# Slow Down: Generative AI, Faculty Reactions, and the Role of Critical Thinking in Writing Instruction

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## Introduction
Generative artificial intelligence (GAI) is developing so rapidly that some may already see OpenAI's ChatGPT as old news, particularly given the release of open-source alternatives. However, brand recognition alone makes ChatGPT a force of nature: after just two months of existence, ChatGPT amassed 100 million "monthly active users" (Browne, 2023, para. 11). The notoriety of ChatGPT has heightened public awareness of AI while new tools have proliferated in its wake. AI could be used in higher education in a myriad of ways, from creating study guides based on textbook content to gamifying educational material to creating lecture transcripts; in this paper, we have chosen to limit our focus to the use of GAI tools, such as ChatGPT. The impact that ChatGPT and other emerging GAI technologies will have on teaching and learning is only just beginning to be seen, and in this report from the field, we touch briefly upon some of the emotional, ethical, and educational concerns that arose from a GAI faculty learning community at Ashland University (AU), in the context of current research and broader conversations on the topic. The pedagogical possibilities opened up by an increasingly urgent imperative to teach and assess critical thinking may bolster the hopes of college faculty understandably worried by GAI's rise to prominence. Engaging students in meaningful writing—across disciplines—is one strategy for building necessary critical thinking skills.

## GAI Faculty Learning Community
Like at many colleges and universities around the world, the faculty, staff, and administrators at AU were caught off-guard by the emergence of ChatGPT at the end of 2022 and spent a good part of the first half of 2023 trying to understand what it and similar GAI technologies might mean for higher education. One response to this emerging and little-understood technology was to create and implement faculty development opportunities, which have included a seminar on ChatGPT and higher education, an educational video on related plagiarism policies and, most recently, a month-long learning community of faculty and staff, the most prolonged and in-depth faculty development opportunity related to GAI at AU.

This faculty learning community was held throughout the month of June 2023 and involved both synchronous and asynchronous discussions and activities revolving around the following four week-long themes:

- What is Generative AI?
- Generative AI in Higher Education
- Problems with Generative AI
- The Future of AI

Faculty from various fields, including English, business, sociology, education, communications, foreign language, and the library, participated. The most important goal of this learning community, as defined by the Center for Innovation and Teaching Excellence at AU, was to offer faculty a place to emotionally and intellectually process the implications of GAI's recent splash, especially as it pertains to writing and communicating in and across the disciplines. The Center for Innovation and Teaching Excellence also promoted the learning community as a way for faculty to offer feedback: their most pressing concerns, potential problems and solutions, and what professional development could be provided to support them. During these events and through our other conversations with faculty, we have been fortunate to learn a great deal about our colleagues' hopes, fears, and burning questions about GAI, which we share and synthesize with research in this report. Of utmost concern to AU's faculty, and perhaps countless others, is the increased potential for academic misconduct, the deterioration of students' critical thinking skills, and injustice.

The authors of this paper both played active roles in this faculty learning community, with Katy Major as the designer and leader of the community and Clay Chiarelott as a participant. Additionally, a major part of both our roles at AU involves working with faculty across disciplines, including facilitating discussions and offering professional development. Major primarily works as an instructional designer and content developer for LearnAU, the university's instructional design division, and the Center for Innovation and Teaching Excellence, while Chiarelott worked as the coordinator of Accent on Communicating, an initiative focused on writing and communicating in and across the disciplines. Moreover, both of us have taught as adjunct faculty first-year writing courses at AU and other institutions. As such, we are approaching this topic from the perspective of college writing instructors as well as faculty development and instructional design experts.

**Emotional Reactions**
An early conversation about GAI on AU's campus made evident that the responses of faculty were largely emotionally grounded. The most glaring example of this was a professor who opined that ChatGPT was designed in an effort to encourage cheating and evade detection. This comment was based not in reality but rather emotion: If OpenAI indeed wanted users to be able to cheat to their hearts' content without fear of repercussions, it is safe to assume that they would not have invested time and money in developing an AI detection tool, much less offered this tool to the public free of charge. This conversation led us to the important realization that one would be hard-pressed to discuss AI's ever-evolving role in the lives of academics without activating emotional responses.

