

First Nations Traditional Teaching Units. Online resources by Wasagamack Education Authority. With the guidance and wisdom of 3 generations of Elders, these units present a rationale, a web diagram, advance material preparations, lesson plans, evaluations/reflections and a brief profile of the Elders involved. <http://aboriginalcollections.ic.gc.ca/teaching/>

The Centre of Excellence, Eskasoni School Board, Eskasoni, NS has been writing, illustrating, translating and publishing story books and language arts curriculum in the Mi'kmaq language for the reserve schools of Nova Scotia over the past 15 years. They sell these productions to others as well and have available stories and curriculum up to the Grade 8 level.

*The Centre of Excellence, Eskasoni School Board, Eskasoni, NS B0A 1J0
Tel: (902) 379-2825; Fax (902) 379-2886*

Atlantic Canada's First Nation Help Desk "Partnerships: Working Together to Make a Difference"

Atlantic Canada's First Nation Help Desk began January 2000 in response to a request from Industry Canada to provide Help Desk services to First Nation schools, early education, and adult learning centres, in Atlantic Canada. Rather than merely taking a reactive approach to assisting with technical problems as they arise, the Help Desk has taken a proactive approach to encouraging First Nation educational activities using the internet. Monthly contests, in-service training, web page hosting, Aboriginal language initiative, and "publishing" students' work are all examples of internet-based activities. Atlantic Canada's First Nation Help Desk is presenting a Vision for the Future that addresses content, connectivity and capacity development to Industry Canada, the Department of Indian and Northern Affairs, Human Resources Development Canada, and Heritage Canada in order to identify partners and "kindred spirits"

who can work with them toward common goals, aspirations and objectives. It is their hope that each agency will become a partner with them to make a difference in First Nation classrooms and communities.

<http://firstnationhelp.com/ali/ppmbook/page1.html>

EASTERN WOODLANDS

7 Generations: A Mohawk History Text. (1980). By David Blanchard from Kahnawake Survival School. Aboriginal knowledge is shared through topics that include Mohawk symbolism, Mohawk creation story and sovereignty.

<http://www.schoolnet.ca/aboriginal/7gen/index-e.html>

People of the Pipe: Cayuga-English Lexicon consists of a 63-page book and 1 audiocassette. G. Marjorie Henry, Cayuga language instructor at Six Nations Polytechnic, developed this kit for students learning Cayuga. The lexicon lists more than 1100 commonly used words. The words are written in the Henry Orthography. The text is organized alphabetically according to the English words making this lexicon useful for beginners. The book and audiocassette are also available separately. Recommended grade 4 – 12.

<http://www.goodminds.com/kits>

Introduction to Verb Paradigms is a Cayuga language resource developed by G. Marjorie Henry for Cayuga language students at Six Nations Polytechnic. The Kit consists of a 29-page book and an audiocassette. The book lists 46 words chosen from verb roots taken from the Ganohonyohk speech.

<http://www.goodminds.com/kits>

Bella's School: A Curriculum Guide for Grade 1 Teachers of Cree / Oji-Cree as a Second Language is a teaching package developed by the Ojibway and Cree Cultural Centre in Ontario to meet the needs of students along the James Bay coast. The kit consists of a Curriculum Guide and an 80-minute video available in either Cree or Oji-Cree. The developers follow the Ontario Ministry of Education Native Language Curriculum Guideline. The 10 units are organized according to themes such as family, community, nature, communication, time and recreation. The materials were developed for Grade 1 teachers of Cree as a Second Language and Cree as a First Language students.

<http://www.goodminds.com/kits>

Ganohonyohk Our Being Ogweho:weh is a language resource developed by G. Marjorie Henry for Cayuga language classes at Six Nations Polytechnic. The kit consists of a 56-page book and a 16-minute audiocassette. The Cayuga words are written in the Henry Orthography developed at Six Nations of the Grand River. The illustrated resource booklet and audiocassette were created for students learning Ganohonyohk, the speech of thanksgiving recited at all Iroquois functions. <http://www.goodminds.com/kits>

Most Commonly Used Phrases in Cayuga is a Cayuga language resource developed by G. Marjorie Henry for students at Six Nations Polytechnic. The Kit consists of an 18-page booklet and a 78-minute audiocassette. The book gives the Cayuga words for 347 English phrases. The Kit assists students to increase their vocabulary and to become proficient in the Cayuga language. <http://www.goodminds.com/kits>

Nishnawbe-Aski Nation - A History of Cree and Ojibway of Northern Ontario Kit consists of a brief 53-page history text, and a Teacher's Guide produced by the Ojibway and Cree Cultural Centre for students in grades 7 – 10. The text follows the 1986 Ontario Ministry of Education curriculum. The text begins with a condensed Cree creation story, describes the fur trade in the Hudson's Bay and James Bay regions, the role of church missions, the effects of Canadian government legislation, the James Bay Treaty of 1905, the contemporary situation, and the development of the Nishnawbe-Aski Nation political organization. <http://www.goodminds.com/kits>

Circle Program - Kindergarten Level is a language arts program kit that contains several booklets and audiocassettes designed to integrate music, art, and games with other reading and writing activities. Organized thematically, the series is designed for Native students who speak English as a second language, but is also suitable for students with an interest in the northern environment and traditional Aboriginal legends and artwork. The program, developed in the Modern Language Centre of the Ontario Institute for Studies in Education with funding from the Ontario Region of Indian and Northern Affairs Canada, addresses listening, speaking, reading and writing skill areas. <http://www.goodminds.com/kits>

Circle Program - Grade 2 is a language arts program kit that contains several booklets and audiocassettes designed to integrate music, art, and games with other reading and writing activities. Organized thematically, the series is designed for Native students who speak English as a second language, but is also suitable for students with an interest in the northern environment and traditional Aboriginal legends and artwork. <http://www.goodminds.com/kits>

