

# Book Review

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## **Climate Change Education: An Earth Institute Sustainability Primer**

By Cassie Xu and Radhika Iyengar

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### **Reviewed by:**

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The Paris Climate Agreement and recommendations from the Intergovernmental Panel on Climate Change (IPCC) (2022) both identify education as key to carbon emission mitigation and adaptation to a rapidly warming world. These initiatives were codified by Canadian Faculties of Education in the Dean's Accord on Sustainability Education (2022), and supported by a burgeoning field of research on climate change education (for example see: Field et al, 2023; Galway & Field, 2023; Long & Henderson, 2023; Roderick, 2023; Stevenson, Nicholls & Whitehouse, 2017; Windschitl, 2023). Yet, K-12 education systems across Canada have been glacial in their shift to support policy and classroom instruction commensurate with the climate emergency (Field & Howlett, 2023).

Cassie Xu and Radhika Iyengar from the recently established Columbia Climate School map out in *Climate Change Education: An Earth Institute Sustainability Primer* (2023), the what, how, where and why for climate change education in the North American context. This book review will discuss in brief those elements, detailing how the authors focus on systems thinking (the what) facilitated through an inquiry or project-based approach (the how), across multiple educational spaces (the where), with specific attention on why teaching about climate change is a question of justice (the why).

Xu and Iyengar align themselves with recent scholarship (Brumann, Ohl & Schackert, 2019; Newberry & Trujillo, 2018) advocating a move away from siloed

instruction of science and social studies for inter- or transdisciplinary practice, which draws in language arts, mathematics, health and arts for example through project-based or inquiry learning. Systems thinking, defined as, “the ability to view phenomena as interconnected and dynamic... [and] understanding that the natural, social, and economic worlds are interrelated and constantly changing and that people, including oneself, are part of that dynamic system” (p. 10) is offered as a pathway for facilitating this learning. Teachers can offer a systems thinking lens by targeting local environmental and climate-related issues of interest to students.

Writing in the Foreword, Alex Halliday, founding Dean of the Columbia Climate School argues that there is a key role for post-secondary institutions to support the K-12 system, advocating for, “a two-way exchange... a means for academics and educators to likewise improve and adapt” (p. xi). To this, Xu and Iyengar add, “Universities, as existing institutional resources, are ideally suited to take on the role of working with schools and school systems to advance climate change education” (p. 137). Such is the temporal imperative for action on this issue, those working in the field of climate change education in higher education need to leverage their time and resources directly in the field. The authors work with the Columbia Climate School offers one model of this.

But post-secondary engagement should not be limited to the K-12 system, the authors write, and herein is a vital contribution that this book makes to climate change education discourse. The second half of the book outlines quality climate change education exemplars, demarcated by ‘formal’, ‘community-based’ and ‘informal’ education. These *complimentary pluralities* leverage the partialities of people, places and resources to enhance the quality of learning.

Formal education covers the traditional K-12 and post-secondary system, whereas ‘community-based’ climate change education extends into learning spaces such as libraries, markets and through citizen-science, the collective wisdom of individuals and organizations can be scaled to educate beyond just youth. Similarly, in ‘nonformal’ climate change education youth are invited into summer learning programs that focus on specific place-based or environmental projects. These opportunities in particular are unburdened by the ‘grammar of schooling’ (Tyack & Cuban, 1995) that includes siloed school disciplines, assessment and student evaluation, challenges in leaving school grounds and the hierarchical structure of the classroom. Instead, community-based and nonformal learning spaces are more conducive to student voice, collaboration and a transdisciplinary model of learning.

One of the most challenging aspects of climate change education is striking a balance between heeding the advice of climate scientists calling for a rapid transformation of the industrial system (key aspects of which are a speedy decarbonization of energy systems coupled with a cultural mind shift away from consumerism), and the temptation to be pragmatic about what is possible in a system beholden to political institutions (Kunkel & Seaton, 2023). Case studies embedded throughout the text lean into more liberal approaches without critical analysis of the root causes of human-led climate change. One might recognize this tendency as a result of what the authors allude to as the hyper-politicization of climate change and the current tendency for discussing the science of mitigation and social aspects of adaptation as part of the urban and ‘leftist’ agenda (Long & Henderson, 2023). While not acknowledged in the book, practitioners need to be mindful of navigating the local political terrain of a community when undertaking this work.

Despite a well authored chapter towards the end of the book underscoring the need to centre climate justice in any approaches to climate change education, the reader who is eager to read about how Indigenous ways of knowing can intersect with climate change education, and examples of how this has been operationalized may be left disappointed. Xu and Iyengar are clear, albeit brief, about the value of Indigenous knowledges being “integrated into the curriculum” and that this approach not only represents “knowledge that helps connect humans to nature... based on a relationship of reciprocity and caretaking” but provides a local context for learning (pp. 82-83). One may conclude that given the power of this knowledge, skills and attitudes, that there would be a stronger presence of Indigenous voices and ideas present in the book.

*Climate Change Education: An Earth Institute Sustainability Primer* (2023), provides a quick and accessible introduction to climate change education for the North American context. More well-versed K-12 and post-secondary scholars in the field may not uncover ideas that shift their theoretical understanding of critical perspectives on climate change education, and may look instead to Roderick’s (2023) *Teach for Climate Justice* or Windschitl’s (2023) *Teaching for Climate Change*. Instead, readers will surely benefit from the contribution that is made through differentiating spaces of learning and the cases studies identified within.

What this book does emphasize is the importance of building relationships between K-12 and post-secondary institutions and non-formal and community spaces. The call that Xu and Iyengar make here is that the post-secondary educator needs to have a

strong understanding of people and places in the community that could offer real-world and hands-on experiences for youth and to centre this work with a systems-thinking approach and a commitment to social justice in theory and action. “Schools and school districts are the places to start planting the seeds of change, but more is needed” (p. 137), the authors claim.

In this sense the text is successful in offering a succinct introduction, along with a wide range of models that serve to inspire educators. Despite the increasing volatility that climate change brings to humans and the more-than-human world, climate change education remains on the margins of curriculum in the K-12 and post-secondary system. Xu and Iyengar have offered an important starting point for welcoming in educators who feel compelled to respond to this call.

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