

CHAPTER 23.

GENERATIVE AI CAN WRITE
WITHOUT DAMAGING THE
ENVIRONMENT ✦ WRITERS
*MUST CONSIDER THE DIGITAL
DAMAGE THEY CAUSE WHEN
THEY USE GENERATIVE AI*

Lydia Wilkes

Auburn University

The bad idea that generative artificial intelligence (GenAI) can write without damaging the environment allows environmental damage caused by this writing to persist unchecked and individuals to contribute to it unknowingly. A better idea is that GenAI does substantial environmental damage due to its scale, and because profit rather than sustainability drives decision-making at the Big Tech companies behind well-known GenAI chatbots, individual users of GenAI must consider the environmental harm it causes as part of using it responsibly. While this bad idea affects everyone who uses GenAI to write, I focus on teachers who promote critical AI literacy because that literacy must include understanding the scale of GenAI's environmental harm, also known as digital damage (Edwards, 2020; Edwards, 2025).

This bad idea is difficult to perceive because stories surrounding digital technologies, such as the myth of the airy digital cloud, obscure the environmental damage done by digital life (Crawford, 2021; Edwards, 2020; Edwards, 2025; Hao, 2025). While all digital technologies do digital damage, GenAI's scale ensures its digital damage *exponentially* outpaces that of other digital technologies (Edwards, 2020; Edwards, 2025; Hao, 2025). GenAI writing does digital damage as the thirsty, energy-hungry data centers and supercomputers that power it consume greater and greater quantities of dwindling environmental resources like fresh water and many sources of energy, all while increasing emissions (e.g., Li et al., 2025; Saul et al., 2024). Greenhouse gas emissions from training and deploying GenAI large language models running on generative

pretrained transformers (GPTs), along with other AIs, have equaled or surpassed those of global air travel (International Energy Agency, 2023). Many people know air travel contributes to the climate crisis, yet as they rely more on GenAI to perform routine tasks, they may not know these technologies do the same. For example, using ChatGPT for a search consumes an estimated ten times more energy than using a search engine (Kerr, 2024). I recall someone in a leadership position in higher education bragging that he no longer uses search engines, preferring ChatGPT. Did he know about the environmental costs? Or did he choose to ignore them?

He may have chosen to ignore them because he was looking at the bright side of what the Center for Humane Technology (2023) calls the “AI dilemma,” in which AI offers both the brightest and darkest possible futures simultaneously. Applied to the environment, the AI dilemma goes like this: on the one hand, highly sophisticated GenAI models can analyze mountains of environmental data to suggest novel solutions for decarbonizing the planet, desalinating ocean water, neutralizing novel chemicals, and more. On the other hand, these models run on equipment manufactured at great environmental and human costs, and the spikes in water and energy consumption and greenhouse gas emissions they’ve caused have only shown signs of increasing as the scale of GenAI models grows exponentially while Big Tech companies pursue artificial general intelligence (Crawford, 2021; Hao, 2025). Big Tech companies tout gains in operating efficiency as a way to reduce the environmental costs of GenAI, but more efficiency begets more demand (Leffer, 2023). This dilemma poses an urgent question: are the potential solutions these technologies might deliver worth the digital damage they do now?

No, they’re not. For one, Big Tech’s claim that GenAI expansion, and eventually artificial general intelligence, will solve the climate crisis is misleading because the AI needed to create solutions for aspects of the climate crisis are not GenAI models but rather older forms of AI, primarily machine learning models, that don’t require massive digital infrastructures or environmental resources (Hao, 2025). Most of all, the environmental AI dilemma is only a dilemma as long as we’re invested in maintaining business as usual when it comes to resource consumption. As Ira J. Allen (2024) writes, “an awful lot of people are trying to persuade you that nothing fundamentally needs to change, that innovations in everything from finance to material science will save civilization (such as it is). They are wrong” (p. ix). While machine learning AI models may provide *some* solutions to the many overlapping environmental crises worsening as you read this, they do so to sustain a way of life premised on infinite growth that is fundamentally unsustainable. GenAI was built by ignoring environmental costs that are now due and impossible to pay. GenAI writing not only harms the

environment now, but by sustaining business as usual, it also hampers our ability to commit to the sweeping changes in human resource consumption and political-economic organization necessary for our species and over a million others to have an inhabitable home on Earth (Allen, 2024).