What Do You Have in Your Canoe? Kit is an educational package developed by the Ojibway Cree Cultural Centre to address the problem of solvent abuse among children. The Teacher's Manual is designed to tackle the problem by beginning with young children at the kindergarten and grade one level. Their non-direct approach is based on positive reinforcement that addresses the self-image and self-esteem of children. Teachers are provided with positive song lyrics, eleven activities and the accompanying activity sheets, and background information about developing self-esteem using a holistic approach. The activities are culture-based and the canoe is the focal point because of its importance in northern Native lifestyle. <http://www.goodminds.com/kits>

Explore the History, Culture and Spirituality of the Haudenosaunee (Six Nations Iroquois). Learn how the Great Law of Peace guides and protects the Haudenosaunee. This is a CD-ROM about Iroquois people for all people. It is intended as a resource for schools, libraries and other educational institutions at all grade levels. <http://www.greatpeace.org/frames.htm>

PLAINS

Cree Language 1 - Pisim Language Series Kit was developed by the Saddle Lake Board of Education for elementary students learning Cree. The kit is authorized as basic curriculum resources by Alberta Education. The kit contains The Unit Plan Book (Teacher's Guide), Student Book 1 (5 copies), Student Book 2 (5 copies), Stories and Legends 1 (Fall and Song), Stories and Legends 2 (Winter Months and The Rock Talks), set of flashcards, 2 audiocassettes (Action Songs, Stories and Legends, and Student Book Units 1-8). The package was designed to provide one school year of Cree language instruction <http://www.goodminds.com/kits>

Cree Language 2 - Pisim Language Series Kit was developed by the Saddle Lake Board of Education for elementary students learning Cree. The Kit is authorized as basic curriculum resources by Alberta Education. The Kit contains The Unit Plan Book (Teacher's Guide), Student Book 1 (5 copies), Student Book 2 (5 copies), Stories and Legends 3 (Indians Long Ago and When the Creator Made the Earth), Stories and Legends 4 (Mudhens Dancing and Wisahkecahk and the Geese), set of Flashcards, 2 audiocassettes (Action Songs, Stories and Legends, and Student Book Units 1-8). <http://www.goodminds.com/kits>

Cree Language 3 - Pisim Language Series Kit was developed by the Saddle Lake Board of Education for elementary students learning Cree. The Kit is authorized as basic curriculum resources by Alberta Education. The Kit contains The Unit Plan Book (Teacher's Guide), Student Book 1 (5 copies), Student Book 2 (5 copies), Stories and Legends 5 (The Bear and Why Crows are Black), Stories and Legends 6 (Buffalo Lake and Black Poplar), set of Flashcards, 2 audiocassettes (Action Songs, Stories and Legends, and Student Book Units 1-8). The package was designed to provide one school year of Cree language instruction at level 3. <http://www.goodminds.com/kits>

Learning Cree Series was developed by the Samson Cree First Nation Education program for use in Kindergarten. The series consists of 12 full colour booklets and a 15-page teacher's guide. Each booklet introduces Plains Cree vocabulary according to a theme in an easy-to-follow method of matching pictures to words. <http://www.goodminds.com/kits>

Nihyawiwini 10 was developed for high school and adult learners who are interested in beginning to speak and write Woodland and Plains "Y" Cree. This teaching resource was developed by the Northland School Division in Alberta. Eight thematic units present a culturally based Cree as-a-second-language program. <http://www.goodminds.com/kits>

Siksikai'powahsin Siksika Language Series Level 1 Kit produced by the Siksika Nation of Alberta is authorized as a basic curriculum resource by Alberta Education. Each kit contains: 4 Student Books (5 copies of each); 1-11"x17" full-colour Book of Old Stories; 1 set (166) of black and white Flashcards, 1 229-page Teacher's Guide; and 3 audiocassettes (Stories by Siksika Elder Matthew Many Guns and songs by Robert Sun Walk). The Siksika Board of Education developed this comprehensive learning kit for use in its schools. <http://www.goodminds.com/kits>

Siksikai'powahsin Siksika Language Series Level 2 Kit produced by the Siksika Nation of Alberta is authorized as a basic curriculum resource by Alberta Education. <http://www.goodminds.com/kits>

Siksikai'powahsin Siksika Language Series Level 3 Kit produced by the Siksika Nation of Alberta is authorized as a basic curriculum resource by Alberta Education. <http://www.goodminds.com/kits>

Kawacatoose Cree Language Materials. Material developed by the Kawacatoose Band for their Grade 10, 11, and 12 Cree program, is available to assist other

communities in designing their language program and delivery of curriculum. The material consists of 3 teacher's manuals, one for each grade and a student vocabulary book. <http://www.sicc.sk.ca/crkawcat.htm>

âhkami-nêhiyawêtân" (Let's Keep Speaking Cree"). The Cree Language Retention Committee is putting together Cree writing materials and are in the process of developing Cree books for those who wish to teach Cree. <http://www.sicc.sk.ca/crcom.htm>

Saskatchewan Indian Cultural Centre provides cultural and language support and materials for five cultures of the province: Saulteaux, Dakota, Assiniboine, Dene and Cree (Plains, Woodland, and Swampy). The fundamental aim of the Centre is to encourage people to maintain a proud and positive self-image. The Centre does this by developing Indian education, which teaches about these peoples, spiritually, emotionally, psychologically, and intellectually. Through the various departments of the Cultural Centre, they try not only to preserve the traditional cultures, but also to develop methods of applying these traditional values and skills in an ever-changing and vibrant modern culture. <http://www.sicc.sk.ca/>

"Rekindling Traditions"

Cross-Cultural Science & Technology Units (CCSTU)
For Northern Saskatchewan Schools

Aboriginal student participation in science and engineering is very low in Saskatchewan. This project focuses mainly on integrating Aboriginal science and technology with the provincial science curriculum (seven dimensions of scientific literacy). This project is a collaborative R&D team of northern science teachers and university science educators, along with community resource people who have developed a prototype process for producing culturally sensitive instructional and assessment strategies, as well as culturally responsive curriculum materials, that support student learning within any particular community. In addition, they have produced some teaching strategies and materials (Cross-Cultural Science and Technology Units, CCSTU) that exemplify culturally sensitive science teaching for Aboriginal students (grades 6 to 11). These are made available to communities electronically through CDs and web site sources.

