

ACCELERATE / ACCÉLÉRER

CLIMATE CHANGE EDUCATION
IN CANADIAN TEACHER EDUCATION

L'ÉDUCATION AUX CHANGEMENTS
CLIMATIQUES DANS LA FORMATION
DES ENSEIGNEMENTS AU CANADA



PROFESSIONAL LEARNING CASE STUDY

Professional Learning on Haida Gwaii

Dr. David Zandvliet
Simon Fraser University
March 2025

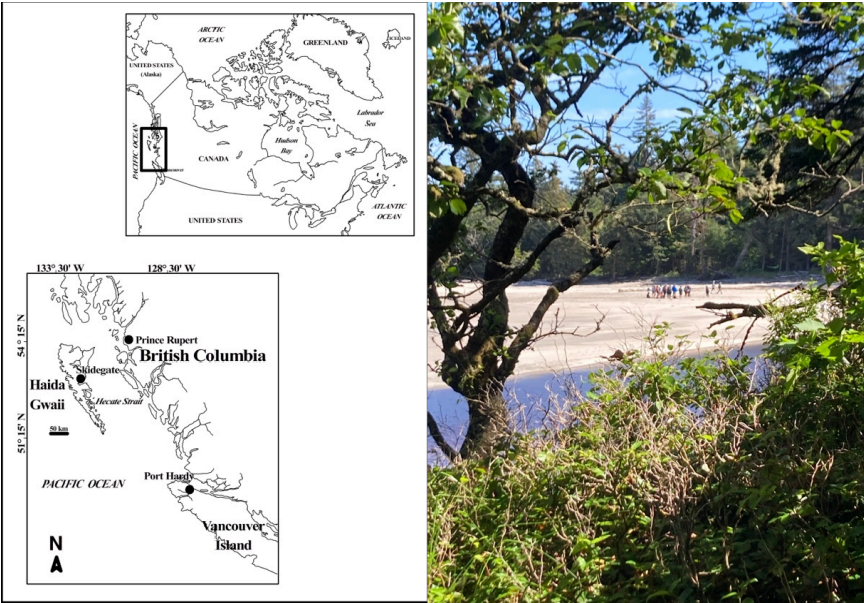
Overview

This case study describes a unique educational experience on Haida Gwaii -- an archipelago located on the westernmost fringe of British Columbia forming part of the Pacific Rim. It describes important aspects of a community unique for its connections between culture, ecology and the land. For this reason, it is the location for a longstanding environmental education program offered in a partnership between the Haida Nation and Simon Fraser University's Faculty of Education. In this case description, we share excerpts of this in person teacher-education program through the 'science and stories' that inform our experiences there. Inherent in these perspectives are the voices of Haida leaders, students and academics who play key roles within the design and implementation of the program.

Since its inception twenty years ago, the most recent program (24 students) involved a complex mix of pre-service and in-service teachers offered in August 2024. The story aspect of this case is especially important as we continue our work in decolonizing climate, environment and sustainability education. For example, increasingly, climate scientists and anthropologists look at oral histories not as mere myth but instead as tools to unlock high-level cultural constructs or as illustrations of theories. Cultural stories preserve information about the ancient past that cannot be obtained from Western sources but they also store other important kinds of knowledge (eg. medicinal knowledge or environmental management practices).

This case study also presents an ecological (place-based) framework for environment and climate education, its assertion is that grounding learning in a sense of physical and cultural environments is an essential component to a balanced view of

environmental learning and teacher professional development. Through a combination of science and story, the perspectives inherent in a critical (place-based) framework on Haida Gwaii resist marginalization as our work takes the form of an epistemology rather than a curriculum implementation strategy. Our interpretation of student teachers' reflections and outcomes at the end of the program indicate that students realized their learning goals and that cultural and environmental issues increasingly framed their ideas about teaching and learning.



