



Developing a Climate Justice Education Cohort in Teacher Education at UBC

**Final Report | Solutions Scholars Project
2025-26**

Land Acknowledgment

**We did this work on the UBC Vancouver Campus,
situated within the traditional, ancestral, and
unceded territory of the Musqueam People**

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1. Problem Statement

Contemporary climate change and related social impacts have necessitated a re-think and revisioning of traditional teaching and learning practices (Chomsky in Polychroniou, 2019; Vongalis-Macrow, 2010) that “elevates kinship with nature and communal well-being” for all earth’s communities (Fletcher et al, 2024). Due to escalating global crises such as extreme weather events, biodiversity loss, mass extinction, and ecosystem collapse, there is an urgent need for evidence-informed climate change education (Desmarais, Johnston, & Hunter, 2023). Intergovernmental Panel on Climate Change (IPCC) highlights that human-caused impacts of climate change are disproportionately affecting vulnerable communities, who have historically contributed the least to current climate change (IPCC, 2023). In 2024, the Canadian government led a nationwide consultation on Toward a National Framework for Environmental Learning, with a key focus on climate change and identifying “education as a key element that cannot be overlooked”.

We understand this revisioning to interweave climate change education, STEM education, and climate justice. Educators are faced with the challenge of not only engaging learners in these conversations but also supporting and addressing the range of emotions while developing and enacting inclusive and culturally responsive curricula and pedagogies. Universities, specifically Teacher Education programs are transforming their education systems to prepare the next generation of teachers and educators to teach complex and wicked problems (Murtugudde, 2019)

of our time.

As such, teacher education programs must offer innovative and emerging programs to deliver a multidisciplinary and holistic climate change education. UBC’s Climate Emergency Task Force Report highlights the importance of embedding and integrating climate change education in all aspects of a student’s learning journey. In order to support climate education that is student-centered and trauma-informed, UBC needs a strategic institutional and interdisciplinary pathway to address the contemporary challenges while supporting student wellbeing. UBC’s Teacher Education program has an opportunity to demonstrate leadership in climate education by introducing an innovative and much needed Climate Justice Education cohort that will inspire teacher candidates to integrate climate change education and motivate solutions-oriented learning.

Given BC Science Climate Change curriculum connections and the fact that the UBC Teaching Education program currently does not offer any climate-focused courses, there is a gap which provides the opportunity to develop a B.Ed. cohort with a focus on climate change education, climate justice, and STEM education. This proposed B.Ed. elementary cohort in STEM and Climate Justice will inform and empower teacher candidates to inspire the next generation to advance hopeful climate action through research-based scientific inquiry.

To educate the next generation about climate change and related competencies, educators need to be knowledgeable about the unequal

action through research-based scientific inquiry.

To educate the next generation about climate change and related competencies, educators need to be knowledgeable about the unequal impacts of climate change, including adaptation and mitigation strategies as well as transformative pedagogies that may help support development of knowledge, skills and values needed to tackle climate change impacts. This includes evidence based knowledge of current global and local issues that might be relevant to one's practice and influence action as well as knowledge of human cultures and the physical and natural world; skills associated with leadership and development, such as communication, conflict management, problem-solving, these are considered intellectual and practical skills; values that connect one's assumptions and opinions to their learning and interactions as well as understanding other's values, beliefs and frames of reference, including perspectives that are based in interdisciplinary understanding and interpretations (Chalkley, 2006; UNESCO, 2017).

The Cohort will advance climate justice and STEM education through:

- Indigenous-focused climate justice lens
- evidence-based multidisciplinary education
- development of competencies to advance solution-orientated advocacy
- values-based and justice-informed pedagogies
- community-driven approaches, for example community science

2. Project Summary

As part of the Climate Solutions Scholars Grant from UBC Climate Solutions Research Collective, this 10-month project (September 2025 to June 2026) was developed. This project focused on developing a B.Ed. Curriculum Framework for the Teacher Education Program at the UBC Faculty of Education, aiming for the cohort for September 2027.

We conducted a needs assessment through curriculum mapping of current STEM and climate change education offerings with a focus on STEM and climate education justice-informed curricula and pedagogies, including courses, programs, resources, etc. We interviewed and surveyed teacher candidates and practicing teachers about what is important, what is needed, and what is lacking in climate change education offerings such as sustainability education in schools, the BC Ministry of Education curriculum, and related professional development initiatives. We also created an open-source educational resource for climate justice and STEM and climate change education. As a final outcome, we synthesized a B.Ed curriculum framework outlining the different aspects needed to facilitate the creation of a climate justice cohort.

