

**TOWARDS A CRITICAL UNDERSTANDING OF
INDIGENOUS ENVIRONMENTAL ISSUES IN CANADA:
A CURRICULUM REVIEW**

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Executive Summary

This report and the associated website (www.indigenouseved.ca) were developed as part of a study supported by a Social Sciences and Humanities Research Council of Canada (SSHRC) Insight Development Grant led by Dr. Greg Lowan-Trudeau, an Associate Professor of Métis, Swiss, and Norwegian descent with the University of Calgary's Werklund School of Education, into the experiences of Canadian educators who are interested, but at times challenged, in incorporating consideration of Indigenous environmental knowledge, rights, issues, and activism into their teaching practice.

During the fall of 2015 and winter of 2016, interviews were conducted with ten educators from across Canada. Participants were both Indigenous and non-Indigenous and came from a range of personal and professional backgrounds; they included those with extensive K-12 experience, university professors, collaborative community-based artists, and land-based educators. One message that was communicated by several participants was that they lacked confidence in introducing Indigenous environmental knowledge and issues for discussion with their students due to limited foundational knowledge and curricular support in this area. They also expressed difficulty in staying up to date with contemporary events in a manner that would allow them to incorporate discussion in their classrooms and other educational settings. This report was produced in response to such concerns to provide increased access to foundational knowledge and curricular links for interested educators from both within and beyond their own regions.

A review of provincial and territorial curricula was conducted by Teresa Fowler, Doctoral Candidate and Research Assistant of mixed Indigenous and European ancestry, in the fall of 2016 and winter of 2017 with a view to understanding each province and territory's approach to explicitly or implicitly supporting educators in engaging with Indigenous environmental knowledge and issues in various subject areas including, but not limited to, science, social studies, math, and English. This was a significant task and, while we recognize that it is inevitably imperfect, we hope that we have provided a starting point for further inquiry, discussion, and refinement. Please feel free to contact us with any questions or clarifications.

Terminology Practices

We acknowledge the complex and living nature of terminology with regards to Indigenous peoples. Whenever possible in this report, we favour the terms Indigenous and/ or Aboriginal when speaking generally about First Peoples with Indigenous being an internationally recognized term (e.g. in the United Nations' Declaration on the Rights of Indigenous Peoples, 2007) and Aboriginal being commonly used in Canada (see below). We also favour and encourage the use of tribally and regionally specific names whenever possible (e.g. Kainai, Anishnaabe, Mi'kmaq, Inuvialuit, Cree-Métis, Bigstone Cree).

We also follow unconventional capitalization practices for culturally related terms such as Elder, Medicine Wheel, or the Land to acknowledge their importance and demonstrate respect.

Finally, we acknowledge and respect that Indigenous peoples and organizations may hold individual and collective preferences that do not align with the practices described above for a variety of reasons. We encourage individuals who are uncertain of the appropriate term to use in a given situation or relationship to ask, with humility, what those being described prefer.

Key Concepts and Terms

Familiarity with the following concepts and terms may assist readers in developing and fostering a deeper understanding of critical Indigenous land, environmental, and educational issues in Canada.

Aboriginal Peoples: As defined in Section 35 of the Canadian Constitution (1982), includes First Nations (Indians = still employed as a legal term), Métis, and Inuit peoples.

- **Aboriginal Rights:** General rights held by Aboriginal peoples to practice Indigenous cultures (and languages), conduct harvesting activities (hunting, fishing, gathering berries and firewood) in one's traditional territory, and establish agreements such as treaties and land claims. Have been and continue to be clarified through several court cases (e.g. R v. Sparrow, R v. Calder).
- **Treaty Rights:** Rights specifically outlined in a given treaty or similar (e.g. modern day land claim agreements).

For more, see:

<http://laws-lois.justice.gc.ca/eng/Const/page-16.html>

http://indigenousfoundations.arts.ubc.ca/constitution_act_1982_section_35/

https://www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr6/blms/6-3-2c.pdf

Relevant Case Law:

Calder v. BC: <https://www.canlii.org/en/ca/scc/doc/1973/1973canlii4/1973canlii4.html>

Daniels v. Canada <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/15858/index.do>

R. v. Marshall: <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/1739/index.do>

R. v. Sparrow: <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/609/index.do>

Decolonization: The process of developing critical understanding of the historical, contemporary, and ongoing impacts of colonization while also considering possible counter-approaches.

Indigenization: A process wherein Indigenous philosophies, languages, cultures, and practices are introduced and/ or prioritized in institutional and societal contexts.

For more, see:

Battiste, M. (2013) *Decolonizing education: Nourishing the learning spirit*. Vancouver, BC: UBC Press.

Holmes, A. P., Grimwood, B. S. R., King, L. J., & the Lutsel K'e Dene First Nation. (2016). Creating an Indigenized visitor code of conduct: the development of Denesoline self-determination for sustainable tourism. *Journal of Sustainable Tourism*, 24(8–9), 1177–1193. <https://doi.org/10.1080/09669582.2016.1158828>

Little Bear, L. (2000a). Jagged worldviews colliding. In M. Battiste (Ed.), *Reclaiming Indigenous voice and vision*, (pp. 77-85). Vancouver, BC: UBC Press.

St. Denis, V. (2007). Aboriginal education and anti-racist education: Building alliances across cultural and racial identity. *Canadian Journal of Education*, 30(4), 1068-1092.

Traditional Territory: The geographical area traditionally used and occupied by a given Indigenous group. Increasingly documented through Traditional Land Use Studies (TLUS) as described below.

- **Traditional Land Use Study (TLUS):** The methodical documentation of an Indigenous group's traditional use and occupancy of a given territory. May include techniques such as interviews with Elders and other community members documented by audio and/ or visual media along with physical markings on topographical maps, other digital media such as interactive maps, spending time on the Land with community representatives, consulting historical written sources, and others.
- **Use:** Pertains specifically to traditional activities such as, but not restricted to, hunting, fishing, trapping, berry, plant, and firewood collection, other cultural and/ or spiritual activities, and travel. Often used to establish a community's rights (as opposed to title) to a given area (see below).
- **Occupancy:** Geographical area occupied on a regular basis by a given community; may be a long-standing village or encampment or extend, as recently established in Tsilhqot'in Nation v. British Columbia, to the broader area used (see below) on a routine/ rotational/ seasonal basis, depending on the community and region.
- **(Land) Title:** Often linked to demonstration of occupancy; includes surface and sub-surface rights in resource negotiations.
- **(Land) Rights:** Often linked to demonstration of use (see above); includes surface rights, but not typically sub-surface.
- **Overlap:** A geographical area traditionally occupied and/ or used by two or more Indigenous groups.

For more, see:

https://www.ubcic.bc.ca/chief_kerry_s_moose

https://www.ubcic.bc.ca/living_proof

Relevant Case Law:

Tsilhqot' in Nation v. BC: <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/14246/index.do>

Duty to Consult (and Accommodate): The fiduciary (legal) duty of the Crown (federal and/ or provincial government) to adequately consult and accommodate Indigenous communities that will be potentially affected by a given resource development or other disruption of their traditional territory (e.g. mining, hydro, or forestry activity; installation of a power line or road)

For more, see:

http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/intgui_1100100014665_eng.pdf

Natcher, D.C. (2001). Land use research and the duty to consult: A misrepresentation of the Aboriginal landscape. *Land Use Policy*, 18, 113-122.

Co-Management: Co-management by an Indigenous group and government of the social and ecological aspects of a given geographical area such as a national or provincial park, coastal region, designated resource development zone, or similar.

For more, see:

<http://coastalguardianwatchmen.ca/nation/haida>

<https://www.pc.gc.ca/en/pn-np/nt/naatsihchoh/info/plan>

Menzies, C.R. (Ed.) (2006). *Traditional ecological knowledge and natural resource management*. Lincoln, NE: University of Nebraska Press.

Impact-Benefit Agreement: An agreement between an Indigenous community, industry stakeholder (e.g. resource company), and, sometimes, government body, that outlines the anticipated social and ecological impacts of a given development or extraction project, proposed social and ecological monitoring framework, and agreed upon benefits that will be provided to the Indigenous community. Benefits may include service contracts, guaranteed training and employment of community members, guidelines for healthy work environments (e.g. shift work schedules), regular monetary payments to the community, construction of community buildings such as schools or health centres/ hospitals, among others.

For more, see:

https://www.foa.ca/afoadocs/L3/L3a%20-%20IBA_toolkit_March_2010_low_resolution.pdf
<https://lop.parl.ca/Content/LOP/ResearchPublications/2015-29-e.html?cat=aboriginal#a2>

Whitelaw, G. S., McCarthy, D. D., & Tsuji, L. J. S. (2009). The Victor Diamond Mine environmental assessment process: a critical First Nation perspective. *Impact Assessment and Project Appraisal*, 27(3), 205–215.

Further Case Law of Note:

Delgamuukw v. British Columbia: <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/1569/index.do>

Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage): <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/2251/index.do>

Curriculum Review

Within the scope of this pan-Canadian review of curricular outcomes related to critical Indigenous environmental issues, publicly available curriculum documents were reviewed from each province and territory within the subject areas of English, Math, Science, and Social Studies for each grade in the Kindergarten – Grade 12 system. Other subjects were also scanned for relevance to the project but the primary focus of the review was the aforementioned subject areas.

While outcomes were initially evaluated based on their connections to contemporary Indigenous environmental activism, we also looked for outcomes that may not have immediately appeared relevant to this focus, but could still provide foundational opportunities to engage with related topics such as Indigenous land and environmental knowledge, philosophies, rights, and historical and contemporary issues. As such, this document is offered as a flexible resource to support K-12 teachers and others who hope to engage with critical Indigenous environmental topics in a manner that connects with provincial and territorial curricula.

In recognition of the dynamic nature of curricula across Canada and, in particular, provinces such as Alberta that are currently undergoing system wide curricular revisions, this resource is not meant to be prescriptive—we have not provided suggestions for curriculum revisions; rather, we hope that this will serve as a generative resource that invites educators to make connections to curricula from various perspectives within and between regions even after minor or significant curricular shifts may have occurred.

General Trends

While most provinces and territories maintain unique and regionally connected curricula, we also observed certain broad similarities. For example, many cited the Western and Northern Canadian Protocol for Collaboration in Education (WNCP) and the Pan-Canadian Framework of Science Learning Outcomes K-12 in their curricular documents, specifically with respect to Math and Science. We also observed that:

- Math curricula in each province follow similar scope and sequences as well as Science but with differences in ability groupings in high school.
- Certain provinces also have additional Science courses beyond the common choices of Biology, Chemistry, and Physics. For example, Environmental Science, Earth Science, and Earth and Space Science.
- There are also variations within some high school Math subjects with respect to some content such as data analysis, statistics, and probability, but overall Math is fairly consistent across the provinces/territories.
- English offers similar scope and sequences as well, however some provinces/territories have more specialty English courses at the high school level.
- Social Studies revealed more variation with some provinces keeping a Social Studies focus while others split into more specific content within, for example, Geography and History frameworks.

Delving deeper into particular subject areas, we found that each province and territory has locally responsive content that is often reflective of their respective dominant ideologies and the natural resources that drive their economies. For example:

- Newfoundland and Labrador, and Alberta have more connections to petroleum based natural resources whereas British Columbia and Nova Scotia have a stronger focus on forestry, mining, climate change, and renewable energy.
- Each province also offers language courses relevant to their provincial identity such as Mi'kmaw and Gaelic streams in Nova Scotia and Anglophone and Francophone curricula in New Brunswick and Quebec.
- The territories (Yukon, Nunavut, NWT) all variously borrow from the curricula of southern provinces as outlined in the report below. However, each territory has also generated locally developed language streams, resources, and supplemental curricular materials that complement the main documents.

Curriculum Redesign

Several provinces have recently redesigned, or are in the process of redesigning, their curricula. For example, Alberta is currently undergoing a redesign with implementation expected in 2020; Nova Scotia, Quebec, Saskatchewan, and British Columbia have all redesigned their curricula to be more focused on competencies with broader learning outcomes that allow teachers flexibility to be more locally responsive to their communities.

Saskatchewan and British Columbia have also thoroughly Indigenized their curriculum in each subject area with British Columbia having an entire English stream in high school devoted to English for First Peoples which explores Indigenous knowledge and literature more extensively than the regular English program. High School Social Studies curriculum in Saskatchewan, however has not yet been Indigenized at the time of this report. Other provinces that have not Indigenized their curricula still often include places and spaces with Indigenous knowledge in specific subjects, primarily in Social Studies, but also in Math, the sciences, and English, and certain electives such as Environmental Science.

We also noticed significant variation in grand narratives and dates relating to the trajectory of Canadian history. For example, some provinces mark the beginning of Canadian history as the point of contact with Europeans such as in Quebec, while others, as seen in Manitoba, acknowledge the pre-contact history and journey of Indigenous people. We also noted that, while we found few explicit references to Indian Residential Schools, provinces such as British Columbia are leading the way in developing robust revised curricula that includes content related to the Truth and Reconciliation Commission. We further observed that the front matter in many subjects across jurisdictions has some references to diversity, Indigenous learners, and environmental education.

Some documents have very explicit curricula that include lesson and unit plans with direct connections to textbooks and are very expansive as seen in Newfoundland and Labrador and Prince Edward Island, while others, like redesigned curricula in Nova Scotia, British Columbia, and Quebec, are concise and succinct and provide overviews of previous and upcoming grades. Some of the curricular documents reviewed include cross-curricular connections and others encourage teachers to teach outdoors with suggestions for appropriate weather conditions. Some of the newer documents, especially the recently redesigned curricula,

have more environmental education connections with consideration of renewable energy and climate change. However, some provinces with a deep economic focus on petroleum-based resources still lean towards knowledge within those industries.

This report is broken into the general, but not definitive, geographical areas of the Eastern Provinces, Central Provinces, Western Provinces, and Territories. Each provincial sub-section also contains general and subject-specific summaries as well as relevant curricular expectations related to critical Indigenous environmental topics.

Eastern Provinces

For the sake of organization, we chose to include Newfoundland and Labrador, New Brunswick, Nova Scotia, and Prince Edward Island in the Eastern provinces.

