

Tackling racism in teacher education and in the science curricula

July 18 2024, by Bernard Rizk



Credit: Professor Nicholas Ng-A-Fook

A [scoping review](#) conducted by the Canadian Curriculum Theory Project sheds light on the pervasive presence of racism in the general curricula and a significant gap in antiracist initiatives within Canadian

science education programs.

Led by principal investigator Professor Nicholas Ng-A-Fook from the Faculty of Education at the University of Ottawa, a research team composed of Patrick Phillips, Rieley M. O'Leary, Marcus G. Parley, and Patrick R. Labelle, in collaboration with Awad Ibrahim, Leron Dana Lewis, and Tricia McGuire-Adams, set out to examine the extent, range and nature of research activity and practice on anti-racism and [science education](#) in Canada, with a focus on genomics and genetic education and literacy.

The review's key findings include:

- Genetic essentialisms remain a core challenge within [teacher education](#), science education and curriculum policy. All students come to science education with implicit understandings of "race" and genetics learned from popular media and introductions to basic genetic concepts. Most students taking introductory science courses at university are only taught basic genetic literacy, which--even in the case of purportedly progressive science curricula--can serve to reinforce or instill belief in a biological foundation for "race". Such inattention to reductive, essentialist thinking risks reproducing existing racist beliefs within past, present and future policy and practice.
- Disciplinary siloing limits the teaching and learning of contextualized (social, cultural, historical) genetics/genomics literacy. In the K-12 science curricula, the sociocultural and/or historical contexts of "race" are often relegated (if present at all) to the social sciences and history curricula. However, biological categorizations of "race" are still used to teach basic genetic concepts and/or as a proxy for human difference. Learners are often left with the implicit lesson that "race" is still defined as a

biological concept, which in turn allows dangerous myths to persist among the public.

- There is an absence of science education studies and/or research programs in Canada that analyze and synthesize how various racisms and settler-colonial logic, and their respective exclusions, have framed historical and/or contemporary conceptions or debates on genetic essentialism and its respective racisms in relation to the field of genomic education and its respective literacies.
- Predominately white educational institutions, ranging in level from kindergarten to post-secondary, continue to reproduce science education and science curricula that often limit the [educational opportunities](#) for members of various non-white, racialized equity-seeking communities. Most science majors arrive at post-secondary institutions without having learned about racisms and anti-racisms in relation to genomics. In the case of genomics-focused fields, disciplines are often dominated by a white settler colonial logic. Meanwhile, the reproduction of genetic determinisms, framed as a biological category of race, reinforces beliefs that non-white racialized people share DNA that differs from the rest of humankind.
- Creating, supporting and enacting science education curricula that introduce students to a humane form of genomics literacy reduces the risk and dangers of reproducing genetic essentialisms. Genomics and genetics education assume the current order and cultural values, which risks perpetuating the understanding of race as ahistorical rather than as an historically contingent form of understanding human difference, thus undermining critical consciousness of how present and future technology might be misused.

"There is remarkably little educational research in Canada on the impact of settler colonial ideologies and the teaching of genetic essentialisms in genomics education," explains Professor Ng-A-Fook. "Predominantly white institutions often perpetuate curricula that marginalize non-white racialized communities, exacerbating systemic inequities."

This scoping review calls on science educators to draw on antiracist humane genomics literacy and cross-disciplinary teaching methods to co-create a more inclusive science curriculum. It sets the groundwork for future teacher and science education research and policy initiatives to establish a more equitable and anti-racist educational teaching and learning environments.

More information: Patrick Phillips et al, [Addressing Racisms and Anti-Racisms in Science and Teacher Education Research: A scoping review](#) (2024)

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