Their work is guided by Elders (principally Henry Sanderson, La Ronge) to ensure that appropriate protocols are followed and that Aboriginal culture is respected and properly protected. The CCSTU project has produced:

1. strategies for teaching and assessing students (illustrated in the materials produced)
2. the 6 exemplary curriculum units

3. a prototype process for adapting any curriculum material to suit the local culture
4. "Teacher Guide" for CCSTU
5. "Stories from the field", a guide to involving community people.
6. teacher in-service sessions
7. a technical report

The 6 teaching units, the Teacher Guide, and Stories from the field are available on their website, or on CD for \$10 from: Northern Lights School Division, Teacher Resource Department, Bag Service 6500, La Ronge, SK, S0J 1L0. Phone 306-425-3303). On line at <http://capes.usask.ca/ccstu/summary.html>

WEST COAST

Brittney Diana: Getting Ready to Dive Series Primer was developed by Diane Silvey, a Salish teacher, for First Nations Education Division of the Greater Victoria School District, British Columbia. The materials are aimed at grade one students or young children who have difficulty beginning to read. This resource uses a direct instruction approach and teaches for mastery before starting each unit. The first 45 basic sight words are introduced and receive reinforcement throughout the three-month program. The Series consists of the 115 page Teacher's Guide for the Primer Workbook; 87 page Teacher's Guide-Developing Listening and Language Skills; a 140 page Student Workbook; and 5 Controlled Vocabulary Readers (Eagle Will Hunt, Every Fish Will Get an Apple, Eagle and Seal Play, and The Ravens Are Skipping). <http://www.goodminds.com/kits>

Brittney Diana: Make Ready to Dive Series was developed by Diane Silvey, a Salish teacher, for First Nations Education Division of the Greater Victoria School Division, British Columbia. The series teaches students with a limited sight vocabulary of three or four words. The Reading Series focuses on the Northwest Coast culture for content. <http://www.goodminds.com/kits>

Brittney Diana: Power Dive into Reading Series was developed by Diane Silvey, a Salish teacher, for First Nations Education Division of the Greater Victoria School District, British Columbia. This reading series is intended to supplement existing pre-reading material. It provides additional reading practice to students who have difficulty in the regular program and are 2-4 years behind in their reading skills. The Teacher's Guide includes a three-step method to teach word recognition. The mini readers and activities reflect the Northwest Coast culture area. <http://www.goodminds.com/kits>

<http://web.uvic.ca/fnpp/.pdf> *The Generative Curriculum Model: First Nations Partnership Programs*. Ball, J. & Pence, A. (2000). Two VHS tapes: Involving

Communities and Indigenous Knowledge and Student and Instructor Transformations introduce and guide an innovative and uniquely effective approach to meet the needs of children and youth. Instructors, Elders, administrators, students and university partners have participated in this work. <http://web.uvic.ca/fnpp/pub.htm>

Handbook for Aboriginal Language: Program Planning in British Columbia. This online handbook is intended to provide assistance to First Nations communities and organizations who want to design, maintain, revitalize, expand or restore their Aboriginal languages in their communities among children, adults and Elders alike. <http://www.schoolnet.ca/aboriginal/fnesc/index-e.html>

Connecting Traditions: Explore Tsimshian Pre-Contact Life. This multimedia interactive web site tells of the richness of Tsimshian culture in an exciting way that uses text, picture, sound and animation. Tsimshian language runs parallel with English throughout the presentation. <http://www.sd52.bc.ca/fnes/tsimshian/ct.html>

Tlingit Moon and Tide Teaching Resource: Elementary Level. By Dolly Garza. (1999) This book brings Alaska Native understanding of science and ecology to the elementary classroom by showing teachers how to present local and ecosystem knowledge held by long-time inhabitants of southeast Alaska. It includes several activities for studying moon phases and tides, and addresses science teaching standards, inviting elders to the classroom, and Native language and legends. http://www.uaf.edu/seagrant/Pubs_Videos/pubs/SG-ED-33.html

SUB-ARCTIC

Dene Kede Education: A Dene Perspective. Curriculum Document: Grades K – 6. (1993). Prepared by Northwest Territories Education, Culture and Employment. *Dene Kede Education* brought together Elders from each of the five Dene regions to develop this resource that focuses on the creation story as the basic principle for curriculum development. Elders' knowledge is respectfully and beautifully articulated in this document via words and pictures of life on the land.

Dene Kede Education: A Dene Perspective. A teacher's resource manual that outlines the learning expectations and broadly categorizes the curriculum into four areas that relate to a students' relationships with the spiritual world, the land, other people and themselves. Prepared by NWT Education, Culture and Employment. <http://www.learnnet.nt.ca/a-z/>

ARCTIC

Our Children, Our Ways - Early Childhood Education in First Nations and Inuit Communities is a video series program produced by Red River College about early childhood education in First Nations and Inuit communities. This educational resource consists of six videos, with accompanying guides, based on early childhood curriculum areas. <http://www.goodminds.com/kits>

Inuuqatigiit: The Curriculum From The Inuit Perspective. Curriculum Document: Kindergarten – 12. (August, 1996). Prepared by Northwest Territories Education, Culture and Employment. *Inuuqatigiit* has created an educational link between the past and the present; a link that has been lost in some places in the north. Reinforcing the Inuit identity, values and beliefs is aided through Elders' knowledge beautifully articulated in this document via words and pictures of life on the land.