Newfoundland and Labrador

Newfoundland & Labrador's curriculum is extensive; some curricular documents are very lengthy and include detailed appendices such as assessment rubrics as well as teaching tools and exemplars for teachers. Newfoundland's curriculum aligns with the other Atlantic provinces in some ways such as through Essential Graduation Learnings (2015); the Western and Northern Canadian Protocol for Collaboration in Education (WNCP) (1993) is also credited in their Mathematics program.

The front matter for each curricular area reviewed is consistent in format and of particular note to this review, is that Education for Sustainable Development (ESD) appears in the front matter for each grade divided into three areas: economy, environment, and society and teachers interested in including environmental education can tie into this area even though specific learning outcomes do not explicitly address environmental issues. There is also a general emphasis on local connections, especially in Science. It is also important to note that the approach to ESD espoused seems to encourage not only teaching *about* sustainable development as a topic of interest, but also fostering students' understanding of how to meet their needs without compromising the needs of generations of people that will follow them. However, as debated in environmental education literature, the concept of sustainable development itself is not without controversy as it may be used to superficially justify making status quo societal development practices more efficient rather than promoting deep structural and existential changes (Jickling, 1992).

The Essential Graduation Learnings, knowledge areas deemed needed for success after high school, which are common across all the Atlantic provinces, could also be used to connect environmental education to the front matter curricula, specifically with the Citizenship essential graduation learning strand as it is focused on environmental interdependence in both local and global contexts.

English

English curricula were being revised in Newfoundland and Labrador when last reviewed; they currently range in original date of publication from 2013 to 2016. Key learning outcomes common to the Atlantic provinces also offer flexibility to teachers; for example, Grade 6 students are encouraged to detect examples of bias and the impact bias has on cultures, while in Grade 9 and 12 students consider the power of language and how it can be used to shape and manipulate values. General curriculum outcomes also provide teachers room to use the curriculum to teach about Indigenous environmental issues through student choice in selecting resources, responding to texts, and expressing their experiences through writing.

Within the Kindergarten-Grade 9 English specific curricular outcomes, there are no outcomes that specifically mention engaging with Indigenous environmental issues nor are there in the high school grade levels. However, in Grade 12 in both English Language Arts (ELA) 3201 and ELA 3202 there is a possibility for students interested in critical Indigenous

environmental issues to conduct a research project wherein they advocate for a particular position on a given topic.

Math

Newfoundland and Labrador's math curriculum guidelines not only offer explicit methods to teach the curriculum, they also make direct connections to textbooks used in the region. The original date of release for math curricula range from 2009 to 2016. Grades 1 through 4 do not offer explicit connections to Indigenous environmental issues; however, beginning in Grade 5, specific learning outcomes could be used to teach about related topics with appropriate resources. For example, within the statistics and probability, and shape and space strands, a teacher could employ reading and graphing data that is locally relevant. The patterns and relations strand focuses on dimensional shapes using diagrams to scale which could be used as well for students to explore environmental issues such as pipelines through their communities. High school math courses continue to provide moments for teachers using data in environmental contexts as well in Math 2201, students could do an inquiry-based research project that connects concepts in math to Indigenous environmental issues. While there are no explicit connections to Indigenous environmental content, teachers have flexibility to use data and themes that connect to local and global issues.

Science

Newfoundland and Labrador's Science curriculum was being redesigned when last reviewed, despite the relatively recent publication date of most documents which ranges from 2010 to 2015.

Most grade levels already offer specific learning outcomes that connect with environmental education. For example, in first grade, students learn about seasons, connections between technology and science, social and environmental contexts, and the characteristics of living things and there are suggestions for teachers to take students outside to explore their living environments. While there are no direct mentions of Indigenous knowledge or content, teachers could make simultaneous connections with environmental topics, especially when supported by knowledgeable colleagues, community members, and possibly resources. Grade 2 continues the trend but with a focus on air and water, and animal growth and changes. The animal growth and changes unit is intentionally left to the end of the year to encourage teachers to take students outside and explore in an outdoor context.

Grade 3 specific learning outcomes are devoted to life and plant science and outcomes related to the Pan-Canadian Science outcomes are referenced. Of particular relevance to this inquiry are outcomes related to Science, Technology, Society, Environment (STSE) that are incorporated throughout the Science curriculum. Grade 4 specific learning outcomes explore rocks, minerals, and erosion as well as habitats and communities. These outcomes can be connected more generally to environmental topics and, again, there is encouragement for teachers to engage students through outdoor experiential approaches. The Grade 5 Science curriculum does not offer much room other than general STSE outcomes, but there is a focus in Grade 6 on life sciences and diversity in living things, including local habitats, which could be linked to environmental education and local Indigenous knowledge. Similarly, Grade 7 focuses

on interactions with ecosystems while grade 8 explores water cycles; the Grade 9 Science curriculum offers less obvious opportunities for connection.

Newfoundland and Labrador's high school Science curriculum has consistent outcomes for Grades 10-12 that could be connected to Indigenous environmental topics, specifically under a stewardship outcome and a focus on maintaining a sustainable environment. As high school Science curricula are streamed into more explicit areas, some courses have less obvious, but not absolutely incommensurable, connections to Indigenous environmental topics such as Physics and Chemistry.

One general science course, Introduction to Science 1206, has some specific learning outcomes that relate to environmental education such as within the life sciences, weather, and chemical reactions units. While not explicitly linked to Indigenous environmental topics, students could be encouraged to make connections through expectations related to considering different perspectives on scientific issues, as well as specific topics such as weather and heat cycles.

The Grade 11 Biology curriculum encourages exploration of biodiversity, dynamic equilibriums, interactions among living things; it also includes outcomes related to students gathering data. Biology 12 has more of a body systems focus, somewhat reducing the ability of teachers to make links to Indigenous environmental topics; however, if approached from a health justice perspective, such connections could still be made.

Additional science courses do relate explicitly to environmental education including Earth Systems 3209 and Environmental Science 3205. Earth Systems 3209 examines the physical earth and Environmental Science 3205 relates directly to this inquiry by offering teachers and students opportunities to learn about environmental education and Indigenous knowledge specifically:

- 1.03 describe the Newfoundland and Labrador transition, from aboriginals[sic], European settlers, to present day, in terms of how they impacted the land (p. 6)

Many other outcomes within Environmental Science support the aims of this project and offer more spaces for teachers to tie into Indigenous knowledge and environmental issues.

Social Studies

Newfoundland and Labrador's Social Studies curriculum focuses on using social studies as a means to empower students to engage in issues-based educational experiences and follows the same structure as the previous subjects with publication dates ranging from 2004 to 2012. Kindergarten to Grade 3 generally focuses on students learning about identity and place, with Grades 1 and 2 having specific outcomes that connect to environmental education through understanding interactions with the environment with an explicit connection in Grade 1:

- 1.3.3 Students will be expected to demonstrate an understanding that Aboriginal peoples' relationship with place has changed over time (p. 133)

In Grade 4, students begin to learn about exploration of places, and ideas such as the relationships between humans and the physical environment, and the political landscape; teachers could link work in this area to Indigenous environmental issues, but there is nothing

explicitly mentioned. Grade 5 explores societies—there are specific outcomes that relate to Indigenous people, however there are also places where further knowledge could be explored, but is left out. For example, in a “Learning about the Past” unit there is no mention of Indigenous people (not to suggest that Indigenous peoples only existed in the past, mind you), while the environment unit focuses on an ancient society in Africa as well as environmental changes over time. Social structures are also studied, but from the inevitably biased singular perspective of the colonizers. However, a unit focused on decision making includes outcomes related to Indigenous cultures such as:

- 4.0 Students are expected to explain the diversity of First Nation and Inuit societies in what later became Canada (c. 1000-1400ce) (p. 72)
- 5.0 Students are expected to explain the decision-making practices used by First Nation and Inuit societies in the Atlantic region (c. 1000-1400ce) (p. 72)
- 6.0 Students are expected to analyse interactions between British and French settlers and First Nation and Inuit societies in the Atlantic region (c. 1650-1800ce) (p. 82)

Grade 6 Social Studies revolves around world cultures, including the relationship between culture and the environment. There is content related to human rights, however there is no specific mention of Indigenous rights or Indigenous cultures. Grade 7 focuses on empowerment and offers one outcome that could be tied to this inquiry:

- 7.3.1 Evaluate the conditions of everyday life for diverse peoples living in British North America in the mid-1800s, including Aboriginal peoples, African-Canadians, and Acadians (p. 66)
- 7.4.3 Analyse the degree of empowerment and disempowerment for Aboriginal peoples in present day Atlantic Canada during this period: Identify the various Aboriginal groups in present day Atlantic Canada during this period; Explore how national policies, treaties and the Indian Act had an impact on the Aboriginal peoples of present day Atlantic Canada (p. 92)

Within Grade 7, there is space for a teacher to tie into concepts related to Indigenous environmental topics as there is an exploration of future trends of economic empowerment and the connection between land resources and economic commodities. Grade 8 looks at the history of Newfoundland and Labrador beginning in the 19th century and offers many connections to Indigenous cultures and room for teachers to look at connections between Indigenous peoples and land. There are also explicit expectations linked to Indigenous relationships with the Land and contemporary issues such as:

- 4.5.10 Identify the basic issues related to Aboriginal land claims in the province (p. 135)
- 4.5.11 Evaluate the impact of non-Aboriginal activities on Aboriginal peoples (p. 135)

Grade 9 focuses on Canadian identity with a geography focus, however, there is no mention of Indigenous people within the topic of Canadian Identity.

Newfoundland and Labrador's high school social studies programs are streamed into history, geography, economy, law, and Newfoundland and Labrador studies. Geography in Grade 10 centres on the relationship between natural and human systems, providing opportunities for teachers to link to content related to Indigenous environmental topics and, more specifically, within the final unit of economic issues. Students need to understand the economic significance of Canada's resources as well as the impact of globalization. History explores Canada's story beginning in 1900, but does have some outcomes directly tied to Indigenous people, including contributions to WWI, but also specifically related to this inquiry such as:

- 7.1 Aboriginal rights: Legislation, women's rights, land claims, self-government (p. 108)
- 7.5 International issues: Peacekeeping, terrorism, environmental issues, humanitarian issues, any other contemporary issues (p. 116)

The Grade 11 unit Canadian Economy focuses on fundamental economic and environmental concepts and offers outcomes that could be linked to Indigenous environmental topics with expectations. For example, a teacher could consider the United Nations' Declaration on the Rights of Indigenous People (2007) in light of:

- 5.2.5 Evaluate the effectiveness of international agreements intended to promote sustainability, e.g., Kyoto Protocol, 1987 Bruntland Report, and United Nations Convention on the Law of the Sea (UNCLOS) (p. 80)

The Law curriculum for Grade 11 mentions Aboriginal people and the law and Newfoundland and Labrador (NFLD) Studies explores culture and local and regional histories with some content related to First Nations and Inuit people, while World Geography in Grade 12 continues the exploration of the relationship between humans and natural systems but also looks at world climate patterns and ecosystems. A unit on economic geography centres on resources including oil, gas, farming, and forests as well as manufacturing. While there is little mention of green industries, the environmental issues related to the previous industries is mentioned. World History in Grade 12 does not explore content related to Indigenous environmental topics.

References

Council of Atlantic Ministers of Education and Training (2015). *The Atlantic Canada framework for essential graduation competencies*. Retrieved from http://www.ednet.ns.ca/files/curriculum/atlantic_canada_essential_grad_competencies.pdf

Council of Ministers of Education of Canada (1997). *Pan-Canadian science framework*. Retrieved from <https://ia800508.us.archive.org/17/items/commonframework00coun/1996330.pdf>

Jickling, B. (1992). Why I don't want my children to be educated for sustainable development. *Journal of Environmental Education*, 23(4), 5-8.

Newfoundland and Labrador Department of Education and Early Childhood Development (2017). *Curriculum guides*. Retrieved from <http://www.ed.gov.nl.ca/edu/k12/curriculum/guides/>

United Nations (2007). *United Nations' declaration on the rights of Indigenous peoples*. Retrieved from http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

Western and Northern Canadian Protocol for Collaboration in Education (1993). *Western and northern Canadian protocol (WNCP) for collaboration in (Kindergarten to Grade 12) education*. Retrieved from <https://www.wncp.ca/media/49521/protocol.pdf>

New Brunswick

New Brunswick follows a similar curricular structure to the other Atlantic provinces' foundational documents which includes the Essential Graduation Learning outcomes. The Science curriculum in general, which derives from the Pan-Canadian Science Curriculum document, and the Citizenship strand in Social Studies also offer many possible points of connection to sociocritical environmental topics. For example, the front matter of the Science outcomes include references to teachers including diverse cultural perspectives as a suggested method for teaching and learning. However, there are a limited number of outcomes that are explicitly linked to Indigenous cultures and knowledge systems. Promising elective courses also exist that could be tailored to focus on Indigenous cultures and critical environmental issues, however they may not be offered as part of a students' program as they are often considered optional or complimentary. Please see below for more detailed discussion of these and other curricular areas.

English

Within the Kindergarten – Grade 3 English (1998) curriculum documents there are suggested activities linked with specific learning outcomes related to Indigenous cultures such as the use of a talking journal (talking circle) that may employ a talking stick, acknowledging first languages, and inviting family members into the class from diverse backgrounds. These moments could indicate to teachers that incorporating Indigenous knowledge systems and practices ought to become part of the learning experiences of all children. There also seems to be amenability towards using texts that reflect cultural diversity, some outcomes have students exploring how language is used, and explorations into biases and stereotypes are encouraged. While there are not explicit connections to critical Indigenous environmental topics, teachers could tie some of the outcomes to local and regional issues. These general themes continue in Grades 4-6 with further encouragement to develop a deeper understanding of how language is used to shape narratives—another thread that could be employed in exploring Indigenous topics. The following outcome of note from Grades 4-6 connects to this inquiry:

- SCO#3 Identify examples of prejudice, stereotyping, or bias in oral language; recognize their negative effect on individuals and cultures; and attempt to use language that shows respect for all people (p. 58)

Grades 7-8 also look at language, interactions with each other, and how bias is shaped through language. High school English curricula also offer space to connect with Indigenous environmental topics but there are no direct outcomes of note. Inquiry projects are encouraged that offer flexibility for teachers and students to explore and deepen their understanding of local and regional issues.

