CHAPTER 29.

AI CREATES SHORTCUTS FOR GOOD THINKING ✨ *AI CREATES OPPORTUNITIES FOR MORE COMPLEX CRITICAL THINKING*

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In central Utah, in the Fishlake Basin, there is a suckering tree named Pando. Latin for "I spread," Pando is a quaking aspen. And although Pando only creates pollen, it has managed to replicate itself over forty-seven thousand times across one hundred acres (Barney & Power, 2025). Pando is both one tree—as all stems/trunks are genetically identical—and many trees—as each trunk has its own place within the basin, complete with lifespan and individual interactions that would create uniqueness. One of the oldest living organisms on earth, Pando has been threatened by disease and overgrazing at various times, yet it remains—continuing to maintain, sucker, and spread when it encounters new resources (Barney & Power, 2025). Like Pando, large language models (LLMs)[1] regenerate through a clonal nature of replication or simulation, expand and grow, and share a knowledge base (ChatGPT 3.5).[2] In other words, LLMs imitate nature and human languaging by reproducing commonplaces from large data sets (Bali, 2023), as they expand, replicate, and connect patterns of written communication. However, if one proceeds from the idea that LLM-produced commonplaces are value neutral and/or the most effective way to interact with one's audience, this also has the potential to create a highly problematic, bad

1 This chapter will use generative AI, GenAI, and GPT interchangeably, as they are often cross-referenced and/or cross-applicable within the literature, including this larger collection. At the same time, the authors acknowledge the recent push to distinguish LLMs from AI, as they are a subset of artificial intelligence projects not intended to truly replicate the human mind.

2 Interested in what ChatGPT thinks of this comparison? We asked. Check it out here: https://chatgpt.com/share/124eb665-3130-46f6-bea8-bd7bd1f2424d.

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idea about AI and writing: AI Creates Shortcuts for Good Thinking. In short, just as humanity must put more effort into helping Pando flourish like a forest, the introduction of LLMs and "artificial intelligence" (AI) more broadly requires more critical thinking of innovators and writers, not less.

Pando is an interesting frame through which to view United States education's current fetishization of generative, pre-trained(ing) transformers (GPTs), and language-based GPTs in particular, because GPTs can make writing appear almost like magic—replicating conventions through the provision of clear instructions instantaneously. So while as educators we might understand the value of interrogating generative AI (GenAI) as a complex system, LLM corporations attempt to market writing as a simple AI task, hiding the complexity involved in the writing process—as well as the problems in the programming—in favor of providing quick answers. Even the interfaces of GenAI are designed to appear simple. Consequently, some arguments about GenAI would have educators believe that an excellent written outcome is simply a matter of teaching clear prompt engineering to students—GenAI can take care of the product. So as Pando's topography replicates a forest, so too might we understand LLMs crafting of exemplary communication as imitating standard writing practices based on (biased) statistical patterns through prompt engineering. However, this is a gross oversimplification in both regards.

Sindija Franzetti and Amy Wanyu Ou (2026) argue that marketing writing as a prompt-manufactured product rather than a complex social meaning-making process perpetuates this oversimplified understanding of writing, disregarding its iterative and collaborative aspects. We would agree. In fact, a key component of writing education, we would argue, asks why we write, why students write, and what writing is utilized for in learning processes. Writing is not solely a communication tool—it can and should be utilized as a complex form of meaning-making (the actual primary purpose of languaging for humans). The use of qualitative data across fields and the writing up of research in and of themselves demonstrate these concepts easily. Consequently, the question should not simply be "What can language GPTs write for learners?" but rather "Why would language GPTs write for learners?"

Fostering critical thinking has been a focus in education for quite some time. From Dewey's discernment to Bloom's taxonomy to Vygotsky and Piaget's constructivism to Freire's critical pedagogy, each theory reinforces our understanding of critical thinking as the merging of available knowledge, individual experience, and explicit and implicit reasoning that moves an individual toward understanding and/or judgement. This of course positions writing not only as a communication system but also as a thinking device—as a meaning maker. "Writing is thinking," Richard Menary (2007, p. 631) argued. Consistent with

historical educational research and practice, emphasizing process over product when writing with GenAI helps educators prioritize two of our most important values regardless of discipline: critical meaning-making and communication.

Grounding our pedagogical praxes in what research has proven thus far allows us to understand the areas in which GenAI is most helpful to writing education, like generating ideas (Aguilar, 2024), providing feedback (MacArthur et al., 2024), reviewing genre conventions (Renade et al., 2024), and modeling standardized forms of English. It also enables us to prioritize the human skills that LLMs can never truly replicate: emotions, intuition, empathy, embodiment, moral and ethical reasoning from personal values, consciousness, complex social interactions, and adaptation through experience. Perhaps the most challenging part for all of us in education today is acknowledging that our students will use LLMs to write throughout their careers, whether we teach them how to use them proficiently and ethically or not. Increasingly, corporations and the organizations for which students work have turned toward GenAI technologies to find innovative and efficient solutions to all sorts of problems from innovations in physics, to entertainment, to health sciences and more (Breazeal, 2022; Bridle, 2023; Marcus, 2023). Consequently, educators must ask—doesn't GenAI in fact (and inevitably) disrupt past notions of critical thinking? If writing is thinking, could we begin talking about LLMs as products that may facilitate thinking and using/teaching them as such? And, how might this complicate our desire to foster critical creators and users in emerging fields?