In our GAI faculty learning community, we observed that writing seemed to be valued differently by faculty members across and in the various disciplines, and, by extension, their responses—both emotional and academic—to the growth of GAI seemed to vary by field. Among faculty in fields such as religious studies, creative writing, and literary studies, where the written word carries significant value and meaning (and in some cases, an almost sacred

value), the use of GAI to produce writing was considered to be extremely alarming and raised serious ethical and academic concerns. In contrast, among faculty in fields where writing is treated more pragmatically, as a means to some other end, such as in business and technology, we found that, in general, they reacted to the use of GAI to produce writing as something quite exciting that opens up new opportunities to reach more people faster. While these responses might not be broadly generalizable to faculty, they do raise important questions about how attitudes towards GAI may vary by field.

Interestingly, recent publications indicate attitudes toward GAI in higher education across the board are mostly positive and are improving. EDUCAUSE conducted two QuickPolls on GAI this year, one in February (Muscanell & Robert, 2023) and one in April (McCormack, 2023), the latter of which found that respondents reported improved attitudes regarding GAI in higher education, with 67% rating their attitude as optimistic compared to the former poll's 54%. Furthermore, the majority of respondents in higher education agreed with the statements "The use of generative AI in higher ed has more benefits than drawbacks" and "Generative AI will make my job easier" whereas only 45% agreed with the statement "The use of generative AI in higher ed makes me nervous" (McCormack, 2023). Americans more broadly are mixed in their emotional responses, reporting positively about some applications of GAI but negatively in response to others. For instance, generating sophisticated genetic data to help farmers to grow superior crops is recognized as a productive technological advance whereas a chatbot acting as a mental health counselor is not (Funk et al., 2023).

It has already become apparent that there are numerous applications of GAI in higher education. Some have worried faculty members. During the GAI learning community, Hardman's (2023a) resource *ChatGPT for Educators* was shared and, while participants conceded that some of Hardman's ideas were interesting, they were worried by her suggestion to "paste existing learner feedback [and] other course data [such as] stats from your LMS [learning management system] into ChatGPT" to enable the tool to identify opportunities to improve an online class (p. 3). This reaction is sensible given that college instructors are trained in FERPA compliance regularly, making them hyper-aware of the importance of maintaining student privacy. It is also an anxiety validated by experts in computer science who express the same concern. Several faculty at the Schools of Computer Science of Engineering and Software Engineering at Sun Yat-sen University in China wrote: "The data used to train [GAI] models may contain sensitive information, such as personal identify [*sic*] information, medical records and financial information. If sensitive information is leaked, it will bring great risks to individuals and organizations" (Chen et al., 2023, p. 111:3). These risks are a part of what causes faculty members to limit their engagement with GAI.

Some have deemed strong negative reactions to GAI hysterical or uninformed. In May 2023, Patrick Grady and Daniel Castro published *Tech Panics, Generative AI, and the Need for Regulatory Caution*, which outlines the history of tech-related panic and espouses the authors' belief that "exaggerated and misleading concerns about the tool's potential to cause harm have crowded out reasonable discussion about the technology, generating a familiar, yet unfortunate, 'tech panic'" (para. 1). It is true that there is a historical pattern of panic following major technological advances, but it could be argued that this panic is not the waste of energy that Grady and Castro portrayed. For example, they dismissed the fear of AI gaining sentience as "outrageous," yet experts with the same or a greater level of knowledge of AI

than Grady and Castro have expressed alarm for that very reason. Eliezer Yudkowsky (2023), a lead GAI researcher at the Machine Intelligence Research Institute and, per *Time Magazine,* "widely regarded as a founder of the field," wrote:

> I'd be remiss in my moral duties as a human if I didn't also mention that we have no idea how to determine whether AI systems are aware of themselves— since we have no idea how to decode anything that goes on in the giant inscrutable arrays—and therefore we may at some point inadvertently create digital minds which are truly conscious and ought to have rights and shouldn't be owned. (para. 12)

Accurate or not—for, in reality, no one truly knows—fears of AI gaining dominance have one potential benefit: encouraging critical thinking in GAI users. Users who are aware of GAI's capacity to violate people's privacy, cause academic misconduct, lead to decreased hiring, and inadvertently stifle their creativity will be thoughtful and critical users, navigating these concerns when they make decisions about how and when to use GAI.