Math

New Brunswick's Math curricula range in date of publication between 2008 and 2013 and offer teachers and students multiple opportunities to explore Indigenous environmental issues. For example, the use of data within the statistics and probability strand beginning in

Grade 1. More layers are added in Grade 2 with patterns and relations and shape and space strands wherein teachers could link meanings of equality and inequality with the impact of globalization on the environment and Indigenous communities as well as studying, for example, maps that show pipelines and other transportation methods of resources. Similar opportunities continue through to Grade 9 with more specific outcomes that could also provide interesting cross-curricular connections with English such as:

- SCO: SP1 Describe the effect of the following on data collection: Bias, use of language, ethics, cost, time and timing, privacy, cultural sensitivity (p. 87)

Students in Grade 9 also must develop and implement a plan to collect data that presents an opportunity for engagement with Indigenous environmental topics. High school Math courses are streamed—some classes such as Financial and Workplace Math provide opportunities to connect to “real world” experiences which could be linked to the project such as continuing to use data related to environmental monitoring and maps of pipelines that cross Indigenous territories. The high school Math outcomes do not explicitly relate to Indigenous environmental issues, however a research project could be developed to link to Indigenous environmental content. However, as the curriculum is quite dense and prescriptive, flexibility seems somewhat restricted.

Science

New Brunswick’s Science curricula have an expansive range of publication dates between 1998 and 2012 and are organized as unit plans with assessment and teaching strategies. The Kindergarten to Grade 2 curricula include opportunities to engage with Indigenous environmental topics within the Environment; Community; and the Change and the Physical Environment units. One specific outcome of note in Grade 1 looks at Aboriginal people’s relationships with place over time (see below). Grades 3-12 have all outcomes listed in one document, with separate documents providing more in-depth resources. Within the Science, Technology, Society, and Environment (STSE) outcomes there are explicit connections to caring for the environment, how humans impact the environment, advantages and disadvantages of sustainability, as well as diversity. There are also independent inquiry projects in each grade that students could use to learn about Indigenous environmental issues.

High school Science is divided into speciality areas. Physics and Chemistry do not offer any connections to Indigenous environmental topics. However, Biology in Grade 11 offers a unit on biodiversity which encourages students to explain how ecosystems are related to sustainability as well as the impact human behaviour has on the environment. Two high school courses, Introduction to Environmental Science 120 and Physical Geography 110, have clear connections to Indigenous environmental topics. For example, the Introduction to Environmental Science unit in Environmental Science 120 includes a student project that again allows students an opportunity to learn about critical Indigenous environmental issues.

Social Studies

New Brunswick’s Social Studies curricula also span a wide publication range from 1993-2012 with outcomes for all grade levels contained within one summary program of studies document. Optional high school courses are provided separately from the main program of

studies. Social Studies centres on four strands including Citizenship, Power, and Governance, People, Place, and Environment, Culture and Diversity, and Interdependence. Within these areas across each grade there are spaces for teachers to look at critical Indigenous environmental topics specifically in the People, Place, and Environment strand:

- Key Stage Curriculum Outcomes: People Place, and Environment: Analyse ways in which social, political, economic, and cultural systems develop in response to the physical environment (by the end of grade 9) (p. 25)
- Key Stage Curriculum Outcomes: People Place, and Environment: Evaluate the role of perspective, power, and authority in the use of and development of policies to manage Earth's resource (by the end of grade 12) (p. 25)

Through mandating that teachers consider the socioecological dynamics described above, New Brunswick's Social Studies curriculum provides a strong prompt for critical engagement with Indigenous environmental issues. Additional high school courses of interest include Canadian Geography 120, Canadian History 122, Modern History 111/112/113, Law 120, Economics 120, Native Studies 120, Political Science 120, Ancient Medieval History 120, and World Issues 120. Law 120, in particular, has sections relating to environmental law and Aboriginal peoples and the law. Other notable key outcomes such as consideration of the impact of the Indian Act on the rights of Aboriginal people, and how current laws work to support sustainability. Native Studies is another course of note that provides a strong focus on Indigenous cultures in New Brunswick.

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Nova Scotia

Nova Scotia's Curriculum offers a socially progressive and streamlined approach that presents teachers with a broad overview of curricular progression between grades, enabling them to easily assess not only see what students have learned in learned in past grades, but also what is forthcoming in future years. There are similarities with the other Atlantic provinces such as the use of Essential Graduation Learnings and common strands in Math and English with respect to scope and sequence (for example: statistics, data, reading, listening, writing). However, other courses offered in Nova Scotia delve deeper into cultural roots, history, and environmental topics. For example, the Health curriculum includes an outcome related to environmental sustainability. A social justice narrative is evident across Nova Scotia's curricula—from language classes in Mi'kmaq and Gaelic, to African Canadian Studies courses, and a focus on topics such as colonization, treaty education, racism, social stratification, and even mental health as studied in Biology.

English

The curricular documents for English that were reviewed are from 2015-2016 and are grouped into Kindergarten-Grade 3, Grades 4-6, 7-9, and 10-12. Each grouping follows general strands that are consistent with the other Atlantic provinces and the specific outcomes do allow flexibility for teachers to engage with learning related to critical Indigenous environmental topics. As the grades progress, a critical lens takes shape with outcomes that question racial equity and cultural context in media and communication that could be connected to this area of inquiry such as:

- 7.1 Recognize that print and media texts can be biased and become aware of some of the ways that information is organized and structured to suit a particular point of view (p. 6)
- 7.7 Demonstrate an awareness that texts reveal and produce ideologies, identities, and positions (p. 10)
- 7.8 Evaluate ways in which both genders and various cultures and socio-economic groups are portrayed in media text (p. 10)

All English grades also offer students and teachers flexibility to explore their own texts. While there are no explicit outcomes related to Indigenous environmental topics, the curriculum is flexible and approached through a social justice lens that could easily be tied to related themes.

Math

Nova Scotia's Math curriculum is formatted similarly to English with respect to grade groupings and overviews, it also follows similar general strands to the other Atlantic provinces. Within the Statistics and Probability strand students are required to work with data, creating the opportunity to engage with environmental data that highlights issues faced by Indigenous people. Other than that, there are limited opportunities elsewhere across the grades to make strong connections to Indigenous environmental topics except for one outcome in Math 11:

- M01.01 Students will be expected to solve problems that involve the application rates; Interpret rates in a given context such as the arts, commerce, the environment, medicine, or recreation (p. 143)

Science

Nova Scotia's Science curricula are also quite recent (released in 2015) and present a global and holistic view of science. However, although there is some Indigenous content apparent within the outcomes, this seems to disperse as the grades progress. Within the elementary K-8 curriculum, students explore diversity and ecosystems as well as relationships between living things and the environment. Grade 4 has one outcome in particular related to Indigenous environmental themes:

- Outcome 2: Students will investigate the interrelatedness among animals, plants, and the environment in local habitats: Investigate and compare local habitats and their associated populations of plants and animals, inclusive of Aboriginal perspectives; describe how human actions and natural phenomena can change and/or conserve the environments of habitats, inclusive of Aboriginal perspectives (p.1)

Moving into more senior years, students in Grade 7 are required to consider major events in the earth's history and are expected to consider:

- Ecological Succession: Action. Defend a proposal to protect a habitat and provide examples of various issues that can be addressed in multiple ways (113-11, 211-5, 113-1) (p. 31)
- Ecological Succession: Action. Research individuals/groups in Canada that focus on the environment, using various print and electronic sources. (112-4, 112-8, 209-5) (p. 31)

High school courses are divided into more specialized areas with little room or flexibility for content related to critical Indigenous environmental topics in certain subjects such as Chemistry and Physics. However, Grade 10 Science does have a unit called "Life Science: Sustainability of Ecosystems" which offers many potential connections to Indigenous environmental issues that could be used to build upon the previous outcomes identified in Grade 7. Grade 11 Biology also has units such as "Biodiversity" and "Interactions Among Living Things" which offer some flexibility that could be amenable to considering sociocritical environmental topics.

Social Studies

In keeping with the same themes as the other Atlantic provinces, the Social Studies program in Nova Scotia is built around general strands such as Individuals, Societies, and Economic Decisions; People, Place and Environment; and Culture and Diversity. The Social Studies program follows a similar format to the other subjects and was quite recently updated (2015-2016). It is very inclusive of Indigenous perspectives with a social justice theme throughout. The curriculum explores treaty education, racism, and human interactions with the

environment which all offer inviting opportunities for teachers to engage with critical Indigenous topics. Beginning in Kindergarten, Nova Scotia students learn about treaties and this continues up to Grade 3. Notes to the teachers within the outcomes demonstrate a careful consideration of the Indigenous cultures of students for example:

- Outcome 2: Students will take age-appropriate action to practice responsible behaviour in caring for the environment: ask questions to gain information about the need to protect the environment, discuss responsible behaviour and caring for the environment [Teacher note: Be mindful of Mi'kmaw beliefs and practices in relation to the environment], engage in a practice(s) that can help to solve problems and promote environmental sustainability in their community (p. 1)

Connections to the Land and sustainability run throughout Nova Scotia's curriculum, including the requirement that students identify a sustainable topic/issue in Grade 2 and the impact of a resource exploration in Grade 4. Students in Grade 5 begin to look at relationships during colonization between settlers and Indigenous people and in Grade 6 students examine different sustainability practices as well as human rights issues. Grades 7, 8, and 9 look at Canadian identity and connections between humans and natural resources.

Nova Scotia's high school Social Studies program is divided into Geography and History with regional, national, and global perspectives at various grade levels. Geography 10 looks into the complexities of the earth and provides several opportunities for teachers to connect to critical Indigenous environmental topics such as:

- 7.5 Use climatic data to identify major climatic zones of the world (p. 28)
- 8.2 Demonstrate an understanding that humanity is part of the planet's physical-biological web, and that sustainability is dependent upon wise planet management systems and global co-operation (p. 28)

Grade 10 History has no direct connections to the themes of this inquiry; however, Grade 11 Canadian History looks at economic systems in Indigenous societies and their relationships with colonization. Students also look at the struggles of Indigenous peoples in attempting to regain sovereign rights along with Indigenous contributions to the legal system in Canada. One important outcome that provides an interesting connection to Indigenous environmental topics points to the relationship between land and culture:

- J2 Demonstrate an understanding of the relationship between land and culture and analyze the effects of displacement (p. 94)

Students also learn about pre-and post-contact Indigenous democracies and how each culture had their own social structure at the time of colonization.

Geography of Canada 11 looks focuses on resource development as well as connections between cultures and physical features of Canada. A notable outcome within this course that we only found in Nova Scotia is:

- 7.3 Demonstrate an understanding of the issue of environmental racism (p. 136)

Two courses within the Social Studies subject area: Global History and Global Geography in Grade 12 continue similar themes but on a larger scale as in both courses, students are expected to conduct a research project that could be used to look at critical Indigenous environmental issues through the specific outcome:

- 6.2 Investigate the extent to which the environment has been/is affected by cultural attitudes and practice (p. 256)

And within the Global History course:

- 4.2 Investigate a global event that has raised fundamental questions of justice (p. 259)
- 5.5 Illustrate the interdependence of societal change, justice, economic disparity, and geo-political power (p. 259)

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Prince Edward Island

Prince Edward Island (PEI) follows similar structure and format as the other Atlantic provinces with the high school English curriculum resembling Nova Scotia's structure. Within Math, the Western and Northern Canadian Protocol is referenced as are connections to Education for Sustainable Development within the Pan-Canadian Science Learning outcomes.

English

PEI's English curricula have broad publication dates ranging from 1996-2015, perhaps due to ongoing curriculum redesign, with the newer curricula found in high school; these documents resemble in structure that of Nova Scotia's program of studies. With respect to outcomes tied to critical Indigenous environmental topics, there are no explicit outcomes however there are some spaces where teachers could utilize the openness of the English outcomes to do so, as well as within the ability to incorporate a variety of texts. The older grades begin to look at language and its' influence and Grades 7 and 8 have an outcome that teachers could tie to the project:

- SCO 3.3 Recognize that spoken language reveals values and attitudes such as bias, beliefs, and prejudice, and understand how language is used to influence and manipulate (p. 153)

As well in Grades 7, 8, and 9:

- SCO 4.1 Select texts that address their learning needs and range of special interests (p. 154)

Exploring how language is used to influence thought is a theme that runs throughout and Prince Edward Island's English curriculum also considers how power contributes to this influence and the role of bias in the media. Students are also required to engage in research processes which could assist them in considering Indigenous environmental topics.

PEI's high school English curricular documents demonstrate a shift—the previous documents were incredibly extensive, some over 450 pages. The recent high school curricula also shift to more inquiry based approaches but continue to question how language is used to shape perceptions. A few outcomes that could be connected with the present inquiry:

- SCO 6 Evaluate how identity and culture are portrayed in texts (p. 14)
- SCO 2 Create a defense for a critical audience (p. 14)
- SCO 6 Evaluate how gender and SES are portrayed in a variety of texts (p. 14)
- SCO 6 Evaluate how ideologies are portrayed in a variety of texts (p. 14)

Math

The publication dates of PEI's Math curricula range from 2009 – 2015 and follow similar structure to the other Atlantic provinces with respect to the strands, scope, and sequence. For example, the Statistics and Probability strand with outcomes related to data could tie to

sociocritical environmental issues by using environmental data as well as looking at maps of how resources are transported across Canada. In Grade 8, the following outcome within the Statistics and Probability strand approaches data from a critical lens:

- SP1 Critique ways in which data is presented (p. 56)

And in Grade 9:

- SP1 Describe the effect of: bias, use of language; ethics; cost; time and timing; privacy; cultural sensitivity on the collection of data (p. 62)

Students also need to engage in the research process and students could not only cross-circularly connect this to English, but they could explore environmental data and local Indigenous topics related to the environment.

PEI's high school Math program is streamed into different ability levels and, while there are no explicit outcomes that connect to this inquiry, there are some math courses (521A, 531A, 521E, 621A) that present the opportunity to use data related to the environment as well as a research project centred on a historical math event.

Science

PEI's Science curricular documents range between 2005 and 2012 follow similar structure as the other Atlantic provinces. Also of note is that Grade 7 and 8 documents were not available for review as they were under revision at the time of this inquiry. The front matter of the Science curriculum encourages teachers to work across curricular boundaries with other subjects to enhance student achievement. The documents also include cross-curricular connections to support such efforts. The outcomes for Science are also tied explicitly to specific textbooks. The general outcomes align with each Atlantic province with the Science, Technology, Society, and the Environment strand, which provides a means for teachers to look at Indigenous environmental topics.

