How Do I Get Started? Creating Safer Learning Environments for Indigenous Students in STEM at UBC

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About the Authors

Frances Butterfield is from Treaty 1 Territory in Winnipeg and grew up on the traditional lands of the Anishinaabe, Néhinaw (Cree), Oji-Cree, Dakȟóta (Dakota), and Métis Nations. She is Métis-Cree from Norway House and a Ukrainian settler. Frances is a student in the Combined Major in Science (CMS) program at UBC, studying chemistry, life sciences, and environmental sciences, on the traditional, ancestral, and unceded territories of the xʷməθkʷəy̓əm (Musqueam), Squamish, and Tsleil-Waututh Nations. Frances worked as an Indigenous collegium advisor for two years and as a chemistry tutor at the First Nations House of Learning. She also volunteered with Destination UBC and contributed to the development and implementation of UBC's Indigenous Strategic Plan through her roles as a student representative and Indigenous Strategic Initiatives Fund adjudicator. Frances was hired as an Undergraduate Academic Assistant by Skylight and has worked on numerous projects related to inclusive teaching in UBC Science. She is passionate about challenging and improving university systems and elevating the voices and experiences of Indigenous students to help create more equitable and respectful learning spaces in STEM fields. Recognizing that Indigenous Ways of Knowing and Doing aren't always reflected in STEM curricula through her personal experiences and conversations with peers, she sees the value and importance of addressing the barriers faced by Indigenous students in science education. In creating this resource, Frances led focus group discussions with Indigenous students to share their experiences and provide feedback as it was important to her that the content was reflective of the experiences of other students, not just her own.

Ashley Welsh is of settler descent and was born and raised on the traditional and treaty territory of the Mississaugas and Chippewas of the Anishinabeg (Williams Treaties First Nations) and now lives in Vancouver on the traditional, ancestral, and unceded territories of the xʷməθkʷəy̓əm (Musqueam), Squamish and Tsleil-Waututh Nations. Ashley is the Faculty Liaison (Science) in the Centre for Teaching, Learning and Technology and the Science Centre for Learning and Teaching (Skylight) at the University of British Columbia Vancouver (UBCV). Within this cross-appointed role, she develops, facilitates, and partners on professional development as a means to enrich curriculum, pedagogy, the scholarship of

teaching and learning, and decolonizing practices in undergraduate math and science education. Ashley works closely with colleagues and units within and outside of UBC to build more inclusive teaching, learning, and work environments and to create stronger relationships among faculty, staff, students, and the broader community. Ashley holds a BSc in Chemical Physics from the University of Guelph and an MA and PhD in Curriculum Studies (Science Education) from UBC.

Preamble and Acknowledgements

This resource is meant to provide advice and resources for STEM (Science, Technology, Engineering, and Mathematics) instructors on how to 'get started' when working to incorporate Indigenous ways of knowing, being, and doing into their curriculum and practices as a means to create safer learning environments for Indigenous students. It may also be useful for people facilitating these types of conversations in STEM departments and contexts or by anyone who may be interested in the subject. The idea to create this resource emerged from a Skylight Development Grant project that aimed to curate and create resources and professional development opportunities for UBC Science faculty members around Goal 4 of the UBC Indigenous Strategic Plan (ISP), Indigenizing Our Curriculum. When working on the project, we realized the need for a foundational resource that addresses the emergent and commonly asked questions that non-Indigenous STEM folks often pose in regard to their learning and engagement with Indigenous rights, histories, experiences, and ways of knowing, being, and doing.

We see this as a living, conversational resource to be updated over time as new questions, relationships, and resources form. The responses to the questions are informed by our conversations with Indigenous students, faculty, and staff in UBC Science, the CTLT Indigenous Initiatives team, and our colleagues in Skylight. We have organized the document into five main themes related to Western and Indigenous ways of knowing in STEM, one's personal journey, language, land acknowledgements, and emotion and relationality. As much as possible, we have provided links and information from UBC, British Columbian, and Canadian-based resources to help people further enrich and expand their knowledge. We do not consider this a 'clean' or 'perfect' document, but one that shares perspectives, experiences, thoughts, and resources to help folks navigate these complex and nuanced topics. Creating curriculum and practices that elevate and acknowledge diverse ways of knowing and that are centered around respect, reciprocity, and relationality are not only important for Indigenous students' learning and experiences, but for everyone.

When we originally began development on this resource in 2021, we naively assumed it would be 5-6 pages, but with increasing feedback and conversations, it grew into something much greater given the importance and complexity of the topics. The first version was published in July 2022 as a 16-page PDF and its methodology and content were celebrated via workshops as well as within various professional development spaces at UBC. Over the years, suggestions for us to covert the resource into a Pressbooks and/or website were mounting as colleagues were keen to capture and share particular sections and/or questions of the resource. As such, in the fall of 2023, with gracious funding from Skylight, we reviewed and updated the resource into this Pressbooks format. While once again, we thought this would be a relatively straightforward update, it turned into a more lengthy project with multiple conversations and check-ins. After close to 8 months of work, we are eager to share this resource with others while acknowledging the great responsibility in ensuring our words and the words of others are received with humility and care from readers.