## GAI, Critical Thinking, and Slowing Down When You Should

When our learning community discussions turned toward how GAI, and AI more broadly, might affect critical thinking, we kept coming back to the idea of fast versus slow thinking. Newson (2012) asserted, "one of the most pressing priorities of our time is . . . space and time for reflective, evaluative critical thinking" (p. 122). While Newson said educators must set aside space and time *for* critical thinking, we want to articulate that it is the very act of *pausing to make time for thinking* that is the "critical" part of "critical thinking," and what follows from that can include any other method or way of thinking. Or, as John Dewey (1910) wrote in *How We Think*, "The essence of critical thinking is suspended judgment" (p. 74). In this framework, critical thinking means knowing when and how to slow down, pay close attention, and engage in deep thinking.

In other words, we propose that critical thinking is the pivotal moment when, according to the psychologist Daniel Kahneman (2011) in his book *Thinking, Fast and Slow*, one shifts from System 1 thinking to System 2 thinking. As Kahneman theorized, System 1 thinking is fast, automatic, frequent, emotional, stereotypic, and unconscious while System 2 is slow, effortful, infrequent, logical, calculating, and conscious. However, Kahneman stressed it is not possible to always engage in the type of high-effort, active cognitive processing characterized by System 2 thinking, so people must be strategic and purposeful about when such attention is required and when, in contrast, it is optimal to use quick, superficial, and relatively low-effort automatic thinking.

Figure 1 provides a visual representation of how we are conceptualizing critical thinking in this paper. Note that defining critical thinking as slowing down and pivoting to System 2 thinking rather than as a specific method of thinking also allows faculty to fill in the preferred type of thinking in their discipline, since each academic field may have slightly different ideas of what constitutes critical thinking. For instance, formal logic may be the preferred approach in math, while the scientific method may be preferred in the sciences, informal logic or argumentation in rhetoric and composition, the dialectical method in some disciplines within the humanities, and so on.
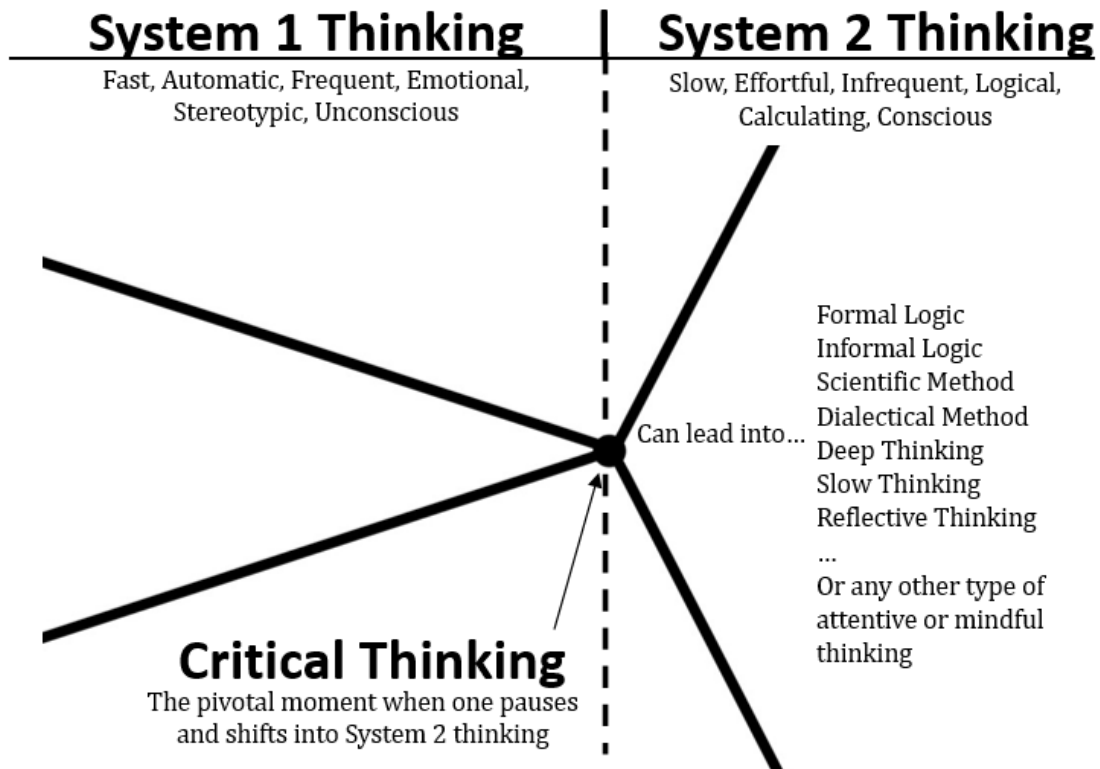
## System 1 Thinking
Fast, Automatic, Frequent, Emotional,
Stereotypic, Unconscious