The elementary grades, K-3, begin exploring the Earth and its diversity as well as relationships between Earth and humans. In Grade 2 a general outcome relates to this inquiry:

- Protecting our water sources (p. 35)

This outcome offers an opportunity to look at Indigenous environmental topics specifically, however, opportunities exist throughout the Science program for teachers to tie outcomes to the topics of this inquiry. In grade 5, there is perhaps an explicit linkage however the context of the lexicon use in the outcome may cause tension between the understanding of what constitutes folklore as, if Indigenous knowledge is considered folklore then this outcome could be used to incorporate Indigenous knowledge:

- Identify and use weather-related folklore to predict weather (105-2) (p. 59)

Also in Grade 5, a general outcome related to environmental issues opens up space for teachers to dive deeply into critical topics:

- Describe how studies of the depletion of the ozone layer, global warming and the increase in acid rain have led to new inventions and stricter regulations on emissions from cars, factories, and other polluting technologies (106-4) (p. 72)

High school Science splits into more specializations with no explicit connections to Indigenous environmental topics within Chemistry or Physics. Reflective perhaps of the province's economic industries, the high school Science curriculum includes elective courses in Animal Science and Agri-Science. Agri-Science courses require students to analyse the intersections of environment, social and economic significance of agriculture as well as the impact of agriculture on sustainability which could allow teachers to link to Indigenous environmental topics. Animal science courses focus on the intersections of the environment with social and economic development in Prince Edward Island, including an outcome that requires students to debate the concept of sustainability within an agricultural context.

Life Sciences and general Grade 10 Science (431A) explore the sustainability of ecosystems, encourage students to engage with the research process, and examine environmental issues as well as how shifts in thinking can influence understandings of sustainability. Within Biology 521A, students can engage in the research process by looking at content related to matter and energy for life that could link to Indigenous environmental topics which could continue in Biology 621A with a focus on maintaining a dynamic equilibrium. Environmental Science 621A is a project based learning course that brings in the concept of looking at an environmental issue through working through the research process. Topics within this course include an "Introduction to Environmental Science", "Ecological Principles", "Human Population and Carrying Capacity", "Natural Resources", "Environmental Challenges and Successes", and "Energy Resources", which includes an anecdote that this last unit is compulsory to the course. The "Environmental Challenges and Successes" unit offers a strong connection to this inquiry.

Social Studies

PEI's Social Studies curricula ranges in publication date from 2006-2015 with similar structure to the other Atlantic provinces. Within the front matter, there is explicit mention of this curriculum being learner-centred, skills, and issues-based. There is also a notation that items marked with a heart symbol are sensitive topics and teachers ought to be observant of the needs of their students when teaching these topics. Each grade between Kindergarten – Grade 9 has an overarching theme that then breaks into smaller strands. Some themes do not align with this project but there are many that do.

Grade 1's primary theme is Interactions and within the Environment unit teachers can draw connections to Indigenous environmental topics as well as within the space and time unit, specifically:

- 1.3.3 Demonstrate an understanding that Aboriginal peoples' relationship with place has changed over time (p. 24)

Grade 2's primary theme is "Change" and also within the Environment unit teachers can use the following outcomes to bring in content related to this project:

- 2.4.1 Explain how and why physical environments change over time (p. 24)
- 2.4.2 Describe how people's interactions with their environment have changed over time (p. 24)
- 2.4.3 Demonstrate an understanding of sustainable development and its importance to our future (p. 24)

Grade 3 examines the provincial identity and Grade 4 examines geographic exploration. Neither grade has any explicit outcomes related to Indigenous people however, there are references to diverse people and culture. Grade 5's theme is societies and Indigenous people are explored within the theme of past societies as well as in decision making and interactions. An outcome within the environment unit can be tied to this project if Indigenous people are regarded as a past society:

- 6.7.2 Demonstrate and understanding of a significant event in PEI history (p. 28)

Grade 6 examines the history of Prince Edward Island and world cultures with an outcome that teachers can tie to this project within the unit of Culture and Culmination:

- 6.7.2 Demonstrate and understanding of a significant event in PEI history (p. 28)

And also within the World Issues unit:

- 6.3.2 Examine selected examples of human rights issues around the world (p. 30)

Grade 7 focuses on individual empowerment and includes Indigenous references throughout the course with one outcome within the economic empowerment unit that could be tied directly to this project:

- 7.2.1 Examine the importance of land and natural resources as economic commodities in Canada's history (p. 22)

Other units include Political Empowerment and Cultural Empowerment and within those the Red River Resistance is examined as is how Indigenous people have been disempowered as well as the importance for ethnic groups to retain their cultural and linguistic identities. Grade 9's theme is interdependence and as well as exploring citizenship and human rights, it also looks at the environment in the global community with an outcome that ties to this project:

- 9.4.2 Analyse factors that contribute to environmental issue (p. 89)
- 9.4.3 Investigate a current environmental issue using an inquiry process (p. 93)

The Social Studies program in high school branches out into a few specialized areas including Geography, History, Economics, and Law. Canadian Geography 401A looks at:

- 10-1-4 Aboriginal settlement patterns, past and present, across Canada using physical and climatic factor (p. 28)
- 10-2-4 Plan and carry out historical research of a local nature (p. 29)

These outcomes could be explored more deeply to align with this project as well as bring up the impacts of colonization and environmental racism on Indigenous people. Geography 531A, within the world geography context, includes content related to renewable resources, including water, and how over time natural resources have changed over time including their value, distribution, and management. Factors that influence climate regions are also a part of this course and students need to:

- 3.6 Engage in an active citizenship project initiative as a part of a group or class (p. 27)

Geography 621A and 631A cover sustainability within the global community context as well as active citizenship where students again will conduct a research project and this can tie to the current events focus that also explores sustainability and environmental issues. Law 521A and 531A both have Indigenous content related to legislations and the impact of governmental power on Indigenous people. History 621A examines colonization and has a few outcomes that can be tied to this project:

- J2 Demonstrate an understanding of the relationship between land and culture and analyse the effects of displacement (p. 17)
- GL2 Analyse the effects of contact and subsequent colonization (p. 15)

Geography 621B looks at land and resources, as well as the impact of globalization, and includes outcomes related to this inquiry:

- 1.3 Analyse the impact of various factors on the Island's natural resources and environment (p. 24)
- 1.4 Analyse the impact of a past economic development initiative involving a natural resource (p. 24)

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Central Provinces

For the purposes of this inquiry, we chose to include Quebec and Ontario within the Central Provinces.

Quebec

Quebec's English-language curriculum is competency based and, instead of grade levels, they have cycles through which students progress, with pathways that are more streamed at the secondary level. The flexibility within this competency based curriculum offers teachers room to incorporate content that aligns with this inquiry. The front matter also encourages teachers to deliver authentic learning experiences with a focus on environmental awareness. Most curriculum documents were recently published with 2016 being a common release date.

Quebec's English-language curriculum was the primary source reviewed for this inquiry along with some comparison conducted with the French-language version. Further study of and comparison with the French-language curriculum would be beneficial as would consideration of CEGEP curricula and/ or initiatives in consultation with regional experts.

English (Language Arts)

Quebec's English Language Arts curriculum is embedded within a broader Languages stream that includes French language study and instruction for second language learners; the English guidelines are balanced between specific and open-ended expectations with flexibility for teachers to facilitate authentic learning opportunities. The skills and competencies are specific such as reading, listening, writing, and expressing ideas. Significant flexibility appears with respect to the topics and contexts within which students learn. Notably referencing the critical work of Paulo Freire in the preamble of the English Language Arts curriculum (p. 72), students are encouraged to examine how their views and perspectives are shaped by the media as well as how they express their ideas as producers of media. Language is also examined with respect to how students use it to interact with others and with their communities. Teachers are encouraged to use a variety of texts as well as to engage students with action research to engage in their learning. The English Language Arts curriculum is not a literal translation from its French language counterpart and, while similarities do exist, certain details such as the lack of an explicit reference to Paulo Freire in the French language version are intriguing. An emphasis on language as a vehicle for expanding students' understanding of the world around them is, however, still evident.

As the cycles progress from primary to secondary (similar to elementary and early high school levels), the English curriculum is further identified as a critical literacy program and it ties together the previous cycles to promote lifelong learning. Students also have the opportunity to engage with an independent study, building on their time learning action research process. While there are no explicit curricular connections, the openness of the context for learning and critical literacy focus, teachers could tie teaching English towards authentically engaging in understanding Indigenous environmental topics.

Math

Competency based and following the cycle progression (not grades), the Math curriculum is embedded within a broader umbrella of Mathematics, Science and Technology; it also leaves a balance between focus on skills and an openness and flexibility within particular contexts to develop the skills. The documents are condensed, leaving a teacher the opportunity to visually see the past competencies students have developed to what they are working towards. Additionally, throughout the documents, there are cross-curricular opportunities for teachers to collaborate with others. Within the front matter of Mathematics, Science and Technology in both the English and French versions, there are considerations for the health and well-being of students as well as encouragement to help students to develop environmental awareness. Specific outcomes are not explicitly linked to this inquiry but teachers seem to have room to embed content that could be relevant.

Science

Cycle One in Science has content related to the environment specific to plant growth, animal adaptations to the environment, and consumption of living things and the context for learning is flexible for teachers. Cycles 2 and 3 in both English and French contain references to the importance of acknowledging cultural and historical contexts in shaping societal values with regards to science and technology which could be a place for teachers to link to content related to this project. Additionally, within the strategies and data area, teachers could employ community-based environmental data that could generate learning related Indigenous environmental topics. High school cycles build on the elementary cycles but also incorporate more connections to environmental protection, hunting and fishing, climate change and deforestation, as well as energy production.

Secondary Science is divided into some specialty areas but remains competency focused. The Science and Technology stream offers strong possible connections to this inquiry by way of looking at the history of life on Earth, climate change, the energy challenge of humankind, deforestation, ecology, climate zones, drinking water, and community resource and environmental groups. A Science and Environment stream also provides general possibilities for connection to this inquiry while Chemistry and Physics do not offer any obvious explicit connections to Indigenous environmental topics beyond, for example, consider soil chemistry in relation to an environmental issue.

Social Studies

Quebec's primary and middle school Social Studies (also broadly described as Social Sciences) curricula are contained in one document with high school presented separately. Social Studies also revolves around geography, history, and citizenship with competencies focused on organization, change, and diversity. Quebec's Social Studies curriculum appears to have a research focus as viewed through an academic lens. The competency nature of the curriculum again leaves flexibility for teachers to provide authentic learning experiences for students and engage in current events that have deep roots in our cultures. Indigenous people are mentioned in Cycles 2 and 3 in the elementary levels, specifically the Iroquois, Algonquin, and Inca nations through the era between 1500-1700 within the context of societies. In Cycle 3, students also

study the Inuit and Mi'kmaq as well as colonization, and the assets and limitations of land. There is also a research project.

Cycle 1 in high school looks at human action and social change, including the relationship between humans and the Land. Competency 2 (p. 269) focuses on territorial issues and could be connected to the themes of this inquiry by way of looking at a local Indigenous environmental topic. There are also other places that relate to this project including looking at Indigenous territories, cultural references for landmarks, exploration of forests, global warming, environmental risks, and protected territories. Cycle 2 narrows towards citizenship and history, however there also remains flexibility to tie into this inquiry. For example, a research project into an historical event could be used for students to consider historical Indigenous Environmental Activism.

While we recognize that curricular documents are often evolving, the use of language within curriculum documents has been shown to teach children how language can be used to express ideas, therefore a need to speak to some language used within this subject is necessary. Throughout the English-language Quebec documents, Indigenous people and their territories are referred to by terms that are considered by many to be outdated and offensive such as “the Natives” and “the Native world” (e.g. See p.196 in the elementary curriculum). Interestingly, the term “Autochtones”, which is currently preferred as the French equivalent of “Indigenous”, is employed in the French-language documents (e.g. See p. 181 in the French version of the elementary curriculum).

Additionally, one of the competencies within the Contemporary World supplement for Cycle 2 related to population and settlement studies states:

- From the Native [sic] world around 1500 to present, the designated focus is thus the effects of natural population change and migration on the formation of the population and settlement of the territory. (p. 67)

In the preamble for this competency, the document references the relative decrease in Indigenous populations however, it does not mention the various impacts of colonization as possible causes. Rather, it takes a colonist view and considers settlement and natural growth as well as immigration of Settler populations as primary factors. In addition, the language within this outcome seems to suggest that the first occupants of Quebec appeared around 1500, despite a contradictory statement (p. 36) in Cycle 2's History and Citizenship Education Program suggesting that Indigenous peoples came to North America via the Bering Strait approximately 30 000 years ago. Comparable contradictory narratives are also presented in the French language versions.

The Canadian History stream examines historical turning points and social phenomena, but within a European and American context.

As noted, further comparative investigation into Quebec's French and English curricula would be illuminating.

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Ontario

Ontario's curriculum documents are detailed and extensive. They also have similarities with the other provinces with respect to strands taught in English and Math as well as the use of the Pan-Canadian Science outcomes. The Social Studies curriculum offers many different specialty areas that cover a wide variety of topics. There are many spaces for teachers to introduce content related to Indigenous environmental topics through both general and specific outcomes that relate or could relate to environmental education and Indigenous cultures.

English

Ontario's English curriculum has a publication date range from 2006-2007 and is a spiraled to encourage teachers to build on previous outcomes. Similar to English curricula in other regions, there are strong foci on reading, writing, and oral communication, with an additional strand for media literacy. Even with no explicit connections to Indigenous environmental topics, teachers could use curricular outcomes within the context of a project, for example, as they explore how language is used for a variety of purposes. One general outcome that runs through the grade levels includes students using a variety of texts, which could allow teachers to bring in Indigenous authors with content related to this project. Within the media literacy strand, students explore how point of views and perspectives are expressed which could present an opportunity for teachers to look at how Indigenous environmental movements are portrayed in the media.

High school in Ontario typically begins in Grade 9 and English is streamed into ability levels at that point. In the front matter of the Grade 9 and 10 curriculum documents, anti-discrimination education is presented as part of a context within which teachers encourage students to think critically about the world around them as well as themselves and their role in society. The strands continue from elementary, however media literacy grows into media studies and reading becomes reading and literature studies. General outcomes are spread throughout concerning critical literacy, which again leaves flexibility for teachers to question perspectives and biases present in texts, language, and how beliefs, values, and identity are shaped. Ontario's English curriculum not only fosters learning within critical literacy but also with student self-reflection and their place in their communities.