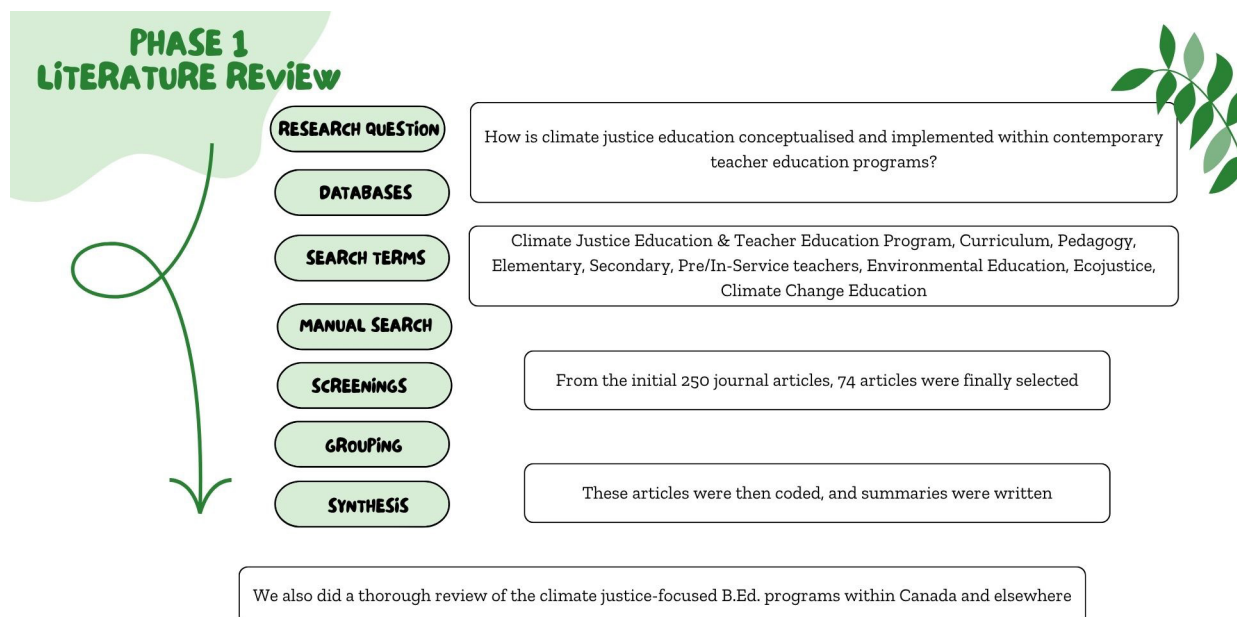
3. Project Timeline

- **Phase 1: Literature review of climate justice education theory and teacher education programs (Sep to Dec, 2025)**
- **Phase 2: Climate justice framed needs assessment (survey & interviews) with practicing teachers and teacher candidates (Jan to Apr, 2026)**
- **Phase 3: Open resources for climate justice education (Jan to Apr, 2026) & B.Ed. curriculum framework (May to Jun, 2026)**

Figure 1: Project timeline

4. Phase I : Literature Review

For the literature review, we started with the research question: and then followed the process, as explained in the diagram below:



Adapted from: MacDonald, J.B. (2023). PRISMA flow diagram templates for literature reviews. <https://jasminebmacdonald.com.au/prisma-flow-diagram-templates-for-literature-reviews/>

Figure 2: Literature Review Process

The literature review provided us with some understanding of what it takes to be a climate justice elementary teacher, and the learnings from phase 1 are categorized into four sections.

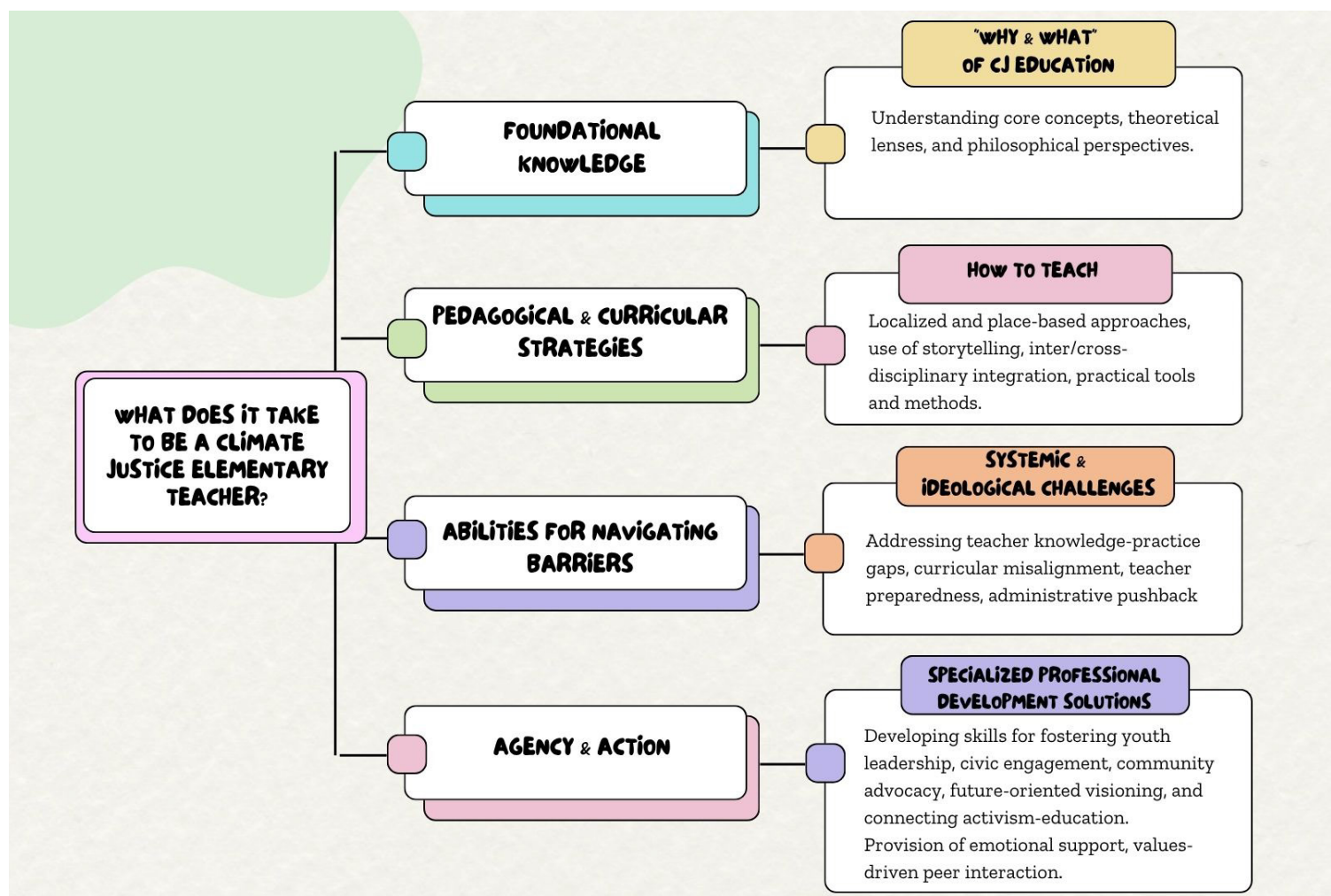


Figure 3: Learnings from Phase 1

Foundational Knowledge:

Literature suggests that teachers understand the “what” and “why” of climate justice education by learning about its core concepts and philosophical perspectives. This entails an understanding of justice as it weaves in with climate change. It lends focus on notions of concepts such as inter-generational justice, environmental racism, ecojustice, political ecology among others.

For instance, Sultana (2022) explored climate justice as a framework to understand and redress the unequal impacts of climate change across scales, places, and peoples. They

emphasized how focusing on climate justice requires attention to both disproportionate harm and equitable solutions. Other researchers like Kluttz and Walter (2022) focused on conceptualizing learning through climate justice movement by drawing on radical pluralist approaches to social movement learning. They focused on aspects such as organized/unorganized learning and individual/collective learning. In another work, Walsh (2022) examined how climate change education intersects with justice, equity, and social transformation, advocating for urgent reform in climate education. Walsh highlighted how climate change deepens existing societal inequities and explores ethical and social dimensions

such as identity, agency, and power structures. Getting familiarized with such theoretical perspectives can help teachers to identify what aspect of justice is to be focused on and then direct it to operationalizing that approach within their teaching and designing climate justice learning.

Pedagogical and Curricular Strategies:

Literature suggests that teachers learn about specialized climate justice pedagogical and curricular strategies. A recurring core idea in the literature is the focus on teaching students that local actions have global consequences and global actions have local consequences. This leads to a focus on localized and place-based approaches. For instance, Tagg and Jafry (2018) drew on the Water for ALL project in Malawi and Zambia; the study worked with 154 primary students in Glasgow to connect global climate justice to local learning. Their findings showed that participatory, research-informed lessons can foster children's sense of agency and ownership in addressing climate injustice

Also, other pedagogical methods involve using storytelling to situate justice discussions in the classroom. Clark and Shoemaker (2025) explored children's literature to teach climate justice through different methods and books that highlight human interconnections to the earth, promote hope and action, and empower diverse voices. These pedagogical and curricular strategies are geared towards using innovative methods that move away from conventional, depoliticized instruction. Also, these provide opportunities for interdisciplinary approaches to climate change education that go beyond its scientific aspects.

Abilities for Navigating Barriers:

When teaching climate justice, elementary teachers must navigate systemic and ideological barriers that may shape feasible classroom practice. There are systemic barriers to climate justice education, including curriculum misalignment, lack of resources, insufficient teacher preparation, and limited institutional support (Burton, 2024; Gleeson & Morrissey, 2024; Dunlop & Rushton, 2022). Burton (2024) focuses on how climate change is often unevenly represented across the curriculum, while Gleeson and Morrissey (2024) stress that, due to limited formal guidance, teachers might depend on external resources. Similarly, Eilam et al. (2020) identify conceptual gaps in the curriculum, particularly when adaptation and mitigation policies are framed in technical terms rather than explaining them from social or ethical perspectives. Such systemic gaps place responsibility on individual teachers without providing adequate time for training or support (Dunlop & Rushton, 2022; Winter et al., 2022; Almazroa, 2024).

Ideologically, climate justice education is shaped by depoliticization, individual responsibility narratives, and fear of controversy (Waldron et al., 2019; Eaton & Day, 2020; Borgerding et al., 2024). Waldron et al. (2019) observe how teachers often frame climate change as a geographical or individual-action issue, rather than presenting it as a global injustice. Eaton and Day (2020) explain how fossil fuel interests might promote a neoliberal environmentalism that avoids any critique of corporate power. Similarly, Borgerding et al. (2024) observe how teachers often emphasise individual mitigation over collective action, policy, adaptation, or racial justice. In politically

contexts, teachers may also fear administrative pushback (Damico et al., 2020; Panos & Sherry, 2023). Thus, teachers need critical, place-based, culturally responsive, and relational pedagogical abilities to address climate justice while navigating these barriers (Bowden, 2025; Butler et al., 2018; McGregor & Christie, 2021).

Agency and Action:

Central to climate justice education is agency and action because students and teachers must move beyond awareness toward ethical, civic, and collective engagement. McGregor and Christie (2021) argue that activists often understand climate justice education through agency, participatory democracy, and epistemic justice, while educators may feel constrained by institutional pressures, ideological bias, and concerns about students' emotional resilience. Similarly, Lupinacci (2022) emphasizes ecojustice pedagogies that help teachers question dominant assumptions and support socially just, sustainable communities. This shows that teacher education must prepare educators to support action in ways that are thoughtful, justice-oriented, and pedagogically responsible.

Professional development is essential for building this capacity to support agency and action. Bautista and Davis (2025) show that preservice elementary teachers can learn to adapt science lessons through environmental justice connections and ethical community-based sensemaking. Davis (2022) similarly provides a practical framework for teaching science through equity and justice, while Ibourk et al. (2025) demonstrate that learning technologies can strengthen teachers' self-efficacy for facilitating climate discussions. Morote et al.

