

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.

References

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