Math

Ontario's Math curriculum documents range in publication date from 2005-2007 and contain anti-discrimination content in the front matter. There is also a note within the anti-discrimination section about gendered curriculum with respect to Mathematics that raises the notion of gender having an impact on learning. For example, teachers are encouraged to provide male students with literacy support in Math whereas female students may need to see female role models in the field. Therein also, teachers are encouraged to assist students in becoming more "sensitive" to diverse cultures, specifically Aboriginal people, and teachers are encouraged to use culturally authentic activities when teaching Math. While such gender and culture-related dynamics are certainly important to consider, we found ourselves uncomfortable with the reductionist underpinnings of such suggestions that apply broad generalizations to particular

groups of students that may actually result in further perpetuation of stereotypes and ignore individual strengths, challenges, and perspectives (St. Denis, 2007).

Ontario's Math curriculum documents are organized in grade groupings. Grades 1-8 could all be linked to Indigenous environmental topics through a Data Management and Probability strand by, for example, using environmental data related to a current event or controversy. Grades 9-10 are also grouped together however there is less opportunity to link to the themes of this inquiry. Grades 11-12 are linked; they also offer less opportunity for connections other than in Grade 12 courses using data management wherein teachers could again refer to environmental data, for example.

Science

Within the front matter of Ontario's Science curriculum, which has a publication date range of 2007-2008, themes such as anti-discrimination education, critical thinking, and environmental education provide opportunities for teachers to link to content related to Indigenous environmental topics. The curricular outcomes are structured around big ideas and fundamental concepts that then narrow in scope to each grade level. Each document is also organized into grade groupings: Grades 1-8, 9-10, and 11-12.

Elementary outcomes include content related to sustainability and stewardship in Grade 1, the relationship between humans, animals, and the environment in Grade 2 as well as air and water in the environment. Grade 3 addresses growth and changes in plants and soils and Grade 4 has outcomes related to habitats and communities that could all relate to this inquiry. Grade 5 contains a "Big Idea" on energy and conservation that looks at the effects of energy and resources on society and the environment. Grade 6 considers human impacts on biodiversity with an explicit outcome that ties to this inquiry:

- 1.1 Analyse a local issue related to biodiversity (e.g., the effects of human activities on urban biodiversity, flooding of traditional Aboriginal hunting and gathering areas as a result of dam construction). Taking different points of view into consideration (e.g., the points of view of members of the local community, business owners, people concerned about the environment, mine owners, local First Nations, Métis, Inuit), propose action that can be taken to preserve biodiversity, and act on the proposal (p. 113)

Also in Grade 6, the electricity unit has an outcome in which students must examine the short and long-term effects of electricity generation. Grade 7's big idea includes one that explores interactions with the environment and assesses the impacts of human activities and technologies including one explicit outcome:

- 3.9 Describe Aboriginal perspectives on sustainability and describe ways in which they can be used in habitat and wildlife management (p. 128)

Grade 8 looks at water systems and has an outcome that could be easily linked to Indigenous environmental topics:

- 1.2 Assess how various media sources (e.g., Canadian Geographic; the science section in newspapers; Internet websites; local, national, and international news on television and radio) address issues related to the impact of human activities on the long-term sustainability of local, national, or international water systems (p. 150)

High school streams into more specialty areas with few obvious connections to this inquiry within Chemistry and Physics, other than perhaps considering soil chemistry in relation to a contemporary pollution issue or similar. However, Biology offers more promising opportunities.

One Biology unit in Grade 9 Science looks at the impact of human activity on the environment and in Grade 10 Science the Earth and Space Science unit looks at climate change. Biology offers further space for connection to critical environmental topics in Grade 11 under Big Ideas such as the Diversity of Living Things; Evolution; and Plants, Anatomy, Growth and Function. Other Fundamental Concepts are emphasized in the front matter of Grade 11 Biology such as Sustainability and Stewardship as well as Change and Continuity. There is less explicit opportunity for connection in Grade 12 Biology, however the Fundamental Concepts of Sustainability and Stewardship as well as Change and Continuity still provide general opportunities for connection.

Ontario's Grade 12 Earth and Space Science course also provides opportunities for connection to this inquiry within the Earth's Geological History and Earth materials unit wherein students explore Earth's resources and the climate. Environmental Science courses in Grade 11 also offer numerous points of connection to this inquiry through some of the suggested units such as Science Solutions to Environmental Challenges, Human Health and Environment, Human Impact on the Environment, Energy conservation, and Natural Resource Science and Management. While there are no explicit outcomes in these courses, teachers could consider their own regional context to make connections with Indigenous environmental topics.

Social Studies

Ontario Social Studies curricula range in date of publication from 2013-2015 and are broken into Social Studies for Grades 1-6, History and Geography for Grades 7-8, then further specialty areas in high school under the more specific umbrellas of Social Sciences and Humanities, Canadian and World Studies, and Native Studies. Teachers may also wish to explore the development of their own unique courses through the Interdisciplinary Studies elective stream, which can allow for bridging with other disciplinary areas. The front matter of the curriculum includes many openings for teachers to connect with Indigenous environmental topics through a critical and social justice tone. Broader themes such as the role of mental health, connections to current events, encouragement of engagement with a local field study, environmental education, equity and inclusion, and critical thinking and literacy round out the front matter. Within the equity and inclusion section, there is specific mention of Indigenous cultures and using curriculum to dismantle stereotypes, and within the environmental education section students are encouraged to develop an action plan that encourages sustainability and stewardship.

Grade 1 looks at roles and responsibilities including treating the environment with respect. Grade 2 looks at local and global communities and diverse groups of people with an outcome that focuses on the importance of sustainability in peoples' relationships with their

communities. A suggested teaching strategy includes interviewing a local Elder who can speak to ancestral lands and how traditions and heritage are passed down. Grade 3 looks at communities between 1780 and 1850 after contact. There are multiple connections within several outcomes as well as connections to Indigenous and land-related concepts such as:

- A3 Understanding context: Identify some of the communities in Canada around the beginning of the nineteenth century, and describe their relationships to the land and to each other (p. 86)

Within this defined time period, the outcomes share a colonized story of Indigenous people after contact and, while there is some content that looks at the challenges Indigenous people faced, there is an avoidance of the impact of Indian Residential Schools (however, see below) and various forms of displacement on Indigenous people, for example within this outcome:

- A3.7 Describe how some different communities in Canada related to each other during this period, with a focus on whether the relationships were characterized by conflict or with cooperation (e.g., cooperation between First Nations and settler communities with respect to the sharing of medicines and technologies; intermarriage between First Nations women and European men; cooperative efforts to establish farms and villages; conflict as settlers impinged on First Nations lands; conflicts between different religious or ethnic groups) (p. 89)

In an age appropriate manner, teachers could still interpret outcomes such as the one above to critically explore the impact of colonization on Indigenous people as well as the effects still lingering today.

Grade 4 looks at social organization and relationships with the environment that existed between 3000 BCE and 1500 BCE around the world and students need to conduct an inquiry into issues associated with balancing human needs and wants as well as activities with the environment. Grade 5 includes characteristics of First Nations and European settler communities in New France up to 1713 from the perspectives of each group. There are connections to environmental and social issues within this context, and one particular outcome that could be connected to this inquiry:

- B1 Assess responses of governments in Canada to some significant issues, and develop plans of action for governments and citizens to address social and environmental issues (p. 112)

Grade 6 also has some Indigenous content within the context of historical and contemporary Canada and how diverse perspectives contribute to a Canadian identity. Within this grade there is a suggested cue for teaching:

- A3.4 What impact did the residential school experience have on First Nations families and communities (p. 122)

While not directly tied to this inquiry, this could be the beginning of a conversation that does tie into Indigenous environmental topics.

Grades 7 and 8 in Ontario mark a shift towards splitting Social Studies into Geography and History with a focus in History on social, political, economic, and legal changes in Canada between 1713 and 1850. Similar to Grade 6, there are Indigenous references throughout but the suggestions are not mandatory, only cues for teaching. In Grade 8 there are two references to Indian Residential Schools. Geography 7 and 8 look at the physical nature of the world, including sustainability as well as global settlement and inequalities. One outcome in Grade 7 ties directly to this project:

- B1.3 Assess the efforts of some groups, agencies, and/or organizations (e.g., the United Nations Environmental Programme; non-governmental organizations [NGO's] such as Friends of the Earth International, Rainforest Alliance, or the Nature Conservancy; indigenous groups; different national governments) in helping to preserve natural resources (p. 170)

As such, with this outcome, teachers have explicit license to look at critical Indigenous environmental issues. Grade 8 adopts more of a global focus, however teachers could still tie some outcomes to this inquiry if desired.

Grade 9 Geography has a focus on looking at the physical environment and human activities with a small scattering of Indigenous content spread throughout. General themes of sustainability of resources and communities offer connections to this inquiry as does this specific outcome:

- E2 Impacts of land use: Analyse impacts of land use in Canada on communities and the natural environment (p. 89)

Grade 10 History focuses on historical and political events beginning in 1914. There is some Indigenous content spread throughout both ability streams (Academic and Applied), including references to Residential Schools that could be tied to this inquiry. Outcomes of particular note include:

- D3.3 Explain some significant events, developments, and/or issues that affected First Nations, Inuit, and/or Métis people in Canada during this time period (p. 120)
- E1.1 Describe various social and cultural trends and developments in Canada since 1982 (p. 122)
- E1.1 Identify some key developments and issues that have affected the relationship between the federal/provincial governments and First Nations, Métis, and Inuit peoples since 1982 (e.g., changes in immigration; an increasingly multicultural society; continuing movement from rural to urban areas; the growth of social advocacy groups, including environmental and human rights groups), and assess their significance for the lives of different people in Canada (p. 138)

An interesting note regarding the two levels of ability groupings in Grade 10 History is that the Academic stream has less caveats to teaching within the context of this inquiry than does the less Applied stream. Additionally, there seems to be more content related to Indigenous culture in the non-academic stream.

The curricular documents for Grade 11 and 12 Social Studies (under the umbrella of Canadian and World Studies) in Ontario are approximately 600 pages in total as there is an expansive program including specific subjects such as Economics, Geography, History, Law, and Politics with further streaming in foci and ability levels (College/ University preparation vs. Workplace). Geography 11 considers sustainability and stewardship of natural resources as well as issues associated with relationships between governmental organizations and agreements related to climate change and the rights of Indigenous people. Economics 11 includes an outcome that relates specifically to this inquiry:

- E1.2 Analyse how First Nations, Métis, and/or Inuit people have responded to issues related to scarce resources (e.g., with reference to land claims, fishing rights, resource development on and/or environmental degradation of Aboriginal land), and explain similarities and differences between their responses and those of other groups in Canada, including government (p. 88)

Forces of Nature 11 (University/ College preparation), a course that falls under the Grade 11 Geography umbrella, connects well to this inquiry through introducing topics such as the impacts of climate change globally and within students' local communities. Additionally, this course looks at environmental concerns in tourism and how to protect spaces and species. Outcomes of particular note include:

- B2.1 Analyse differences in views that various groups of people, including indigenous peoples, hold about the natural environment (p. 234)
- E1.3 Analyse a local, national, or global environmental issue and a range of possible solutions, and create an action plan to address the issue (p. 241)

Another course of note, American History 11 (University preparation), explicitly begins at pre-contact to present and compares the views of Indigenous people and the United States prior to European contact. The course also looks at challenges and opportunities presented between views with respect to the environment and reform movements through different eras including 1791-1867 and 1945 and onwards. A selection of World History courses in Grade 11 have limited explicit connections to this inquiry, but one course (CHT30-Since 1900) mentions social movements, including environmental and Aboriginal movements:

- D3.3 Describe some of the main social movements in two or more regions of the world during this period (e.g., civil rights, feminist, peace, environmental, Aboriginal, anticolonial movements), and assess their significance (p. 364)

Grade 12 Forces of Nature (University/ College preparation) also has one outcome that ties to this inquiry:

- C1.3 Analyse the influence of the values and beliefs of individuals and groups (e.g., environmental non-governmental organizations [NGO's]; business advocacy groups; First Nations, Inuit, and Métis people) in shaping public opinion about environmental sustainability (p. 212)

World Geography 12 (University/ College preparation) includes content related to students exploring their role in sustainability and different points of view on local issues. World Issues 12 also draws on sustainability through an environmental stewardship focus as well as looking at human rights violations. Living in a Sustainable World 12 (Workplace preparation) also looks at environmental stewardship and how organizations work to protect the environment. Canada: History, Identity, and Culture 12 (University preparation), has some Indigenous content regarding the interactions between Indigenous people and the government with a stated focus on positive changes and unresolved conflicts. Here teachers could look at Indigenous environmental issues within the time-period of origins to 1774 with less of a focus on current events, but more on the extent of some of the lingering impacts of early colonization, for example. World History since the Fifteenth Century 12 (University/ College preparation), looks at the impact of exploration and the relationship between colonizers and colonized Indigenous peoples including the loss of land, assimilation, loss of traditional culture and the social and environmental impact of exploitation of colonial resources and resistance to colonial practices.

Of further note are several courses in Law, which do have relevance to this inquiry including opportunities to consider legislation related to Indigenous rights. Racial profiling and the 60s Scoop are also discussed as are environmental protection laws. As previously mentioned, courses under the Native Studies umbrella also contain extensive opportunities to connect to Indigenous environmental topics. Other courses were also reviewed but did not provide strong connections to this inquiry.

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Western Provinces

For the purposes of this inquiry, we identified the Western Provinces as Manitoba, Saskatchewan, Alberta, and British Columbia.

Manitoba

Manitoba's curriculum documents seem somewhat unique from the other provinces and territories with numerous outcomes not found in other jurisdictions. The Social Studies curriculum in particular stood out in this review as the curricula is very robust and filled with outcomes related to sustainability, climate change, and Indigenous knowledge. In addition, the language used often implies an intersectional perspective with links to social justice pedagogy. Additional pan-curricular materials are also available such as the document *Integrating Aboriginal Perspectives into Curricula* (2003).