(2025) further show that climate knowledge does not always translate into practical teaching competence. Agency is strengthened through collaboration, peer learning, and community engagement (Huang & Asghar, 2019; Sperling et al., 2025). Williamson et al. (2023) highlight professional development that connects teachers, scientists, activists, and media specialists through civic action and public campaigns. Field et al. (2025) emphasise civic action, public campaigns, and interdisciplinary partnerships as important pathways for climate justice education. Overall, climate justice education requires teachers to cultivate confidence, emotional resilience, community engagement, and opportunities for students to participate in meaningful collective action (Sperling et al., 2025; Lupinacci, 2022).

5. Phase II: Survey and Interviews

The survey questions were distributed to two courses at the UBC Teacher Education Program, and there were 25 respondents. The surveys focused mainly on the 19 questions, with a broader scope of demographics, teaching expertise, confidence in topics, resources needed, and activities, the interview questions included range of topics mostly in relation to climate change education, and sustainability education to understand the scope of climate justice. We also interviewed three teacher candidates and practicing teachers, who were also UBC students (one of whom was an alumni).

Survey Findings:

Out of 25 respondents, 12 said that they were somewhat confident in teaching climate change topics. Teachers pointed out several multimedia resources that they need to teach these topics. Many of them also expressed interest in teaching through diverse learning activities such as political advocacy and sharing learning with family. While climate change discussions in school are often dominantly situated in science and social studies (as suggested by the spider graph), teachers also suggested that arts and English-language arts are also potential subject avenues for teaching climate change topics.

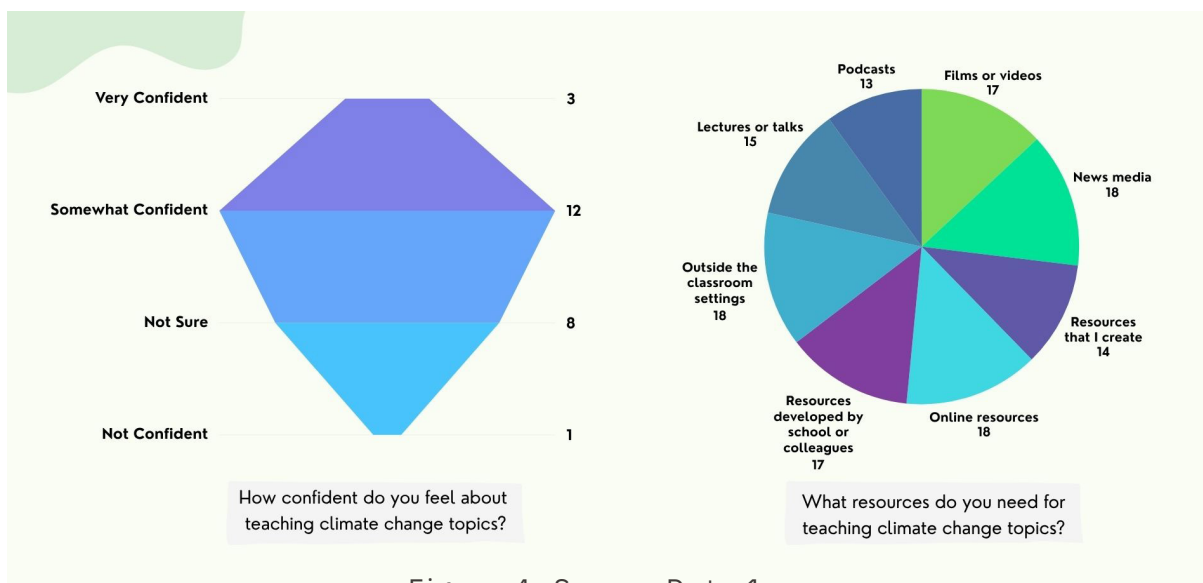


Figure 4: Survey Data 1

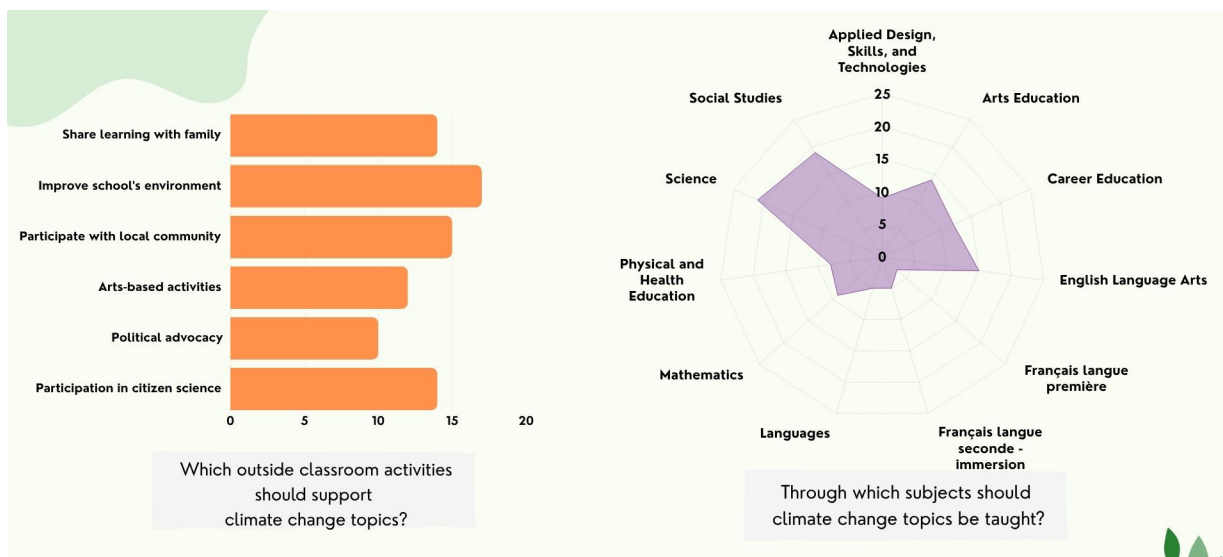


Figure 5: Survey Data 2

Interview Findings:

The interview findings suggest that practicing teachers and teacher candidates understand climate justice education as relational, interdisciplinary, and practice-oriented. Participants emphasized connecting climate learning to children's daily lives, families, communities, local environments, and land-based experiences rather than treating climate change only as scientific content. Creative pedagogies such as drama, role play, and skits were seen as ways to make climate issues more accessible and meaningful for students.