The creation of this resource would not have been possible without conversations with and contributions from Indigenous students, faculty, and staff in UBC Science, Zakir Suleman, Amber Schroeder, Erin Fields, Will Engle, and our colleagues in Skylight, the Skylight ISP Working Group, and CTLT Indigenous Initiatives. We sincerely thank them for their constructive feedback and support. We would also like to acknowledge that the development of this work took place in-person and virtually on several Indigenous lands and territories including that of the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), Sel̓ílwitulh (Tsleil-Waututh), Syilx Okanagan, Anishinaabe, Néhinaw (Cree), Dakȟóta (Dakota), and Métis Peoples.

With thanks and care,

Frances & Ashley

TEACHING, INDIGENOUS AND WESTERN WAYS OF KNOWING, AND ETUAPTMUMK (TWO-EYED SEEING)

The following set of questions relate to how you, as a member of the STEM community, can get started with your own education and engagement in respectful and meaningful ways. It reviews the differences and connections between Western science and Indigenous ways of knowing and highlights how *Etuaptmumk* (Two-Eyed Seeing) can be a useful framework for STEM faculty, staff, and students to explore ways of knowing, being, and decision-making.

How do I get started?

As you begin and continue your journey, it is important to listen, to be open to learning, and to be prepared to challenge your personal and academic views, knowledge, and past interactions/experiences.

While in academia we are often encouraged to speak up and out, it's important that we listen twice as much as we speak when doing this work and give space for reflection and for Indigenous folks to share their truths.

To get started, we encourage you to read and familiarize yourself with the UBC Indigenous Strategic Plan (ISP) and reflect on your role in regard to Truth and Reconciliation. You might also want to ask people within your department about the broader goals of the ISP that will be implemented within your context.

The creation of the ISP was a collective effort with significant contributions from the Musqueam and Syilx Okanagan Nations and Indigenous Elders, faculty, staff, students and community members. It was created in response to the Truth and Reconciliation Commission's 94 Calls to Action, the National Inquiry into Missing and Murdered Indigenous Women and Girls' 231 Calls for Justice, and the United Nations Declaration on the Rights of Indigenous Peoples.

The UBC Indigenous Portal has curated a list of internal and external professional development opportunities that you can use to support your learning. Some UBC-specific professional development and learning opportunities include:

- Weaving Relations, a UBC self-directed course created by the Faculty of Applied Science and the Faculty of Land and Food Systems. The course explores Indigenous histories, peoples, and contexts, as well as settler colonialism in Canada.
- Events, workshops, and drop-in sessions organized and facilitated by the Indigenous Initiatives team at the Centre for Teaching, Learning, and Technology (CTLT) who support the UBC community in their Indigenous-focused learning path and provide excellent professional development opportunities for faculty.
- Attending workshops and exploring resources from the Classroom Climate Series and the What I Learned in Class Today project. These would be a great place to start.
- UBC-generated resources including Indigenous Foundations, Time and Place at UBC: Our Histories and Relations, and the Reconciliation Through Indigenous Education MOOC (offered 1-2 times/year).

The Pulling Together series guides are also excellent BC-related resources for personal and collective learning. We suggest checking out the Foundations Guide as you get started and then move to the Teachers and Instructors Guide.

Engaging in this work and learning can be difficult, and as such, we encourage you to find communities and/or other colleagues who can learn with you. Having broader networks for discussion is really valuable to support you and your learning.

How do I create a safe space in my classroom where Indigenous students will not feel tokenized, isolated, or uncomfortable?

In our conversations with Indigenous students about this question, the main piece of advice was for faculty members to focus on creating safer classroom environments where other ways of knowing are acknowledged and embraced and respectful conversations can be had. Below are some ideas of what this should look like to get you started.

Model and discuss how respectful relationship building, reciprocity, and responsibility are relevant to your space and material.

- Within your class, aim to collectively create (with yourself, the students, the TAs) an inclusive classroom climate that emphasizes respectful conversations.
- Refer to the *First Peoples Principles of Learning*, developed by the BC Ministry of Education and First Nations Education Steering Committee, to inform how you can create learning environments that support well-being, holistic education, self-reflection, and respect.
- These are important values for students to learn and build upon both personally and professionally. As such, drawing upon and embedding Indigenous ways of knowing, being, and doing is beneficial for Indigenous students as well as non-Indigenous students.

Always teach as though there are Indigenous students present in your class.

- Consider the topics being discussed in your course and be mindful of the impact on Indigenous and non-Indigenous students if the topics relate to Indigeneity, trauma, colonization, or harm.

Do not call out Indigenous students to ask for their perspectives on Indigenous issues or topics.

- Not only is this tokenizing, but Indigenous students may struggle with their identity for various reasons and as such, asking them to speak on behalf of their community may put them in an uncomfortable position.
- Just because someone identifies as Indigenous, doesn't mean they can speak for all Indigenous Peoples. Asking them to speak for all Indigenous Peoples is inappropriate as it implies that Indigenous experiences, nations, and groups are the same, which is a harmful misconception.

Consider reevaluating assessments.

- Give students the option to not participate in particular conversations and think about how you can create a supportive environment that allows students to share any concerns they may have in a safe setting.
- Reevaluate rubrics and assessment methods to ensure Indigenous ways of knowing, pedagogies, and perspectives are valued and recognized as legitimate.

Acknowledge your own learning and shortcomings.

- This is an important piece to starting the conversation.
- It's important for you to take the time to actively commit to professional development and education to support your learning.

- It's also important to share your learning journey with students. You could share professional development and/or educational opportunities you've engaged with.