Nortext, a northern publishing company based in Iqaluit, Nunuvut and Ottawa. It publishes many resources and books for school boards on a limited run basis. Each school board sells its own materials, Nortext is not a distribution centre. Nortext, 16 Concourse Gate, Suite 200, Nepean ON K2E 7S8 Tel: 1-800-263-1452; Fax: (613) 727-6910

GENERAL: NORTH AMERICA

TOPONA: The Original People of North America is an educational game about the accomplishments and contributions of First Nations and Native Americans. Two First Nations women from Fort Resolution, Ruth Mandeville and Marilyn Sanderson, developed the concept and the resulting game is ideal for classroom or informal settings. The board game consists of approximately 500 facts about the First Peoples of North America. Question cards relate to general knowledge and specific culture areas. Reading level for the junior version is grade four. The Advanced Version cards are suitable for grade nine to adult. <http://www.goodminds.com/kits>

The Alaska Native Knowledge Network is designed to serve as a resource for compiling and exchanging information related to Alaska Native knowledge systems and ways of knowing. It has been established to assist Native people, government agencies, educators and the general public in gaining access to the knowledge base that Alaska Natives have acquired through cumulative experience over millennia. The Alaska Federation of Natives and the University of Alaska, with support from the National Science Foundation, have formed the Alaska Native/Rural Education Consortium to provide support for the integration of Alaska Native knowledge and ways of knowing into the educational systems of Alaska. Anyone wishing to participate in the Alaska Native Knowledge Network or contribute to the development of the resources in this knowledge base is encouraged to contact the ANKN Coordinator at (907) 474-5086, or send an

email message to fyankn@uaf.edu. For inquiries regarding the Alaska Native/Rural Education Consortium, contact Frank Hill, Alaska Federation of Natives at (907) 274-3611, or email to fnfwh@uaf.edu.
<http://www.ankn.uaf.edu/npe.html>

International

Cradleboard Core Curriculum

The Cradleboard Teaching Project has created a library of fifteen text based volumes of core curriculum based in Native American culture. Seven of these are already available as interactive online units. One is available to the public at the Cradleboard Store on line. Cradleboard Core Curriculum is available in five subject areas at three grade levels as follows:

Elementary Grades:

Geography Online - Available to Electronic Powwow subscribers in 2003

Social Studies Online - Available for free public use by everybody who visits their website

Science - Available to Electronic Powwow subscribers as a pdf file by request

Middle School Grades:

Geography Online - Available to Electronic Powwow subscribers in 2003

Social Studies Online - Available for public use free to everybody who visits their website

SCIENCE: Through Native American Eyes CD-ROM - Available at Cradleboard Store

High School Grades:

Geography Online - Available to Electronic Powwow subscribers in 2003

Social Studies Online - Available for free public use by everybody who visits our website

SCIENCE: Through Native American Eyes for High School - In progress

Online units are supplemented with appropriate maps, videos, charts, tests, lesson plans and activities. All units are written as core curriculum from the point of view of Native American culture. All units are extensive and meet National Content Standards for appropriate elementary, middle school or high school levels. Most Cradleboard classes study one or two Native American core curriculum units per year.

Cradleboard Teaching Project at <http://www.cradleboard.org/main.html>

Adult Education and Literacy Resources

Native Language Literacy (# 41), *Native Literacy Curriculum Development* (#48), *Native Resources for Learners* (# 51). AlphaPlus Centre, Tel: 416-975-1351, Fax: 416-975-4608, TTY: 416-975-8839. To search the AlphaPlus catalogue online, go to www.alphaplus.ca and choose AlphaCat.

Reaching the Rainbow: Aboriginal Literacy in Canada. Parkland Regional College, Yorkton, Saskatchewan (1998) This kit contains a manual and video, designed to increase awareness of the impacts of literacy in Aboriginal communities and serve as a resource for literacy and Native organizations that want to develop community-based Aboriginal Literacy programs. The video showcases different types of Aboriginal Literacy programs across Canada. For more information, contact Roshan Hemani, Literacy Coordinator, Parkland Regional College, 72 Melrose Avenue, Yorkton, SK S3N 1Z2. Tel. (306) 786-2590, Fax: (306) 786-7866

Empowering the Spirit: Native Literacy Curriculum – Ontario Native Literacy Coalition. Developed by Kateri Akewenzie-Damm & Deana Halonen (1997). This curriculum has been developed to assist Native literacy coordinators and tutors in providing culturally appropriate materials, and in using culturally appropriate methodologies in their work with Native learners at various ages and levels of literacy. Curriculum principles include culturally focused and appropriate, community based, learner centred, flexible, holistic and experiential. Nigwakwe Clearing House. ISBN: 1 – 896832-05-9

EMPOWERING THE LEARNER: NATIVE LITERACY WORKBOOK. NIGWAKWE LEARNING PRESS. THIS WORKBOOK IS DESIGNED TO ACCOMPANY THE EMPOWERING THE SPIRIT: NATIVE LITERACY CURRICULUM. [HTTP://WWW.LITERACYSERVICES.COM/TWRITE.HTM](http://www.literacyservices.com/TWRITE.HTM)

Native English: Curriculum Guidelines. A Resource Book for Adult Educators. (1991). BC: Ministry of Advanced Education, Training and Technology. Taking a holistic, student-centred approach, this resource provides culturally appropriate curriculum consistent with current research.
<http://www.literacyservices.com/TWrite.htm>

General Internet Educational Resource Sites

American Indian Educational Resources
<http://cobalt.lang.osaka-u.ac.jp/~krkvls/edu.html>

CULTURAL AND INTELLECTUAL PROPERTY

Principles & Guidelines for the Protection of the Heritage of Indigenous Peoples'
Report of the seminar on the draft principles and guidelines

for the protection of the heritage of indigenous people (Geneva, 28 February - 1 March 2000) Chairperson-Rapporteur: Mrs. Erica-Irene Daes
Sub-Commission on Prevention of Discrimination and Protection of Minorities of the Commission on Human Rights, Economic and Social Council, United Nations
<http://www.unhcr.ch/Huridocda/Huridoca.nsf/TestFrame/42263fd3915c047ec1256929004f1ffc?Opendocument>

¹ In this paper, the term *Indigenous* is used to encompass both the international scope of the literature and the national context of Aboriginal peoples as defined in the Constitution of Canada. The terms *First Nations* and *Aboriginal* are used when referring to specific organizations or when referring to contexts specific to Canada.

² Much of the literature on Indigenous knowledge has emerged from the international context, such as Africa, Asia, Australia, Latin America, New Zealand, and United States and represents a wide scope of issues and concerns, including biodiversity, sustainability, ethnosciences, and intellectual and cultural property. The literature review in this paper does not approach the whole area of Indigenous knowledge, neither does it cite every important piece of research in the area surveyed.