## System 2 Thinking
Slow, Effortful, Infrequent, Logical,
Calculating, Conscious

Can lead into...

Formal Logic
Informal Logic
Scientific Method
Dialectical Method
Deep Thinking
Slow Thinking
Reflective Thinking
...
Or any other type of
attentive or mindful
thinking

## Critical Thinking
The pivotal moment when one pauses
and shifts into System 2 thinking

*Figure 1.* Critical thinking as the pivotal shift between System 1 and System 2 thinking.

Our university proudly advertises on its website that "We promise to teach you how to think, not what to think," yet as the rise of GAI makes apparent, we should also begin thinking about the importance of teaching students "when to think." A related critical thinking heuristic that comes to mind is known as "slowing down when you should" (Moulton et al., 2007, p. S109), which has received attention in the medical education field but does not appear to have caught on in other disciplines. Building off of Kahneman's (1973) early work on attention, effort, and cognitive processing in conjunction with research on what qualities distinguish experts from non-experts, such as novices and technicians, in a given field, Moulton et al. posited that what sets experts apart is being able to automate complex tasks through experience while also recognizing when to slow down and focus when anomalous situations present themselves. Whereas novices might have a strong capacity for problem solving and responding to novel situations (especially since most situations are novel to a beginner), they lack the experience that allows them to perform complicated actions with relative ease using nonanalytic cognitive resources such as scripts, schemas, heuristics, pattern recognition, chunking, encapsulation, and restrictions of solution sets (Moulton et al., 2007). In contrast, technicians might have built up many, if not all, of those same experiences in order to automate complex tasks, but they might overlook or be ill-equipped to address non-routine, anomalous problems (Moulton et al, 2007). Experts, though, seem to be uniquely adept at both the efficient automation of complex tasks and the ability to recognize when to slow down and use more cognitively effortful processes

to address novel cases, with the top experts in a field switching between the two at the optimal times.

Interestingly, some recent research has shown that even large-language AI models such as ChatGPT can benefit from being prompted to slow down their thinking (Kojima et al., 2022; Nori et al., 2023). Notably, chain-of-thought prompting, a technique for eliciting complex multi-step reasoning through step-by-step answer examples, improved arithmetics and symbolic reasoning, difficult System 2 tasks (Kojima et al., 2022, p. 2). Even adding a prompt as simple as "think step by step" can achieve more accurate and in-depth responses (Kojima et al., 2022; Nori et al., 2023). While evidence for the effectiveness of such chain-of-thought commands on GAI outputs is new and inconclusive, it does suggest that finding some ways to slow down the process and prompt additional "critical thinking" (if it can be called that) in GAI models might improve the quality of the results.

