

# Environmental, Energy and Climate Change Education in Alberta's Draft K-6 Curriculum

## Analysis and Recommendations, September 2021 - Executive Summary

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Submitted by the following organizations and working group members



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## Introduction

In the spring of 2020, Alberta Education released the draft K-6 curriculum for all subjects and sought feedback on the draft, with plans to pilot it in the 2021/22 school year and fully implement it in the fall of 2022. The Alberta Council for Environmental Education (ACEE) along with a working group of environmental, energy and climate change educators reviewed the draft curriculum. The working group consisted of the following stakeholders:

- Kathy Worobec, Senior Education Advisor; Wyatt Schierman, Environmental Education Program Coordinator - Alberta Council for Environmental Education
- Jennifer Janzen - Executive Director, Alberta Tomorrow
- Dick Holland (Instructor, Faculty of Education); Stephen MacKinnon (Educational Consultant) - GreenLearning Canada Foundation
- Valerie Miller, PhD
- Alberta Youth Leaders for Environmental Education students - Isiri Jayathilake and Subashini Thangadurai

Since 2014, the Alberta Council for Environmental Education (ACEE) has been gathering research, conducting interviews with thought leaders and offering workshops to create the [Curriculum for a Sustainable Future](#) - a document that outlines what students need to know to be environmental, energy and climate literate. This document was used by the working group along with their own experience of engaging students in environmental, energy and climate change education as part of their review and feedback. The working group completed their review from June 2021 to September 2021 and met virtually three times during that time period.

The working group helped answer the following questions regarding the draft K-6 curriculum for the subjects of science, social studies, and physical education and wellness in relation to environmental, energy and climate change education:

- How is it providing better/deeper opportunities for environmental, energy and climate change education and leading to engaged environmental stewards?
- How well does it align with child educational development (age-appropriateness) for environmental topics?

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- How have the recommendations from the Curriculum for a Sustainable Future been incorporated?

We used the following sub-questions to guide our feedback:

- What are the strengths?
- What needs improving?
- What is missing?

This report is a compilation of the working group's review of the draft K-6 curriculum. Other environmental education organizations joined in submitting this collective response from the environmental education community. This report was submitted to the Minister of Education, Hon. Adrianna LaGrange and Alberta Education senior staff leading curriculum development in September 2021. This document was also shared publicly to help individuals or other organizations provide their own feedback on the draft K-6 curriculum.

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## Executive Summary

In the review of the draft K-6 curriculum for the subjects of science, social studies, and physical education and wellness, some content regarding environmental stewardship, energy and climate change was added; however, we found that there is much to be improved with this content and many important aspects of environmental, energy and climate change education that have not been included. It is imperative that the new curriculum addresses environment, energy and climate change education to help students cope with the increases in eco-anxiety that we are witnessing among youth (as revealed in the image below and on Pg. 11) and to prepare students for their future; a future which will require them to understand complex and challenging issues and to help make decisions both locally and globally. Environmental education is well-suited to provide the meaningful and relevant context to help students make sense of their learning, to help build skills to make meaningful contributions to their communities and to give them hope for their future.

“I think that’s the problem, is that we don’t know how we can help. And then everybody keeps putting it on us like: “All right, figure it out”. But we don’t know how to figure it out because we haven’t found that out yet.”  
(Grade 10, rural student)

confusion

anxiety

apathy



In this report, we’ve outlined why environmental, energy and climate change education is needed in curriculum and how this also supports the outcomes for learning as outlined in the Ministerial Order for Student Learning. We’ve also provided additional information on the need for curriculum to include these topics as Alberta, Canada and the international community address the many challenges faced by the world today. All of this demonstrates that the curriculum needs to provide more environmental, energy and climate change education, which Alberta’s new curriculum must address if we are to prepare students with the knowledge, skills and understanding they need for their future.

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Curriculum is not updated often or quickly so this is an extremely important time to ensure that this need is met for Alberta students, especially with the release of the [Intergovernmental Panel on Climate Change's Sixth Assessment Report \(2021\)](#) stating "recent changes in the climate are widespread, rapid, and intensifying and unprecedented in thousands of years". Below we've outlined our key recommendations for revisions and/or additions to improve the draft K-6 curriculum that includes general recommendations along with subject-based recommendations. We also highlighted the draft content that presents opportunities for environment, energy and climate change education. Also included in this report, is more detailed information including subject and grade-specific feedback. The detailed grade-specific recommendations were used to create the general and subject recommendations (below). We are asking Alberta Education to incorporate these recommendations as they finalize the Alberta K-6 curriculum.