Location and features of Haida Gwaii

Program Foundation

Needs or Gaps Addressed By the Program

The professional learning program that we have offered (on location) in Haida Gwaii for many years acknowledges both the social and ecological roots to the problem of climate change (and environmental issues in the broadest sense) by first acknowledging the important knowledge of local Indigenous knowledges and pedagogies while also acknowledging the contributions of western science. In theorizing about this nexus, we use the term *Science and Story* (Alsop et. al., 2023) to describe synergistic connections in the knowledge base and in many ways our approach is analogous to a 'Two-eyed Seeing' approach described by Indigenous *Mi'kmaq* scholar Albert Marshall in his work with Cheryl Bartlett (Bartlett et. al., 2012). In adopting these frameworks, we also begin to directly address the directives and recommendations of the Truth and Reconciliation Commission (see BC Ministry of Education, 2015) and the pressing need to decolonize curricula to take immediate action in empowering Indigenous communities wherever we live. Locating our program in the context of *Haida Gwaii* is particularly advantageous to this effort as the Haida people have sustained a strong cultural resurgence in recent decades (Zandvliet et. al., 2006) and have now 'officially' retained their legal title as traditional stewards of the

land (Inside Climate News, 2024) - a condition that many Haida describe as being 'in their DNA' and seemed obvious due to the extensive archaeological record (see appendix).

Science and Story Approach

It [Xā'gi] came to the surface like a reef in the falling tide. On top of it a woman called Foam- Woman was sitting, and the families of supernatural beings swam over to it from all sides. Only those were there out of whom the present island families were going to come. Before this, when it was not yet on the surface, and the supernatural beings tried to climb on top of it, Foam-Woman refused to allow them to [let them out of the water]. Then they were afraid, and waited for it to come above the surface of the water, as she had said. When quite a piece of it was above the surface, they began to talk over where they were going to settle ...

[excerpt from a cultural exhibit -- recounted by Swanton 1901a: p76]

Scientists who study the geology of Haida Gwaii generally separate the islands and the surrounding marine area into two regions: the Queen Charlotte Ranges and Coastal Trough, including the Hecate Depression. These mountains run from southwestern Graham Island to Moresby Island and include the Skidegate Plateau. While the Queen Charlotte Ranges form the backbone of the islands, they are extremely rugged. The Coastal Trough is a marine area between the east coast of Haida Gwaii and the west coast of the British Columbia mainland.

[excerpt from a science and cultural exhibit, Haida Heritage Centre]

The above accounts are excerpts from scientific and cultural exhibits displayed at the *Kay Lnagaay* Heritage Centre (*Kay*) in Skidegate and are referenced in unit and lesson plans developed by participants in our professional learning programs. Texts such as these describe important aspects of a community unique in Canada for its connections between culture, ecology and the land while also setting the stage for professional learning about Indigenous issues as they also relate to climate and environmental learning.

Theoretical Framework

Many cultural accounts of climate change and environmental conditions still exist in both written and recorded forms and in the memories of Haida elders. All of these show the deep connection between the Haida people and their land. Cultural stories preserve information about the ancient past that cannot be obtained from Western sources but also store other important kinds of knowledge (e.g. medicinal knowledge or environmental management practices). They also 'give roots' to young people instilling a sense of pride in their connection to *Haida Gwaii* (Wilson, 2005). This kind of understanding assists us in moving towards a more sustainable relationship with the earth and in addressing important issues such as climate change. This point also connects to the importance of Indigenous forms of education (Lowan–Trudeau 2013).

Indigenous Knowledges - The field of education on Indigenous knowledges has grown rapidly in the last few decades, led by noted scholar Gregory Cajete (see 1994; 1999). As a contemporary example of this Lowan-Trudeau (2013) outlined an 'Indigenous environmental education' noting that its emergence has paralleled a growing trend in North America and other parts of the world seeing a dramatic rise in "programs teaching Indigenous knowledge and philosophies for the benefit of both indigenous and nonindigenous students" (Lowan-Trudeau 2013, p. 404).