What all this suggests is that, in light of the proliferation of GAI, there is a growing need to help students learn when they need to think critically and when they can automate certain tasks and processes—whether that automation is in the form of their own System 1 thinking or in the form of AI. An emphasis on critical thinking as slowing down when one should in order to strategically activate a more attentive, System 2-type of thinking may help safeguard our students from an overreliance on GAI to do the work for them.

**The Importance of the Donkeywork**
Unfortunately, overreliance on AI can disrupt the critical thinking skill of knowing when, where, and how to switch between thinking modes. The acceleration of thinking that AI provides has obvious upsides for efficiency and progress, but in learning, speed and efficiency are often opposed to critical thinking. Since AI can apparently perform complex yet routine tasks with increasing ease, speed, and accuracy—tasks which usually take experts years of experience to master before they become more cognitively automated—it provides novices the ability to become as seemingly skillful and knowledgeable as seasoned technicians and near-experts without slogging through all the tedious practice, what one participant in our faculty learning community, an associate professor of English, referred to as "the donkeywork."

Even among experts, there will be novel situations and anomalous cases that will require the ability to "slow down when one should" in order to address them. As AI-based technologies grow and improve, and as they increasingly replace the more mundane and tedious donkeywork that humans do on a daily basis, they threaten to supplant what Moulton et al. (2007) called "the accrual and efficient use of nonanalytic resources" that comes with experience (p. S109). This supplantation of the mundane learning processes, in turn, may disrupt one's ability to slow down when one should. In other words, overdependence on AI can breed the type of complacency that causes one to overlook important anomalies that require extra attention and critical thinking—or even prevent one from recognizing such anomalies in the first place.

In the realm of college writing instruction, take, for example, the donkeywork of academic citations. Rekdal (2014) highlighted the ironic case of Katherine Frost Bruner who, as an editorial assistant for the *Journal of Abnormal and Social Psychology* from 1937 to 1941, published in said journal an influential article entitled "Of Psychological Writing: Being Some Valedictory Remarks on Style" in which she provided writing advice to would-be authors,

including advocating for spending more time on ensuring the references are correct. She wrote,

> a sin one more degree heinous than an incomplete reference is an inaccurate reference; the former will be caught by the editor or the printer, *whereas the latter will stand in print as an annoyance to future investigators and a monument to the writer's carelessness* [emphasis added]. (Frost Bruner, 1942, p. 69)

This case is ironic because, as Rekdal (2014) cataloged, Frost Bruner's article (especially the italicized part of the quote above) has since been miscited, misquoted, and misattributed by several authors, including in such high-profile sources as the *Publication Manual of the American Psychological Association.* By the third edition of the APA Manual, its authors had begun to misquote Frost Bruner by ignoring the distinction she made between incomplete and inaccurate references, stating that both will "stand in print in annoyance to future investigators and a monument to the writer's carelessness" (APA, 1984, p. 112). From there, subsequent publications have further misquoted Frost Bruner, with some even attributing her words to the APA Manual itself or to the noted psychologist Jerome Bruner, to whom she was married from 1940 to 1956 (Rekdal, 2014). In an email to Rekdal in 2010, Jerome Bruner described his former wife as being "particularly keen on referential accuracy—not only because of its obvious merit, but because inaccuracy so often provokes serious, broader misunderstanding" (Rekdal, 2014, p. 747).

A more current and egregious case of erroneous citations, one which involves ChatGPT, has recently made the news. In this case, two lawyers, Steven A. Schwartz and Peter LoDuca, used the ChatGPT program to generate citations in a legal brief for a case against the Colombian airline Avianca (Weiser, 2023; Weiser & Schweber, 2023). The brief was full of legal citations and judicial opinions that, it turned out, were non-existent —ChatGPT just made them up (a phenomenon in GAI known as "hallucinations"). Schwartz reportedly said he "did not comprehend that ChatGPT could fabricate cases" and assumed it was a "super search engine," with both he and his partner LoDuca admitting before a judge that they had done no additional research and did little to even reread and review the brief before filing it (Weiser & Schweber, 2023). It is clear that neither lawyer used their critical thinking skills in this case to evaluate the output produced by ChatGPT. Neither one paused, slowed down, and did their due diligence to evaluate the content generated by ChatGPT for their brief before filing it in Federal District Court.