A key theme was the importance of place-based and land-based learning, where students can explore relationships among themselves, their communities, and the land. Participants also highlighted Indigenous perspectives, anti-racism, social justice, and cross-curricular integration, including connections to English First Peoples curriculum, Indigenous authors, environmental relationships, and climate issues. The findings further show that teachers need resources, confidence, and institutional support to teach climate justice effectively. Overall, the data suggest that becoming a climate justice teacher involves building interdisciplinary approaches, centering Indigenous and multicultural perspectives, strengthening community connections, supporting student well-being, and grounding pedagogy in nature, daily life, and relational responsibility.

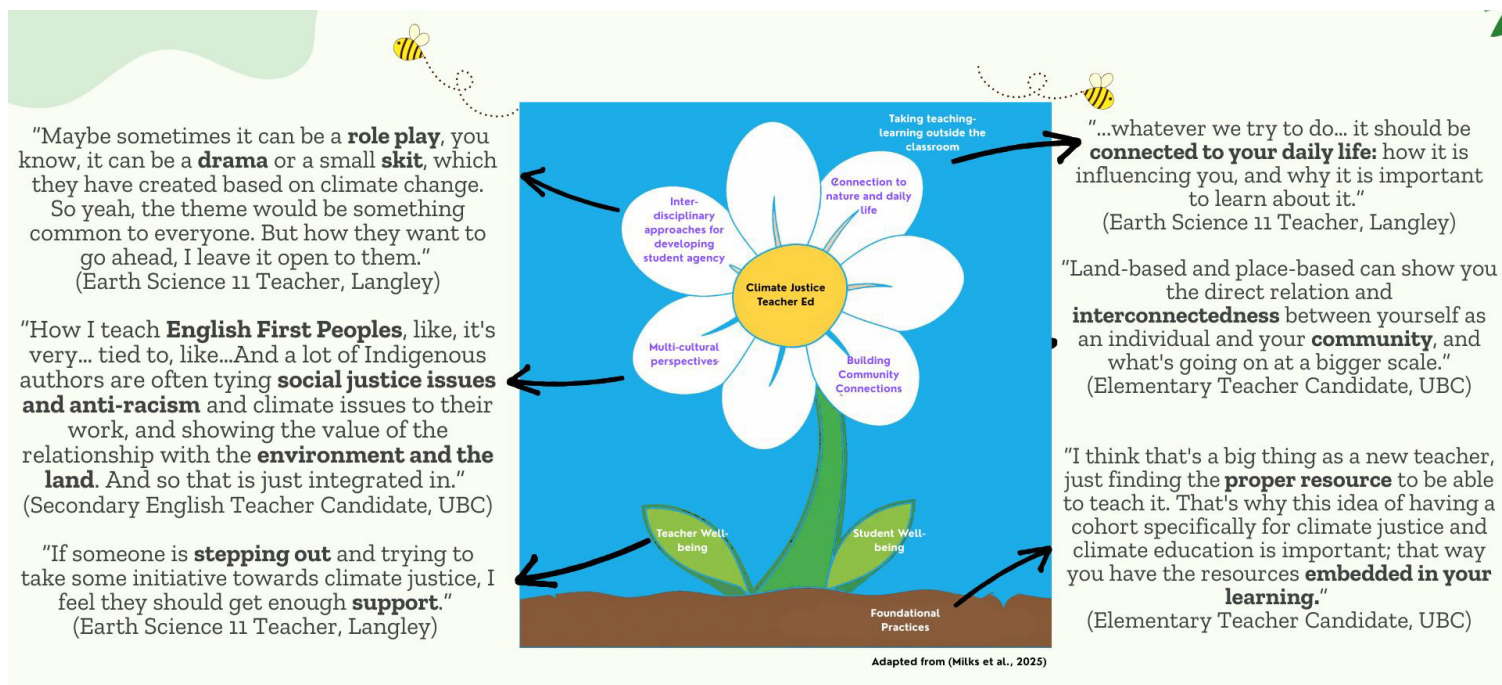


Figure 6: Key themes from interviews and quotes

6. Phase III: Creating Open Resource

Our learnings from phases one and two ultimately led us to shape the final phase. One of the findings from the literature review and the data collection was a lack of resources on climate justice, and we felt the need to create an open education resource, which is a repository of our literature review findings. Through our project website, interested educators can read about theoretical and empirical research, identify pedagogies and instructional strategies for teaching climate justice, address teacher knowledge-practice gaps, and learn about developing skills for youth leadership or civic engagement.

The following QR code takes the audience to the website, which is exactly what the screenshot explains regarding how to use the website. While the readers can look up their topic of interest by using certain keywords, find the relevant articles and get the summary of those articles that we created. While the repository is a working document, it is useful for the teacher candidates and practicing teachers to learn more about climate justice.