Ecological Framework - complementary to Indigenous forms of education, the 'ecological' framework we employ in our program offers a critique of the mainstream organization of curricula while at the same time making a case for alternative place-based pedagogies which allow teachers to interpret curriculum in a way that focuses learning within the context of a single physical or cultural community. Teaching with/in an ecological framework focuses teaching on attempts to improve the quality of life within communities while at the same time assists students and teachers to develop a sense of 'their place' within them (Zandvliet, 2016).

Place-based Education - in the description of our ecological model, it is also necessary to describe how the experiences on *Haida Gwaii* are 'framed' as a form of place-based education (Zandvliet et. al., 2006). This methodology is informed by socio-constructivist ideas about teaching and learning, merged with elements of the experiential learning cycle (BC Ministry of Education, 2007). The model describes learning as a socially mediated process through which teachers teach and students learn. Throughout the process, cultural leaders and mentors model the view that teachers and students are *co-constructors* of knowledge. Through sustained reflection (and critique) of peers' ideas and concepts, participating teachers develop a 'style' that embodies their beliefs about teaching and learning related to important cultural and environmental issues related to climate and a range of other issues. This concept of a place-based education lies at the nexus between a 'science education' with forms of knowledge construction largely conceived of and implemented *outside* of 'authentic' communities, and a form of learning that juxtaposes this knowledge with socio-cultural, values-based constructs which we describe as an *environmental ethos* (Ministry of Education and Childcare, in press). The framework provides a model for the interpretation of curriculum in a broad range of communities. In the case of Haida Gwaii, this includes a deep understanding of the Haida's deep connection to place, land, and a complex cultural history.

Desired Outcomes

This goal of the professional learning program was to help teachers examine the educational problems entailed in developing human awareness and understanding of the *environment, climate change* and *eco-justice* broadly defined. The program helps teachers to explore environmental issues through a multidisciplinary lens and relates historical, cultural, and contemporary issues in human-environment interaction to school curricula from the elementary to the secondary level. Indigenous and local cultural knowledge forms an integral part of our approach. As we continue to re-invent the Haida Gwaii learning experience, our method combines foundational

work completed in classroom teaching contexts, with tighter connections to sustainability, professional development and K-12 curriculums. The field school approach aims to put theory into action in a specific place (eg. *Haida Gwaii*). We believe this approach provides greater coherence to teacher education programs and a deeper understanding of the merits of placed based education and Indigenous knowledges.

In this program it is hoped participants/teachers will achieve the following outcomes:

- Develop appropriate models and methods for *Environmental Learning* (EL), *Indigenous knowledge* and *Climate Education* (CE) in both formal and informal educational settings.
- Critically evaluate available *Environmental Learning* and *Climate Education* instructional materials and resources from a variety of sources (eg. web, video and print based materials).
- Compare and contrast educational resources and guidelines published by the Ministry of Education and Childcare with other published guidelines (eg. ECCC, NAAEE, UNESCO).
- Consider a variety of perspectives in the interpretation of *Environmental Learning* and *Climate Education* (eg. regulatory, socio-economic, legalistic, aesthetic and scientific).

Curriculum & Implementation

Program Leadership

Leadership for this program was provided by Dr. David Zandvliet (SFU) and Dr. Shannon Leddy (UBC) in their capacities as the co-directors of the Institute for Environmental Learning.

Participants

Participants in the program consisted of 17 adult students of mixed age range (2 males and 15 females) enrolled in the Professional Development Program at SFU. In addition 7 graduate students (6 females and 1 male) enrolled in PhD or Masters programs at SFU and UBC participated in the program. In addition, 6 indigenous knowledge holders were involved in the dialogue and talking circle sessions as part of the program.