English (Language Arts)

Manitoba's English curriculum has a publication date range of 1996-2000 with a curriculum revision currently in progress. Similar general outcomes are spread across the grades with enough flexibility for teachers to connect many of them to Indigenous environmental topics if desired. For example, fundamental themes such as a Consider Other People's Ideas outcome, as well as specific outcomes such as:

- 2.2.2 Connect self, texts, and culture: Discuss own and others' understanding of various community and cultural traditions in various places and times as portrayed in oral, literacy, and media texts [including texts about Canada or by Canadian writers] (across all grades - np)

Manitoba's high school English program is streamed into different ability groupings and has similar general outcomes continuing from elementary grades again with flexibility within the outcomes to teach within the context of this inquiry.

Math

Manitoba's Math documents are grouped into Elementary (2013) and Secondary (2014) and follow similar strands as other provinces and territories. Within the front matter of the elementary Math curriculum there is a reference to teaching Indigenous children (p. 4). In a manner similar to our comments on Ontario's efforts in this regard, we acknowledge the importance of promoting awareness of Indigenous pedagogies, but remain somewhat concerned that over-prescribing pedagogical strategies for Indigenous learners introduces the risk of perpetuating stereotypes. As such, we advocate for an approach that encourages teachers to develop awareness of possible cultural influences, but ultimately respond to the particular needs and learning styles of individual students, which may or may not align with traditional cultural models. Within Manitoba's elementary Math curriculum, a general outcome related to data could be used to tie to this project and there are no other explicit outcomes that could connect directly.

High school Math courses in Manitoba are streamed into different ability levels after Grade 9 with flexibility to link to the themes of this inquiry through a Statistics and Probability strands. In Grade 11 and 12, students need to research a historical or current event or personal area of interest within the context of Mathematics which could also provide an opportunity to consider Indigenous Environmental topics, for example through consider longitudinal environmental data related to an ongoing issue in a particular community.

Science

Manitoba's Science curriculum has a publication range between 1999-2013 with each front matter containing a reference to sustainable development. Kindergarten – Grade 4 curricula are in one document with topics and units that could be related to critical Indigenous environmental topics such as the needs of living things, air and water in the environment, growth and changes in plants, soils and the environment, habitats and communities with each unit offering space to incorporate and adapt content. Specific outcomes of interest include:

- 4-1-14 Investigate natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations and interactions (p. 3.48)
- 4-1-17 Recognize and appreciate how traditional knowledge contributes to our understanding of plant and animal populations and interactions (p. 3.48)

Grades 5-8 are in one document with relevant topics including weather, diversity of living things, and interactions within ecosystems, Earth's crust, water systems, and some specific outcomes that link more directly to this inquiry such as:

- 5-4-18 Recognize that climates around the world are ever changing, and identify possible explanations (p. 3.22)
- 7-1-05 Identify and describe positive and negative examples of human interventions that have an impact on ecological succession or the make up of ecosystems (p. 3.47)
- 7-1-06 Identify environmental, social, and economic factors that should be considered in the management and preservation of ecosystems (p. 3.47)
- 7-4-11 Identify environmental, social, and economic factors that should be considered in making informed decisions about land use (p. 3.57)
- 8-4-18 Identify environmental, social, and economic factors that should be considered in the management of water resources (p. 3.74)

As with most other jurisdictions, High School Science in Manitoba breaks down into specialty areas with limited possible connections in Chemistry and Physics. However, Grade 9 and 10 General Science courses contain some units that could relate to this inquiry such as outcomes related to climate change and sustainability in Grade 10. Biology 11 incorporates personal wellness within each unit with notes in the front matter regarding sustainable development, moral and ethical characteristics of students, ethical issues, and advising teachers not to avoid controversial topics and issues in their classes as these issues provide students with a means to make personal connections to the topic.

Social Studies

Manitoba's Social Studies curriculum ranges in publication date from 2003-2016. It is quite robust with a social justice tone, holistic approach to diversity, and Indigenous content spread across each grade. There are numerous references also to the environment beginning in Kindergarten as well as exploring relationships with the Land. Other notable examples arise in Grade 1 with examinations of media's influences on our lives and, starting in Grade 2, students are expected to engage in a research project framed through multiple references to Indigenous and environmental content. Grade 5 examines the history of Canada and colonization and Grade 6 has one particular outcome of note that ties to this inquiry:

- 6-KL-026A Describe the influence of the land on their First Nations, Inuit, or Métis identity (p. 92)

Manitoba's Grade 7 Social Studies curriculum considers bias and discrimination and looks at how stereotypes are portrayed in the media. It also includes a few outcomes related to sustainability with one that aligns with this inquiry quite explicitly:

- 7-VL-009 Be willing to take actions to help sustain the natural environment in Canada and the world (p. 104)

Grade 8 continues to examine racism as well as encouraging consideration of Traditional Knowledge in understanding the Land. The Grade 9 curriculum references the WNCP in the front matter and is quite large with over 440 pages. The front matter also references sustainability, environmental citizenship, dealing with controversial issues, and the pedagogy of social justice. There are numerous connections with Indigenous culture throughout this grade as well as some specific outcomes that could be linked to this inquiry:

- VL-006 Respect traditional relationships that Aboriginal peoples of Canada have with the land (p. 70)
- KP-045 Describe factors related to Aboriginal self-determination in Canada. Examples: Indian Act, treaties, land claims, natural resources, traditional forms of decision making (p. 73)
- KP-046 Give examples of ways in which people can individually and collectively influence Canada's political and social systems. Examples: voting, political parties, labour organizations, civil disobedience, NGO's, lobbying (p. 73)

Grade 10 continues with a similar social justice lens and there remain many connections to sustainability and Indigenous cultures throughout as well as outcomes related to students understanding complex societal issues. The following outcomes could be linked to Indigenous environmental topics:

- KI-004 Identify Aboriginal perspectives and rights regarding natural resources and their use. Examples: perspectives – sacred, caretaking; resources – land claims, fishing and hunting rights, mineral rights (p. 138)

- VI-003 Be willing to consider diverse views regarding the use of natural resources (p. 150)
- S-103 Promote actions that reflect principles of sustainability (p. 162)

Grade 11 looks at the history of Canada; there are less explicit spaces to connect with this inquiry, but Indigenous content continues with themes such as exploring the impact of colonization on Indigenous people. Grade 12 has a law focus with several outcomes that could tie well to this inquiry including:

- 1.4 Explore First Nations, Métis, and Inuit practices related to law and the evolving legal relationship between first Nations, Métis, and Inuit people and non-Indigenous Canadians, including the treaty relationship (p. 3)
- 3.13 Analyze the overrepresentation of Indigenous people incarcerated in Manitoba and in Canada, and how the judicial system is responding to this issue, particularly in light of the recommendations made by the Aboriginal Justice Inquiry (1991) and in the Truth and Reconciliation Commission of Canada: Calls to Action document (p. 6)
- 4.4 Examine Indigenous practices and case law regarding rights on reserves, land titles, and treaty lands, as well as property rights on reserves and civil actions against government, such as residential school compensation and treaty land rights (p. 7)

Students in Grade 12 must also engage with a research project from a list of 6 topical areas which all include environmental protection and climate change in some manner. An additional course is offered in Grade 12 in First Nations, Métis, and Inuit (FNMI) Studies with extensive content related to this inquiry including land claims, treaties and rights, as well as economic development. Another elective of note is Sustainable Tourism for Grades 11 and 12. Further supplementary resources are also available related to Indigenous education and Sustainable development (see references below).

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Saskatchewan

Saskatchewan's curriculum offers a generally strong example of how to authentically Indigenize content with cross-curricular connections for teachers. Similar to other provinces, the Western and Northern Canadian Protocol for Collaboration in Education (1993) and Pan-Canadian Science Outcomes (1997) are referred to and similar strands are used in English and Math when compared with other jurisdictions. As discussed below, there is one troubling anomaly with Saskatchewan's high school Social Studies program that we noticed at the time of this review. However, as the province's curriculum documents seem to be evolving, this may have been subsequently addressed.

English

Saskatchewan's English curriculum ranges in publication date from 2008 to 2013 and seems generally flexible and open ended for teachers which would allow teachers to link to themes of this inquiry if so desired, for example, through the introduction of relevant texts. The curriculum employs a social responsibility lens with a scattering of Indigenous content in the indicators with especially strong connections in high school. Within each grade there are also possibilities for cross-curricular connections. The earlier elementary outcomes include responding to grade level texts, expressing identity through writing, communicate their ideas in a variety of formats. In the older elementary grades, students begin to explore bias, stereotypes, and prejudices. The outcomes are spiraled and continue in each grade with an increase in complexity supported by suggested resources.

Saskatchewan's High School English courses build on the general elementary outcomes while incorporating human agency and social responsibility. For example, here is an outcome of note for this inquiry from Grade 10:

- CR B 10.2 View, interpret, and report on ideas and information from more than one source to develop and support positions on various topics related to the course including identity, social responsibility, and personal agency (p. 18)

Grade 11 and 12 courses provided more explicit Indigenous linkages through literature and outcomes. For example, the outcomes below from Grade 12 could be used to connect with Indigenous environmental themes:

- CR A 30.2 View and evaluate critically information and ideas obtained from First Nations, Métis, Saskatchewan, and Canadian visual and multimedia texts including an advertisement, news broadcast, poster, and film (p. 20)
- CR B 30.2 View, comprehend, and evaluate critically a variety of visual and multimedia texts by international, including indigenous, texts that address: identify (e.g., Sense of Self), social responsibility (e.g., Social Criticism), and social action (agency) (e.g., Addressing the issues) (p. 21)

As demonstrated above, English 12 engages critically with media and texts by exploring power, beliefs, and values are portrayed by use of language and presentation.

Math

Saskatchewan's Math curricula range in publication date from 2007-2012 and, like English, present multiple cross-curricular opportunities. Additionally, notwithstanding our earlier ambivalence in this regard, within the front matter, there is a reference to First Nations and Métis learners with detailed and nuanced discussion of pedagogical concepts and approaches such as constructivism, ethnomathematics, and individual learning histories and styles. These concepts are even represented in the higher grades that are commonly ignored in many other curricula. There also appears to have been consultation with Indigenous academics and educators in this regard.

Specific outcomes of note from the elementary years include, for example, in Grade 6:

- N6.9 Research and present how First Nations and Métis peoples, past and present, envision, represent, and use quantity in their lifestyles and worldviews (p. 34)
- P6.1 m. Research a current or past topic of interest relevant to First Nations and Métis peoples and present the data as a table of values or a graph (p. 35)

Grade 9 also has outcomes that have been connected to Indigenous cultures and could be related to this inquiry:

- SP9.1 Demonstrate understanding of the effect of: bias, use of language, ethics, cost, time and timing, privacy, cultural sensitivity and population or sample on data collection (p. 36)
- SP9.1 a. Analyze given case studies of data collection, including data pertaining to First Nations and Métis peoples, and identify potential problems related to bias, use of language, ethics, cost, time and timing, privacy or cultural sensitivity (p. 36)

High school courses are streamed by ability and focus, with the Indigenization of the curriculum in general being a strong example for other provinces to consider. One outcome from Foundations of Mathematics and Pre-Calculus 10 ties well with this inquiry:

- FP10.3 m. Analyze a treaty for its inclusion of measurements, such as in the surveying for land entitlement, and create and solve situational questions that are relevant to self, family, and community (p. 29)

Science

Saskatchewan's Science curriculum also demonstrates significant consideration of Indigenization; it spans a publication range between 2009-2016 with front matter that contains references to sustainability and stewardship as well as traditional and local knowledge. The early years in the elementary curriculum have space for teachers to teach with reference to Indigenous environmental topics throughout the grades, but what is noteworthy with the Science curriculum is the use of Indigenous knowledge throughout with reference to deep connections with the Land. Naming the Earth "Mother Earth", exploring the ceremonial offering tobacco and the cyclic nature of the seasons as expressed in the Medicine Wheel, and the legend of the Thunderbird to explain light are but some examples of Saskatchewan's meaningful

Indigenization of the curriculum. Through such uses of Indigenous knowledge, connections to the Land and environment are infused throughout Saskatchewan's Science curriculum documents. The interrelationships between people and the environment are also explored throughout elementary curricular outcomes and in Grade 5 students inquire specifically into the effects of changes in weather on people. Grade 7 has a few key outcomes that connect with this inquiry:

- IE7.1 a. Gather information about traditional Indigenous practices with respect to the relationships and connections between people and their ecological environment (p. 30)
- IE7.1 d. Describe the ways that traditional Indigenous knowledge about respect and responsibility for the land, self, and others has been transmitted over many years, including the oral tradition (p. 30)
- IE7.4 b. Propose ecological questions to investigate arising from practical problems and issues (p. 32)
- IE7.4 c. Predict what a specific ecosystem (e.g., clear-cut forest, abandoned sports field, abandoned farm yard, abandoned rail line, ditch, driveway, or sidewalk) will look like in the future (e.g., 5, 10, and 25 years) based on characteristics of the area and long-term changes observed in similar ecosystems (p. 32)

Grade 8 and 9 also have flexibility to link outcomes with the themes of this inquiry, but nothing particularly explicit that we discovered.

Similar to most jurisdictions, Saskatchewan's high school Science courses are divided into specialty areas with less explicitly relevant connections, however Science 10 does have one outcome of note:

- SCI10-CD1 Assess the implications of human actions on the local and global climate and the sustainability of ecosystems [CP, DM] (p. 30)

Environmental Science 20 (Grade 11) also has several outcomes that connect well with critical Indigenous environmental topics:

- ES20-ES1 Examine the methods, mindsets, and purposes of environmental science [CP, DM] (p. 29)
- ES20-AH2 Analyze the production, reliability and uses of geoscience data to investigate the effects of a changing climate on society and the environment [CP, DM, SI] (p. 29)
- ES20-AH2 e. Identify the contributions of Indigenous knowledge in policy decisions related to climate change [K, STSE] (p. 35)
- ES20-HP1 c. Research First Nations and Métis beliefs and practices that demonstrate a sustainable perspective on using resources wisely and minimizing waste [K, STSE, S] (p. 35)

Within the context of Environmental Science 20, the curriculum also encourages teachers to engage with place-based learning to better appreciate the local environment. There is also a

recommended research project in this course, as well as within Physical Science 20, Earth Science 30, and Biology 30 that could be used to connect with Indigenous environmental topics.