Provide opportunities to share concerns and feedback.

- In acknowledging your own learning and shortcomings, it is also important that you invite students to follow up with you if they have particular concerns or feedback.
- At the beginning of the course, you could provide an opportunity for students to share what an inclusive and respectful classroom space is for them.
- You could provide surveys and/or set up group check-ins throughout the term to see how students are doing both academically and personally (and you can follow up with UBC student resources).

How do I respectfully and authentically incorporate Indigenous Ways of Knowing (IWK) into my teaching when I don't know a lot about it?

Authentically incorporating IWK into teaching is a process that takes time. Indigenous students shared that, in doing this work, it is important that you prioritize creating a space where other ways of knowing are not only accepted but appreciated and valued. As you take this step, it's important to educate yourself, to locate examples, stories, and resources created or co-authored by Indigenous Peoples, and to share this knowledge with students in a respectful way. Collaborating and talking with colleagues is a great way to find, vet, and weave diverse knowledge and practices into your teaching.

> Incorporating IWK includes speaking to and modeling Indigenous values, such as respect, relationality, and care. We encourage you to review the work of Kirkness and Barnhardt (2001) about "The Four R's – Respect, Relevance, Reciprocity, and Responsibility" and how these principles can help transform higher education for Indigenous Peoples. This seminal framework has been built upon and expanded over time, in particular, by Restoule (2008, 2019) who proposed the addition of a fifth R – Relationships. See the work of Tessaro et al. (2018) and Lake and Atkins (2021) for additional insight into how these 5 R's can be foundational in (online) education.

Focus on drawing upon and modeling Indigenous pedagogies.

- While the course content may not seem as natural a fit or connection, you can use Indigenous pedagogies to model relationship building, reciprocity, and care in the classroom setting and within your curriculum.

Be intentional in only including material where relevant.

- Take the time to find relevant, meaningful examples and stories and make sure to incorporate/share them in a respectful and relevant way.
- Incorporating IWK doesn't mean randomly inserting facts about Indigenous culture or history into course material without context, as this can feel performative or awkward.

Explore the discrepancies of Western science as a way of knowing.

- Reflect on how dismissing other ways of knowing may actually limit our understanding and bring these issues to light in class. It's also important to explore the discrepancies and limitations of Western science as a way of knowing and how Indigenous ways of knowing, values, and processes can enrich STEM environments.
- You might also think about why we don't know enough or talk about particular knowledge systems in STEM disciplines (e.g. why don't we know enough about traditional plant use?) and discuss these issues with students.

Consider the issue of knowledge extraction and hierarchies within Western science.

- Research and consider the groups of people, beings, and the land who aren't credited, despite contributing to or

providing the foundation for scientific discoveries, and explore the reasons behind this. While literature usually attributes scientific advancements to a single scientist or group of scientists, it is important to acknowledge the many other people and beings that are involved, but who are discounted or discredited because they don't hold certain privileges. For example, the contributions and discoveries of women in STEM have historically been discounted and even stolen. Similarly, the relationship that humans have with other beings and the land is frequently overlooked in Western scientific contexts.

- You could also discuss how particular course concepts relate to society or societal issues.

References

Kirkness, V. J. and R. Barnhardt (2001). First Nations and Higher Education: The Four R's – Respect, Relevance, Reciprocity, Responsibility. Knowledge Across Cultures: A Contribution to Dialogue Among Civilizations. R. Hayoe and J. Pan. Hong Kong, Comparative Education Research Centre, The University of Hong Kong. http://www.ankn.uaf.edu/IEW/winhec/FourRs2ndEd.html

Lake, J. & Atkins, H. (2021). *Facilitating online learning with the* 5R's. Pressbooks. https://pressbooks.bccampus.ca/the5rsonline/

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Restoule J. P. (2019). Where Indigenous knowledge lives: Bringing Indigenous perspectives to online learning environments. In McKinley E., Smith L. (Eds.), *Handbook of Indigenous education* (pp. 1295–1317). Springer. https://doi.org/10.1007/978-981-10-1839-8_62-1

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Where can I find specific examples of how to embed Indigenous Ways of Knowing in my STEM course?

Many faculty want to know where they can locate specific examples of what incorporating IWK looks like. While this may be useful in informing your approaches, it is critical to first realize that doing this work goes far beyond taking content/examples and directly implementing them in your classroom. You cannot incorporate IWK without linking your own positionality and learning to the curriculum and practices you bring to your course.

Locating examples

- It's common for non-Indigenous STEM folks to ask for examples prior to having explored what's available themselves. One of the first steps you can take is to do some research online to see what examples exist or you could reach out to folks at the X̱wi7x̱wa Library to discuss their collections and resources.
- It is also worthwhile exploring what work is being done in the K-12 sector to generate ideas for approaches and practices to use in your own course.

Considerations for why there is a lack of examples

- The push to Indigenize STEM curriculum and practices in undergraduate education at UBC, and within North America, is relatively recent.
- As such, there might be limited to no examples that exist or are available depending on your context/field, an issue which in itself highlights the necessity for this work.

Learn from UBC educators on Indigenous engagement

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.bccampus.ca/indigenousstemeducation/?p=30#oembed-1

- In this video from a 2021 CTLT Indigenous Initiatives event, three UBC faculty members describe their journeys of infusing Indigenous ways of knowing and practices within their teaching. The video participants emphasize the importance of positionality, community, and the time needed to engage meaningfully in this work and to not just add content for the sake of adding content.

