

## Appendix 4: Promising Practices Database

The following *promising practices* are arranged in three sections: promising practices in inclusive curriculum design (including units, lessons, etc.), promising practices in pedagogy/methodology, and promising practices in systemic initiatives.

### A. PROMISING PRACTICES IN INCLUSIVE CURRICULUM DESIGN (UNITS, LESSONS, ETC.)

#### 1) Forests for the Future (Tsimshian territory, BC)

*Social studies and science curriculum*

The Forests for the Future social studies curriculum focuses on four unit plans that incorporate Indigenous and scientific knowledge to meet the ecological needs of the local community. The curriculum incorporates the traditional ecological knowledge of Gitxaala Elders.

<http://www.ecoknow.ca/>

#### 2) Rekindling Traditions (Northern Saskatchewan, Canada)

*6 Cross-cultural science and technology units*

Guided by the writings of Dr. Greg Cajete and other First Nations educators, six teachers across northern Saskatchewan and Dr. Glen S. Aikenhead developed six cross-cultural science and technology teaching units (complete with lesson plans). The project involved the communities bringing First Nations science into the science classroom. They also wrote a teacher guide for the whole project and another document to tell our stories about involving people in the communities (our challenges, successes, and advice). The units give students access to Western science and technology without requiring them to adopt the worldview endemic to Western science.

<http://www.usask.ca/education/ccstu/>

#### 3) Manitoba Education, Citizenship and Youth

*Title: Incorporating Aboriginal Perspectives: A Theme-Based Curricular Approach (Resource Materials and Templates)*

This workshop package offers selected instructional strategies for specific grade and content areas. It is designed to assist teachers as they build Aboriginal Perspectives into curricula

[http://www.edu.gov.mb.ca/k12/docs/policy/abpersp/ab\\_persp.pdf](http://www.edu.gov.mb.ca/k12/docs/policy/abpersp/ab_persp.pdf)

To assist Manitoba educators in incorporating Aboriginal Perspectives, Native Studies documents have been developed and published, such as:

- Native Studies Early Years (K- 4) A Teacher's Resource Book
- Native Studies Middle Years (Grades 5 - 8) A Teacher's Resource Book Framework, and
- Native Studies Senior Years (S1 - S4) A Teacher's Resource Book Framework

Most recently Integrating Aboriginal Perspectives into Curricula: A Resource for Curriculum Developers, Teachers and Administrators has been distributed to schools to assist in the process.

Cultural Concepts are organized according to grade level:

Grade 2	Cooperation and Respect;
Grade 5	Knowing Our Place
Senior 2	Water and Collective-Decision Making

Science units exist for each grade level/cultural theme.

<http://www.edu.gov.mb.ca/k12/abedu/perspectives/resources.html>

#### 4) **The Alaska Native Knowledge Network ANKN**

*ANKN is a systemic initiative that has endorsed and developed curricula*

The Alaska Native Knowledge Network is a resource for information related to Alaska Native knowledge systems and ways of knowing. It has a searchable curriculum database, sample science units, copies of Alan Dick's science books, AISES Handbooks, links to multiple related sources and much, much more:

Dick, A. (2003) *Resources for Native Science Camps, Projects and Fairs*. Fairbanks, Alaska: Alaska Native Knowledge Network

Dick, A. (1999) *Village Science, Teacher and Student Editions*. Fairbanks, Alaska: Alaska Native Knowledge Network

Dick, A.(1998) *Northern Science or Alaskans are Never Stuck, Teacher and Student Editions*. Fairbanks, Alaska: Alaska Native Knowledge Network

Matthews, D. (2003) *Unangam Hitnisangin/Unangam Hitnisangis/Aleut Plants: a Region-Based Plant Curriculum for Grades 4-6*. Edited by B. Carlson.

<http://www.ankn.uaf.edu/unangam>

*ANKN culturally responsive science units*

The Alaska Native Knowledge Network website contains 21 culturally responsive units that can be applied to any locale. The website states that more units will be available soon.

<http://www.ankn.uaf.edu/curriculum/units>

#### 5) **The Kormilda Science Project: An Indigenous Perspective on the Earth Sciences (Read, 2002)**

In Australia, national policies explicitly support Aboriginal versions of school science (see Michie, 2002; Purdie et al., 2000). This support inspired a non-Aboriginal science educator to collaborate closely with three different Aboriginal family groups across Australia to produce a high school textbook, *The Kormilda Science Project: An Indigenous Perspective on the Earth Sciences* (see Read, 2002). *The Kormilda Science Project* is a rare example of a textbook that respectfully integrates Indigenous science with Western science.

#### 6) **Native Access to Engineering Program**

The Native Access to Engineering Program has been producing curriculum since 1998. Each topical set consists of a newsletter, worksheet and teacher's guide.

*Curriculum units include:*

Geomatics, Ocean Engineering, Nutrition, Building Engineering, Water, Geology, Biomedical Eng., Energy, Structures, Simple machines, Environment, Communications, Chemical, Construction, Flight, Materials, Measurement, Space, Agriculture, Mining, Forestry, Computer, Transportation, Sound, Light.