³ Auditor General Report, 2000; RCAP Final Report, 1996.

⁴ Dawn Martin Hill (Mohawk), "Indigenous Knowledge as a Tool for Self-Determination and Liberation" (paper presented at the National Association of Native American Studies Section, Houston, Tex., 21-26 February 2000); Craig S. Womack (Cree), *Red on Red: Native American Literary Separatism* (Minneapolis: University of Minnesota Press, 1999); Gregory Cajete (Tewa Pueblo), *Ignite the Sparkle: An Indigenous Science Education Model*. (Skyland, NC: Kivaki Press, 2000) and *Native Science: Natural Laws of Interdependence* (Santa Fe, NM: Clearlight, 2000); Oscar Kawagley (Yupik), *A Yupik Worldview: A Pathway to Ecology and Spirit*. (Prospect Heights, ILL: Waveland Press, 1995).

⁵ J. M. Blaut, *The Colonizer's Model of the World: Geographical Diffusionism and Eurocentric History* (New York: Guilford Press, 1993).

⁶ M. Ascher, *Ethnomathematics: A Multicultural View of Mathematical Ideas*. (Pacific Grove, C.A.: Brooks/Cole, 1991).

⁷ For a more specific analysis in Eurocentric political and legal analysis, see James (Sa'ke'j) Youngblood Henderson articles in Marie Battiste, ed. *Reclaiming Indigenous Voice and Vision*. (Vancouver: UBC Press, 2000).

⁸ Assembly of First Nations, *Tradition and Education: Towards a Vision of Our Future*. Vol. 1. (Ottawa: Assembly of First Nations Education Secretariat, 1988), and *Towards Rebirth of First Nations Languages*. (Ottawa: Assembly of First Nations Language and Literacy Secretariat, 1992).

⁹ Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (Cambridge, Mass.: South End Press, 1997); Michael A. Gollin, "Legal Consequences of Biopiracy," *Nature Biotechnology* 17 (1999).

¹⁰ Cathryn McConaghy. *Rethinking Indigenous Education: Culturalism, Colonialism, and the Politics of Knowing*. Flaxton, Qld: Post Pressed.

¹¹ L. Clarkson, V. Morrisette, and G. Regallet, *Our responsibility to the Seventh Generation: Indigenous Peoples and Sustainable Development*. (Winnipeg: International Institute for Sustainable Development, 1992); Canadian International Development Agency, The Human Development Division. *Draft—CIDA Policy on Indigenous Knowledge & Sustainable Human Development*. (Ottawa, ON: CIDA, September 2002).

¹² See Marie Battiste and James (Sa'ke'j) Youngblood Henderson, *Protecting Indigenous Knowledge and Heritage: A Global Challenge*; Gregory Cajete, *Look to the Mountain: An Ecology of Indigenous Education*. (Skyland, NC: Kivaki Press, 1995), *Nature Science*, and *Indigenous Knowledge*; Oscar Kawagley, *A Yupiaq Worldview*; and Alaskan Native Knowledge Network, *Standards for Culturally Responsive Schools*. (Fairbanks, AK: Alaskan Native Knowledge Network, 1998).

¹³ Cathryn McConaghy, *Rethinking Indigenous Education: Culturalism, Colonialism and the Politics of Knowing* (Flaxton, Qld.: Post Pressed, 2000).

¹⁴ *Traditional knowledge* was part of the ethnosience or ethnobiology field within anthropology in the 1950s. *Indigenous knowledge* was a term developed in the late 1980s by Indigenous scholars and representatives to the United Nations Working Group on Indigenous Populations to cover the diverse knowledge systems of Indigenous peoples.

¹⁵ Erica-Irene Daes, *Principles and Guidelines for the Protection of the Heritage of Indigenous Peoples*, United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities, Commission on Human Rights, United Nations Economic and Social Council, E/CN.4/Sub. 2/1995/26, and *Study on the Protection of the Cultural and Intellectual Property Rights of Indigenous Peoples*, United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities, Commission on Human Rights, United Nations Economic and Social Council, E/CN.4/Sub. 2/1993/28. See also *Canadian Native Law Review* * 4: 18-26, and S. Wiessner and M. Battiste, "The 2000 Revision of the United Nations Draft Principles and Guidelines on the Protection of the Heritage of Indigenous People," *St. Thomas Law Review* 13 (2000): 383. The Aboriginal people at the 2001 Indigenous Summit of Americas, held in Ottawa from March 28-31, 2001, reaffirmed the *Principles and Guidelines* at articles 29-36.

¹⁶ United Nations Environment Programme (UNEP), UN Doc. Na. 92-7807, 5 June 1992.

¹⁷ UNESCO: Paris, 2000. Official document of the World Conference on Science, Budapest, Hungary, 26 June to 7 July, 1999, convened by the United Nations Educational, Scientific and Cultural Organization and the International Council for Science.

¹⁸ Other international instruments of particular interest to educators are *The Coolangatta Statement on Indigenous Peoples' Rights in Education*, ratified at the 1999 World Indigenous Peoples Conference on Education in Hilo, Hawaii, and the 1999 *Kalinga Declaration on Indigenous Education and the Establishment of SIKAT Schools*.

¹⁹ Daes, *Study on the Protection of the Cultural and Intellectual Property Rights*.

²⁰ *Ibid.* at 6.

