

Canada's high school curricula not giving students full picture of climate change

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Canada's high school students may not be getting enough information on the negative impacts of climate change, scientific consensus behind human-caused warming or climate solutions, according to new research from the University of British Columbia and Lund University.

In a study published in *PLOS ONE*, researchers analyzed textbooks and curricula from Canada's 13 provinces and territories and interviewed curriculum designers. They concluded that while the material did a good job of explaining that [climate](#) change is caused by humans, it missed opportunities to educate them on impacts and solutions.

In addition, curricula from Manitoba, Newfoundland and Labrador and Prince Edward Island presented human-caused climate change as being a subject of debate among experts when, in fact, there is overwhelming [scientific consensus](#) that humans are driving climate change.

"A focus on inaccurate scientific controversy is problematic," said lead author Seth Wynes, Ph.D. candidate at UBC in the department of geography. "If you ask students to debate whether or not climate change is happening, or if it's caused by humans, it gives them the idea that there's disagreement on facts established with great scientific certainty."

The researchers rated high school science curricula documents across Canada on six core areas: basic knowledge of the physical climate system ("it's climate"); observations of rising temperatures ("it's warming"); warming is caused by human activities ("it's us"); scientific

consensus ("experts agree"); negative consequences associated with warming ("it's bad"); and the possibility of avoiding the worst effects of climate change through rapidly reducing [greenhouse gas emissions](#) ("we can fix it").

"Canadian curricula often focus on how the greenhouse effect works, and demonstrating that Earth is warming—but only Saskatchewan covers that there's such a strong scientific consensus, and only five provinces focus on the solutions that can fix climate change. This gap in knowledge might be one of the reasons past surveys have shown that 52 per cent of young adults in Canada are only "somewhat" or "not at all" concerned about climate change," said Wynes.

Given that burning [fossil fuels](#) is the major driver of climate change, the researchers expected that provinces with a larger fossil-fuel industry might have less climate change coverage in their science curriculum. However, they found no such correlation. In fact, Saskatchewan, which has the highest per capita greenhouse gas emissions, had the most comprehensive coverage of climate change in its high school curricula, followed by Ontario.

Nova Scotia and New Brunswick, which had the oldest curriculum documents, had the least comprehensive coverage of climate change, covering only the single topic "it's warming" in mandatory courses, while B.C. covered only half of the core topics, although it is rolling out major updates to its science curriculum over the 2019/2020 school year.

The researchers believe that climate change education in Canada would benefit from reform to accurately reflect [scientific understanding](#) and to support environmental citizenship in the next generation of Canadians.

"Curriculum documents take a lot of time and effort to produce, but the earth itself is changing fast," said Wynes, a former high school chemistry

teacher. "Educators should be supported in keeping up to date with the latest scientific understandings of climate change."

"Scientifically accurate and comprehensive [climate change](#) education is absolutely essential for the 21st century," concluded study author Kimberly Nicholas, associate professor of sustainability science at Lund University in Sweden. "The science is clear on the urgent need to rapidly reduce emissions to zero. Every country needs students prepared to contribute to meeting the climate challenge."

Provided by University of British Columbia

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