PHASE 3 OPEN RESOURCES DEVELOPMENT

Climate-Kind Pedagogy

- Home
- About
- Climate-Kind Framework
- Projects
- Tools and Evaluation Strategies
- Presentation and Publications
- Toolkit
- Our Team

Home > Climate Justice Teacher Ed

Foundational Knowledge	Understanding core concepts, theoretical lenses, and philosophical perspectives.
Pedagogical and Curricular Strategies	Localized and place-based approaches, use of storytelling, inter/cross-disciplinary integration, practical tools and methods.
Systemic and Ideological Challenges	Addressing teacher knowledge-practice gaps, curricular misalignment, teacher preparedness, administrative pushback
Professional Development Solutions	Developing skills for fostering youth leadership, civic engagement, community advocacy, future-oriented visioning, and connecting activism-education. Provision of emotional support, values-driven peer interaction.

All Themes

Reset

Should We...? Embracing justice-oriented climate education in elementary science teacher preparation

Category: [Specialized professional development solutions](#)

Abstract The article focuses on the teachers' learning, based on the mechanics and teaching of environmental justice, while their collective sensemaking in adapting an elementary science lesson is emphasized as... [Read more](#)

Teaching STEM through Climate Justice and Civic Engagement

Category: [Pedagogical and Curricular Strategies](#)

Abstract This article provides a rationale and resources for teaching climate justice and civic engagement across the STEM curriculum in K-12 and higher education. It presents a culturally responsive approach to STEM... [Read more](#)

Climate-Kind Pedagogy

- Home
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- Tools and Evaluation Strategies
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- Toolkit
- Our Team

Home > Should We...? Embracing justice-oriented climate education in elementary science teacher preparation

Should We...? Embracing justice-oriented climate education in elementary science teacher preparation

Abstract

The article focuses on the teachers' learning, based on the mechanics and teaching of environmental justice, while their collective sensemaking in adapting an elementary science lesson is emphasized as ethical decision-making with members of local community. The article provides ideas and inspiration for teacher preparation programs to integrate and enhance environmental justice connections within their own courses.

Keywords: Teacher preparation program; professional development; K-2; NGSS; systems and system models; cooperative groups; field trips/field study; Earth and human activity; Earth systems/weather; environmental change; physical changes; scale; proportion; quantity

Core Idea: Lessons for preservice teachers on environmental justice, including climate justice, and climate change.

Link: <https://www.tandfonline.com/doi/full/10.1080/00368148.2025.2533888>

Reference: Bautista, J., & Davis, E. A. (2025). Should We...? Embracing justice-oriented climate education in elementary science teacher preparation. *Science and Children*, 62(5), 33–40. <https://doi.org/10.1080/00368148.2025.2533888>



<https://climateeducation.ca/climate-justice-teacher-ed/>

<https://climateeducation.ca/climate-justice-teacher-ed/>

Figure 7: Website Screenshots and QR Code

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7. Final Output: B.Ed. Curriculum Framework

The curriculum framework entails certain recommendations which we make based on the findings from the three phases.

