Climate Literacy in Education

Introduction: The Road Taken

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Abstract

In this Introduction, we envision possibilities for climate action and climate literacy education under the Trump administration. We reflect on what teachers can do on to accelerate integration of climate literacy across all subject areas and how a changing understanding of climate literacy as a holistic socioscientific and cultural competence is gaining ground across the world.

Keywords

U.S. presidential election, climate action, climate literacy education

Welcome to the third issue of *Climate Literacy in Education*! This Introduction was delayed until the results of the U.S. presidential election were announced. We already know which road was not taken. As Fintan O'Toole noted, "The Democrats played down two very big things: the climate crisis and the income inequality that is sure to rise as new technologies further enrich existing elites. The result was an offering that was broad but shallow, based as it was on a decision not to address issues that are shaping the lives of Americans now and will continue to shape them in the coming decades." The road chosen by the popular vote is almost certainly going to be harder on the people and the planet.

That said, an important caveat must be made. In today's reality of extreme polarization it is easy to assume that that Americans who care about climate belong in one political camp whereas those who deny the emergency belong in the other. In fact, however, over 72 percent of Americans believe that climate change is real, over 70 percent believe it will harm future generations, and over 58 percent believe it is already harming people in the US today. These beliefs increasingly transcend political and generational

divides. They are growing to be a shared space from which we can act together—even if we disagree on this or other political issue. Put otherwise, if we are serious about addressing the emergency, it may be smarter to focus on discovering how we are in it together—like the millions affected by Hurricane Helene—instead of righteous anger that insists on an ever-sharper "us vs them" divide. The future is yet unwritten. We all have a role to play in how it unfolds.

In the larger context, of course, the world is still on track toward climate collapse. No country or political party has really stepped up to the challenge yet. According to the International Institute for Sustainable Development, the G-20 countries are still subsidizing fossil fuel at triple the rate they're doing for renewables. Wildlife loss continues to accelerate, from 69% in 2022 to 73% in 2023. This comes as no surprise given that "the world has never yet met a single target set in the history of UN biodiversity agreements" (Greenfield & Dunne). Although wealth-related drivers of the climate crisis and biodiversity loss are increasingly clear, the neoliberal paradigm of fossil-fuel based growth seems unstoppable. Aside from ecospheric and social costs, more severe events like hurricanes Milton and Helene bring very real loss in financial terms too: a double-digit billion-dollar loss from Milton and anywhere between $225 and $250 billion from Helene. How long and how often can people bear that kind of cost? As Jonathan Mingle writes, "Even under President Biden, who has said he thinks climate change is an existential crisis and who has done more than any president before him to confront it, Americans have been woefully unprepared for the climate upheavals that are coming—and for those that have already arrived." We are all in for a bumpy ride.

Although the climate crisis will continue to accelerate on the path set by our actions over the past thirty years, there are always opportunities to also accelerate mitigation, adaptation, and transformation necessary to finally shift humanity's trajectory toward just, regenerative futures. Here are some of the tools we have and what they mean for hope and possibility on climate action.

1. We have successful models from around the world of legislation and actions that mitigate the climate emergency, accelerate adaptation, and constrain operational space for ecocidal industries. For example, European Environment Agency report Trends and projections in Europe 2024 (Oct 31, 2024) notes that 2023 saw the "largest year-on-year reduction [of emissions] in several decades" (5). "In 2023, EU total net GHG emissions decreased to 37% below 1990 levels" (5) and "the share of renewable energy had grown … to an estimated 24% of the EU's gross final energy consumption by 2023" (6).
2. We may be closer to turning a corner on tolerating denial and lies on confronting climate change. As Rebecca Solnit (2024) recently wrote, the mainstream media

have failed America by "treating the true and the false, the normal and the outrageous, as equally valid" (n.p), and this normalization of atrocity has been especially disabling for climate action. Yet, it is becoming harder for ecocidal agents to dismiss climate change as a scam and we may be getting closer, collectively, to embracing "climate truth" and confronting the climate emergency *as an emergency*. Between Hurricanes Beryl (June) and Helene (September), massive floods in Europe and Asia, accelerating extreme weather and 2024 being, again, the hottest year on record, calls for a national climate action plan and concerted world action are getting louder and more likely to be taken seriously.