With GenAI's digital damage difficult to perceive, writing teachers have an ethical obligation to inform students about GenAI's current disastrous environmental effects so students understand that writing responsibly with GenAI includes, at minimum, weighing these effects (see Wilkes, in press). Teachers must also guide students' critical thinking about claims made by Big Tech boosters whose stake in the future is in part one of short-term financial gain exacted at the planet's expense (Hao, 2025). This obligation gains increased urgency in a time when more and more people, usually those in the Global South, do not have access to clean drinking water, suffer ill health caused by polluted air, face natural disasters exacerbated by climate change, starve in ever greater numbers, and die from heat exhaustion. While it may be possible to write with GenAI so as to mitigate these disasters, the scale of digital damage should lead teachers, students, and members of the public to default to skepticism about GenAI's environmental costs. This skepticism, along with growing awareness of environmental costs, may lead to an increase in individual resistance and refusal of GenAI as a writing technology (Sano-Franchini et al., 2024).

WRITING WITH GENAI DOES DIGITAL DAMAGE

Writing with GenAI does digital damage, an unavoidable consequence of using digital technology. Dustin W. Edwards' (2020) term digital damage "designate[s] how the material infrastructures of the internet and connected platforms and devices are tangled up with lands, waters, energies, and histories that are often unseen, unfelt, or unacknowledged in our everyday lives" (p. 60). For example, every time any of us posts text, images, video, or audio online, we're "turning on a lightbulb forever" because that data lingers in data centers (Michel, 2024). While we can't avoid doing digital damage, we can grapple with what it means for our individual use and demand accountability from the companies who profit from it (see, e.g., Crawford, 2021).

GenAI's startling water consumption provides a powerful way for teachers to prepare students to write responsibly with it. Every five to 50 prompts entered into ChatGPT-4 consume about 16 ounces of water, the same amount as in a bottle of water (Li et al., 2025). How much water each prompt consumes depends on the outside air temperature near Des Moines, Iowa, where ChatGPT-4 is housed: on warm days, heat-producing servers and networking equipment need fresh drinking water to avoid overheating (Li et al., 2025). The

same is true for any other large language model, as each one is housed in a specific data center. Fresh drinking water, rather than other types of water, is needed to avoid bacterial growth and other buildup in pipes (Hao, 2025), and it cools the servers through evaporation, leaving nothing behind for other uses. As a result, these “thirsty” GenAI models have caused massive increases in freshwater consumption (Li et al., 2025). Google’s water consumption increased by 37% from 2021 to 2023 as it tried to catch up with OpenAI’s ChatGPT, and Microsoft, OpenAI’s investor, reported a whopping 56% increase in the same period (Li et al., 2025). These companies claim they will respond to the increase by pursuing more operating efficiencies, not by changing how they do business.

That’s because questioning the dramatic pace and scale of GenAI growth is not possible within the companies themselves, which are integral to the carbon-capitalism-colonialism assemblage or CaCaCo (Allen, 2024). CaCaCo “refers to the organizing conditions for nearly every human person on earth’s lived reality” (Allen, 2024, p. 17). In this reality, burning carbon provides far more energy than humans have been able to access for most of our existence while capitalism “organize[s] economic production and consumption, and colonialism’s legacy and persistent present . . . define the social and property relations . . . into which each of us is thrown upon birth” (Allen, 2024, p. 17). CaCaCo determines how digital damage is distributed: those in the Global North reap the benefits of a carbon-intensive life while those in the Global South aspire to that life and suffer damages that make it possible.

Digital damage starts with mining for elements that power the computer chips behind GenAI in places shaped by European colonization (Crawford, 2021; Hao, 2025). In the Democratic Republic of Congo, individuals engage in “artisanal” mining for cobalt, used to manufacture lithium-ion batteries, to earn a few dollars a day so their families won’t starve in an arrangement that researcher Siddharth Kara calls “modern-day slavery” (Gross, 2023). Colonial hunger for other elements like copper and lithium drives similar extraction in other parts of the Global South like Chile (Hao, 2025). CaCaCo’s colonialist present ensures that (mostly) poor people of color live in miserable conditions so that (mostly) wealthy white people can enjoy digital life. This is, as journalist Hao’s bestselling book on OpenAI is titled, an *empire of AI*.