²¹ *Ibid.*

²² Office of the High Commissioner for Human Rights, *Convention (No. 169) Concerning Indigenous and Tribal Peoples in Independent Countries*, adopted 27 June 1989 by the general conference of the International Labor Organization, entry into force 5 September 1991. This convention has not been ratified by Canada, but it is part of international law. The Aboriginal peoples at the 2001 Indigenous Summit of Americas reaffirmed this convention at articles 24-25. **Article 7** of the convention provides: “**(1)**. The peoples concerned shall have the right to decide their own priorities for the process of development as it affects their lives, beliefs, institutions and spiritual well-being and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development. In addition, they shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development that may affect them directly. **(2)**. The improvement of the conditions of life and work and levels of health and education of the peoples concerned, with their participation and co-operation, shall be a matter of priority in plans for the overall economic development of areas they inhabit.” **Part VI, Education and Means of Communication**, provides: “**Article 26**. Measures shall be taken to ensure that members of the peoples concerned have the opportunity to acquire education at all levels on at least an equal footing with the rest of the national community. **Article 27 (1)**. Education programmes and services for the peoples concerned shall be developed and implemented in co-operation with them to address their special needs, and shall incorporate their histories, their knowledge and technologies, their value systems and their further social, economic and cultural aspirations. They shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development, which may affect them directly. **(2)**. The competent authority shall ensure the training of members of these peoples and their involvement in the formulation and implementation of education programmes, with a view to the progressive transfer of responsibility for the conduct of these programmes to these peoples as appropriate. **(3)**. In addition, governments shall recognize the right of these peoples to establish their own educational institutions and facilities, if such institutions meet minimum standards established by the competent authority in consultation with these peoples. Appropriate resources shall be provided for this purpose. **Article 28 (1)**. Children belonging to the peoples concerned shall, wherever practicable, be taught to read and write in their own indigenous language or in the language most commonly used by the group to which they belong. When this is not practicable, the competent authorities shall undertake consultations with these peoples with a view to the adoption of measures to achieve this objective. **(2)**. Adequate measures shall be taken to ensure that these peoples have the opportunity to attain fluency in the national language or in one of the official languages of the country. **(3)**. Measures shall be taken to preserve and promote the development and practice of the indigenous languages of the peoples concerned. **Article 29**. The imparting of general knowledge and skills that will help children belonging to

the peoples concerned to participate fully and on an equal footing in their own community and in the national community shall be an aim of education for these peoples. **Article 30 (1).** Governments shall adopt measures appropriate to the traditions and cultures of the peoples concerned, to make known to them their rights and duties, especially in regard to labour, economic opportunities, education and health matters, social welfare and their rights deriving from this Convention. **(2).** If necessary, this shall be done by means of written translations and through the use of mass communications in the languages of these peoples.

Article 31. Educational measures shall be taken among all sections of the national community, and particularly among those that are in most direct contact with the peoples concerned, with the object of eliminating prejudices that they may harbour in respect of these peoples. To this end, efforts shall be made to ensure that history textbooks and other educational materials provide a fair, accurate and informative portrayal of the societies and cultures of these peoples.

²³ United Nations Educational, Scientific and Cultural Organization, Confintea V, Fifth International Conference on Adult Education, Hamburg, 14-18 July 1997, "Adult Learning: A Key for the Twenty-First Century," Indigenous Education Panel; UNESCO, *World Declaration on Higher Education for the Twenty-First Century: Vision and Action* (UNESCO: Paris, 1998); UNESCO, *Declaration on Science and the Use of Scientific Knowledge, Science for the Twenty-First Century* (UNESCO: Paris, 2000); UNESCO, *Science Agenda: Framework for Action, Science for the Twenty-First Century* [are there publication details for this agenda?]; UNESCO-APEID, *Work Plan of APEID for the Sixth Planning Cycle, 1997-2001* (Bangkok: UNESCO Principal Office for Asia and the Pacific, 1997). Paragraph 38 of the *Declaration on Science* provides: "There is also a need to further develop appropriate national legal frameworks to accommodate the specific requirements of developing countries and traditional knowledge, sources and products, to ensure their recognition and adequate protection on the basis of the informed consent of the customary or traditional owners of this knowledge." In the 1997 work plan of ACEID, there is the continuing theme of education for all, and within the theme the two ideas which are relevant to Indigenous peoples as participants are diversity ("Each country has a unique culture (and within the national culture, many sub-cultures) which, if shared, may possibly benefit and enrich each other" at page 6) and equality ("... there are also other population groups who, by virtue of language, ethnicity, geographical location, or economic status, are underserved by education systems" at page 56). These divergent issues can be addressed through education, particularly through values education (A conflict of values continues to take place between the need to preserve tradition and culture, and to modernize and industrialize partly by modeling the West" at p. 6), peace education (at page 13, and environmental education (at page 6).

²⁴ Ratified by the Working Group on Indigenous Populations and ratified as a multilateral treaty among Indigenous peoples based on international precedent and custom. In the UN system the treaty is called the *Draft Declaration on the Rights of Indigenous Peoples*, United Nations Economic and Social Council, Commission on Human Rights, Sub-Commission on Prevention of Discrimination and Protection of Minorities, *Discrimination Against Indigenous Peoples*, E/CN.4/Sub.2/1994/2/Add.1.. The Aboriginal

people in the 2001 Indigenous Summit of Americas reaffirmed the treaty at article 7. The *Draft Declaration* provides: “Article 12. Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artifacts, designs, ceremonies, technologies and visual and performing arts and literature, as well as the right to restitution of cultural, intellectual, religious and spiritual property taken without their free and informed consent or in violation of their laws, traditions and customs. Article 13. Indigenous peoples have the right to manifest, practice, develop and teach their spiritual and religious traditions, customs and ceremonies; the right to maintain, protect, and have access in privacy to their religious and cultural sites; the right to use and control of ceremonial objects; and the right to repatriation of human remains. ... Article 14. Indigenous peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons. States shall take effective measures, especially whenever any right of indigenous peoples may be affected, to ensure this right and to ensure that they can understand and be understood in political, legal and administrative proceedings where necessary through the provision of interpretation or by other appropriate means. Article 15. Indigenous children have the right to all levels and forms of education of the State. All indigenous peoples also have this right and the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning. Indigenous children living outside their communities have the right to be provided access to education in their own culture and language. Article 16. Indigenous peoples have the right to have the dignity and diversity of their cultures, traditions, histories and aspirations appropriately reflected in all forms of education and public information. States shall take effective measures, in consultation with the indigenous peoples concerned, to eliminate all prejudice and discrimination and to promote tolerance, understanding and good relations among indigenous peoples and all segments of society. Article 17. Indigenous people have the right to establish their own languages. They also have the right to equal access to all forms of non-indigenous media. States shall take effective measures to ensure that State-owned media duly reflect indigenous cultural diversity. Article 18. Indigenous peoples have the right to enjoy fully all rights established under international labour law and national labour legislation. Article 31 Indigenous peoples, as a specific form of exercising their right to self-determination, have the right to autonomy or self-government in matters relating to their internal and local affairs, including culture [and] education, as well as ways and means for financing these autonomous functions.”

