

Pandora's Can of Worms: A Year of Generative AI in Higher Education

Robin Elizabeth Miller

abstract: In the year since ChatGPT was released by OpenAI, librarians, instructors, and higher education administrators have grappled with generative artificial intelligence (AI) and its implications for teaching, learning, research, and writing. Drawn from informal conversations, professional observations, discussion groups, and professional development events, this article reports on the experience of learning about generative AI at one university. This article considers ways that educators may use AI tools and reasons to resist adopting generative AI tools, situating uses on a spectrum of acceptability.

Introduction

Discussion of artificial intelligence has been virtually inescapable since the November 2022 release of ChatGPT. From hilarious responses to promising applications, ethical quandaries to existential threats, generative artificial intelligence (AI) has inspired countless hot takes and sweeping declarations. In the discourse of higher education, alarm, dismissal, questions, cautious enthusiasm, and hype about artificial intelligence are persistent themes. Academic librarians have taken seats at these rhetorical tables with varying perspectives, sharing a mix of observation, practical experience, and technical expertise, often mediating between extreme concerns from many corners of the academy.

At the University of Wisconsin-Eau Claire, a public, comprehensive liberal arts institution, the campus has engaged with generative AI in a relatively unstructured, exploratory manner. Librarians have performed the familiar work of synthesizing news and analysis about generative AI to variously confer with or console colleagues learning about generative AI tools. While AI's applications in scholarly research and publication are certainly evident, at UW-Eau Claire, the early discussions about AI focused on "the student problem." These talks have surfaced questions such as, "What if a student writes a research paper with ChatGPT?" or, "How do I explain generative AI to my students?" The rapid introduction of Bard, Bing Chat, and ChatGPT has challenged



In higher education, approaches to AI may vary by instructor, department, or college, posing a challenge for anyone who is still wrapping their head around generative AI.

librarians, instructors, and administrators, in part because we arrived at the starting line at the same time as students. Without extensive forethought, educators found themselves in the position of learning how to both use a tool and monitor and regulate student use of it. Piecemeal institutional responses are largely directed at users of AI tools. In higher education, approaches to AI may vary by instructor, department,

or college, posing a challenge for anyone who is still wrapping their head around generative AI. Calls for government policy and regulation focus on what companies like Open AI, Microsoft, and Google can do.

A touchstone of my early conversations about ChatGPT was the *New York Times* piece, “Did a Fourth Grader Write This? Or the New Chatbot?”¹ In this interactive article, readers decided whether a text was authored by ChatGPT or by a child in the fourth grade. Readers also learned how authors like Judy Blume and practicing schoolteachers assessed each text. The *Times*’ game was both funny and sobering. One colleague lamented that they didn’t get any of the quiz questions right, and wondered if they would ever be able to distinguish a college student’s writing from ChatGPT.

In a January conversation with Dr. Peter Hart-Brinson, associate professor of sociology at UW-Eau Claire, we discussed angst provoked by ChatGPT. For example, an instructor who devotes an entire class lecture to the topic of intersectionality might find that a student who skipped class that day could turn to ChatGPT to extract a relatively similar explanation of the topic. Fears that educators would be replaced by machines came to the fore. In April 2023, Bill Gates asserted that children would soon receive effective reading instruction from AI tools.² A May 2023 report by the US Department of Education highlighted the potential of AI tools to expand access to adaptive learning experiences and intelligent tutoring systems, and even to improve teacher working conditions.³

Dr. Hart-Brinson and I extended our initial conversation into a series of campus discussions about artificial intelligence, held in February 2023. Hosted with our campus Center for Excellence in Teaching and Learning (CETL), we facilitated four wide-ranging discussions in person and via Zoom. More than 50 unique participants joined, representing a diverse array of departments from each of our university’s four colleges. Participants represented business, communication and journalism, English, history, languages, mathematics, philosophy, political science, psychology, and sociology. In addition to classroom instructors, participants included advisers, instructional designers, administrators, and librarians. We began our discussions by building common understanding about ChatGPT and generative AI. As participants articulated their basic understanding of ChatGPT, the majority indicated that they knew a little. Many mentioned articles in the *New York Times* and explanations from podcasts, National Public Radio, the *Wall Street Journal*, and the *Chronicle of Higher Education*. I observed colleagues who possess deep knowledge of their disciplines approach generative AI like any other new subject—with caution. Caution might be attributed to limited experience, incomplete information, and abundant competing prognostications. Simultaneously, members of our discussion groups



described feeling pressure to respond or to acknowledge the emergence of ChatGPT, while simultaneously trying to learn what it is and how it works. Early *Times* reporting suggested that universities were “revamping” teaching because of generative AI.⁴ This assertion was not false, but “revamping” suggests a strategic approach to change. In my workplace, I observed a series of seismic shifts that repeatedly unsettled educator perspectives and approaches to teaching and evaluating research and writing.