Part of how critical thinking becomes more complex and complicated with the introduction of LLMs is in the discussions around the ethical implications of using GenAI for writing and the seemingly contrasting industry conversations. Corporations such as Invoka, OpenAI, NVIDIA, and Anthropic are interested in efficiency and the return on investment (ROI) of course, but they are also interested in innovation (Anthropic, 2024; Invoka, 2024; NVIDIA, 2024; OpenAI, 2024b). And while Part Four in this collection approaches ethics considerations more fully, the literature currently under-represents these complications, especially those that are an acute component of the critical thinking practices that writing educators are positioned to address. Applying a human-centered approach and ensuring that students understand the limitations of and the problems associated with these technologies—plagiarism, biases, hallucinations, information colonization, data privacy issues, and environmental concerns that run rampant across various platforms—is the sweet spot of writing education, allowing for critical reflection and the development of critical thinking practices that will help students to be critical makers and users of these technologies (Bali, 2023; Bender et al., 2021; D'Agostino, 2023; Gupta, 2024; Mills, 2023; Vee et al., 2023). And even if we agree that humans and machines process writing

similarly because both scrub through information and reorganize it to generate a written response (Dobrin, 2023), there is a fundamental difference.

Critical thinking requires knowledge of and reflection upon personal experiences and contexts. If educated to do so, humans have the capacity to evaluate evolving issues from multiple perspectives and frames in real time, moving from individuated, implicit ideas to explicit approaches that consider a multiplicity of topics. Tapping into our students' contexts also allows us to incorporate their values into what they create, prompting students to compose relevant texts that meaningfully and purposefully advance knowledge beyond the known. Machines are biased toward the known and the explicit. AI does not escape this issue. Biases are built into LLM systems by those doing the coding and creating and by the data sets used to train them, and biases can continue to proliferate through the ways in which users engage with the systems. The 2021 Stanford Institute for Human Centered AI Artificial Intelligence Index Report puts it plainly:

> The AI workforce remains predominantly male and lacking in diversity. [T]he lack of diversity … risks creating an uneven distribution of power in the workforce [and] reinforces existing inequalities generated by AI systems, reduces the scope of individuals and organizations for whom these systems work, and contributes to unjust outcomes. (p. 3)

Addressing these issues starts with working with differing populations to critically evaluate, contribute, build, and change these systems. This is not an overnight task, or a version upgrade. It will take time, energy, and communal effort that extends generationally and globally. In the classroom, writing exercises and assignments that directly connect to students' backgrounds can support making long-standing, relevant, and meaningful changes to how AI is used and potentially crafted and coded in the future (e.g., Explain how this is relevant to you and your community; Why does this matter to you and your community?). Teaching iteration when working with generative AI can also help students use these technologies as a commodity that may facilitate these deeper critical thinking tasks through clarifying, restructuring writing, and identifying constraints (Dobrin, 2023). Angela Laflen (2026) also necessarily extends iteration to the reading practices of students. Readers interested in how reading and writing critical practices might fold more concretely together can easily read Laflen and Franzetti and Ou in tandem in order to support more robust, active engagement in reading and writing on the part of educators and students.

As educators know, active engagement spurs actual critical thinking. We must focus on partnering with learners in critically evaluating and unblackboxing AI

systems, so that change can take place on a fundamental level—true change is not a retrofit. Critical thinking centers how AI can and cannot (currently) aid in the processes of original, transliterate, morally and/or ethically informed, good thinking. Adding AI as an invention product in our courses is new to all of us. Although we may be anxious about this radical change, we can rely on our strengths in writing pedagogies. Working with students to build and measure learning outcomes (those both determined individually and corporately through educational environments) are two of writing educators' specialties. Interrogating and communally building measuring systems for good thinking using AI in writing should be a priority, as we work together to find out if we are going in the right direction or if we are only spinning in circles. Crafting assignments which engage learners in reflection in process activities while creating and/or writing with LLMs becomes key to establishing critical thinking practices that extend beyond the immediate. Ultimately, the greatest takeaway from examining AI and writing by far is that it allows us to reflect on our role as educators.

As Pando imitates a forest, so too do LLMs imitate critical, reflexive writing. We shouldn't be fooled in either case. Pando is overly susceptible to the collapse of its ecosystem through rot and disease, because it lacks a diverse biome that provides natural checks and balances to its overall health and wellness (Dykes, 2024). So too could LLMs present a risk to writing and thinking that works toward positive change, through the absence of critical thinking practices embedded in the reflective, meaning making possible through writing instruction. We must find a balance among useful and ethical uses of generative AI, what we value as writing teachers (because we all have our own writing biases), what students value (informed by their contexts—cultural, generational, linguistic, social, political), what research on AI and writing is telling us, and what students will encounter after they leave academic-controlled environments. Only these complex, critically-informed practices will lead to actual critical thinking that will help humanity and our environments flourish.

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