3. We have a growing consensus that education is essential for the wholesale civilizational transformation the planet needs: as leading climate scientists Michael E. Mann puts it in the "Foreword" to *Empowering Youth to Confront the Climate Crisis in English Language Arts*, edited by Allen Webb, Richard Beach and Jeff Share (2024), "the climate crisis is far more than a problem of science, economics, policy, or politics. Fundamentally, it's a problem of ethics—particularly, the intergenerational ethical quandary of leaving behind a degraded planet for future generations." To tackle it, "we must engage the heart, as well as the head … [and] Nobody is better positioned to help young people do that than teachers…" (p. ix).
4. We also have a major shift—a decade in the making—in understanding that climate literacy is far more than just about climate science: an approach that the Center for Climate Literacy has championed since its inception. The recently updated 2024 NOAA *Guide to Climate Literacy* has now expanded a definition of climate literacy to "incorporate other types of knowledge about the climate system, in addition to physical climate science" so that "The term now includes local and Indigenous Knowledges, social and cultural contexts, the social sciences, climate solutions, and climate justice concepts" (n.p). Likewise, UNESCO's 2024 *Education and Climate Change* report stresses that education "is key to climate change mitigation and adaption efforts," and not just through "improving knowledge [and] raising awareness" but specifically through "changing attitudes, beliefs and behaviours" (p. 1). At the heart of this shift is a recognition that climate literacy is a narrative capacity. That we need to, to quote Mann again, "find compelling narratives that are engaging and motivating, narratives that convey both *urgency* and *agency*" (2024, p. x). As educators and humanists, we find it heartening to see a leading climate scientist state: "If we are to prevail in this epic battle for our future, our children must be equipped with the right tools. And none is more important than effective storytelling, for this is how we spur others to action and achieve social change. While I would argue that this skill must be incorporated by teachers into all disciplines, including science, its true home is the language arts" (2024, p. x).

Back in 2020, a study of "social tipping interventions (STIs)" required to stabilize the Earth's climate by 2050 through transformations in technologies, behaviors, social norms, and structural reorganization within the planetary socioeconomic system—its six "functional domains" that the authors called "social tipping elements (STEs)"—calculated that achieving STE4, "changing norms and value systems," will require 30 to 40 years, and achieving STE5, "transforming education system," will take 10 to 20 years (Otto at al., p. 2359). Interestingly, the authors concluded that achieving these two STEs will take much longer than transformations of our energy, financial, infrastructure and information systems. At the Center for Climate Literacy, we agree that transforming values, norms and education systems is more complex than technological change. But we are also confident that we are able to do it sooner, within a ten-to-twelve-year range. If climate literacy is implemented across all grade levels, all subject areas, and in all schools everywhere, it will create an unstoppable social tipping point cascade within a few years. This is how we create the green, just and regenerative world we all want to see.

The articles in this issue contribute to this mission by offering educators specific materials to promote climate hope and justice. The two curriculum articles featured in this issue engage these values directly. Karen Hindhede's "Implementing Ecojustice Praxis in Children's Literature Courses" puts forth a framework for reading children's literature using the three "Es" of sustainability: ecology, economics, and equity. Colleen Redmond's article, "The HOPE Framework: A Literacy Strategy for Identifying Hope in Narratives as a Response to Young People's Eco-grief", also grants educators a specific framework for analyzing narratives for what she terms "hope markers". In doing so, students are prompted to consider hope as an active, reflexive endeavor.

Hope and justice also feature proximately in the reflection articles. Lee Zimmerman's "Staying with the Climate Trouble: Part Two" extends his discussion from Part One to consider how inviting students into teacher "not-knowing" can actually help students cultivate a sense of their own agency. In "Climate Change Denialism: Critical Analysis of Arguments in Confrontation with Climate Science", Ricardo Ramos, Maria José Rodrigues, and Isilda Rodrigues offer specific responses to common climate change denier arguments. The fight against climate disinformation, they argue, is a necessary component of a just transition. Finally, Ben Screech contributes an interview with author Sarah Guillory, whose intention in writing fiction for young people is to simultaneously stress the magnitude of the climate emergency while also advocating for the necessity of hope.

Although they focus on four distinct narratives, the four critical essays in this issue are united in their observation that fiction is a powerful medium for depicting justice amid crises. Antonella De Sena's "Social Justice, Human Rights, and Environmental Crisis in Álvaro Colomer's *Ahora llega el silencio* (2019)" finds that Colomer's novel is clear in its

vision for cooperation and equity even in the face of environmental disaster. Sietse Hagen's "The Black Snake: Powerful Imagery in *We Are Water Protectors*" is equally adamant that Lindstrom and Goade's award-winning picturebook—despite its frightening images—is especially helpful in cultivating discussions of Native youth activism and Native-led coalitions for climate justice. In "After the Flood: Environmental Activism, Agency and Action in Sarah Guillory's *Nowhere Better than Here*", Ben Screech follows his interview with an analysis that demonstrates Guillory's narrative is a model for young people taking action—even if they do so largely alone. A similar modelling is featured in Nick Kleese's "Democracy and Kinship in *Nausicaä of the Valley of the Wind*" which reads Miyazaki's seminal anime as presenting openings for young people to imagine democracy extending beyond the limitations of our own species to spark movements for interspecies justice. Finally, James Damico writes about his musical collaborations with young people in "Confronting Climate Denial with an Intergenerational Conversation/Song". Damico shares his insights about the process, as well as his reflections that collective creation—as well as getting climate conversations out of the classroom and into the street—deserves its own soundtrack.

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