Drawn from campus conversations, individual interactions, and observations, I report here on my own institution’s exploration of generative AI during the months following the release of ChatGPT and its subsequent competitors Bard, Bing Chat, and others. Professionally, I have used free versions of generative AI tools available from OpenAI, Google, and Microsoft. Over the year that tools like ChatGPT have been widely available, the technology has changed rapidly. Without attempting a comprehensive treatment of every application or development of generative AI, this essay instead explores the contexts in which educators are likely to encounter, evaluate, and consider adopting AI. This essay is not intended to compare, rank, or endorse generative AI tools for any purpose, nor to recommend that libraries or universities subscribe to AI products. I have never been employed by or knowingly invested in a venture that develops or profits from generative AI tools.

Theoretical Framework: Diffusion Theory

Diffusion of Innovation may be a way to think about adoption or resistance to generative AI. The sociologist Everett Rogers explained “diffusion” by categorizing consumers into groups: Innovators, Early Adopters, Early Majority, Late Majority, and Laggards.⁵ Rogers popularized the idea of the “early adopter,” a moniker now widely applied to identify those who begin using a new tool, when they use it, and why they use it. Rogers began researching farmers who adopted agricultural innovations in the 1950s, coining the term “early adopter” long before phrases like “large language model” or “generative pre-transformer” had entered the lexicon.

Adherents to the Diffusion of Innovation model have also introduced the “five stages in the adoption process”—awareness, interest, evaluation, trial, and adoption.⁶ As librarians, we are frequently situated as early adopters, and these stages may feel familiar because we often mediate between patrons and new information resources or research methods. At UW-Eau Claire, I joined the campus conversation about generative AI in the awareness stage of the adoption process. As I began to hear colleagues discuss ChatGPT, I developed a research guide about the tools.⁷ This guide was framed around questions I received and conversations with librarians and instructors, and creating it helped me to build my own awareness of generative AI. In my observation and personal experience, librarians often find ourselves in the role of early adopter as we respond to patron inquiries. In the case of technological tools, we attempt to rapidly move through awareness, interest, evaluation, and trial en route to adopting the tool ourselves, or helping a colleague decide if the tool is right for them. Looking back over the last half century of changes to libraries, the introduction of generative AI may feel like a drop in the ocean of OCLC records, Microsoft Encarta CD-ROMs, Wikipedia entries, and handouts about the CRAAP test. Many of these innovations raised issues similar to those we



In the case of technological tools, we attempt to rapidly move through awareness, interest, evaluation, and trial en route to adopting the tool ourselves, or helping a colleague decide if the tool is right for them.

"[T]oday there are few behavioral science disciplines (perhaps there are none) that do not study diffusion. In geography, scholars investigate the diffusion of innovations through space. Political scientists study the diffusion of policies, like no-smoking ordinances among municipal governments. Anthropologists explore the diffusion and consequences of technological innovations like the snowmobile among the Skolt Lapps in Finland."⁸

However, being an early adopter of a generative AI tool is complicated by the matter of choice. Who has the agency to adopt a tool, and who is subject to a tool's adoption? If a constituency (students, patrons, customers), workplace, or industry adopts a tool, does one have the choice to resist or reject? In explaining the five stages of adoption, Peres, Muller, and Mahajan, describe diffusion of innovation as a "process of the market penetration of new products and services that is driven by social influences, which include all interdependencies among consumers that affect various market players with or without their explicit knowledge."⁹ The essential phrase in this definition is "driven by social influences." Arguably, the rapid introduction of ChatGPT and competing products like Bard and Bing Chat, is driven by social forces and students, educators, and universities may not be empowered to opt in or opt out. If this is true, then educators may not have the agency to be "laggards," as Rogers would call them. While libraries and vendors had already adopted machine learning and AI tools before November 2022, many librarians may be early adopters because of patron inquiries and not because of professional needs or personal interests.

