

**Indigenous Knowledge in Academia: The Makings of a Well-Rounded Scientist**

BIOL 510

## **Introduction**

As University-educated biologists, most of us understand the detrimental impacts of human activity on the Earth. Many biologists argue that we are entering the sixth mass extinction which is human-caused and accelerating rapidly (Ceballos et al., 2020). Western metaphysics, the foundational ways of our thinking processes, are based on a stagnant worldview where everything except animals are seen as inanimate, with a focus on the future and looking at things in isolation. This has led to social values that emphasize bigger, newer, faster, etc and have likely contributed to our current state of consumerism and environmental destruction (Little Bear, 2021). Although Western science has immense value in our societies, most scientists emerge from academia with little to no comprehension of Indigenous ways of knowing. This means our world-threatening sustainability issues are only being worked on through a Western lens, and so far, this has been unsuccessful. There is a separation of Western scientists from the land they work on, but Indigenous ways of knowing could help promote connectedness and respect for nature, therefore creating more aware and sustainable scientists. In this essay, I will argue that the content and themes highlighting Indigenous Ways of Knowing in BIOL 510 2022 are essential to a Bachelor of Science undergraduate program in the Department of Biology.

## **Indigenous Knowledge**

### *Indigenous Ways of Knowing and Science*

Indigenous ways of knowing describes the complexity and diversity of Indigenous ways of learning and teaching. Although practices, languages, and protocols often differ based on the Indigenous community, these ways of knowing are built on a deep respect for the land, interconnectedness, and the necessity of a reciprocal relationship with nature (Office of Indigenous Initiatives, n.d.). Indigenous metaphysics views the world and all of their inhabitants

(animals, plants, fungi, etc) to be animate and of value, and this is expressed well through process- and action-based Indigenous languages (non-human organisms are not an 'it'). There is a relationship-based understanding of wholeness and a renewal or maintenance thought orientation rather than the future-based orientation seen in Western metaphysics (Little Bear, 2021). While Western science is rigid in its values of measurability, Indigenous science (IS) concentrates on sustainability and relationships. Cajete (1999, p. 81), a Tewa educator and scholar, defines IS as "a broad category including everything from metaphysics to philosophy to various practical technologies used by Indigenous peoples past and present, and like Western science, has models that are highly contextual to tribal experiences, representational, and focused on higher order thinking and understanding." As opposed to being a body of knowledge or set of rules like Western science, IS accompanies spiritual knowing and is a way of life and a combination of knowledge practice and belief (Berkes, 2012). These foundational parts of Indigenous metaphysics promote slow, intentional thinking, leading to a culture of gratitude, reciprocity, and connectedness. I believe that students learning more about IS and metaphysics can promote a new generation of more sustainable biologists.

#### *How BIOL 510 highlights Indigenous Knowledge*

The overarching theme of BIOL 510 was a focus on interconnectedness and impermanence in relation to sustainability, both of which can be seen as inherently Indigenous ideologies based on metaphysical values. The course, titled *The Biology of Sustainability*, highlighted Indigenous knowledge and metaphysics as a positive example of living sustainably and how mindsets can influence change. These ideas were expanded upon by viewpoints from Indigenous scholars, scientists, and peoples, including webinars by Dr. Leroy Little Bear and Dr. Robin Wall Kimmerer, a reading on integrating Indigenous knowledge with Western knowing, a

reading of the Thanksgiving Address, Indigenous knowledge bases and educational resources in the reference list, field trips with a focus on Indigenous knowledge and history, and the course textbook – *Braiding Sweetgrass* by Robin Wall Kimmerer.

*Braiding Sweetgrass* was required reading for the 2022 rendition of BIOL 510 and acted as a guide for discussion questions and thought-provoking student-led seminars. Seminars often dove deeper into specific chapters of the book including Indigenous ideas of reciprocity, gifting, impermanence, connecting with nature, community and family values, motherhood, language, and more (Kimmerer, 2013). This was the basis for much of the content covered in the course. Although I believe the course did a good job of highlighting Indigenous ways of knowing, it would have been valuable to learn from a more diverse group of Indigenous peoples rather than the majority of highlighting on Dr. Kimmerer's stories and knowledge throughout the main body of the course. As well, we only received one seminar from our professor on Indigenous ways of knowing, which I feel could have been expanded upon for a more comprehensive overview of the subject and for those that may not have any experience with Indigenous knowledge.