Examples of projects/initiatives at UBC

There are a growing number of teaching and learning projects related to Indigenizing STEM curriculum, pedagogy, and culture at UBC. Below are some posters the Teaching and Learning Enhancement Fund (TLEF) showcase over the years. They provide examples of how UBC faculty, staff, and students are co-leading this work.

- Co-creating Aquatic Science with Indigenous Communities, 2022
- Earth Science Experiential and Indigenous Learning (EaSEIL), 2024
- MAKING CONNECTIONS: Students, faculty, staff, and community partners as co-creators of a biodiversity science course for undergraduates, 2024
- Reflecting on place-based learning and the role of land stewardship and Indigenous knowledge in Integrated Sci-

ences sustainability course, 2024
- Student-Curated Informal Learning and Engagement Spaces (Sci-LEnS), 2024

What are the differences between Western Science as a way of knowing and Indigenous Ways of Knowing?

Western Science as a way of knowing is reductionist, individualistic and often considered to be objective and empirically grounded with a strong focus on observations, experimentation, and the reliability and validity of data. While Western Science has been important for certain advancements in society, Eurocentric forms of knowledge and practices disregard spirituality, remove agency from non-human animals, beings, and the land, and dismiss the validity/credibility of alternative ways of knowing.

Indigenous Ways of Knowing (IWK) are centred around relationality, community, reciprocity, respect, storytelling, spirituality, and intergenerational relationships. IWK are non-hierarchical and centred around the principle that all beings and the land are connected, rely on one another, and work in balance. It is also important to note that there is not one collective Indigenous way of knowing, but that ways of knowing differ among Indigenous Peoples and across different Nations.

Understanding, incorporating, and embracing IWK is not only important to make Indigenous students feel comfortable in the spaces we create in STEM, but is an essential aspect of expanding scientific knowledge and understanding. It offers a different outlook and new perspectives that expand upon what we already know in the Western scientific context and, with appropriate collaboration, can benefit the scientific community as a whole.

To learn more, see "The Application of Both-Ways and Two-Eyed Seeing Pedagogy: Reflections on Engaging and Teaching Science to Post-secondary Indigenous Students" by Michie, Hogue, and Rioux (2018), which provides a generalized comparison between Western and Indigenous worldviews.

References

Michie, M., Hogue, M., & Rioux, J. (2018). The Application of Both-Ways and Two-Eyed Seeing Pedagogy: Reflections on Engaging and Teaching Science to Post-secondary Indigenous Students. *Research in Science Education*, 48(6), 1205–1220. 10.1007/s11165-018-9775-y

Why is Western Science colonial?

Living reciprocally with the land and respecting the agency of all beings is at the heart of Indigenous Ways of Knowing and living and is seen as essential to our well-being and existence. In contrast, Western Science is anthropocentric and hierarchical, as it prioritizes prioritizes human (and Western) knowledge and understanding. This form of knowledge ignores the agency of land and non-human beings, which in turn, undermines the sovereignty of Indigenous Peoples.

Western Science was founded by white European men and was used as a tool to advance and justify colonial practices and policies. Its prominence is deeply linked to the so-called "discovery" of "new plants/organisms" and "new people" in the "New World." European colonizers were quick to impose their notion of what constitutes knowledge on the lands and peoples they colonized, disregarding the ways of knowing and being of Indigenous Peoples. This often involved extracting knowledge, further marginalizing Indigenous perspectives and practices.

As you start to explore how to create safer spaces for Indigenous students in your classroom setting, it would be useful to explore the colonial aspects of your discipline and how your discipline has benefitted from the historic and continued exploitation of and disregard for Indigenous lands and peoples. You can also research examples of how particular aspects of your field are embracing/weaving Indigenous ways of knowing within their current processes and how/if scientists in your field are collaborating with Indigenous Peoples to better understand the world around us.

- "Jagged Worldviews Colliding" by Little Bear (2000) discusses why Indigenous and Eurocentric worldviews clash and reiterates the need to understand the role of colonialism in the advancement and suppression of particular ways of knowing and being.
- For more information around the history of colonialism as it relates to science, see this article by Adas (2008) in the Encyclopedia of the History of Science, Technology, and Medicine in Non-Western Cultures and the work of Le & Matias (2019) about how whiteness impacts science education.

References

Adas, M. (2008). Colonialism and Science. In: Selin, H. (eds) Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures. Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-4425-0_8518

Le, P.T., Matias, C.E. (2019). Towards a truer multicultural science education: how whiteness impacts science education. *Cultural Studies of Science Education*, **14**, 15–31. https://doi.org/10.1007/s11422-017-9854-9

Little Bear, L. (2000). Jagged worldviews colliding. In WALKING TOGETHER: First Nations, Métis and Inuit Perspectives in Curriculum. Government of Alberta. https://www.learnalberta.ca/content/aswt/worldviews/documents/jagged_worldviews_colliding.pdf

What is Etuaptmumk (Two-Eyed Seeing)?

Elder Dr. Albert Marshall defines *Etuaptmumk* (Two-Eyed Seeing) as "learning to see from one eye with the strengths of Indigenous ways of knowing, and to see from the other eye with strengths of Western ways of knowing, and to use both of these eyes together." (Bartlett, Marshall, & Marshall, 2012, p. 335).