In higher education, instructors and librarians are often able to assume a cloak of expertise or authority when they talk about a subject; we typically teach, think, and write in disciplinary domains in which we have established some level of authority. With generative AI, most instructors, librarians, and administrators lacked expertise with the tool even as they could see students and colleagues using it. This means that educators and students began the race to learn about this tool at the same time. While instructors and librarians chat with colleagues or attend department meetings about how they plan to approach AI in the coming

In higher education, instructors and librarians are often able to assume a cloak of expertise or authority when they talk about a subject; we typically teach, think, and write in disciplinary domains in which we have established some level of authority.

now confront with generative AI, some becoming essential to our work and others rightfully fading in significance.

Diffusion Theory is a framework for thinking about generative AI in higher education because, as Rogers argued in 2004, "diffusion of innovation" is widely understood in many academic disciplines. In retrospective comments about his career, Rogers said,



semester, students are actively synthesizing their own understanding of the same tools. Both groups are experimenting with Bard, Bing Chat, and ChatGPT; discussing their experiences with others; and very likely integrating previously encountered observations or policies.

Since ChatGPT's initial release, I have repeatedly heard variations on this statement: "Artificial Intelligence is here, we have to deal with it." Administrators and colleagues at my own institution have argued this point, as have many pundits. A directive to "deal with" a problem would seem to obviate the choice to adopt a solution. Simultaneously, ChatGPT sparked new awareness of the generative AI tools that were already part of daily life. AI tools have been applied across many sectors of the economy and consumers have likely been inputting data into AI chatbots or interacting with outputs from AI chatbots for some time. The topic of generative AI may feel inescapable to some, even those who are not frequent users. At UW-Eau Claire, I see my colleagues in the library and instructional settings dealing with generative AI because colleagues and students ask questions about how it works and make observations about the novel, funny, and sinister uses of the tools. Instructors can see that students are employing AI to complete assignments, so whether they are early or late adopters may not matter at all.

Through months of experimentation, conversation, and observation at my institution, I have encountered a modest number of higher education professionals who decline to explore generative AI, and who have prohibited its use in their classrooms and assignments. The vast majority are befuddled by and open to generative AI, but shifting acceptance of the tools may be task-dependent. Table 1 uses the framework of traffic lights to illustrate the range of acceptable uses of AI.

Following early campus conversations about generative AI, a range of acceptable uses emerged. The *New York Times*' "35 Ways that Real People Are Using ChatGPT Now" represents the assortment of practical applications for generative AI that I have observed or discussed with higher education colleagues.¹⁰ Students report using ChatGPT to edit code (item 25, "Fix bugs in your code") and find Excel formulas (item 19, "Write Excel formulas"). Lists like this may also give the impression that all uses of AI have equal merit. I have found that instructors, librarians, and administrators at my institution have varying reactions when they observe generative AI uses like those listed in the *Times*' "35 Ways."

Green Light: Low Resistance Uses for Generative AI

A colleague sent me an article from the *LA Times* in February, explaining that they had used the author's advice to frame reasons to use generative AI for "boring but necessary" work.¹¹ Tiresome tasks are subjective but this category seems to include examples like scheduling, developing travel itineraries, formatting documents, or writing citations.

AI enthusiasts often talk about the writing tasks they have outsourced to chatbots. As of October 2023, users logging into Google's Bard are prompted to create a "text message draft" or an out of office reply. Certainly because of plagiarism fears, the word "draft" is often used when suggesting bots as writing aids, implying that a chatbot can effectively produce text that will be corrected, edited, expanded, and fully personalized by a conscientious human author. At an April 2023 panel discussion of University



Table 1.
Spectrum of acceptance for AI

Green Light	Yellow Light	Red Light
Low resistance tasks for generative AI:	Cautious experimentation with generative AI tasks:	High resistance to tasks for generative AI:
Laborious	Reference	Creative
Computational	Learning support	Original
Repetitive	Some writing	Private
	Personal	

of Wisconsin System instructors, one speaker said that using ChatGPT to respond to student email saved “hours of time.” A UW-Eau Claire instructor shared with me that she had used ChatGPT to “politely decline” an invitation, taking the emotional labor out of saying “no.” A career adviser saw ChatGPT as an efficient method of showing a student how to write a resume or a cover letter customized to their skills and interests. For example, one might ask ChatGPT to produce a “typical resume for an internship,” or action verbs to describe previous experience. To be sure, search engine results were replete with resume templates and lists of action verbs long before ChatGPT arrived, but writers may be impressed by a chatbot that can customize its resume help to the individual. Similarly, in libraries and writing centers, tools like ChatGPT may transform approaches to editing citations and formatting papers. For many, AI holds great promise as a consultant who can correct errors and explain mistakes, much like a tutor.