**The Slow Movement: Resisting the Need for Speed**
Indeed, slowing down is so important to critical thinking in particular and the learning process in general that it has spurred calls for a "slow movement" in higher education. In books such as *The Slow Professor* by Berg and Seeber (2016) and *Reversing the Cult of Speed in Higher Education* edited by Chambers and Gearhart (2018), scholars have started urging their colleagues in higher education to build in more space and time for slow and deep thinking. In their work on threshold concepts in writing studies, Adler-Kassner and Wardle (2020) made a similar point in favor of building in more time for slow thinking in the learning process, arguing that students often need to dwell in the ambiguous, confusing, and uncomfortable liminal space of kind-of-but-not-quite getting it when working through an

important concept. As they stated, "Encounters with threshold concepts—that is, learners' initial experiences with them and their journeys to and (when it occurs) through them—occur within a liminal space. Learners spend time in this space moving, often in nonlinear ways, to (and hopefully through) the concept" (Adler-Kassner & Wardle, 2020, p. 4). In the face of rapid advances in AI, even many of those in the notoriously speed- and efficiency-obsessed world of technology have called for a moratorium on further development, effectively pausing and slowing to better understand what we, as users, are doing (Browne, 2023).

In a world where the pressure for ever-increasing speed and quantity continues to grow with the burgeoning of GAI, the imperative of education becomes to slow down and home in on quality. In college writing courses, whether first-year writing or writing across the curriculum, it will make less and less sense to try to pump out as many papers in a semester as possible or read as many books and articles as one can cram into a syllabus, since GAI can and likely will assist with most of that for the students, and instead it will make more and more sense to limit production and consumption of text in order to focus on it in greater depth. Perhaps it would even make sense to assign only one paper to write or only one book (or even one dense article or essay) to read in a semester. Doing so could give students the opportunity to painstakingly but lovingly craft a really strong and meaningful paper—even a relatively short one—that they have put a lot of thought, research, and critical thinking into through multiple drafts and revisions, incorporating feedback from multiple readers and reviewers. Or, in the case of a very limited reading list, students would have the opportunity to employ close reading—to examine each and every major word choice, the sentence structure, how paragraphs are organized, the overall ideas, the logic of the arguments, the cited resources and pieces of evidence, and perhaps sociohistorical context—in order to understand the text as much as possible. Such slow, focused, and constrained attention to detail may help students gain the expertise and experience to recognize which texts demand their utmost attention, and which do not.

**AI as a Tool in Higher Education**
Recognizing the growing significance of GAI, many faculty members have already leveraged ChatGPT in their classes. Examples include assigning students to correct faults in AI output, consult a chatbot as a stand-in "peer" reviewer, and discuss relevant ethical and philosophical concerns (Miller, 2022; Nerantzi, 2023). Incorporating GAI is far from straightforward. One valuable tool for educators considering changes to their courses to account for the existence of GAI is Hardman's (2023b) newly developed DOMS™ AI-Ed Tools Evaluation rubric, which lists seven areas to assess when making these decisions: pedagogical quality, reliability and ethics, data privacy and security, accessibility and inclusion, scalability and adaptability, ease of integration, and cost effectiveness. The variety of criteria exemplifies the complexity of determining what AI's role in higher education should be. Meanwhile, in other areas, faculty are tasked with discouraging improper uses of GAI and encouraging original creativity.