Two-Eyed Seeing generally means weaving together Western science as a way of knowing with traditional or Indigenous knowledge. It means acknowledging different perspectives and engaging with various forms of knowledge, research, worldviews, and values in a co-learning journey that is built on respect, community, meaningful relationships, and reciprocity. Bartlett, Marshall, and Marshall (2012) explain this concept in more depth and explain how "we need each other and must engage in a co-learning journey." (p. 331)

To learn more about how Two-Eyed Seeing can inform your practices and research, review this 2020 Reconciling Ways of Knowing panel discussion with Mi'kmaq Elder Dr. Albert Marshall, Dr. Jesse Popp, Dr. Andrea Reid, and Deborah McGregor (Jaquie Miller as the moderator) and this article by Reid et al. (2020), "'Two-Eyed Seeing': An Indigenous framework to transform fisheries research and management".

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.bccampus.ca/indigenousstemeducation/?p=36#oembed-1

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Reid, A. J., Eckert, L. E., Lane, J.-F., Young, N., Hinch, S. G., Darimont, C. T., Cooke, S. J., Ban, N. C., & Marshall, A. (2021). "Two-Eyed Seeing": An Indigenous framework to transform fisheries research and management. *Fish and Fisheries* , 22(2), 243–261. https://onlinelibrary.wiley.com/doi/full/10.1111/faf.12516

PERSONAL JOURNEY

The following set of questions speaks to why this work is important and the positionality and role of non-Indigenous folks in learning, engaging, and elevating this work.

Why should I care? Why is this important?

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.bccampus.ca/indigenousstemeducation/?p=118#oembed-1

In the above video, created in advance of the inaugural National Day for Truth and Reconciliation on September 30, 2021, the Honourable Murray Sinclair, former Chair of the Truth and Reconciliation Commission of Canada, speaks to the need to put forth a message of "*hope for reconciliation, of hope that we can come to terms with this past, of hope that we will be able to establish a new and better relationship between ourselves as Indigenous people and non-Indigenous people can in fact be the pathway to the future. It's going to take a lot of effort. It's going to take a lot of time.*"

Murray Sinclair goes further to say that "*we are not only calling for people to understand this truth and to accept it, but we're also calling on people to recognize that, there came with it, benefits and privileges that now are bestowed upon the settler population, that were bestowed at great cost to Indigenous people. The loss of land, the loss of resources, the loss of access to their own potential as human beings, is part of the price that Indigenous people have paid for the existence of this nation… but we also need to get people to think about what is it that we can do properly to come to terms with this.*"

Despite often being thought of as events of the past, the exploitation, marginalization, and colonization of Indigenous Peoples, their communities, their lands, and their livelihoods are ongoing and prevalent in our everyday lives. As such, there is a call for settlers to address these issues, in addition to the role of Indian Residential Schools in Canada and harmful policies, structures, and attitudes. There is also a need to acknowledge the histories and experiences of Indigenous Peoples and to uplift their voices and celebrate their excellence. Doing this work is extremely important for many reasons, including working towards making a difference for future generations.

Learning about Indigenous realities, histories, cultures, and knowledge is a strategic goal for the UBC community and a national priority and expectation. You are being called upon both personally and professionally, as per the TRC Calls to Action, the UBC Indigenous Strategic Plan and the Memorandum of Affiliation between Musqueam and UBC, to advance change in your classrooms, departments/units, and communities.

Doing this work is also an extremely important element of supporting Indigenous students in becoming more comfortable with themselves and their identities.

I often hear the phrase “nothing about us, without us.” So, how can I do this work on my own as a non-Indigenous person? Who will support/guide me?

The idea of “nothing about us, without us” is rooted in the issue of Indigenous communities being left out of policy making decisions that intimately shape, influence, and impact their lives.

For non-Indigenous folks, especially in STEM fields where our understanding of and connections to Indigenous histories, cultures, and knowledge is often limited, there is hesitancy to do this work without direct guidance from and partnership with Indigenous Peoples. The calls to action outlined in the TRC and UBC ISP were created and written by Indigenous Peoples and, as such, it is now the turn of non-Indigenous people to participate in the work. This is not to say that you have to do it alone without consultation, but that it’s now time for everyone to do their part and to be mindful not to burden their Indigenous colleagues or peers with furthering their own understanding and education on the matters at hand.

> “We have described for you a mountain. We have shown you a path to the top. We call upon you to do the climbing.” Honourable Murray Sinclair, 2015.

As you engage in this work, seek out other people or communities with whom you can discuss and further your learning. You could co-organize a reading group, attend workshops/events together, and/or collaborate on projects that focus on Indigenizing curriculum and learning spaces.

I am a recent immigrant, how do I learn more about Indigenous Peoples and histories in Canada?

While many people are coming to UBC with a very different relationship to colonization, it is important to realize that there exists an explicit connection between the colonization of Indigenous Peoples in Canada and one's ability to attend, learn, or work at UBC. As such, it is important to recognize that international faculty and students also benefit from the dispossession of Indigenous Peoples in Canada despite there being many ways in which they, especially those from marginalized communities, face intersectional oppression. Recognizing our positionality in contributing to the colonization and oppression of Indigenous Peoples is a crucial aspect for implementing meaningful change.