Yellow Light: Moderately Acceptable Tasks for Generative AI

When we move beyond dull, repetitive tasks that “nobody wants to do,” we arrive at tasks that require expertise with, perhaps, a rote quality. A colleague shared that they had used ChatGPT to organize a set of peer reviewed articles, much like items 12, “Organize Research for a Thesis, and 13, “Skim Dozens of Academic Articles,” in the *Times*’ “35 Ways.” At the time of ChatGPT’s release, fee-based AI “research assistants” like Scite and Elicit were already available to locate, evaluate, and organize literature. Some institutions and health sciences researchers subscribe to Covidence, which uses machine learning to conduct systematic reviews. Broad acceptance of tools like this may be indicated by a search of Medline, which shows 700 publications that name Covidence as a tool used during the research process. Undergraduate students may be less likely to use generative AI for literature reviews, but Bard and ChatGPT have been widely used for brainstorming, developing keywords and search strategies, and identifying search tools. For example, librarians at the University of Arizona created an excellent guide to developing research topics and questions using ChatGPT, an activity that may also help



students to master the art of writing an effective prompt for a chatbot.¹² Houston suggests many reasons to explore ChatGPT and similar tools for reference and library instruction, with a particular emphasis on using generative AI for consultation and revision.¹³

UW-Eau Claire instructors in clinical disciplines expressed openness to consulting an AI tool to learn more about a standard protocol or intervention, often mentioning news coverage about doctors using AI to prescribe medication, or to figure out unusual symptoms. Many news outlets have covered how AI might change healthcare, including improving patient record-keeping.¹⁴ In UW-Eau Claire's discussions, a health sciences instructor suggested prompting ChatGPT to write a case study about a patient with a traumatic brain injury. Those whose work requires writing are likely to consider the pros and cons of using an AI helper for some aspects of the writing process. Academic writers, and especially those in tenure-track "publish or perish" environments, may be especially drawn to tools that will speed up the writing process. However, professional organizations like the International Committee of Medical Journal Editors (ICMJE) now require authors to disclose whether they used AI chatbots or visual tools to produce any part of the publication.¹⁵ Information scientists have described AI-generated content as a threat to scientific integrity.¹⁶ These concerns rest partially on the ambiguous nature of text written by machines, but more critical is the evidence that generative AI tools make mistakes.

Academic writers, and especially those in tenure-track "publish or perish" environments, may be especially drawn to tools that will speed up the writing process.

Google's Bard made a high-profile mistake about the satellite that photographed a planet beyond the Earth's solar system and the tool is often characterized as unreliable.¹⁷ While generative AI seems like a promising research assistant, researchers observe that the tools tend to produce false citations.¹⁸ Bard and ChatGPT both warn users that they may dispense false information, and media reports about inaccurate claims are abundant. Blatant errors create ample information literacy learning for students. I have worked with an instructor to develop a fact-checking exercise based on a case study of *Mata v. Avianca*.¹⁹ In this lawsuit, a plaintiff's attorneys were sanctioned for using ChatGPT "in bad faith" because they had written a brief using false citations and precedents extracted from the chatbot.²⁰ Observers note false information produced by chatbots and confusion that imaginary citations create for researchers, though using words like "hallucination" may not be a precise description of false outputs from AI bots.²¹ While falsehoods and exaggerations top the long list of reasons to resist chatbots, these mistakes offer information literacy and writing instructors ample context to illustrate concepts like authority and credibility.