## **Science in the Academy**

### *Indigenizing the Academy*

Indigenization of the academy represents a shift to expand the academy's narrow conceptions of knowledge to incorporate Indigenous perspectives (Kuokkanen, 2008). Gaudry & Lorenz (2018) analyze three versions of academic indigenization in Canada: Indigenous inclusion, reconciliation indigenization, and decolonial indigenization, which exist on a spectrum from least to most transformative. The ideas I will discuss fall most within the realm of reconciliation indigenization, so I will not delve into the complexities of decolonial indigenization in this essay.

Indigenous inclusion keeps colonial structures in place while aiming to increase the number of Indigenous students and staff in the university through promoting the adaptation of Indigenous peoples into the current, and often isolating, culture of the Canadian academy. Although many can articulate the need for Indigenous-based research, curriculum, and support, policy changes tend to focus on helping Indigenous peoples overcome obstacles rather than processes to remove the obstacles (Gaudry & Lorenz, 2018). Inclusion policies have been found to positively impact student program completion and success, but they should be a strategy for working towards systemic indigenization, not an end goal. (Ragoonaden & Mueller, 2017).

Reconciliation indigenization requires power sharing, transforming decision-making processes, and integrating Indigenous peoples into policymaking. This indigenization works to alter the university's structure and the goal is for Western knowledge to be pulled back while Indigenous approaches to knowledge are strengthened and can take up more space. Some approaches can include establishing Indigenous advisory and/or reconciliation committees which can set clear goals, and Indigenous course requirements, which requires students to complete a certain amount of coursework focused on Indigenous peoples (Gaudry & Lorenz, 2018).

#### *Including Indigenous knowledge in Biology*

BIOL 510 is the only active course in the Queen's biology department that focuses on Indigenous knowledge (Queen's University, 2022). The themes in BIOL 510 of sustainability through an Indigenous lens directly relate to biology, and there are many other aspects of Indigenous science like traditional ecological and conservation knowledge, medicinal knowledge, and agricultural knowledge, that contribute to a more well-rounded understanding of what science can be (Berkes, 2012). Students leave their degree with a baseline of shared knowledge, and I believe that Indigenous knowledge should be a part of this because of the

importance to explore all ways of knowing and approach the world with an open mind. I believe that a biology course that teaches Indigenous ways of knowing and science should be mandatory. Since all biology students will understand climate change and the importance of sustainability, learning about Indigenous metaphysics and values can contribute to mindset shifts in many students towards interconnectedness and reciprocity, creating more mindful scientists in our future, which is essential to living more sustainably. In order to care about the environment and promote change, students must be deeply aware of humanity as a part of nature, and understand core values that allow Indigenous peoples to connect to the land and to each other. Even if a student has a focus in cell biology, which may not seem directly related to Indigenous knowledge, they can participate in research in a more sustainable and mindful way inspired by the core values of Indigenous scientists. This may include more connecting and sharing within a larger scientific community or group, using less single-use plastic, properly disposing of waste, and doing more things to be as conscious as possible of environmental impacts and connecting with their community. Although changes like this are small in the grand scheme of the academy, they can contribute to reconciliation indigenization where Indigenous knowledge is valued in the field of biology. For these reasons I feel that teaching Indigenous ways of knowing in the undergraduate biology curriculum is essential for producing well-rounded, sustainable, and open-minded scientists.

## **Conclusion**

The goal of my essay was to argue that course content highlighting Indigenous Ways of Knowing is essential for an undergraduate biology degree. I aimed to articulate the way that courses highlighting Indigenous knowledge can help contribute to reconciliation indigenization and promoting more sustainable and aware scientists. Being aware of scientific perspectives

other than one's own is important because it creates a well-rounded scientist that can think outside of the Western 'box', possibly leading to more creative science and solutions to our current environmental crises. I conclude that a required biology course teaching Indigenous knowledge and science can be a start for making more meaningful change in the academy and diversifying the scientific perspectives that are taught. I believe that this could help motivate a shift towards more sustainable science and a mindset shift of the Western scientist to be more connected with the world.

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