<http://www.nativeaccess.com>

- 7) **Practising the Law of Circular Interaction** (Saskatchewan Indian Cultural Centre, 1993)  
*Indigenous ecology curriculum*

*Practising the Law of Circular Interaction* was born out of the efforts of Aboriginal participants to transform a Western science ecology curriculum into an Indigenous ecology curriculum. The differences in epistemology, ontology, and axiology between the two knowledge systems were found to be so discordant that they necessitated a fresh independent start (This example reinforces the idea that curricula developed in one cultural context/community is not necessarily transferable to another).

<http://www.sicc.sk.ca/>

- 8) **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 as our main fundraising vehicle. The others exist as traditional school-type print and graphics curriculum units, waiting to be re-created as interactive multimedia units as time and project funding allows. Cradleboard Core Curriculum is available in five subject areas at three grade levels [elementary, middle years, secondary].

[www.cradleboard.org](http://www.cradleboard.org)

### **B. Promising Practices in Pedagogy/Methodology**

- 9) **Authentic Language learning/Instruction: Māori schools in Aotearoa, NZ**

McKinley et al. (1992) enriched the idea of integration when they argued for students to learn both Indigenous and Western sciences in a student's Aboriginal language. This led to research into translating the Aotearoa New Zealand science curriculum into the Māori language (McKinley, 1996) and to research into the effect of non-Indo European languages on student learning" (Aikenhead, 2006b, 125).

Aotearoa New Zealand enjoys an enhanced science curriculum. A Māori version of their country's science curriculum came about through negotiations between Elders of the Māori nation and

science educators (McKinley, 1996; Stewart, 2005). This Māori version, called “pūtaiao,” was recognized by the country’s ministry of education for a network of Māori language schools and Māori bilingual and immersion classrooms in elementary and high schools, including grade 12 (McKinley, 2005; McKinley, Stewart, & Richards, 2004). “As an Indigenous science, pūtaiao offers the opportunity to develop a uniquely local critical science education curriculum” (Stewart, 2005, p. 866). Teacher candidates are being educated to produce lesson plans to fit pūtaiao (Barker, 2004).

It is clear from the Aotearoa New Zealand and Australian experiences that when Indigenous knowledge is recognized as foundational to school science, appropriate curricula, teacher education programs and instructional materials can ensue.

#### 10) **Student Engagement Through Technology (Digital Cameras) and Mentoring**

The use of digital cameras in Aboriginal student education emerged as a theme in effective practices. *Traditional Pathways to Health* is a research project developed through collaborative efforts between University of Victoria researchers, and Aboriginal teachers and students from two school districts. The project enables Aboriginal youth at three high schools in Victoria to use digital video to highlight their own positive activities, culture, and traditions as important dimensions of their lives that help to keep them well (see Riecken, et. al., 2006). The following are three examples of schools that have utilized and found the project to be successful:

- Career and Personal Planning (CAPP) at Victoria High School (BC) has a course option for Aboriginal students that focuses on making connections with Elders and other Aboriginal role models.
- The Westshore Center for Learning and Training (BC) has developed a separate First Nations graduation program with a strong cultural focus that engages adult and youth learners with Aboriginal artists, poets, dancers, and writers.
- In First Nations Leadership 11 at Esquimalt High (BC), the philosophy of the course is the belief that First Nations values and beliefs are essential to the understanding of self and others as leaders.

Mentoring has been employed successfully in the areas of Aboriginal women’s health (see Banister & Begoray, 2006), success coaches (see Costa, 2006), pre-service teachers’ working with students (see McCluskey, Baker & McCluskey, 2005).

### **C. Promising Practices in Systemic Initiatives**

#### 11) **Aboriginal Knowledge and Science Education Research Project**

The *Aboriginal Knowledge and Science Education Research Project* was developed by the Aboriginal Education Enhancements Branch of the Ministry of Education and the University of Victoria. The principal goals of the project are to:

“...enable Aboriginal students to be successful in science and related programs at the middle and secondary school levels; to encourage Aboriginal students to consider science-related occupations; and to provide a meaningful context that will enable curriculum developers at a

later phase to develop culturally appropriate science curriculum materials and programs for Aboriginal students” (Snively & Williams, 2006, 242 – 243).

#### 12) **Aboriginal Learning Knowledge Centre**

The Aboriginal Learning Knowledge Centre was created to provide a collaborative national forum that will support the development of effective solutions for the challenges faced by First Nations, Métis and Inuit learners. The Aboriginal Learning Knowledge Centre, is composed of a Consortium and a National Advisory Committee of more than 80 organizations and individuals from across the country working together to create a path for the improvement of Aboriginal learning in Canada. A Steering Committee composed mainly of members from the Consortium and National Advisory Committee provides leadership and direction to the Aboriginal Learning Knowledge Centre. The Lead Organizations for the Aboriginal Learning Knowledge Centre are the [Aboriginal Education Research Centre](#) at the University of Saskatchewan and the [First Nations Adult and Higher Education Consortium](#).

<http://www.ccl-cca.ca/CCL/AboutCCL/KnowledgeCentres/AboriginalLearning/AboriginalLearningHome/?Language=EN>