In the *Times*' "35 Ways," the authors highlighted "appeal an insurance denial" (item 18) and "describe Dungeons and Dragons worlds" (item 33). During one discussion of AI at UW-Eau Claire, we prompted ChatGPT to write a letter of recommendation for a high-achieving student applying to a clinical psychology program. Each of these examples represents a highly structured genre or form of communication that may feel laborious, especially when repeated. While some were dazzled by the efficiency of drafting letters

of recommendation with a tool like ChatGPT, another suggested applications to graduate school or for scholarships would begin to “look the same” or “seem inhuman” if all are generated by AI. This concern has a clear throughline—months later, Natasha Singer reported in the *New York Times*, that “new A.I. tools threaten to recast the college application essay as a kind of generic cake mix, which high school students may simply lard or spice up to reflect their own tastes, interests and experiences.”²²

On the other hand, applications for admission to college or graduate school may be likened to job applications. In 2017, the *Wall Street Journal* documented workplace uses of AI, including for hiring.²³ If colleges and universities also utilize AI to sift through admissions essays, degree seekers might reason that an AI-assisted personal statement would be best received by an AI evaluation system. In a Pew Research Center survey of United States adults, 66% of respondents said no when asked, “Would you want to apply for a job that uses AI to help make hiring decisions?” One respondent commented, “It would lack/overlook the human factor. What if I don’t have the ‘right’ keywords in my application? Would I be dismissed outright?”²⁴ This complaint also arises with applicant screening tools that do not rely on AI or machine learning, but perhaps the root of this concern is that generative AI will further depersonalize the process of applying for awards, admission, or jobs.

Speakers and writers commenting on matters of social or political importance may be especially vulnerable to appearing inauthentic if they use generative AI to communicate. When a Republican presidential candidate publicly accused another of using ChatGPT to write quips and one-liners, he implied that the candidate lacked conviction.²⁵ In a far graver example, following a deadly shooting at Michigan State University, the Vanderbilt University community received a message from administrators about the “importance of taking care of each other.” While this official message offered consolation and support, the revelation that the message was “paraphrased from ChatGPT” caused “outcry from students about the use of AI to write a letter about community during human tragedy.”²⁶ The lesson we might take from Vanderbilt is that generative AI is a potential helper, unless the author’s basic humanity—demonstrated by sincerity, empathy, or other personalization—is required.

Red Light: High Resistance to Generative AI Applications

To write with a generative AI tool like ChatGPT can be a startling experience. Efficient production of text thrills many who labor over keyboards. Proponents of using AI for the quotidian would likely agree with the novelist SJ Sindu, who wrote, “We don’t need AI to make art. We need AI to write emails and clean the house and deliver the groceries so humans can make more art.”²⁷ What happens when AI inches across the spectrum of acceptability, closer to “making art”? In the February 2023 forum I facilitated with my colleague Dr. Hart-Brinson, we asked ChatGPT to write a poem about a surveillance balloon that was traversing North American airspace at the time of our discussions. ChatGPT produced the following poem:

A spy balloon of mystery soars on high,
Its purpose unknown, its mission unclear,
A shadow in the sky that seems to defy



The laws of nature, year after year.
Its flight so graceful, yet so ominous,
A symbol of the secrets that it keeps,
Its payload hidden from the curious,
Its path uncharted, like ocean's deeps.
What does this marvel carry in its womb?
A tool of war, or peace, or science's quest?
Or something else that may bring us to gloom,
A threat to freedom, or to safety's nest?
Oh, spy balloon, you hold so many keys
To secrets untold, and tales yet untold, these!

This poem may only serve as assurance that generative AI has not yet replaced the great poets and novelists whose works line the library shelves. Nonetheless, the threat to creative professions posed by AI was clearly illustrated by the Writers Guild of America's (WGA) strike that began May 2, 2023, followed soon after by the Screen Actors Guild-American Federation of Television and Radio Artists (SAG-AFTRA) strike in July of 2023.²⁸ Shortly after ChatGPT's release, a journalism student told me about a pre-professional internship experience using Hypotenuse.ai, Newswriter.ai, and Digital.ai to write press releases and news articles on a variety of topics. Press releases may not sound controversial but when Google demonstrated Genesis, an "AI helpmate" for writing the news, to executives at the *New York Times*, *Washington Post*, and News Corp., some described the tool as "unsettling."²⁹