²⁵ GT/DADIN/doc.1/99 rev. 2; *Report of the Chair of the Working Group to Prepare the Proposed American Declaration on the Rights of Indigenous Populations*, GT/DADIN/doc.5/99; Draft work plan 2000/2001 - GT/DADIN/doc.6/00 rev. 6. *

²⁶ In the Plan of Action of the Third Summit of the Americas, held in Quebec City in 2001, the countries recognized that “education is the key to strengthening democratic institutions, promoting the development of human potential, equality and understanding among our peoples, as well as sustaining economic growth and reducing poverty.” The hemispheric leaders committed themselves to promote universal access to quality basic education, support lifelong learning, strengthen educational systems and enhance the performance of teachers. In this summit, the commitment to assure, by the year 2010, universal access to and successful completion of primary school by all children was reiterated. In addition, access to quality secondary education for a minimum of 75 percent of all youths was also reiterated. **Article 16** provided for education reform for Indigenous peoples: “Recognizing that the unique cultures, histories and demographic, socio-economic and political circumstances of indigenous peoples in the Americas necessitate special measures to assist them in reaching their full human potential, and that their inclusion throughout our societies and institutions is a valuable element in the continuous strengthening, not only of human rights in our hemispheric community, but also, more broadly, of our democracies, economies and civilizations; noting that although progress has been made, it is necessary to make their best efforts, in accordance with national legislation, to ... acknowledge the value that the world views, uses, customs and traditions of indigenous peoples can make to policies and programs ... [and] develop corresponding strategies and methods to consider and respect indigenous peoples' cultural practices and protect their traditional knowledge in accordance with the principles and objectives of the Convention on Biological Diversity; Increase the availability and accessibility of educational services in consultation with indigenous peoples, especially women, children and youth, in accordance with their values, customs, traditions and organizational structures, by promoting linguistic and cultural diversity in education and training programs for indigenous communities; promote national and regional strategies for indigenous; ... to promote equal opportunity, raise the average school-leaving age, maximize individual and collective achievement, and promote lifelong learning for all indigenous people; Promote and accommodate, as appropriate, the particular cultural, linguistic and developmental needs of indigenous peoples, in urban and rural contexts, into the development and implementation of educational initiatives and strategies, with special attention to building institutional capacity, connectivity and linkages ... ; Promote and enhance, in all sectors of society, and especially in the area of education, the understanding of the contribution made by indigenous peoples in shaping the national identity of the countries in which they live.”

²⁷ See L. Clarkson, V. Morrisette, and G. Regallet, *Our Responsibility to the Seventh Generation: Indigenous Peoples and Sustainable Development* (Winnipeg: International Institute for Sustainable Development, 1992).

²⁸ *Ibid.*

²⁹ *Declaration on Science and the Use of Scientific Knowledge, Science for the Twenty-First Century*, Budapest, Hungary. See paras. 32, 83-87.

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- ³⁰ Bernard Schissel and Terry Wotherspoon, *The Legacy of School for Aboriginal People* (New York: Oxford University Press, 2003).
- ³¹ Robin Ridington, *Little Bit Know Something: Stories in a Language of Anthropology* (Iowa City: University of Iowa Press, 1990) appears to take this restrictive approach. Other terms encountered in the literature are “ethnoscience” and derivatives such as “ethnobiology” and “ethnopharmacology.”
- ³² Russel Barsh, “The Epistemology of Traditional Healing Systems,” *Human Organization* 56(1) (1997): 28-37. See also the work of the scientists and Mi’kmaq knowledge keepers working at the University College of Cape Breton in forging Mi’kmaq Integrative Science. Their approach has similarly begun with examining the plant life in Cape Breton. Peggy Berkowitz, “Western Science Meets Mi’kmaq Knowledge: Integrating Science in Cape Breton,” *University Affairs* (December 2001): 16-20.
- ³³ See the comparison of the characteristics of Western and Indigenous Science in F. David Peat, *Blackfoot Physics. A Journey into the Native American Universe* (New York: Fourth Estate Limited, 1996) also titled *Lighting the Seventh Fire* (New York: Birch Lane Press, 1994).
- ³⁴ Louise Grenier, *Working with Indigenous Knowledge: A Guide for Researchers* (Ottawa: International Development Research Centre, 1998).
- ³⁵ Michael A.D. Ferguson and François Messier, “Collection and Analysis of Traditional Ecological Knowledge About a Population of Arctic Tundra Caribou,” *Arctic* 50(1) (1997): 1-28.
- ³⁶ NUFFIC. SciDev.Net is a free-access, Internet-based network devoted to reporting on and discussing those aspects of modern science and technology that are relevant to sustainable development and the social and economic needs of developing countries. It is available at www.scidev.net/dossiers/indigenous_knowledge/index.html
- ³⁷ Virginia D. Nazarea, Robert E. Roades, Erla Bontoyan, and Gabriela Flora, “Defining Indicators Which Make Sense to Local People: Intra-Cultural Variation in Perceptions of Natural Resources,” *Human Organization* 57(2) (1998): 159-170; reviewed critically by Chantelle P. Marlor, Russel L. Barsh, and Levita Duhaylungsod, “Comment on ‘Defining Indicators Which Make Sense to Local People,’” *Human Organization* 58(2) (1999): 216-220.
- ³⁸ C. den Biggelaar and M.A. Gold, “The Use and Value of Multiple Methods to Capture the Diversity of Endogenous Agroforestry Knowledge: an Example from Rwanda,” *Agroforestry Systems* 30(3) (1995): 263-275.
- ³⁹ Howard Morphy, “Landscape and the Reproduction of the Ancestral Past,” in Eric Hirsch and Michael O’Hanlon, eds., *The Anthropology of Landscape: Perspectives on Place and Space* (Oxford: Clarendon Press, 1995) pages 184-209; Keith H. Basso, *Wisdom Sits in Places; Landscape and Language Among the Western Apache* (Albuquerque: University of New Mexico Press, 1996). It seems to me that Indigenous peoples’ identities are increasingly being shaped by their globally shared experience of oppression as well as by their older attachments to specific local landscapes.
- ⁴⁰ Battiste and Henderson, *Protecting Indigenous Knowledge and Heritage*.