Social Studies

Saskatchewan's Social Studies documents range in date of publication from 2009-2010 up to Grade 9 with high school ranging from 1992-1997. The difference between these two eras of curriculum development is striking as the newer curriculum is, like the other subject areas, reflective of Indigenized and decolonized perspectives with further consideration for the diversity of learners in the classroom. However, the more dated high school Social Studies curriculum available for review at the time of this inquiry reflects quite biased views of Indigenous people with particular outcomes that are of concern with respect to perpetuating harmful stereotypes.

The elementary grades offer teachers flexibility to engage with topics related to this inquiry through critically informed Indigenous perspectives, a consideration of connections to the Land, and environment that are spread throughout. One outcome in Grade 1 that ties well to this inquiry is:

- DR1.3 Demonstrate awareness of humans' reliance on the natural environment to meet needs, and how location affects families in meeting needs and wants (p. 21)

A guiding theme in Grade 2 is My Community and there are multiple entry points a teacher could use to link to this inquiry through age appropriate approaches including outcomes such as:

- RW2.2 e. Describe current worldviews in the community of the relationship between humanity and the environment (p. 24)

Much of Grade 2 focuses on worldviews as well as dealing with conflicting interests in communities. Grade 3 considers community connections and has some key outcomes that connect with this inquiry such as:

- DR3.3 Compare the beliefs of various communities around the world regarding living on and with the land (p. 21)
- DR3.3 c. Identify local environmental issues that affect life in communities studied (p. 21)
- PA3.2 Demonstrate awareness that divergent viewpoints may lead to conflict as part of group interactions, and assess various means of conflict resolution (p. 22)

Grade 4's guiding theme is Saskatchewan and it contains an outcome that teachers could use to explore Indigenous social and environmental movements such as Idle No More.

- IN4.3 Determine the influence Saskatchewan people and programs have had on a national scale (p. 19)

Other notable outcomes include:

- DR4.2 Explain the relationship of First Nations and Métis peoples with the land (p. 21)
- DR4.3 Analyze the implications of the Treaty relationship in Saskatchewan (p.21)

Grade 5's guiding theme is Canada and it also has a few key outcomes of note:

- DR5.1 Analyze the historic and contemporary relationship of people to land in Canada (p. 20)
- DR5.2 Assess the impact of the environment on the lives of people living in Canada (p. 20)
- DR5.2 b. Explain how different traditional worldviews of Earth affect the use of resources in Canada (e.g., Aboriginal and European attitudes toward ownership, Treaties, Crown land, homesteads, and the seigniorial system) (p. 21)

Grade 6 considers Canada and its Atlantic neighbours; it contains one specific outcome that could tie to youth activism:

- IN6.4 Explore aspects of cultural change over time, including: reasons for cultural change, examples of cultural change affects youth, how youth respond to cultural change (p. 20)

Grade 6 explores power and privilege and this outcome also connects well with this inquiry:

- RW6.2 Contribute to initiating and guiding change in local and global communities regarding environmental, social, and economic sustainability (p. 26)

A guiding theme in Grade 7 is Canada and its Pacific and northern neighbours with an examination of the effects of globalization and the ecological stewardship of economies in Canada and the countries within this theme. Grade 8 has space for teachers to teach within the context of this inquiry through looking at the Indian Act and injustices in Canadian history as well as key outcomes including:

- DR8.1 b. Analyze the relationship between the traditional Aboriginal concept of land (an animate being; the source of life) and the contemporary Western European notions of land (a resource to be owned and exploited through the centuries (p. 20)
- DR8.2 Describe the influence of the treaty relationship on Canadian identity (p. 21)
- RW8.3 Critique the approaches of Canada and Canadians to environmental stewardship and sustainability (p. 25)

Grade 9 looks at how worldviews are formed as well as how worldviews are expressed in society leaving room for teachers to teach within the context of the project.

As mentioned above, Saskatchewan's high school Social Studies curriculum stands in stark contrast to the critical and nuanced social and environmental perspectives provided in the recently released curricula for the earlier years. The high school Social Studies curriculum portrays Indigenous people and other marginalized groups such as women in both an explicitly

and implicitly biased, patronizing, and overly general manner. Some examples of this are demonstrated in outcomes such as the following:

- Grade 10: For 40 years (from the late 1880's to the 1930's) Indian farming progressed. Agriculture, supplemented by a little hunting, hauling wood and casual labour, allowed Indians to make a living with no need for welfare (p. 228)
- Grade 10: Is it possible for Aboriginal people to remain economically dependent on the Canadian government and still retain their culture? (p. 229)
- Grade 10: Know that cultural change requires time and patience while people learn to adapt to new patterns of knowledge, skills, and values (p. 228)
- Grade 10: The Treaty Rights of Indian People, the term Treaty Rights, refers to the rights and benefits granted to Indian Peoples (p. 338)
- Grade 10 They have found that the only way they can get a hearing from Canadian society has been to organize themselves as interests groups and systematically become involved in politics (p. 340)

Social Studies 20 and 30 continue in a similarly biased tone with regards to Indigenous peoples as well as through outdated, overly general, and condescending references to people living in poverty around the world, who are generally referred to as “the poor” within the document, with a particular focus on women and children (e.g. See p. 418 from Social Studies 20). Potentially controversial and anthropocentric statements regarding the environment and natural resource development can also be found in passages such as the following from an introduction to a Social Studies 20 unit on economic development:

The environment has been both difficult and rewarding for Canadians. Much of Canadian history has been about the struggle to create a high standard of living out of a threatening and difficult geography. Technology has changed the situation. Now it is the economy that is strong and threatening and the environment that is relatively weak. But, despite that, the environment is still significant. Paradoxically, the environment, in its weakness, still exerts a strong influence over Canadians. (p. 203)

History 10, 20, and 30 do not display as much overt bias Social Studies 10, 20, and 30 and there are some spaces for teachers to engage within the context of this inquiry, but it is somewhat limited and restricted due to the prescribed timeline of the history content.

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Alberta

At the time of this review, the Alberta curriculum was being redesigned through an ongoing consultation process with various educational stakeholders with a projected implementation date of 2020. The current curriculum is fairly similar to other provinces in its course offerings, strands, scopes, and sequences as well as in ability streaming and foci at the secondary level. A number of Indigenous education resources are available through the Alberta Education website (see link below). The WNCP and Pan-Canadian Science outcomes are also referenced in Alberta's Math and Science curricula.

English

Alberta's English curriculum ranges in publication date between 2000-2003 and is grouped into 2 documents including Kindergarten-Grade 9 and Grade 10-Grade 12 with similar outcomes spread throughout each grade. The curricular strands are generally flexible enough for teachers to make links to the themes of this inquiry through, for example, the use of certain books and resources; however, there is nothing explicitly mentioned. Notable examples include one general outcome (5.1) that provides an opportunity to connect with this inquiry as it considers respecting other people and strengthening communities. At the high school level, students are expected to engage with the research process through an inquiry project which could be employed to consider themes related to Indigenous environmental topics if so desired.

Math

Alberta's Math curriculum ranges in publication date between 2007-2008 and, similar to English, it is grouped into 2 documents for Kindergarten-Grade 9 and Grade 10-12. Both documents contain a brief section in the front matter related to First Nations, Métis, and Inuit perspectives. While they do recognize the inherent cultural and linguistic diversity of Indigenous students, fairly prescriptive pedagogical suggestions are also provided that may be effective for some Indigenous students (e.g. experiential approaches), but not necessarily all. As we have observed in relation to other jurisdictional curricula, we believe that this approach risks perpetuating inaccurate stereotypes of contemporary Indigenous learners rather than promoting awareness of traditional pedagogies while also acknowledging that some Indigenous learners may also be very accustomed to conventional Western approaches.

Alberta's Math outcomes follow similar general strands to other provinces, leaving room for teachers to use, for example, environmental data in the collect, display, and analyze data to solve problems strand. High school courses are streamed into different ability groupings and there are no explicit outcomes that align with this inquiry other than within a research project in the 20-2 and 30-2 Math courses.

Science

Alberta's Science curriculum has a broad date of publication ranging between 1996 – 2014 with documents grouped together as Kindergarten – Grade 6, Grades 7 – 9, and then by high school subjects. While there are no explicit references to Indigenous knowledge, the elementary grades offer flexibility to make connections with this inquiry through outcomes

related to the seasons, living things, habitats, relationships between weather and human activity, and ecosystems such as:

- All Elementary Grades - Science Inquiry (p. A3)
- Grade 1
 - Science Inquiry 1–1 Bring focus to investigative activities, based on their own questions and those of others (p. B. 1).
 - Topic B: Seasonal Changes 1–6 Describe seasonal changes, and interpret the effects of seasonal changes on living things (p. B.3).
 - Topic E: Needs of Animals and Plants 1–11 Describe some common living things, and identify needs of those living things (p. B. 5).
- Grade 2
 - Topic E: Small Crawling and Flying Animals: 2–10 Describe the general structure and life habits of small crawling and flying animals; e.g., insects, spiders, worms, slugs; and apply this knowledge to interpret local species that have been observed (p. B. 10).
- Grade 3
 - Science Inquiry: 3–1 Investigate the nature of things, demonstrating purposeful action that leads to observations and inferences (p. B. 11).
 - Problem Solving through Technology: 3–3 Investigate a practical problem, and develop a possible solution (p. B. 11).
 - Topic E: Animal Life Cycles: 3–10 Describe the appearances and life cycles of some common animals, and identify their adaptations to different environments (p. B. 15).
- Grade 4
 - Topic A: Waste and Our World
 - 4-5 Recognize that human activity can lead to the production of wastes, and identify alternatives for the responsible use and disposal materials (p. B. 19).
 - 7. Identify kinds of wastes that may be toxic to people and to the environment (p. B. 19).
- Grade 5
 - Topic D: Weather Watch
 - 5-9 Investigate relationships between weather phenomena and human activity (p. B. 27).
- Grade 6
 - Topic E: Trees and Forests
 - 6-10 Describe characteristics of trees and the interaction of trees with other living things in the local environment (p. B. 33).
 - 9. Identify human actions that enhance or threaten the existence of forests (p. B. 34).

Grades 7 – 9 in Alberta’s junior high Science curriculum also present opportunities to connect to this inquiry through themes, units, and outcomes such as:

- All Junior High Grades – Foundations: STS, Knowledge, Skills, Attitudes
 - Science, Technology and Society (STS)—Students will develop an understanding of the nature of science and technology, the relationships between science and technology, and the social and environmental contexts of science and technology (p. 3).
 - Developing a Social and Environmental Emphasis (p. 10).
 - Stewardship and Mutual Respect (p. 5)
- Grade 7
 - Unit A: Interactions and Ecosystems (Social and Environmental Emphasis) (pp. 11-14).
 - Unit B: Plants for Food and Fibre (Science and Technology Emphasis) (pp. 15-18).
 - Unit E: Planet Earth (Nature of Science Emphasis) (pp. 27-30).
- Grade 8
 - Unit E: Freshwater and Saltwater Systems (Social and Environmental Emphasis) (pp. 47-48).
- Grade 9
 - Unit A: Biological Diversity (p. 51)
 - Could be used for interdisciplinary project
 - E.g. STS 4- Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making (p. 53)
 - Unit C: Environmental Chemistry
 - STS 2-Identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality (p. 63)
 - STS 3- Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment
 - Could be used as spring board to look at local issue

Alberta’s high school Science courses are split into more specific subject areas and ability groupings. While some courses present more explicitly relevant connections to this inquiry than others, all high school Science courses are guided by the following foundations that emphasize Aboriginal perspectives alongside critical social and environmental awareness:

- Aboriginal Perspectives: Courses in the senior high school sciences incorporate Aboriginal perspectives in order to develop, in all students, an appreciation of the cultural diversity and achievements of First Nations, Métis and Inuit (FNMI) peoples.
- Stewardship: Students will be encouraged to develop responsibility in the application of science and technology in relation to society and the natural environment.

- **Social and Environmental Contexts:** The history of science shows that scientific development takes place within a social context. Many examples can be used to show that cultural and intellectual traditions have influenced the focus and methodologies of science, and that science in turn has influenced the wider world of ideas.

Specific outcomes of note from individual courses include:

- **Science 10 (2005/14)**
 - Unit A 4. Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making (p. 31).
 - Unit D 1. Explain how climate affects the lives of people and other species, and explain the need to investigate climate change (p. 30).
 - Unit D 3. Identify the potential effects of climate change on environmentally sensitive biomes (p. 31).
 - Unit D 4. Assess, from a variety of perspectives, the risks and benefits of human activity, and its impact on the biosphere and the climate (e.g., compare the Gaia hypothesis with traditional Aboriginal perspectives on the natural world; identify and analyze various perspectives on reducing the impact of human activity on the global climate) (p. 31).
- **Science 20 (2007/14)**
 - 20-D1.4k Describe the potential impact of habitat destruction on an ecosystem (p. 42).
 - 20-D1.2sts Explain that society and technology have both intended and unintended consequences for humans and the environment (p. 42).
- **Science 30 (2007/14)**
 - 30-D1.1k Compare the energy consumption of contemporary society with that of traditional cultures and pre-contact Aboriginal societies, and investigate and analyze the exponential growth of global energy consumption in recent history (p. 81).
 - 30-D1.5k Describe the environmental impact of developing and using various energy sources; i.e., conventional oil, oil sands, solar power, wind power, biomass, hydroelectricity, coal-burning power, nuclear power, geothermal (p. 81).
 - 30-D1.6k Describe how the Aboriginal perspective of an interconnected environment demonstrates the need to balance resource extraction with environmental impact (p. 81).
- **Bio 20 (2007/ 14)**
 - 20-C1.2s Use local histories obtained from Aboriginal Elders to describe the importance of plant productivity to human sustainability (p. 33)

- Bio 30 (2007/14)
 - 30C3.4s Debate the advantages and disadvantages of corporate funding and patenting of genetic research results, including Aboriginal and other perspectives of ownership (p. 72)
 - 30CD2.1sts Identify examples of wildlife management techniques used by Aboriginal peoples (p. 77)

Science 14, which denotes the lower academic stream, also considers matter and energy in the environment, how humans have disrupted the flow of matter, and ecosystems.