Digital damage continues with AI’s tremendous demand for energy, first in its training phase and then as it processes user queries. This seemingly insatiable demand has led tech companies to turn to nuclear energy while also keeping coal and gas power plants open (Hao, 2025). The International Energy Agency (2025) says data centers could double their power usage by 2030 over levels from 2024 with much of the growth happening in the US. With this information changing each year, teachers can have students find the latest information

on GenAI's energy demand. And as data centers grow at the massive pace and scale of GenAI, students can learn whether their home communities presently or will soon host a thirsty, energy-hungry data center, many of which are sited in places contending with water scarcity (Barratt et al., 2024). They could also learn about communities that have resisted data centers successfully to preserve their environmental resources (Barratt et al., 2024; Hao, 2025).

Because a handful of Big Tech companies control the narrative around AI (Crawford, 2021; Hao, 2025), teachers must prepare students to think critically about that narrative. Communication from Big Tech companies should be treated with skepticism and awareness that those companies stand to gain more of CaCaCo's business as usual despite their sustainability assurances. For the planet to have a livable future, we need to imagine and implement very different ways of living together. To the degree that writing with GenAI preserves business as usual, writing with GenAI will continue to do digital damage in ways difficult to perceive at a scale difficult to counteract.

WRITING ETHICALLY WITH GENAI ON A DAMAGED PLANET

This leads to an urgent question: since digital damage is unavoidable, is it possible to write ethically with GenAI? Teachers can ask students to grapple with this difficult question and justify their answer, perhaps by referencing ethical frameworks that matter to them.

Writing with GenAI on a damaged planet means continuing to do environmental harm and finding a way to live with that harm. Or it means refusing to use GenAI as a writing tool some, most, or all of the time. To prepare students to use GenAI ethically, which can include informed refusal (Sano-Franchini et al., 2024), teachers must address this problem directly by sharing GenAI's carbon and water footprints with students or encouraging students to locate and reflect on this information given their current uses of GenAI for writing and other tasks.

Teachers can also confront the problem of individualism as it feeds CaCaCo. It is difficult to opt out of GenAI when Big Tech companies embed it in search engines, word processors, smartphones, and other widely used technologies, claiming it's free but hiding its considerable costs, as Whitney Lew James notes in this volume. In researching this chapter, I did digital damage at GenAI scale every time I Googled something because the top result was an AI overview—until I learned how to turn this feature off. Yet tracking one's own digital carbon footprint to reduce it “might be exactly what the industry wants” (Michel, 2024) because it shifts responsibility from the corporations causing the problem at scale to individuals whose actions cannot come close to matching that scale.

In fact, according to Kate Crawford, the very notion of an individual having a carbon footprint was popularized by oil company British Petroleum to do just that (Michel, 2024).

There is no question that solidarity and collective action provide the means for reducing CaCaCo's harm, of which GenAI is one significant part (Allen, 2024). Here we glimpse the best possibility for writing ethically with GenAI. When we use GenAI to augment our organizing power not in service of CaCaCo but of otherwise worlds, its digital damage seems ethically justifiable. Crucially, then, writing ethically with AI means writing toward a future that will look very different from the present, a future not so wedded to carbon burning that sustains capitalism along lines drawn by colonial powers. Realizing that future is tremendously difficult. While writing with GenAI may have a role to play in getting there, GenAI writing at the scale common in the mid-2020s will continue to cause tremendous environmental harm, and all writers wishing to use GenAI ethically must grapple with that difficult reality.