### General recommendations

- **Increasing educational opportunities that prioritize solutions and promote students taking action**, especially when discussing environmental, energy and climate impacts, to provide students with the knowledge and skills to address these complex issues and give them hope (reduce eco-anxiety).
- **Less focus on knowledge and more focus on skills, attitudes and behaviors**, especially those outlined as integral to environmental education (e.g. critical thinking).
- **Ensuring there are more opportunities for systems thinking and cross-curricular or interdisciplinary learning** for environmental topics in each grade to help students understand the interconnections of Earth and human systems.
- **Ensuring Indigenous perspectives**, especially for environmental topics (connection, kinship, and stewardship of the land, land reclamation, ecological restoration, etc.) are provided as integral learning and not just as add-ons.
- **Emphasizing learning in nature/the outdoors in all grades and subjects not just in physical education and wellness in the early years**, all of which has been shown to improve academic performance, personal well-being, social skills development, ecological understanding and motivation/engagement in learning.

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## Science recommendations

- 1) **Revising the content regarding climate change** to be specific about its impacts, what is causing it, the fact that it is anthropogenic and occurring at a far more alarming rate than what occurs naturally and that there are solutions, and explaining the greenhouse gas effect and its connection to many of the other topics linked to it throughout the Science curriculum.
- 2) **Reinforcing the importance of respecting nature and living things**, as well as that humans are part of nature and continuing this care for the environment beyond the early grades as well as the exploration of their natural world.
- 3) Building the foundation for **understanding the importance of biodiversity and increasing instruction on environmental stewardship** are necessary in ensuring resilience of the environment to support all life (e.g. not just learning about bodies of water but watersheds and the importance of wetlands for water quality and biodiversity, the importance of plants and wildlife for biodiversity).
- 4) Revising the wording in skills and procedures for scientific methods to **remove language that implies a distrust of science and scientists (dishonestly recording data)**. Students should learn to think critically and understand rigour in data collection, the peer review process, ways of presenting, and learn how to address misinformation, especially with regards to social media and news, without using language like “honest” or “dishonest”.
- 5) **Increasing instruction on electricity** as a form of energy, how it is generated, its use, its conservation and its environmental impacts.
- 6) **Increasing instruction on the connection between consumption and production of waste**, environmental impacts of waste, energy used in production and handling waste, product life cycle and circular economy.
- 7) **Increasing instruction on agricultural beneficial management practices**, especially as they cover fertilizer, chemical use and methane production, as well as new, forward-thinking practices, such as permaculture or regenerative agriculture.

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## Social Studies recommendations

- 1) **Revising the content regarding climate change** to be specific about its impacts, what is causing it, the fact that it is anthropogenic and occurring at a far more alarming rate than what occurs naturally and that there are solutions, and explaining the greenhouse gas effect and its connection to many of the other topics linked to it throughout the Social Studies curriculum.
- 2) **Increasing education on environmental/climate change history** to help understand that there are changes over time and to explore possible future pathways (e.g. how human relationships with land have changed, what past and present land uses impact the environment, ecology and the loss of biodiversity, and the extensive time in which anthropogenic climate change has been known to be occurring, yet never meaningfully addressed.)
- 3) **Increasing education on Indigenous perspectives**, as well as other societies' and religious groups' perspectives, on environmental preservation, and connection to the land.
- 4) **Ensuring students learn both about the advantages and disadvantages (and trade-offs) of Alberta's resource economy**, including its impacts upon the environment and on society (including Indigenous populations).

## Physical Education and Wellness recommendations

- 1) **Creating stronger connections to the benefits of spending time in nature** in all grades by enhancing the personal well-being and active living sections (including active transportation).
- 2) **Healthy food choices could include growing our own food and how gardening, growing and gathering connect us to the land and the origin of food.** Students should learn about native species, pollinator-attracting plants (and the importance of pollinators), and Indigenous knowledge of native foods and plants.
- 3) **Exploration of the impacts of our food choices** - environmentally, socially and economically.
- 4) **Healthy living and access to food needs to include connections to how climate change may affect access to food.**



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## Existing opportunities for environmental, energy and climate change education in the Draft K-6 Curriculum

- Focus on respect for living things, balance of nature (Science and Social Studies).
- Observing local environments, using their senses in the outdoors and outdoor activities (Science and Physical Education & Wellness).
- Understanding the food chain and healthy eating (Science and Physical Education and Wellness).
- Developing an action plan that helps with conservation efforts in a local environment (Science).
- Broader focus and understanding on all energy resources, considering advantages and disadvantages of different energy sources, and conservation of scarce resources (Science and Social Studies).
- Weather and climate (Science).
- How Alberta's economy has diversified over time, why it is beneficial and necessary for Alberta's economy to continue to diversify in the future (Social Studies).
- Different geographical landforms, main bodies of water and climate zones of Canada (Social Studies).
- Understanding different countries' carbon footprints (Social Studies).
- Scientific Methods (Science) and Critical Thinking (Social Studies).