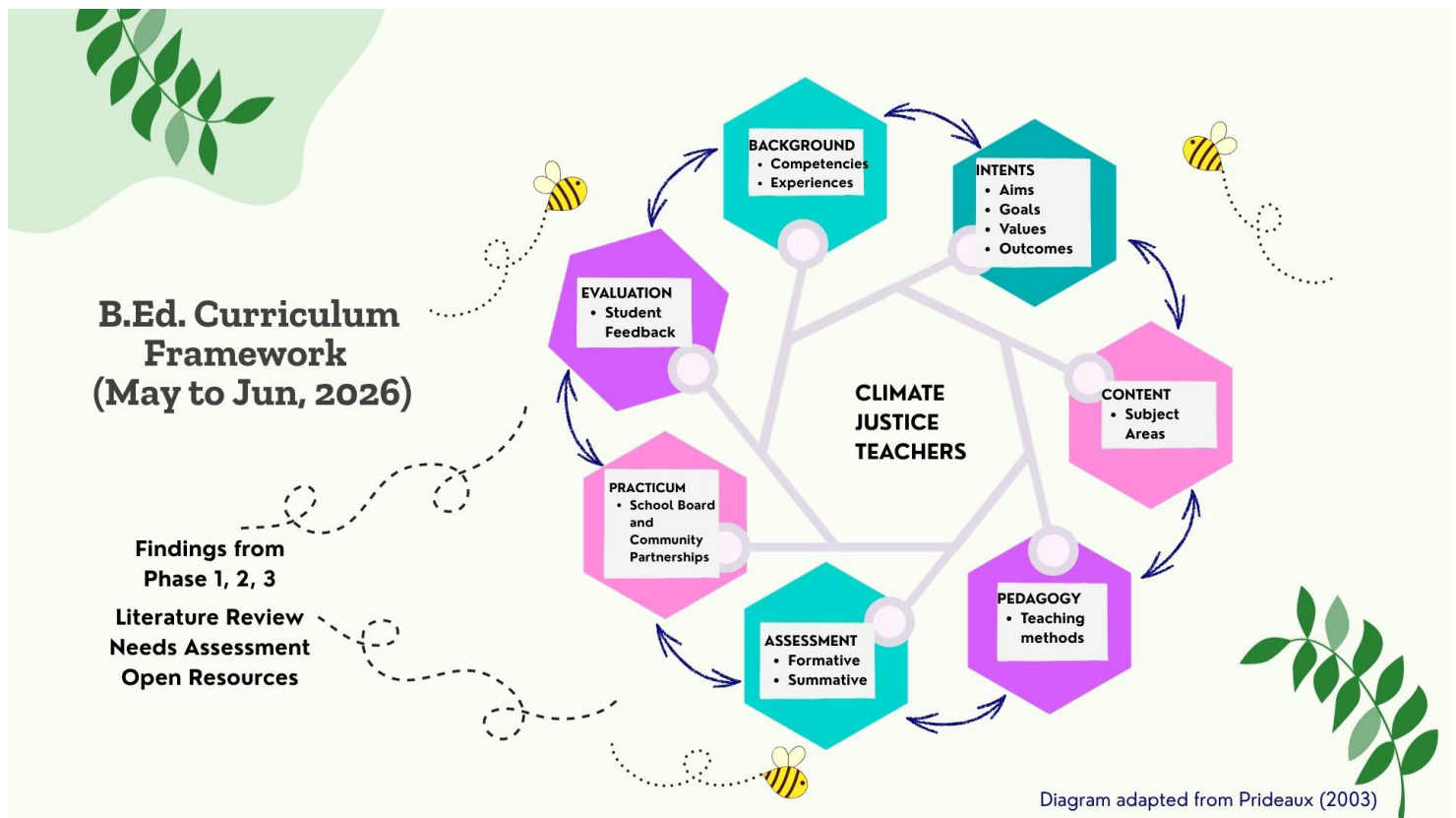


Figure 8: B. Ed. Curriculum Framework

Content

Subject areas: Applied design, skills, and technologies; Arts education; Career education; English Language Arts; français langue première; français langue seconde immersion; Languages; Mathematics; Physical and Health Education; Science; Social Studies.

- STEM: Citizen science action projects (e.g. monitoring water quality).
- Indigenous perspectives: Centering teaching on relationships with land and non-humans.

Assessment

- Formative
 - Journals: Teachers regularly write, draw, or reflect on their emotional and personal relationship to issues of justice.
- Summative
 - Curriculum Adaptation: Candidates evaluate BC curriculum and identify how they can center marginalized voices and address the impacts of local environmental racism

Pedagogy

Teaching methods: emphasizing a more holistic approach which moves beyond climate science.

- Experiential and place-based learning: Using local community issues (access to clean water, heat waves, extreme weather events) for exploring broader systemic issues
- Arts-based: Storytelling methods based on Indigenous authors and youth environmentalists.

School Cohort Practicum

- School board and community partnerships
 - Working with non-government environmental organization for designing action-based learning experiences

Evaluation

Student feedback

- Given how climate change discourse changes rapidly in response to changing socio-political conditions, there should be regular feedback sought from teacher candidates on how to update the program.
- Post-coursework collaboration with cohort faculty on how to update curriculum.

Background

- Competencies: A climate justice lens can be incorporated through values, skillsets, and knowledge. Some competencies include understanding of civic engagement, systems thinking for connecting climate change to broader issues, understanding ecological vocabulary such as sustainability and stewardship.
- Experiences: Prior experiences of volunteering, activism.

Intents

- Aims: To prepare teacher candidates to become climate justice educators who can teach with knowledge, care, courage, and responsibility.
- Goals:
 - a. Improve confidence in teachers to teach climate change through justice-based framings

- b. Being able to navigate and ideological barriers in the polarized environment related to climate discourse.
- c. support teachers to design age-appropriate climate-justice-focused curriculum content
- d. integrate climate justice across all subject areas.
- Values: The cohort curriculum is grounded in the Climate-Kind Pedagogy framework to advance the understanding and integration of transformative learning and reflexive pedagogical approaches, as well as fostering of values such as justice, relationality, reciprocity, responsibility, accountability, empathy, well-being, mutual trust

Outcomes

- Introducing climate justice education across all subject areas to look at climate change from multiple perspectives (not just a technical or scientific issue)
- Designing climate justice curriculum to accommodate multidimensionality, which includes perspectives from the global South, marginalized communities, Indigenous people
- Open educational resources available for teachers and educators beyond UBC's Teacher Education Program.

8. References

Almazroa, H. (2024). Bridging the knowledge–practice gap: Assessing climate change literacy among science teachers. *Sustainability*, 16(20).

Alvey, E. (2020). Deferral, agency, and hope: Pre-service social studies teachers making sense of the pedagogical demands of engaging climate crisis. *Journal of Social Studies Education Research*, 11(3), 18–45.
<https://www.learntechlib.org/p/217737/>

Bautista, J., & Davis, E. A. (2025). Should we...? Embracing justice-oriented climate education in elementary science teacher preparation. *Science and Children*, 62(5), 33–40. <https://doi.org/10.1080/00368148.2025.2533888>

Bowden, R. (2025). Linguistically and culturally responsive pedagogy for sustainable futures: Learning from a European teacher education project. *Education Sciences*, 15(6).

Britton, S., & Tippins, D. J. (2015). Practice or theory: Situating science teacher preparation within a context of ecojustice philosophy. *Research in Science Education*, 45(3), 425–443.
<https://doi.org/10.1007/s11165-014-9430-1>

Burton, W. (2024). Climate change education and the Manitoba K–12 curriculum: A content-analysis. *Antistasis*.

Butler, J. K., Ng-A-Fook, N., Forte, R., McFadden, F., & Reis, G. (2018). Understanding ecojustice education as a praxis of environmental reconciliation: Teacher education, Indigenous knowledges, and relationality. In *Environmental and sustainability education in teacher education* (pp. 19–31).
https://doi.org/10.1007/978-3-319-67732-3_2

Chalkley, B. (2006). Education for Sustainable Development: Continuation. *Journal of Geography in Higher Education*, 30(2), 235–236.
<https://doi.org/10.1080/03098260600717307> Chalkley, B. (2006). Education for Sustainable Development: Continuation. *Journal of Geography in Higher Education*, 30(2), 235–236. <https://doi.org/10.1080/03098260600717307>

Clark, S., & Shoemaker, J. (2025). Children’s Literature: Promoting Climate Justice through Children’s Literature: Interconnection, Action, and Representation. *Language Arts*, 102(4), 221–226.

Damico, J. S., Baildon, M., & Panos, A. (2020). Climate justice literacy: Stories-we-live-by, ecolinguistics, and classroom practice. *Journal of Adolescent & Adult Literacy*, 63(6).