Social Studies

Alberta's Social Studies curricula range in publication date from 2005-2006 and are divided into 3 documents including Kindergarten – Grade 6, Grades 7 – 9, and Grades 10 – 12. Front matter that pertains to all grades includes a section on Aboriginal educational perspectives and experiences (p. 4). We were fairly comfortable with this section as it does implicitly acknowledge the diversity of Indigenous peoples and individual agency, however, as with other provinces, we remain concerned as to the implications of such statements without further professional development to ensure that they do not perpetuate inaccurate stereotypes. Other general areas of emphasis in Alberta's Social Studies curricula that connect to this inquiry include Pluralism: Diversity and Cohesion; Controversial Issues; Current Affairs; Globalization; Power, Authority, and Decision Making; The Land: Place and People; Economics and Resources; and Culture and Community. Two general skill and process outcomes also relate to this inquiry:

- Social participation as a democratic practice (p. 8)
- Research for deliberative inquiry (p. 8)

At the elementary level, Indigenous content appears throughout with outcomes of note for this inquiry including, for example, from Grade 3:

- 3.2.2 What are some environmental concerns that Canada and communities around the world share? (p. 39)

Grade 4 introduces current affairs with the intent that:

- Students engage in current affairs, issues and concerns of a local nature, the program of studies provides the flexibility to include these topics within the time allotted for social studies (p.19)

This theme, which continues throughout the remainder of the Social Studies program, could allow teachers the flexibility to engage with Indigenous environmental topics.

Grade 4 connects with environmental topics and has a few outcomes that fall within the context of this inquiry:

- 4.1.4 How do Albertans deal with competing demands on land use (e.g., conservation, solar and wind power, recreation, agriculture, oil exploration, forestry)? (p. 46)
- 4.2.1 Appreciate how an understanding of Alberta's history, peoples and stories contributes to their own sense of belonging and identity (p. 47)

Grade 5 also explores environmental and geographical topics with outcomes that relate to Indigenous perspectives such as:

- 5.2.1 ... acknowledge oral traditions, narratives and stories as valid sources of knowledge about the land and diverse Aboriginal cultures and history
- 5.2.2 examine, critically, the ways of life of Aboriginal peoples in Canada by exploring and reflecting upon the following questions and issues:
 - What do the stories of First Nations, Métis and Inuit peoples tell us about their beliefs regarding the relationship between people and the land? ...
 - How were the natural environment and geography of each region of Canada determining factors of the diversity among Aboriginal groups (e.g. languages, symbolism)?
- 5.3.2 Why were Aboriginal peoples excluded from the negotiations surrounding Confederation?

Grade 6 begins to examine citizenship and stewardship with outcomes related to this inquiry such as:

- 6.1.6 Analyze how individuals, groups and associations within a community impact decision-making of local and provincial governments by exploring and reflecting upon the following questions and issues: How can individuals, groups and associations within a community participate in the decision-making process regarding current events or issues (i.e., lobbying, petitioning, organizing and attending local meetings and rallies, contacting elected representatives)? (p. 72)
- 6.2.2 Value the role of participation by citizens in diverse democratic societies (p. 73)

While no explicit connections are made to Indigenous environmental issues, Grade 7 Social Studies in Alberta contains expectations that could be generally related to this inquiry such as considering the role of Indigenous peoples in Confederation (General Outcome 7.1) and traditional Indigenous societal structures (7.1.3) with reference to gender roles and decision making. Other general topics of possible interest include considering the influence of the Red River Métis on the development of Western Canada (7.2.4), the impact of immigration on Indigenous peoples (7.2.5).

While general considerations related to colonization and inter-societal relations are raised in international contexts that could be linked to this inquiry, Grade 8 does not contain explicit references to Indigenous considerations in Canada.

Grade 9 Social Studies contains some outcomes that could be related to this inquiry such as:

- 9.1.7 How does legislation such as Treaty 6, Treaty 7, and Treaty 8 recognize the status and identity of Aboriginal peoples? (p. 25)

- 9.2.6 How do government decisions on environmental issues impact quality of life (i.e., preservation, exploitation and trade of natural resources)? (p. 27)

Grade 10 Social Studies looks broadly at globalization including impacts on Indigenous and non-Indigenous people and the impact on the environment including outcomes such as:

- Related Issue 3: Students will understand the economic, environmental and other impacts of globalization (p. 28)
- Related Issue 4: Students will examine their roles and responsibilities in a globalizing world (p. 29)

Grade 11 Social Studies looks broadly at nationalism, a theme that could be somewhat obliquely connected to this inquiry if a teacher so desired. Grade 12 considers liberalism; it has a few outcomes that relate to this inquiry such as:

- 2.3 Appreciate that individuals and groups may adhere to various ideologies (p. 63)
- 2.11 Analyze perspectives on the imposition of the principles of liberalism (Aboriginal experiences, contemporary events) (p. 63)
- 2.12 Analyze the extent to which modern liberalism is challenged by alternative thought (Aboriginal collective thought, environmentalism, religious perspectives, neo-conservatism, postmodernism extremism) (p. 64)
- 2.13 Evaluate the extent to which resistance to the principles of liberalism is justified (p. 64)

Alberta also offers a series of elective courses in Aboriginal Studies (10-20-30) at the high school level that were last updated in 2002. These courses present multiple opportunities for teachers and students to critically consider Indigenous land and environmental topics. Elective courses in Environmental and Outdoor Education for Grades 7-9 (1990) are also available for consideration and adaptation. Additional elective curricula that might be of interest to some teachers are also available under the umbrella of the Social Sciences for Grades 10-12 in areas such as Anthropology, Economics, Geography, History, Philosophy, Political Science, Psychology, Religious Studies, and Sociology.

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British Columbia

British Columbia's (BC) curriculum was recently redesigned with a staged implementation plan beginning in 2016 and continuing until 2019/20. All curriculum documents were revised through an Indigenous lens with strong land and environmental connections. The general tone of BC's new curriculum offers teachers in most subject areas multiple spaces to engage with critical Indigenous environmental topics. Curricula described in the following are all reflective of the recent redesign.

English

BC's English curriculum explores the impact of language through a lens of critical inquiry. The high school English program has a separate stream that is entirely focused on Indigenous knowledge and there is Indigenous content throughout the curriculum. Teachers also seem to be afforded much flexibility to teach English in response to local, individual, or community interests such as those raised in this inquiry.

The Kindergarten to Grade 9 English curricula are contained in a single document and not only explore Indigenous knowledge through texts, but also through consideration of oral traditions and protocols within Indigenous societies. There are strong identified connections between Indigenous people and the Land through outcomes such as:

- Identify how story in First Peoples cultures connects people to land (p. 13)

BC's high school English program divides into two streams, one that takes a more conventional English approach with the other being English for First Peoples which delves more deeply into Indigenous knowledges and texts. A consistent competency structure extends across the high school curriculum inclusive of ability levels with multiple specialty areas including Composition, Creative Writing, Literary Studies, Spoken Language, and New Media with consistent opportunities for teachers to link to the themes of this inquiry. In New Media, for example, students explore bias, manipulation, and journalism. Additionally, Grade 12 has a strong reconciliation focus. Deep consideration of the Land and Indigenous topics throughout BC's English curriculum leaves teachers with lots of space to engage in teaching and learning within the context of this inquiry.

Math

Notwithstanding our earlier ambivalence in this area, BC's Math curriculum is inquiry based with Indigenous competencies intended to assist teachers with providing a culturally responsive Math curriculum. The data strand in the Kindergarten to Grade 9 curricula offer similar opportunities as other provinces with respect to using sociological and/ or environmental data that could link to the themes of this inquiry. In addition, a Statistics theme in Grade 9 explores bias and misleading facts, which could also provide an opportunity to connect to critical Indigenous and environmental topics, perhaps in connection with critical media literacy. Similar to most other jurisdictions, BC's high school Math curriculum is divided into ability areas but remains inclusive of Indigenous worldviews. As such, within the mandated research projects in some courses, students could further consider Indigenous environmental topics.

Science

BC's Kindergarten to Grade 9 Science curriculum has a strong land and place-based focus which lends itself to flexibility for teachers to connect with the themes of this inquiry. General competencies are consistent throughout the grades with specific themes such as Processing and Analysing Data that could link well with Indigenous environmental topics.

Of particular note, Grade 3 considers ecosystems and British Columbia wetlands and Grade 5 introduces environmental stewardship. Grade 7 contains foci on the Earth and climate change and Grade 9 considers Indigenous knowledge of interconnectedness and sustainability.

BC's high school Science courses divide into specialty areas with more opportunities to link to this inquiry in certain courses in particular. For example, Grade 10 Science explores Indigenous perspectives on energy while. Environmental Science courses in both Grade 11 and 12 contain "Big Ideas" that tie well to this inquiry such as exploring Traditional Ecological Knowledge, Conservation of Ecosystems, Identity Bias, Land Use and Sustainability, Global Warming and Climate Change, and Global and Environmental Changes. Earth Science in Grade 11 also has Big Ideas that link to this inquiry including Atmosphere and Climate, Indigenous narratives within astronomy, and evidence of change based on Indigenous knowledge.

Other specialty courses such as Life Science 11 and Anatomy 12 do not offer as many explicit opportunities to connect to this inquiry, but opportunities might be created in courses such as Geology 12 which lists general curricular competencies outcomes such as:

- Economic, environmental, and First Peoples' considerations (p. 1)
- Apply First Peoples' perspectives and knowledge, other ways of knowing, and local knowledge as sources of information (p. 2)

Further connections to Indigenous environmental topics might be created through courses such as Outdoor Education 11 and 12 that also identify the consideration of Indigenous ecological knowledge and practices as key general competencies.

Social Studies

There are multiple connections to this inquiry throughout BC's Social Studies curriculum beginning in Grade 1 with Big Ideas such as Community and Environment and Events in Indigenous Communities. Grade 2 includes a research project based on changes in a local community; there is also consideration of consulting with an Elder. A Grade 3 Big Idea looks at the relationship between humans and the environment as well as how ways of life changed for Indigenous people. Grade 4 examines conflict and cooperation through a Big Idea that examines the interactions between Indigenous people and Europeans as well as contrasting worldviews; ethical judgments based on local events and the impacts of colonization are also considered. Grade 5 has two Big Ideas that connect well with this inquiry including consideration of policies that impact marginalized people and natural resources. Further, within this grade, students explore land claim disputes, how Indigenous people balance economic development with land use, and Indigenous land ownership and use. A Grade 6 Big Idea looks at how economic self-interest causes conflicts; further, within this scope students explore consequences of events, different perspectives on issues, global poverty and class structure, environmental issues, media

coverage of events being used as propaganda, and the impact of economic policies and resource management on Indigenous people.

Grade 7 has an ancient civilization focus and Grade 8 looks at exploration, expansion, and colonization including environmental effects. Grade 9's Big Ideas are disparity, identity, and environment; it also explores natural resources in Canada as well as the question, "whom did colonization benefit?" as well as discriminatory policies.

BC's high school Social Studies program begins with a single primary Social Studies course in Grade 10 which considers topics relevant to this inquiry such as climate change and land use, the Truth and Reconciliation Commission, and the Meech Lake Accord, with further connections to Indigenous social and land-related movements and actions such Oka, Ipperwash, and Shannen's Dream.

Grade 11 also contains one base course, Explorations in Social Studies 11, that appears to have been drafted to allow teachers significant flexibility in delivery and local adaptation. Big Ideas and general expectations include Indigenous cultural reclamation, diversity, and resilience.

Grade 12 is divided into various subjects such as British Columbia First Peoples, Comparative Cultures, Human Geography, Political Studies, and 20th Century World History. Grade 12 courses include Indigenous studies, Genocide Studies, Geography, Social Justice, and Urban Studies. Each area contains significant existing, and further possible, connections to Indigenous topics, the environment and the Land, which would allow teachers extensive opportunities to connect to the themes of this inquiry.

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Territories

The Territories in Canada—Yukon, the Northwest Territories, and Nunavut—all utilize curricula from other provinces supported by their own resources and adaptations. As such, there are locally specific opportunities other than those identified in the reviews of the source provinces to work within the context of critical Indigenous environmental topics. Unique, regionally specific, resources and legislation have also been developed such as the Dene Kede and Inuuqatigiit curriculum supplements and a mandatory Northern Studies course in the Northwest Territories, the Nunavut Education Act, along with embedded Indigenous principles and practices in the Yukon. Further inquiry into the specific ways in which other provinces' curricula are integrated with territorial curricula in both policy and practice would be beneficial and insightful.

Yukon

Yukon primarily follows British Columbia's curricula and is similarly taking an incremental approach to the implementation of the redesigned curriculum. Yukon's students are also exposed to Yukon-specific content and adaptations such as Yukon First Nations Governance and Citizenship for Grade 5 students. Yukon First Nations' ways of knowing and doing are also emphasized across all grades with further experiential learning opportunities available for some students through land-based cultural camps linked to curricular expectations.

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Northwest Territories

The Northwest Territories (NWT) curriculum is a mix of territory-specific and borrowed curricula from other jurisdictions. For example, it borrows extensively from Alberta as well as Manitoba, and Ontario with resources created to respond to the local NWT context.

NWT's K-9 English curriculum is regionally developed while it follows Alberta's high school expectations for Grades 10-12. Similarly, K-9 Social Studies are regionally developed with influences from Ontario and Manitoba with further contributions from the Western and Northern Canadian Protocol (1993) while Grades 10-12 follow Alberta's curriculum.

Ontario's K-6 Science curriculum provided the foundation for NWT, while Grades 7-12 align with Alberta. Unique local adaptations such as the acknowledgement of the importance of using and learning Indigenous languages and terminology in context if possible (p. 15) as well as considering traditional harvesting techniques (p. 25) provide opportunities to link to the themes of this inquiry. NWT's Math curricula are all modelled on Alberta.

All curricula in NWT are further supplemented and guided by the regionally specific Dene Kede resource documents and a mandatory NWT specific Northern Studies course (Grade

10) that was last updated in 2015. Both of these resources provide extensive opportunities to connect to Indigenous environmental topics in a locally relevant and authentic manner.

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Nunavut

While guided by its own Education Act which is founded upon Inuit principles and practices, Nunavut also utilizes curricula from Saskatchewan, Alberta, British Columbia, and Manitoba with locally developed courses and resources. There is a stream for Inuktitut Language instruction as well as a Nunavut-adapted Science program of studies based on the Alberta curriculum for Grades 7, 8, and 9. This Science stream provides particularly promising opportunities to connect to the themes of this inquiry as does the Nunavut-specific supplemental Teacher's Handbook for Social Studies 10: Inuuqatigiitsiarniq-Seeking Harmony.

References

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