The in/relation: supporting new learners to Indigenous topics at UBC educational resource is designed for faculty, students, and staff who want to learn about Indigenous topics, histories, and relationships. The resources include a facilitator's toolbox and modules relating to land acknowledgements, Canada's Truth and Reconciliation Commission and Calls to Action, the Residential School System in Canada, and living and learning on Musqueam Lands.

With respect to being a newcomer to British Columbia and Vancouver:

- Watch this 2020 video from the Immigrant Services Society of BC, Welcome to our homelands: A greeting from Canada's First Peoples to newcomers, and review the accompanying study guide.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.bccampus.ca/indigenousstemeducation/?p=144#oembed-1

- You can also refer to this 2014 City of Vancouver resource, First Peoples: Guide for Newcomers, which provides an overview of Indigenous Peoples in Vancouver and Canada, their relationships with the Government of Canada, and how newcomers can learn more about Indigenous Peoples in their communities.

How do I build relationships and partner with Indigenous Peoples/communities?

Firstly, it's important to acknowledge that Indigenous communities have their own priorities and concerns and these may or may not align with your goals, interests, and/or timelines. Furthermore, be mindful that Indigenous communities receive an abundance of requests and if they do not respond, it could be due to a number of reasons (e.g. too many requests, capacity issues, prioritization of community needs and goals, previous harmful relationships.).

As such, prior to reaching out to a nation with a particular request/project idea, we'd advise you to connect with your colleagues for feedback and to see if they already have relationships with particular communities or resources that might be of use to you. You can also connect with various individuals or offices on campus (e.g. CTLT II; Skylight; IRSI; and CCEL) to discuss whether community involvement is needed and what steps are necessary for respectful engagement. We also suggest you review the IRSI Indigenous Finance Guidelines to ensure you are following appropriate processes and compensation protocols.

Another important piece of relationship building and collaboration with Indigenous communities relates to sovereignty and ownership of Indigenous data and knowledges. As per the First Nations Principles of Ownership, Control, Access, and Possession (OCAP), First Nations should have control over data collection processes and how data is used. The Xwi7xwa Library Guide on Indigenous Cultural & Intellectual Property has a number of useful videos, articles, and resources about data sovereignty.

If you decide to reach out, approach the community and conversations with an open mind and heart. Ensure reciprocity is at the forefront and continually consider how it can be of benefit to their community. Keep in mind that it is not the responsibility of Indigenous Peoples to educate you, as these conversations may be emotionally taxing or triggering for them. Do not criticize or debate Indigenous Peoples' perspectives and knowledges. Instead, listen to their stories and experiences with openness.

What can I do as an ally?

This section of the *Pulling Together* guide includes a few short readings and reflection questions on becoming/being an ally and touches on what this means in the context of Indigenizing curriculum and practices. They emphasize the need for an ally to:

- Not put their own needs, interests, and goals ahead of the Indigenous people they are working with.
- Have self-awareness of their own identity, privilege, and role in challenging oppression.
- Engage in continual learning and reflection about Indigenous cultures and history.

A critical part of learning and developing as an ally, is to listen to Indigenous Peoples' desires, needs, and experiences and to allow space for time and healing. And as you listen and learn, be mindful not to overburden Indigenous Peoples with your own questions and processing. Your role as an ally is to uplift and support Indigenous Peoples, not to be a saviour or prioritize your own position and intentions. It is important to know this boundary exists and where it lies. Identify, learn about, and reflect on your own privilege and how it affects us and those around you. You can use your privilege and power to advance Indigenous voices, experiences, challenges, and successes be heard and be given the appropriate platform for change.

See the Inclusive Teaching Resources for UBC Science Instructors webpage for suggestions and resources for how to make STEM classrooms more inclusive.

LANGUAGE

This section addresses some of the most commonly asked questions around the complexities of language. It provides a number of suggestions and resources to guide folks in learning about the importance, significance, and appropriate use of language with respect to Indigenous Peoples, lands, and contexts.

Why is language so complicated in this space?

Keep in mind that language is always evolving and can hold different meanings for different people. As such, it is important to give people the space to express what forms of language they are comfortable with and to understand that perspectives can change. It is also important to be aware of the impact that language holds and that particular terms or generalizations may be harmful, triggering, and/or associated with colonial history. Colonization, colonial violence, and residential schools in Canada have threatened the existence of Indigenous languages. Given this legacy, there is an urgency for Indigenous language revitalization and there are several UBC projects underway to revitalize Indigenous languages (e.g. Power of a Name video series, hən̓q̓əmin̓əm̓ Alphabet, Indigenous Foundations).

The language used in academic discourses and Western science is inherently colonial as it is rooted in and influenced by Eurocentric ways of knowing and researching. For example, the English language is anthropocentric as it dismisses the agency of nature and non-human animals, which are often objectified and seen as less than the human species. This allows us to be comfortable with manipulating and mistreating animals and nature without consent in the name of scientific "discovery" and for our own personal benefit or curiosity. In contrast, in Indigenous cultures it is understood that we have an inherent responsibility to listen to nature and animals and to live reciprocally with the land and other beings that occupy Earth without exploiting them.

As you navigate this work, be open to how language may influence your own perspectives and views and to challenge your unconscious biases.

What is the difference between “First Nations”, “Indigenous”, “Aboriginal”, “Indian”, and “Native”? When (if ever) do I use each one?

