



# The Ethics of Using Generative AI for Climate Literacy

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## Abstract

We argue that GenAI runs contrary to climate literacy, a stance that emerged after a period of experimenting with Large Language Models (LLMs). This article explores this position by presenting ethical questions around GenAI, ranging from light concerns to the darkest dilemmas of the climate emergency. We conclude by offering a three-step instructional framework based on shifting our approach from teaching with GenAI to teaching about it. The framework emphasizes investigating the presence of GenAI in our lives, raising awareness about GenAI's environmental costs, and making something real (an essay, poem, infographic, skit, and so on) to convey ideas about climate justice. We close the article by providing a link to additional resources.

## Keywords

climate literacy, generative AI, genAI, ethics, climate justice, climate emergency

## Introduction

What does the era of generative artificial intelligence (GenAI) mean for climate literacy? That was the question on our minds at the end of the 2023 National Council of Teachers of English (NCTE) Annual Convention in Columbus, OH. The time was marked by two events: 1) GenAI had entered the English education scene through the emergence of public-facing products, and 2) the red-hued smoke from Canadian wildfires had covered large swaths of North America. The world was changing, and the climate crisis hung, quite literally, in the air. As educators committed to teaching about the climate emergency, we felt the urgency of the moment. Perhaps, as suggested by the tech companies, GenAI would spur innovative teaching methods, creating new possibilities for connecting the dots between thought and action. Perhaps such methods would allow us to go beyond cultivating a general awareness of climate science and instead approach climate action in alignment with Panos and Damico's (2023) description: "a core 'mega-problem' of our time, one that is centrally about all of our social locations and is fundamentally about intersectional and intergenerational justice" (p. 11, the term "mega-problem" drawing on Martin, 2007). Perhaps this mega-powerful technology could meet the moment of this mega-problem. In our exploration of GenAI, however, we found ourselves in an ethical quagmire. We settled at the following conclusion:

Generative artificial intelligence runs contrary to climate literacy. In their current form, these products are unsustainable in their energy consumption and contribute to the climate catastrophe. While we should teach about the relationship between generative artificial intelligence and the climate, we must minimize—or better, eradicate—the use of these products in our teaching and our lives.

Below, we provide the context informing our thinking, offer a set of ethical questions about these technologies, and provide examples of instructional pathways that shift from teaching with GenAI to teaching about its environmental cost.

## Using GenAI for Climate Literacy in English Education

The sheer pace of GenAI product development and integration into daily life has left many English educators with a sense that the world is changing faster than we can accommodate in our classrooms. Like many educators, we set out to think carefully and critically about how GenAI relates to the climate crisis, our relationship to nature, and even ourselves as conscious beings (Canady & Lammert, 2023).

Inspired by the ELATE (English Language Arts Teacher Educators) Commission on Climate Justice, Inquiry, and Action, we originally set out to find innovative uses of GenAI in the ELA classroom to teach about climate literacy. We wanted to develop a set of lesson and unit planning practices, reflect on what happened in our classes, and share our experiences with other educators. Aligning with Oziewicz's (2023) definition of climate literacy, we wanted to reach beyond climate science, directing our teaching toward understanding how we make meaning of the climate emergency through narratives; how issues of climate are inherently bound with racism, colonialism, classism, greed, extractivism, and so on; and how we should embrace multiple ways of knowing to build capacity for a "personally felt understanding of the planetary predicament in the Anthropocene" (p. 34). Following Beach, Webb, and Share (2017), we conceptualized the ELA classroom as an ideal place to embrace the complexity of climate justice in all its social dimensions, as ELA instruction centers on cultivating multivalent understanding through reading, writing, and critical inquiry. We set out to use GenAI to do that work.

Like previous efforts that provide rich pedagogical descriptions of climate literacy in ELA classrooms (e.g., Webb et al., 2025), we focused on integrating GenAI and climate literacy through lesson and unit planning. However, our original efforts ran aground. While exploring the what and the how of using GenAI for climate literacy—the what being the creative ways we integrate the technology and the how being our techniques of refinement—we found ourselves time and again at the should. Should we be using this technology for climate literacy in the first place? The ironies of doing so were undeniable.

We read articles from popular science magazines and features from news organizations about the environmental cost of GenAI. We learned that the widespread integration of GenAI into widely used applications would increase industry demand for fossil fuels and water, a growth trajectory expected to double in the next year and beyond (Parshall, 2024); even so, the cumulative environmental costs would be "difficult to calculate, even if experts focus only on the amount of greenhouse gasses it emits" due to the different uses and energy requirements of different types of AI (Coleman, 2024, para 3); regardless, the training of an LLM requires thousands of megawatt hours of electricity, releasing hundreds of tons of carbon into the atmosphere, not to mention the enormous amount of freshwater resources that data centers require for cooling, leading Ren and Wierman (2024) to call for awareness about environmental inequity: "The uneven distribution of AI's environmental impacts often remains hidden from public view and can potentially create unforeseen socioeconomic ramifications" (para. 21). These environmental costs to local

communities involve decreases in both air quality and water availability, as evidenced by data centers in Iowa (Kieffer, B., & Troutman, 2025), Virginia (Piedmont Environmental Council, 2024), and Texas (PBS Newshour, 2025), among many others.