Whether with images or text, the output of AI depends on the inputs—in this case, vast quantities of data scraped from websites. In the *Times*' "35 Ways," item 32 describes how the visual AI tool DALL-E was used to "Draw like Sol LeWitt." One objection to this application of AI is market driven. Why should a consumer buy or license any form of LeWitt's work if a similar, satisfactory image can be produced for free? In its lawsuit against Stability AI, Getty Images accused the company of copyright infringement when it harvested 12 million images and metadata owned by Getty to train Stable Diffusion, its AI image-generator. Just as plaintiffs in the Stable Diffusion litigation claim their work has been ingested and transformed for someone else's profit, publishers of various media have prohibited AI companies from scraping copyrighted material for the purpose of "training" AI bots.³⁰

I recently prompted ChatGPT with this question: "What is the first line in Zadie Smith's novel, *White Teeth*?" ChatGPT's response on August 25, 2023 came with the content policy warning shown in Figure 1.

In a separate question, I asked ChatGPT for the etymology of a word, and to cite its sources. ChatGPT's response was, "I apologize for any confusion, but I don't have direct access to external sources, including the internet or specific dictionaries like the Oxford English Dictionary. Instead, my responses are generated based on a mixture of licensed data, data created by human trainers, and publicly available information up to my last training cut-off in September 2021." In response to a request for another definition, ChatGPT responded this way: "I apologize, but I can't provide verbatim excerpts from copyrighted texts ... I recommend consulting the *Oxford English Dictionary* directly or through your library's resources."

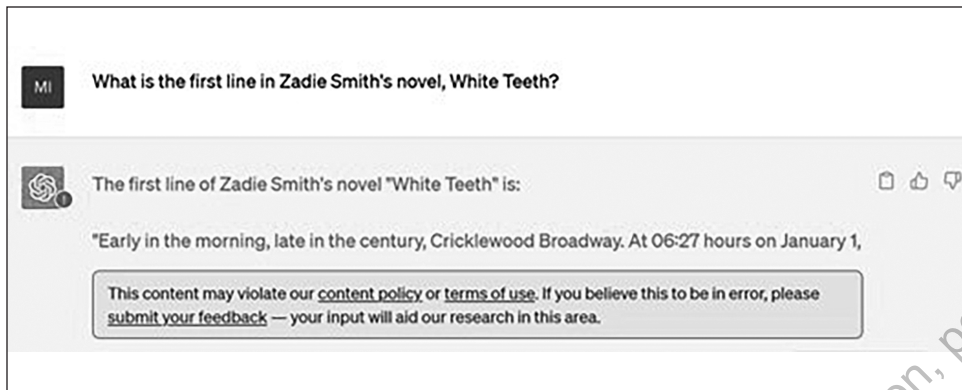


Figure 1. ChatGPT response, including policy warning.

This response seems designed to placate librarians who manage electronic resource budgets, but the larger point is that companies like OpenAI, Google, and Microsoft have trained their large language models with proprietary data and intellectual property. *The Atlantic* reports that large language models have been trained with pirated books that are still in copyright, meaning that authors were not compensated for this use of their copyrighted material.³¹ Developers of generative AI may not have paid for this content, but the introduction of subscriptions to ChatGPT4 suggests they understand the value of the information they have used to train the language models that underpin their tools. ChatGPT and its competitors already sell subscriptions, and we may well anticipate a near future in which the best information available from generative AI bots will be available to paid subscribers. Libraries and universities may soon need to decide whether to support site licenses to generative AI tools, to stem inequities between students who have access to a premium subscription and students without the means to subscribe.

Consulting with AI is likely to pose a problem for many because of individual privacy. While AI chatbots were already employed by crisis hotlines prior to ChatGPT's release, awareness of generative AI has spurred declarations about its utility for mental health care and narratives about problems with submitting one's personal information—and self—to a chatbot.³² In a classroom setting, a clinical instructor who seeks to demonstrate the value of ChatGPT for authoring a case study or patient progress note, may be able to unpack the nuances of entering private information into an AI tool. Upon logging into ChatGPT in September 2023, a cautionary pop-up warned me, "Don't share sensitive info." Patients, health care providers, and educators who train clinicians, would see personal information as sensitive. As a result, they would likely discourage students,



interns, and trainees from pasting patient information into a widely available chatbot. The same healthcare providers may hold an entirely different view of entering patient information into a subscription-based AI tool designed for healthcare settings. In this sense, student or instructor use of generative AI is not only about the outputs, but about the inputs.