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## Why is environmental, energy and climate change education important for Alberta students?

There are many reasons why environmental, energy and climate change education is important for Alberta students and we've outlined four of the top reasons below:

1. To achieve the outcomes for learning as outlined in the Ministerial Order for Student Learning (August, 2020).
2. To ensure that Alberta remains competitive as we move forward in addressing global initiatives such as climate change, the United Nations Sustainable Development Goals and UNESCO's Education for Sustainable Development that requires environmental, energy and climate literate citizens.
3. Extensive research outlines the benefits of environmental education such as improved academic performance, personal health and well-being.
4. Alberta youth polling and focus groups results demonstrate the need for this education and the demand for more education in these areas by students.

### Ministerial Order for Student Learning (August 2020)

The [Ministerial for Student Learning](#) (August, 2020) recognizes the importance of environmental stewardship, *"Students will demonstrate an understanding of economic development and entrepreneurship, and will recognize the responsibility we all share for environmental stewardship and sustainability."* Ensuring the curriculum provides opportunities for students to understand and take responsibility for environmental stewardship is crucial to achieve this outcome.

### Global Initiatives

The global initiatives that demonstrate the need for environmental and sustainability education include the need for responding to climate change as addressed in the [Intergovernmental Panel on Climate Change Sixth Assessment Report \(2021\)](#) the United Nations [Sustainable Development Goals \(SDGs\)](#) and the United Nation Educational, Scientific, and Cultural Organization (UNESCO) [Education for Sustainable Development \(ESD\)](#). ESD is recognized as an integral element of SDG Goal 4 on quality education and a

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key enabler for the remaining 16 SDGs, while environmental, energy and climate change education are key components for addressing both climate change and sustainable development.

## Benefits of Environmental Education

Research has outlined the many benefits of environmental, energy and climate change education for enhancing student learning, personal well-being and health. The North American Association of Environmental Education partnered with Stanford University through a review of academic literature and peer-reviewed studies and identified their [key findings](#). The review found clear evidence that environmental education provides a variety of benefits providing students with:

- **Knowledge gains** across multiple disciplines, including environmental issues, science, mathematics and more.
- **Emotional and social skills** such as self-esteem, character development, teamwork and leadership skills.
- **Environmentally friendly behaviour** such as reducing water use, increasing recycling and participating in community clean ups.
- **Academic skills** such as critical thinking, oral communication, analytical skills, problem solving and higher-order thinking.
- **Motivation to learn** including enthusiasm for and interest in school.
- **Civic interest and engagement** including feelings of civic responsibility, empowerment and ability to take action.

## Alberta Youth Polling and Focus Group Results

In 2020, ACEE conducted [youth polling](#) and [youth focus group workshops](#) and the findings from this demonstrate that students need and want environmental, energy and climate change education. Key findings include:

- **9 in 10 youth have a moderate to extreme level of concern** when considering the environment and climate change.
- **Over two thirds of youth agree** that educating students about **climate change should be a high priority in schools**.

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- When it comes to protecting the environment, one of the **top barriers** cited by youth include, **“I don’t know what to do”**.
  - Students have a **poor understanding of energy systems**, especially energy sources, energy production, the relationship between fossil fuel use and climate change, and energy solutions.
  - Students are **concerned about nature, wildlife and their own future** and feel that the responsibility to fix environmental problems has fallen on them.

The youth polling and focus groups illustrate that many Alberta students are experiencing ‘eco-anxiety’ or feelings of hopelessness and we as Albertans need to **ensure that the new curriculum provides students with learning that moves them from confusion, anxiety and apathy toward learning that helps them feel prepared, informed and optimistic**. The North American Association for Environmental Education Guidelines for Excellence - K-12 Education outlines that, *“Environmental education is key to creating a sustainable future and environmental education engages students in meaningful investigations of how to ensure environmental quality, social equity and economic prosperity.”*