Davis, E. A. (2022). Supporting preservice elementary teachers in teaching science for equity and justice: A practical framework. *Innovations in Science Teacher Education*, 7(4).
<https://innovations.theaste.org/supporting-preservice-elementary-teachers-in-teaching-science-for-equity-and-justice-a-practical-framework>

Dunlop, L., & Rushton, E. A. C. (2022). Putting climate change at the heart of education: Is England’s strategy a placebo for policy? *British Educational Research Journal*, 48(6).

Field, E., Stapleton, S., Lowan-Trudeau, G., Harris, C., Nguyen, C., & Puttur, A. (2025). Climate activism in K–12 education across North America. In *The Routledge handbook of grassroots climate activism*.

Fletcher, C., Ripple, W. J., Newsome, T., Barnard, P., Beery, T., Bowen, M. E., Cooney, M., Crist, E., Fielding, K. S., Hiser, K., Maas, B., Mata, A., Manne, L. L., O'Connor, M. I., Phillips, M., Stenseth, N. C., Wolf, C., & King, D. A. (2024). Earth at risk: An urgent call to end the age of destruction and forge a just and sustainable future. *Proceedings of the National Academy of Sciences*, 121(15), e2308223121.

<https://eileencrist.com/images/Earth-at-Risk-Fletcher-et-al-2024.pdf>

Gleeson, E. M., & Morrissey, J. (2024). Climate change education in Ireland: A crisis in need of a meaningful cross-curricular response? *Journal of Education for Sustainable Development*, 18(1).

Huang, Y.-S. E., & Asghar, A. (2019). Preservice teacher professional development in education for sustainable development. In *Environmental and sustainability education in teacher education*.

Hunter, K. B. (2025). Developing a novel Climate-Kind Pedagogy (CKP) framework to support climate education. *Quality Education for All*, 2(1), 491–535. <https://doi.org/10.1108/QEA-08-2024-0084>

Ibourk, A., Wagner, L., & Zogheib, K. (2025). Developing elementary teachers' climate change knowledge and self-efficacy for teaching climate change using learning technologies. *Journal of Science Education and Technology*, 34(3).

Intergovernmental Panel on Climate Change. (2023). Climate change 2023: Synthesis report. <https://www.ipcc.ch/reports/>

Kluttz, J., & Walter, P. (2018). Conceptualizing learning in the climate justice movement. *Adult education quarterly*, 68(2), 91-107.

Lupinacci, J. (2022). Ecocritical pedagogies: (Re)imagining education for diversity, democracy, and sustainability as eco-justice curriculum. In *Curriculum, environment, and the work of C. A. Bowers*.

McGregor, C., & Christie, B. (2021). Towards climate justice education: Views from activists and educators in Scotland. *Environmental Education Research*, 27(5), 652–668. <https://doi.org/10.1080/13504622.2020.1865881>

Milks, K., Vesnaver, V., Flores, T., Drayton, B., & M. Puttick, G. (2025). Growing climate justice education: A framework for K-12 teachers and school communities. In *Knowles Teacher Initiative*. <https://knowlesteachers.org/resource/growing-climate-justice-education-a-framework-for-k-12-teachers-and-school-communities>

Morote, Á.-F., Sebastián-Alcaraz, R., Ferrero-Punzano, S. M., Miguel-Revilla, D., Moreno-Vera, J. R., Rodríguez-Pizzinato, L. A., & García, Ó. J. (2025). Climate change, education, training, and perception of pre-service teachers. *Social Sciences*, 14(4).

Murtugudde, R. (2019). 10 reasons why climate change is a “wicked” problem. *The Wire Science*. <https://science.thewire.in/environment/climate-change-wicked-problem/>

Panos, A., & Sherry, M. B. (2023). Storying climate change: Discursive possibilities for teaching climate justice literacies. In *Critical perspectives on global literacies*.

Polychroniou, C. J. (2019). Noam Chomsky and Robert Pollin: If we want a future, Green New Deal is key. Truthout.
<https://truthout.org/articles/noam-chomsky-and-robert-pollin-if-we-want-a-future-green-new-deal-is-key/>

Sperling, E., Inwood, H., Sims, L., & Elliott, P. (2025). Exploring ecojustice and environmental learning through online preservice teacher education. *Canadian Journal of Education / Revue canadienne de l'éducation*, 48(1), 145–173.
<https://doi.org/10.53967/cje-rce.7233>

Sultana, F. (2022). Critical climate justice. *The Geographical Journal*, 188(1), 118–124.

Tagg, N., & Jafry, T. (2018). Engaging young children with climate change and climate justice. *Research for all*, 2(1).

The University of British Columbia. (2021). Climate emergency engagement: Final report and recommendations.
https://bm-climate-emergency-2021-sandbox.sites.olt.ubc.ca/files/2022/08/CETF_Report.pdf

United Nations Educational, Scientific and Cultural Organization. (2017). Education for sustainable development goals: Learning objectives.
<https://unesdoc.unesco.org/ark:/48223/pf0000247444>

Vongalis-Macrow, A. (2010). Developing pedagogies for teaching about climate change. *The International Journal of Learning*, 17(9), 237–247.

Waldron, F., Ruane, B., Oberman, R., & Morris, S. (2019). Geographical process or global injustice? Contrasting educational perspectives on climate change. *Environmental Education Research*, 25(6), 895–911.
<https://doi.org/10.1080/13504622.2016.1255876>

Walsh, E. M. (2021). Justice and equity in climate change education. Routledge.

Williamson, K., Shinn, J., Hemler, D., & Fallon, S. M. (2023). A case study for climate change teacher professional development in West Virginia. *Journal of Sustainability Education*.