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- ⁴¹ Para. 56 in *R. v. Côté*, [1996] 3 S.C.R. 136 per Lamer C.J.
- ⁴² *R. v. Sundown*, [1999] 1 S.C.R. 393 at paras. 26-33; *R. v. Marshall*, [1999] 3 S.C.R. 456 at paras. 70, 78.
- ⁴³ Diane Knight, *The Seven Fires*.
- ⁴⁴ Linda Cleary and Thomas Peacock, *Collected Wisdom*.
- ⁴⁵ See Willie Ermine, "Aboriginal Epistemology."
- ⁴⁶ Barry Kort, Bob Reilly, "Evolving Educational Pedagogy in Developing Nations".
- ⁴⁷ James Banks has led the literature on multiculturalism. See James Banks, *Multicultural Education: Issues and Perspectives*, 4th ed. (Etobicoke, Ont.: Wiley and Sons, 2002).
- ⁴⁸ See *School Plus: A Vision for Children and Youth, Final Report of the Minister of Education, Government of Saskatchewan*, prepared by Dr. M. Tymchak, Chair, Task Force and Public Dialogue on the Role of the School, 28 February 2001, pages 101-103; and Verna St. Denis, Rita Bouvier, and Marie Battiste, *Kisinahmahkewak: Aboriginal Teachers in Publicly Funded Schools* (Regina, Sask.: Saskatchewan Education, 1998).
- ⁴⁹ Velma Willett, "Islands of Culture: The Experiences of Post Secondary Cree Language Teachers" (M.Ed. thesis, University of Saskatchewan, Saskatoon, 2001).
- ⁵⁰ Assembly of First Nations, *Towards Linguistic Justice for First Nations* (Ottawa: Assembly of First Nations Secretariat, 1990).
- ⁵¹ Royal Commission on Aboriginal Peoples, *Report of the Royal Commission of Aboriginal Peoples*, 5 vols. (Ottawa: Canada Communication Group, 1996); Assembly of First Nations, *Tradition and Education, Towards Linguistic Justice*.
- ⁵² Stephanie Inglis' dissertation reports that unlike current linguistics that holds all languages have universals of tense, Mi'kmaq language has no tense contrasts, but is largely build on representations of evidentiality. The accessibility of knowledge source upon which the speaker bases his or her assertions is important to how one knows. Hence, the orality of knowledge is grammaticalized in the verbal system of Mi'kmaq through a function of the system of modality. See p. 122-123, "Speakers Experience: A Study of Mi'kmaq Modality".
- ⁵³ Lenore Stiffarm, *Aboriginal Pedagogy... As We See It* (Saskatoon, Sask.: University of Saskatchewan Extension Press, 1998).
- ⁵⁴ Eber Hampton, "Towards a Redefinition of Indian Education."
- ⁵⁵ Beverly Kynoch, "Finding the Way Home: Aboriginal Voices in Canadian Literature."
- ⁵⁶ Michael Tymchak, "School Plus: A Vision for Children and Youth." Final Report to the Minister of Education, Government of Saskatchewan. Saskatchewan Instructional Development & Research Unit (SIDRU), February 28, 2001.
- ⁵⁷ Barnaby 1992:228*, as cited in Livy Visano and Lisa Jakubowski, *Teaching Controversy* (Halifax: Fernwood Press, 2002), page 56.
- ⁵⁸ Livy Visano and Lisa Jakubowski, *Teaching Controversy*.

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- ⁵⁹ Barsh, “United Nations Seminar on Indigenous Peoples and States”.
- ⁶⁰ Office of the Treaty Commissioner, “Treaties as a Bridge to the Future”. Saskatoon, SK: OTC, 2002
- ⁶¹ See Mi’kmaw Kina’matnewey at <http://www.kinu.ns.ca/edjur.html>.
- ⁶² See Alaskan Native Knowledge Network, *Alaskan Standards for Culturally Responsive Schools*.
- ⁶³ Oscar Kawagley, *Addendum, Alaskan Standards for Culturally Responsive Schools* (Brandon, Man: Kingfisher Press, 2001) pages 109-110.
- ⁶⁴ Weber-Pillwax, 2001, p. 156*.
- ⁶⁵ See St. Denis, Bouvier and Battiste, *Kisikinahmahkewak*.
- ⁶⁶ Cathryn McConaughy, *Rethinking Indigenous Education*.
- ⁶⁷ See Willett, “Islands of Culture,” page 75.
- ⁶⁸ See Mi’kmaw Ethics Watch at [www.http://mrc.uccb.ns.ca/mci/protocols.rtf](http://mrc.uccb.ns.ca/mci/protocols.rtf)
- ⁶⁹ Battiste and Henderson, *Protecting Indigenous Knowledge and Heritage: A Global Challenge*.
- ⁷⁰ Hampton, “Towards a Redefinition of Education,” pages 31-32.
- ⁷¹ Gregory Cajete, *Look to the Mountain: An Ecology of Indigenous Education*, 1st ed. ([Skyland, N.C.]; Durango, Colo.: Kivakí Press, c. 1994) pages 208-209.
- ⁷² *School Plus: A Vision for Children and Youth, Final Report to the Minister of Education Government of Saskatchewan*, prepared by Dr. M. Tymchak, Chair, Task Force and Public Dialogue on the Role of the School, 28 February 2001.
- ⁷³ Battiste and Henderson, *Protecting Indigenous Knowledge and Heritage*.