Schedule

The program consisted of a two-day immersive experience which occurred within the context of a longer (extended field school) occurring on *Haida Gwaii* during August of 2024. Intensive workshops (8 hours each) were scheduled August 7 & 8 and were open to all educators in the community. Participants included pre-service teachers, graduate students, local teachers and educators from communities across *Haida Gwaii*. In total, we had 24 participants in the workshop, and this was augmented by more than a dozen Indigenous leaders participating during the first day of the

program. Overall scheduling was as follows:

- August 7, 2024 (AM) - Museum tour and review of exhibits (Haida Cultural Heritage Centre) August 7, 2024 (PM) - Talking circle with Elders / knowledge holders (Bill Reid Classroom)
- August 8, 2024 (AM) – What is Environmental Learning? (Overview, Bill Reid Classroom)
- August 8, 2024 (PM) – Professional Learning Activities (Haida Cultural Heritage Centre)

Content and Pedagogical Approaches

The content and pedagogical approaches for the workshop stem from the framework document: *What is Environmental Learning? A Guided Inquiry for Educators* (BC Ministry of Education and Childcare, in press). An overview of topics included in this framework for K-12 teachers includes those listed below, links to the full document will be available soon.

- **Introduction:**
 - *What is Environmental Learning?*
- **First People's Principles:**
 - *What are the First People's Principles of Learning?*
 - *What is Biocultural Diversity?*
- **Environmental 'Seeing':**
 - *What is Two-Eyed Seeing?*
 - *Seeing through Experience, Seeing as Inquiry: The '7E's Model Inquiry*
 - *Questions and Activities*
- **Environmental Communication:**
 - *Narratives and Storywork Communication and Action, Is Communication Cultural?*
 - *Eight Ways Pedagogies with Communication Activities*
- **Environmental Thinking**
 - *Learning to CARE, What are the 4Rs?*
 - *Thinking with Care: A Guided Inquiry, Thinking 'In,' 'With' and 'For' Community*
- **Eco-Citizenship**
 - *The Educated Citizen,*
 - *Sustainability and the Green Economy*
- **Core Competencies**
 - *Core Competencies are Environmental Competencies*

Program Promotion

A flyer was designed and disseminated broadly to encourage participation in the

professional learning program. In addition, word of mouth promotions went out to members of the local community and through educator networks linked to the *Institute for Environmental Learning* and local school districts on *Haida Gwaii* and in the neighbouring port city of Prince Rupert. These were augmented by additional classroom and field-based experiences offered on both mornings prior to the public workshops.

Reflections & Lessons Learned

Evidence of Impact: Self-study and Reflection

An outcome of the professional learning program is this short video [What is Environmental Learning?](#) which contextualizes and summarizes the experience.

Reflecting on the evidence of the program's impact, it is important to consider how thoroughly leaders and students can make a workshop authentically contextualised to place. Environmental learning *can* and probably *should* look very different wherever you are. It's essentially about being in tune with community, finding what the issues are, and what the unique cultural contexts are where you live.

A second key impact was the importance of including Indigenous knowledge holders to further contextualise this conversation about climate and environment in a 'deep time' and culturally enriching way. The metaphor we use here is 'two-eyed seeing' and it is a powerful way to do this work.

The following are text excerpts, which highlight these impacts:

"Welcome to *Haida Gwaii*. You've come here to a very special place ... Our stories are very, very old ... scientists say that we are here 14,000 years ... So, they've been discovering villages out on the fringes of our shores, that are very, very ancient," (Haida elder)

"I had a lot of questions coming into it -- about what communities are like in and around Indigenous areas. This (experience) gives me an opportunity to actually see everything, to interact with people ..." (Workshop participant)

Lessons Learned and Future Directions

Following the implementation of the Haida Gwaii workshop during August 2024, a colleague interviewed me about the most salient aspects of our program. An analysis and synthesis of the main points is provided here:

"Locating the workshop in Haida Gwaii was important because we are interested in the connection between culture and environment ... there is something about Haida Gwaii that is this unique mix -- a unique ecology in Canada... and a very resilient Haida culture ..."