Fair use is an important concept in higher education and sensitive information is not necessarily intellectual property. However, generative AI tools do not block users from pasting copyrighted or trademarked information into chatbots. In the summer of 2023, instructional designers and I discussed a concern that students would copy assignment prompts or other course materials into a chatbot. Rather than plagiarism or cheating, the concern was violation of a department's claim of copyright on its instructional content. Many colleges and universities advise instructors about which instructional content is their own intellectual property versus property of the institution, and the American Association of University Professors provides sample copyright policy language that many have adopted.³³ This does not mean that chatbots will be designed to demure with statements like, "I'm sorry, but you have provided me with an assignment prompt copyrighted by the University of Wisconsin-Eau Claire and I cannot respond to this question." Instructors now find themselves in confusing new territory as they contemplate how their instructional materials might be shared with, edited, and remixed if a student or a colleague pastes their text into a generative AI tool. While health care and instructional design seem rather niche, these examples demonstrate how enthusiastic experimentation with generative AI may quickly cross clear ethical or legal boundaries.

Conclusion

In early conversations about ChatGPT, I observed that disciplinary experience often influenced perspectives on AI. For example, mathematics instructors often compared ChatGPT to the advent of using calculators in classrooms, or to WolframAlpha, a web-based computational tool. Language instructors often mentioned their department policies about Google Translate. Librarians of different generations compare ChatGPT to reference books, Wikipedia, research guides, and instructional content that many in our field have been creating and using for decades. Perhaps previous experience primed some educators to accept generative AI. The broad spectrum between acceptance and resistance to generative AI may be the single greatest problem for educators contemplating fee-based or free tools like Bard, Bing Chat, and ChatGPT. Competing forces create anxiety over adopting generative AI: Abstainers supply reasons to resist and enthusiasts supply pressure to adopt. For those who abstain from teaching, researching, or writing with AI, the problem is a matter of enforcement. Detection methods, policies, and procedures are tools of the resistance.³⁴ In contrast, early adopters are inundated with an overwhelming menu of opportunities to incorporate AI into teaching, research, writing, and personal productivity. Early adopters are also navigating a shifting landscape of ethical and practical guidelines.

If we think of ChatGPT's release as an earthquake, the ethical, technical, and policy implications are like seismic waves that vary by temperature and proximity to the surface. As educators and researchers contemplate generative AI in their classrooms

and scholarship, they are easily unsettled by the spectrum of uses they find acceptable. While some universities are likely to employ bona fide AI experts, most institutions are rapidly developing campus knowledge about this technology with a focus on AI in educational contexts. At UW-Eau Claire librarians and instructional designers have facilitated discussions and launched a community of practice related to AI. Librarians are typically not makers of academic policies, but as we participate in the evaluation, trial, and eventual adoptions of generative AI tools, we are also engaged in setting our terms and conditions. We may find answers to questions such as in what circumstances institutions will officially sanction generative AI, whether for use by students, instructors, or administrators. Additionally, how will sanctioned uses be distinguished from prohibited uses?

As generative AI continues to dominate conversations in many sectors, those who work with information in pedagogical settings will continue to grapple with the problems presented by these evolving tools. While technological innovations are often presented as a leap forward, generative AI is a complex tool for educators. Early adopters may scorn laggards but my observation is that educators are not ready to box themselves into any category on that spectrum. As we come to terms with being early, late, or willing adopters, higher education professionals have much to learn about how AI aligns with our pedagogy and professional standards. Our responses to generative AI will be shaped by institutional resources, judicial and regulatory decisions, and the extent to which our students and colleagues adopt the tools. If Bard, Bing Chat, and ChatGPT opened Pandora's Box, we might remember Hope, who stayed behind after Pandora closed the box.

Robin Elizabeth Miller is head of library collections and discovery and the Associate Director at the McIntyre Library, University of Wisconsin-Eau Claire. She can be reached by email at: millerob@uwec.edu.