REFERENCES

- Allen, I. J. (2024). *Panic now? Tools for humanizing*. University of Tennessee Press.
- Barratt, L., Gambarini, C., Witherspoon, A., & Uteuova, A. (2025, April 9). *Revealed: Big tech's new datacentres will take water from the world's driest areas*. The Guardian. <https://www.theguardian.com/environment/2025/apr/09/big-tech-datacentres-water>
- The Center for Humane Technology. (2023, March 9). *The A.I. dilemma [Video]*. YouTube. <https://www.youtube.com/watch?v=xoVJKj8lcNQ>
- Crawford, K. (2021.) *Atlas of AI: Power, politics, and the planetary costs of artificial intelligence*. Yale University Press.
- Edwards, D. W. (2020). Digital rhetoric on a damaged planet: Storying digital damage as inventive response to the Anthropocene. *Rhetoric Review*, 39(1), 59-72.
- Edwards, D.W. (2025). *Enduring digital damage: Rhetorical reckonings for planetary survival*. University of Alabama Press.
- Gross, T. (2023, February 1). *How "modern-day slavery" in the Congo powers the rechargeable battery economy*. NPR: Goats and Soda. <https://www.npr.org/sections/goatsandsoda/2023/02/01/1152893248/red-cobalt-congo-drc-mining-siddharth-kara>
- Hao, K. (2025). *Empire of AI: Dreams and nightmares in Sam Altman's OpenAI*. Penguin Press.
- International Energy Agency. (2023, July 11). *Data centers and data transmission networks*. <https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks>
- International Energy Agency. (2025, April 10). *Energy and AI*. International Energy Agency. <https://www.iea.org/reports/energy-and-ai/>
- James, W. L. (2026). GenAI can be accessed for free: AI poses significant hidden costs to individuals, society, and the planet. In C. Basgier, A. Mills, M. Olejnik, M.

- Rodak, & S. Sharma (Eds.), *Bad ideas about AI and writing: Generative practices for teaching, learning, and communication*. The WAC Clearinghouse; University Press of Colorado. <https://doi.org/10.37514/PER-B.2026.2777.2.2>
- Kerr, D. (2024, 12 July.) *AI brings soaring emissions for Google and Microsoft, a major contributor to climate change*. NPR. <https://www.npr.org/2024/07/12/g-s1-9545/ai-brings-soaring-emissions-for-google-and-microsoft-a-major-contributor-to-climate-change>
- Leffer, L. (2023, October 13). *The AI boom could use a shocking amount of electricity*. *Scientific American*. <https://www.scientificamerican.com/article/the-ai-boom-could-use-a-shocking-amount-of-electricity/>
- Li, P., et al. (2025). *Making AI less "thirsty": Uncovering and addressing the secret water footprint of AI models*. *Communications of the ACM*, 68(7), 54–61. <https://doi.org/10.1145/3724499>
- Michel, A. H. (2024, July 5). *Every time you post to Instagram, you're turning on a light bulb forever*. *The Atlantic*. <https://www.theatlantic.com/technology/archive/2024/07/how-much-data-ai-use/678908/>
- Microsoft. (2024). *How can we advance sustainability? 2024 environmental sustainability report: Data fact sheet*. <https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/msc/documents/presentations/CSR/2024-Environmental-Sustainability-Report-Data-Fact.pdf>
- O'Brien, M., & Fingerhut, H. (2023, September 9). *Artificial intelligence technology behind ChatGPT was built in Iowa—with a lot of water*. Associated Press. <https://apnews.com/article/chatgpt-gpt4-iowa-ai-water-consumption-microsoft-f551fde98083d17a7e8d904f8be822c4>
- Sano-Franchini, J., McIntyre, M., & Fernandes, M. (2024). *Refusing GenAI in writing studies: A quickstart guide*. *Refusing Generative AI in Writing Studies*. <https://refusinggenai.wordpress.com/>
- Saul, J., Nicoletti, L., Rai, S., Bass, D., King, I., & Duggan, J. (2024, June 21). *AI is already wreaking havoc on global power systems*. *Bloomberg*. <https://www.bloomberg.com/graphics/2024-ai-data-centers-power-grids/>
- Van Rijmenam, M. (2023, February 23). *Building a greener future: The importance of sustainable AI*. *The Digital Speaker*. <https://www.thedigitalspeaker.com/greener-future-importance-sustainable-ai/>
- Wilkes, L. (in press). *Writing wisely with water in a time of generative AI and digital damage*. In M. Vetter, M. Stewart, T. Daniels-Lerberg, B. S. Finer, X. Tan, & C. Charlton (Eds.), *Writing spaces: Readings on writing 7*. WritingSpaces.org; Parlor Press; The WAC Clearinghouse. <https://wacclearinghouse.org/books/writingspaces/writingspaces7/>