Currently, the most widely accepted umbrella term is “Indigenous Peoples”, but it’s important to do some research to determine what terminology is most appropriate and how particular people and/or communities would like to be identified. If known, it is always best to refer to a person or group of people by the specific nation they belong to and to prioritize using the correct pronunciation. Terms that are not as universally accepted or are only accepted in specific contexts include “Aboriginal”, “Native”, and “Indians”.

Given the nuance of language and potentially problematic nature of language, we have not included direct definitions on this page. That said, we encourage you to review the UBC Indigenous Peoples Language Guide which provides an in-depth explanation of which terms to use when referring to Indigenous Peoples and the contexts in which they are appropriate to use. It also provides some context for why language continues to adapt and change in this space.

What do the terms Indigenization, decolonization, and reconciliation mean?

See this *Pulling Together* guide for definitions and discussions of the terms Indigenization, decolonization, and reconciliation.

Be mindful that these terms are broad and, as such, do not capture specific actions and/or topics needing attention. Providing more detail about the particular aspect of Indigenization, decolonization, and/or reconciliation you are speaking to or engaging in is important (e.g. understanding and respecting Indigenous human rights and sovereignty, weaving together Western and Indigenous ways of knowing, respectfully integrating relevant readings or case studies from a diverse group of scientists).

Recently, there has been criticism of the overuse of these terms in higher education which is explored in this article by Gaudry & Lorenz (2018). It is important to note that Indigenous Peoples don't necessarily identify with or agree with the use of these terms, because of the connotations and meanings these terms hold and because of the lack of action associated with their use.

References

Gaudry, A., & Lorenz, D. (2018). Indigenization as inclusion, reconciliation, and decolonization: navigating the different visions for indigenizing the Canadian Academy. *AlterNative: An International Journal of Indigenous Peoples*, 14(3), 218–227. https://doi.org/10.1177/1177180118785382

LAND ACKNOWLEDGEMENTS

This section addresses some of the most commonly asked questions about land acknowledgements and provides a number of resources and suggestions for how to make these acknowledgements meaningful, respectful, and action-oriented.

What is a land acknowledgment?

Land acknowledgements are a type of protocol that ask people to share who they are, where they come from, the relationship to the land they are visiting/residing on, and their intentions. To learn more about the diversity of Indigenous protocols, review the work done by Chelsea Vowel, Bradley Dick, and the Ontario Arts Council.

Land acknowledgments serve as a reminder that the land on which we learn, teach, work, live, and play is stolen. Such acknowledgements can be an opportunity to share histories, teachings, and actions for how we can be better stewards to our lands, waters, and communities. They can be used to bring to the foreground the reality of our individual relationships to colonization and how we specifically benefit from colonization as settlers and as folks who attend a colonial institution. Offering land acknowledgements can also create an opportunity for us and others to reflect on and challenge our own views and perspectives.

To learn more about land acknowledgements and how to develop one, see this self-guided UBC course, Indigenous Learning Pathways: Land Acknowledgements at UBC available for faculty, staff, and students, and this CTLT one-pager on giving land acknowledgements.

How do I approach doing land acknowledgments?

Research the history of the people on whose lands you currently live and have previously lived.

- Resources such as Native-Land.ca are a good starting point to learn on which lands you reside, but are not exhaustive. You should do further research and explore in more detail the oral and lived cultures and histories of Indigenous Peoples and communities.
- Make sure you know how to correctly pronounce the names of different nations. Writing the names phonetically can help with your pronunciation of the terms when speaking.

Implicate yourself, speak to who your people are, to the identities you hold, and to whose lands you and your ancestors have lived on.

- This isn't an opportunity to talk about yourself at length, but rather a moment to learn how to announce yourself and your positionality respectfully. This resource on positionality from the What I Learned in Class Today project provides some useful prompts to help you think through your positionality.
- Research, think about, and address how you benefit from occupying stolen land. An example of this would be to first research how your field of study, area of research, or how Western science in general is inherently colonial and dismisses Indigenous ways of knowing and living.

Land acknowledgements should be meaningful and authentic.

- When learning how to deliver meaningful land acknowledgements, it will require that you spend time thinking about it, that you bring self/emotion into it, and that you back up the acknowledgement with action. Simply reciting a one line acknowledgement without indicating action may actually do more harm than good.

Be open to being corrected and learning from your acknowledgements. Growth and humility are extremely important in this space.

For additional information and facilitation materials, see Module 1: Where are we? How did we get here? from the in/relation project developed by CTLT Indigenous Initiatives.

How do I bring emotion/self into land acknowledgments?

Indigenous ways of knowing, culture, and protocols are holistic in nature and do not separate the mind from the heart as is often the case in Western scientific practices. As such, it is important for you to bring your whole self to not only your land acknowledgements, but to your learning and action in this space. Within an acknowledgement, you can speak to the relationship between colonization and your work, but remember that this is not an opportunity to speak to your own guilt or difficulties with the subject matter.

Expressing emotion and sharing your personal history/learning within a teaching context can be difficult. Therefore, we encourage you to practice your acknowledgements with peers you trust and to seek feedback on your approaches.

Why can land acknowledgments be harmful?

A harmful land acknowledgement either focuses too much on the person giving it, is short and performative, and/or is not connected to action.