While these sources often temper their arguments by including the likelihood that GenAI will become more energy efficient over time, and that the benefits of GenAI tools will also be deployed to aid in climate mitigation efforts, we were mindful that the current state of GenAI (from 2022 to the time of this writing) remains unsustainable. We found ourselves in an ocean of ethical concerns, from surface-level instructional concerns to the darkest dilemmas of the climate emergency. We represent this range in Table 1.

**Table 1.** *Understanding GenAI’s Ocean of Ethical Concerns: From Light Concerns to Dark Dilemmas*

	What could go wrong and right when using GenAI in English education?
	In what ways do GenAI products work with and against our instructional goals?
	What concerns have emerged about new GenAI-related forms of academic dishonesty?
	To what extent are GenAI products creating dependencies that affect creativity?
	To what extent should we be concerned about GenAI deprofessionalizing teaching?
	How do GenAI products collect, analyze, and store personal data?
	How do GenAI products contribute to biases, dis/misinformation, and societal harm?
	What is the environmental cost of GenAI? Why take on that cost given the risks above?
	How do GenAI practices prioritize the survival of capital investment over life on Earth?

At the top of the figure are lightly shaded ethical concerns; through the middle, the concerns become deeper shades of gray; and at the bottom are the most dystopian concerns about the environmental impact of GenAI. Would we sacrifice the well-being of local communities on the altar of machine learning? Edwards (2025) argues the answer is yes, noting that Indigenous communities have borne the brunt of the

environmental impacts from training new LLMs and that without changes in the capacity for the Environmental Protection Agency (EPA) to regulate energy consumption in the technology sector or without a legislative intervention, environmental degradation will continue. Given the Trump Administration’s gaslighting of the American public on emissions, reversing the EPA’s rules for regulating greenhouse gas pollutants (Dillen, 2025), we are mindful that political leadership in the United States has at times abandoned ethical care for the environment.

In this context, we felt the ethical weight of using GenAI in the classroom. We know we’re not alone in our ethical concerns. We agree with Behizadeh, Johnson, and Garcia (2023), who write, “We do not want to be complicit in perpetuating environmental and human harm by eliding concerns of using GenAI. It is up to humans to figure out how to use technology in ethical ways” (p. 17). At this moment, we’re skeptical that the use of GenAI in the classroom outweighs the environmental dangers. Not only does GenAI come with risks related to instructional goals, academic dishonesty, information accuracy, personal data, intellectual dependencies, identity dependencies, and the ongoing deprofessionalization of teaching, but those risks must be paid for with fossil fuels and clean water.

## **An Alternative**

We suggest a shift in the conversation from *with* to *about*. This shift attempts to balance a tension between the idea that we cannot ignore GenAI technologies, yet we should also model ethical practices in relation to them (ELATE, 2024). Rather than working *with* GenAI technologies, for instance by having students perform specific tasks with them, we can teach *about* them to raise critical awareness about the presence of GenAI in our daily lives and the effects of GenAI on the environment. Below, we offer three steps for making this *with-to-about* shift.

### ***Step 1: Investigate the Presence of GenAI in Our Daily Lives***

For example, students might name the places they see GenAI. Search engines such as Google could serve as examples. Have students seek out more examples. Arrange the class into teams to see who can build the most extensive list. Discuss. What does GenAI do for us? What’s helpful? What could go wrong? Why do you think it’s popping up in so many places? Arrange ideas from the discussion into themes to track and return to throughout a week, month, or unit. Build on those themes periodically.

## ***Step 2: Raise Awareness about the Environmental Impact of GenAI***

For example, students might examine the relationship between GenAI and the environment through news sources, reports, interviews, and discourse on social media. Make a list of environmental concerns the sources identify as well as any other concerns that are associated with GenAI, such as intellectual property rights. Have students respond to the prompt, “What environmental harms are related to GenAI?” Have students share their writing and push further. Ask them what they think most people in the world should know about this topic. Ask them to come up with options—a persuasive essay, poem, infographic, skit, or short narrative—they might use to explain it to others.

## ***Step 3: Make Something Real***

For example, students could develop their ideas from the previous steps through their writing, multimodal composing, and in-class discussions. By making ethical thinking visible to ourselves and each other, students are encouraged to connect the information they’ve learned to what it means for them at the ground level of their day-to-day decisions. In doing so, we want to design a pathway for students to articulate their own ethical stances about the environmental costs of GenAI and provide a classroom space for those stances to be explored and showcased.

## **Concluding Thoughts**

We conceptualize ethical thinking as a journey, not a destination. We began this piece by asking about the meaning of GenAI for climate literacy. We argued that GenAI runs contrary to climate literacy, but we hesitate to position that stance as absolute or static. That’s how we see the situation at this moment in time. The energy consumed through GenAI is substantial and contributes to the climate catastrophe. At the same time, the relationship between GenAI and the environment will undoubtedly evolve. GenAI exists in a constellation of energy-intensive technologies and an ever-expanding array of applications. What is clear is that the era of GenAI presses us to clarify our ethical commitments as individuals and to reconsider where we see our place as a species in relationship to the land and other living things.

We close this piece by offering a link to resources. Through this link, you’ll find teacher resources, student resources, and lesson plans. The teacher resources and student resources are both annotated bibliographies, the former with links to sources

to help educators become familiar with this topic and the latter with student-facing resources for the classroom. The lesson plans come from each author of this piece, demonstrating different instructional styles and contexts for making the *with-to-about* shift. We don't mean to present them as exemplary but rather as examples to inspire new possibilities: [Resources for the Ethics of GenAI](#).

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