Instructors can motivate students to write original material by applying the results of "From Tool to Companion: Storywriters Want AI Writers to Respect Their Personal Values and Writing Strategies," facilitating student usage of GAI to enhance their creative abilities rather than replace their imaginations. In "From Tool to Companion," 20 writers were provided with a design workbook simulating uses of GAI as a "writing companion" and then

interviewed. Writers—especially hobbyists as opposed to professional writers—generally wanted to maintain control of high-level creative processes, delegating lower-order concerns to the AI companion. Using GAI to support the creative process rather than drive it, then, also allows learners to activate their imaginations while still producing improved writing (Biermann et al., 2022). Furthermore, a writer's motivation to maintain control over the creative process correlates with their emotional investment in and sense of ownership over the writing, reinforcing that instructors can encourage students to engage their imaginations and apply their writing abilities unaided by assigning writing projects to which students can meaningfully connect. An imaginative approach nurtures transformational learning and boosts student success (Davis-Manigaulte et al., 2006, p. 27).

In our learning community gatherings, faculty members were motivated to understand GAI by a desire to see students succeed in their future professions by applying the marketable skill of strategic GAI usage. In service of this goal, best practices to pass on to students include proper citation of AI-generated content, recognizing the technology's limitations and avoiding forms of usage that will prompt weak output, and distinguishing the writing or production process of productivity-based text, well-suited for the utilization of GAI, from that of genres that are motivated by passion and creativity, which can enrich the writer's life if not outsourced to GAI tools (Biermann et al., 2022). Recent scholarship further emphasizes the importance of AI in tomorrow's workforce: "Apart from being an employable skill, use of generative AI is already providing some job seekers with competitive advantages, including honing cover letters and CVs, and generating lists of interview questions to help job seekers prepare" (Bowles & Kruger, 2023, p. 75). Given all this, guidance from instructors about when the use of AI may be appropriate and when their own work and critical thinking is necessary is key for the long-term success of college students in a world of growing AI usage.

**Conclusion**

From our faculty learning community, we learned about some of our instructor's hopes, fears, and questions about GAI. Major concerns included how it may worsen academic dishonesty cases, deplete critical thinking skills, and exacerbate issues of injustice. Because of concerns regarding privacy, loss of livelihood, and decreased creativity and critical thinking, faculty and others are likely to respond emotionally to the newly evolving role of GAI, and, indeed, we observed such emotional reactions in faculty at AU, reactions that somewhat varied by discipline in terms of both type and intensity. Instructors are worried about the potential for academic misconduct and students disengaging from the writing process, given the option of simply copying AI-generated output. GAI also raises the concern that students will devalue writing and reading if they can be easily delegated to a tech tool, and faculty are uncertain how to identify content copied from GAI to prevent this. While AI detectors are unreliable, one way to encourage students to write on their own without overreliance on tech tools is to assign projects that will be personally meaningful to them.

Even beyond academic misconduct, GAI presents a range of ethical dilemmas. Many of the fears and anxieties faculty harbor are valid according to published experts. Reactions of concern—and even emotional pain—may seem excessive to some, but regardless of whether society's fears come to pass, thinking critically about AI benefits humanity, training us to notice when problems do inevitably occur. Realizing that GAI is here to stay and will only become more advanced, faculty, despite their reservations, are thinking about how they

can incorporate GAI slowly and intentionally in their courses, considering the costs and benefits of its use on a case-by-case basis.

Keeping in mind how GAI may impact critical thinking skills is particularly important. Special attention should be paid towards how GAI may influence the ways in which people determine when they need to slow down and think deeply and when they can resort to more automatic, unconscious thought. Just as GAI can inspire critical thinking, it can disrupt critical thinking, given its emphasis on speed and efficiency. The polished and seemingly professional quality of AI-generated output can also mislead users of GAI to believe that they have gained expertise, as exemplified in high-profile instances of ChatGPT producing untrue information based on non-existent sources. Slowing down and checking AI-generated content can prevent these mistakes. Thus, in accordance with the slow movement in higher education, we recommend finding ways to slow down despite the growing push for speed and efficiency that will likely be exacerbated by GAI.

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