"A Place-based focus is also important as many of the participants have said, 'finally, we understand what all this talk about decolonization and reconciliation is about,' ... dealing with issues we've only read (about) in books about or heard"

speakers talk about -- out of context ...”

Further, the importance of inquiry in community was highlighted. Learning that happens outside in community, or in natural environments -- that can be the richest form of learning. The only way to address that is to actually ‘do it’ and to model it (in the workshops.)

Finally, the last key idea highlights the importance of interdisciplinarity – you don't have to just go outside just for science -- the lesson could involve art or a creative writing exercise. The real world isn't broken into these little boxes that we call the disciplines.

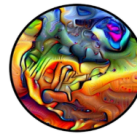
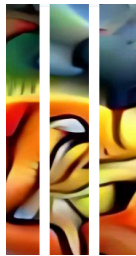
Selected References

- Alsop, J. Ormond, C.A., Wilson, B. & Zandvliet, D.B. (2023). Science and Story. In Chinn, P. and Nelson- Barber, S. (Eds.) *Indigenous STEM Education – Perspectives from the Pacific Islands, the Americas and Asia, Volume 2*, Bern:SpringerNature.
- Bartlett, C., Marshall, M., & Marshall, A. (2012). Two-eyed seeing and other lessons learned within a co- learning journey of bringing together Indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences*, 2(4), 331–340. [https://doi.org/10.1007/s13412-0086-8](https://doi.org/10.1007/s13412-012-0086-8)
- British Columbia Ministry of Education. (2007). *Environmental Learning and Experience*. Retrieved from: http://www.bced.gov.bc.ca/environment_ed/
- British Columbia Ministry of Education. (2015). *Actions Taken to Support Truth and Reconciliation Commission of Canada’s Calls to Action*, Available online: <https://www2.gov.bc.ca/assets/gov/education/ways-tolearn/aboriginal-education/trc-calls-to-action.pdf>
- British Columbia Ministry of Education and Childcare. (in press). *What is Environmental Learning?*
- Cajete, G. (1994). *Look to the mountain: An ecology of Indigenous education*. Kivaki Press.
- Cajete, G. (1999). “Look to the mountain”: Reflections on indigenous ecology. In G. Cajete (Ed.). *A people’s ecology: Explorations in sustainable living* (pp. 2-20). Clearlight Publishers.
- Inside Climate News (2024, Apr.). *In Coastal British Columbia, the Haida get their Land Back*. News article. Lowan-Trudeau, G. (2013). Indigenous environmental education research in North America: A brief review. In R. B. Stevenson, M. Brody, J. Dillon, A. E. J. Wals (Eds), *International handbook of research on environmental education* (pp. 404-407). NY: Routledge.
- Wilson, B., & Harris, H. (2005). *Tllsda Xaaydas K’aayygang.nga*: Long, long ago Haida Stories. In D. W. Fedje & R. W. Mathewes (Eds.) *Haida Gwaii: Human*

history and environment from the Time of the Loon to the Time of the Iron People (pp.121-139) Vancouver: UBC Press.

Zandvliet, D.B. & Brown, D.R (2006). Framing Experience on *Haida Gwaii*: An Ecological Model for Environmental Education. *Canadian Journal for Environmental Education* (Vol.11), 207-219.

Zandvliet, D.B. (2016). *The Ecology of Home*. Rotterdam: Brill.



ACCELERATE / ACCÉLÉRER

CLIMATE CHANGE EDUCATION
IN CANADIAN TEACHER EDUCATION

L'ÉDUCATION AUX CHANGEMENTS
CLIMATIQUES DANS LA FORMATION
DES ENSEIGNEMENTS AU CANADA

For more CCE Professional Learning Case Studies and Vignettes and other resources,
visit the **ACCE-TE website** [accelerating-cce.ca]