The main takeaway is that acknowledgments without action are meaningless. Giving land acknowledgments is only the beginning of a larger conversation that needs to be had about how we can create safer spaces that allow for, accept, and embrace various ways of knowing and being.

To create more meaningful and safe spaces, you can:

- Engage with students about what meaningful action looks like to them and about what would help them to feel safe in the space that you are creating.
- Consult community members, Indigenous Peoples (when appropriate), and resources to learn what meaningful action looks like.
- Indicate action (e.g. “This is informing the design of this class in xyz way”) and follow through with action.
- Continue the conversation throughout the semester.
- Carry the conversation outside of the classroom setting, for example, at home or with friends and colleagues.
- Continue to evaluate your own privilege in your day-to-day life and think about the ways in which you may subconsciously internalize and benefit from colonial views and systemic racism.

EMOTION, RELATIONALITY, AND POSITIONALITY

This work is inevitably emotional, and as such, this section addresses commonly asked questions related to how to navigate conversations, contexts, and one's personal journey with respect and care.

How do I bring emotion into the classroom? Why is it important?

When we talk about bringing emotion into the classroom, what we really mean is bringing your authentic self to your teaching. This may mean sharing stories, personal experiences, or experiences from your career, as well as inviting students to share aspects of their own lives. Being authentic and vulnerable in the classroom may help create a sense of openness which in turn may help students to feel more comfortable in the space.

Prioritize inclusion, relationality, creating a sense of belonging and community, and creating safe spaces that allow for respectful conversations. This is particularly important when such conversations might bring about discomfort in the classroom.

- This Acknowledging the Affect: Tending to the Emotional Side of the Classroom resource from the What I Learned in Class Today project provides an overview of why these subjects are emotional and how instructors can create safe and comfortable learning environments. It also includes resources and reflective questions for further learning.
- Refer to this Anti-Oppressive Learning Environments summary from the What I Learned in Class Today project to learn more about how to create trust and care within the classroom setting.
- Watch this short video by Dr. Pam Palmater on “Why Do Indigenous Topics Cause Such Emotional Discomfort?”

What do I do if I accidentally offend someone?

Apologize without making excuses.

- Practice accepting criticism with gratitude and avoid over-apologizing. Making the apology about yourself may make someone feel like they have to reassure you that it is okay, when really criticism should be welcomed and seen as a learning experience that will help you in creating a safer space for others. Reframe your apology so that this intention is clear.

Mistakes will happen.

- Be aware that some things may be taken differently by different people and what people are comfortable with is also subject to change. What matters is that, when someone raises a concern with you, you take accountability, however that looks depending on the situation, and make a conscious effort to not make the same mistake going forward.

Reflect and seek support as needed.

- Carve out time for reflection on the issue and seek other colleagues, peers, or allies to walk with should you need to debrief.

How do I process my own guilt/emotions in this space?

Realizing how deeply damaging systemic social hierarchies are for ourselves, our communities, other beings, and our planet will inevitably cause uncomfortable and difficult emotions to surface. Moreover, it can be hard to realize and accept your position in contributing to colonization, colonial systems and violence, and the impacts on Indigenous communities. You may yourself belong to another marginalized community or you may feel that your values, beliefs, or actions are not inherently oppressive or directly harmful. Although you may have your own experiences with systemic oppression or you may not have explicitly discriminatory or racist views, as a settler you still benefit from the exploitation of Indigenous Peoples and lands.

No one chooses the position, situation, or body they are born into. However, this does not diminish the fact that we all experience different levels of privilege by living in a society that is systematically oppressive and hierarchical. For many, facing the impacts of systemic oppression is a daily and lifelong experience that they cannot choose to escape or opt-out of. Others have the privilege of being able to choose when, or even if, they have the space to address systemic violence and oppression.

While feelings of guilt may surface as you recognize and learn to accept your position in contributing to the oppression of Indigenous Peoples, it is not the responsibility of Indigenous Peoples or others to alleviate this guilt. Your comfort cannot take precedence over having much-needed conversations that address the impacts of systemic racism and colonization on the lives of Indigenous Peoples, as well as the need to create safer spaces for Indigenous Peoples. Most importantly, having to face uncomfortable feelings is not an excuse for inaction. Guilt is not an excuse for inaction. Being overwhelmed is not an excuse for inaction. Difficulty is not an excuse for inaction. People whose lives are affected by systemic oppression every day do not have the luxury of inaction. If anything, guilt and feelings of discomfort should be used as a way of energizing future work and not a deterrent from engaging and committing to this work.

How do we exercise and promote self-care and community care?

This work is difficult work. As such, it's important to create time and space for self-care, which is an important aspect of being able to support others. We encourage you to create and/or locate personal and professional spaces to talk through any difficult emotions that may surface when doing this work. However, as you talk about your own experiences, be mindful of not burdening your Indigenous colleagues or friends with your personal difficulties. Instead, finding a network of allies or other non-Indigenous folks with whom to work through your emotions may be helpful.

Within your classes,

- Build in flexibility so people have the option to take breaks and to participate only if they are comfortable doing so.
- Providing flexible deadlines and assessment options, being mindful of student workload, and listening to students' concerns can be a way to support student wellbeing and safety.
- Locate resources that might be helpful for yourself and/or students, and prioritize making these resources accessible to all.
- Ensure that students know about and have access to information about UBC student resources (advising, counselling, student affinity groups, student health, the First Nations House of Learning, etc.).