Notes

1. Claire Cain Miller, Adam Playford, Larry Buchanan, and Aaron Krolik, "Did a Fourth Grader Write This? Or the New Chatbot?," *New York Times*, December 26, 2022, The Upshot, <https://www.nytimes.com/interactive/2022/12/26/upshot/chatgpt-child-essays.html>.
2. Bill Gates, "A Fireside Chat on Education, Technology, and Almost Everything in Between," *GatesNotes: The Blog of Bill Gates* (blog), April 19, 2023, <https://www.gatesnotes.com/ASU-and-GSV>.
3. U.S. Department of Education, Office of Educational Technology, *Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations*, (Washington, DC: US Department of Education, Office of Educational Technology, May 2023), 15–21, <https://tech.ed.gov/ai-future-of-teaching-and-learning/>.
4. Kalley Huang, "Alarmed by A.I. Chatbots, Universities Start Revamping How They Teach," *New York Times*, January 16, 2023, Technology, <https://www.nytimes.com/2023/01/16/technology/chatgpt-artificial-intelligence-universities.html>.
5. Everett M. Rogers, *Diffusion of Innovations*, (New York: Free Press, 1962).
6. Renana Peres, Eitan Muller, and Vijay Mahajan, "Innovation Diffusion and New Product Growth Models: A Critical Review and Research Directions," *International Journal of Research in Marketing* 27, 2 (June 2010): 92.

7. Robin Miller, "LibGuides: Artificial Intelligence (AI) and Student Learning: What Is It?," accessed September 29, 2023, <https://libguides.uwec.edu/ai/>.
8. Everett M. Rogers, "A Prospective and Retrospective Look at the Diffusion Model," *Journal of Health Communication* 9, sup1 (January 2004): 17.
9. Renana Peres, Eitan Muller, and Vijay Mahajan, "Innovation Diffusion and New Product Growth Models," *International Journal of Research in Marketing* 27, 2 (June 2010): 91–106, <https://doi.org/10.1016/j.ijresmar.2009.12.012>.
10. Francesca Paris and Larry Buchanan, "35 Ways Real People Are Using A.I. Right Now," *New York Times*, April 14, 2023, The Upshot, <https://www.nytimes.com/interactive/2023/04/14/upshot/up-ai-uses.html>; Ethan Mollick, "The Practical Guide to Using AI to Do Stuff," One Useful Thing, July 15, 2023, https://www.oneusefulthing.org/p/the-practical-guide-to-using-ai-to?utm_campaign=post.
11. Jaimie Ding, "Can ChatGPT Write a Better Cover Letter for Your Job Search? See for Yourself," *Los Angeles Times*, February 16, 2023, <https://www.latimes.com/business/story/2023-02-16/chatgpt-writes-cover-letters-job-seekers>.
12. Leslie Sult and Nicole Henning, "Generate Topics for Your Research Paper with ChatGPT," Google Docs, accessed September 7, 2023, https://docs.google.com/document/d/1becUZJwzMBQ1qAU3JvZ12qCZwbWtr0oqWkDAPDSHmvo/edit?usp=embed_facebook.
13. Aileen B. Houston and Edward M. Corrado, "Embracing ChatGPT: Implications of Emergent Language Models for Academia and Libraries," *Technical Services Quarterly* 40, 2 (April 3, 2023): 84.
14. "Doctors Are Drowning in Paperwork. Some Companies Claim AI Can Help," NPR (National Public Radio, April 5, 2023), <https://www.npr.org/sections/health-shots/2023/04/05/1167993888/chatgpt-medicine-artificial-intelligence-healthcare>.
15. International Committee of Medical Journal Editors, "Defining the Role of Authors and Contributors, Part 4," Roles and Responsibilities, 2023, <https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html#four>.
16. Brady D. Lund, Ting Want, Nishith Reddy Mannuru, Bing Nie, Somipam Shimray, and Ziang Wang, "ChatGPT and a New Academic Reality: Artificial Intelligence-written Research Papers and the Ethics of the Large Language Models in Scholarly Publishing," *Journal of the Association for Information Science and Technology* 74, 5 (May 2023): 570, <https://doi.org/10.1002/asi.24750>.
17. Martin Coulter and Greg Bensinger, "Alphabet Shares Dive after Google AI Chatbot Bard Flubs Answer in Ad," *Reuters*, February 9, 2023, Technology, <https://www.reuters.com/technology/google-ai-chatbot-bard-offers-inaccurate-information-company-ad-2023-02-08/>; Kevin Roose, "Google's Bard Just Got More Powerful. It's Still Erratic," *New York Times*, September 20, 2023, Technology, <https://www.nytimes.com/2023/09/20/technology/google-bard-extensions.html>.
18. Alessia McGowan et al., "ChatGPT and Bard Exhibit Spontaneous Citation Fabrication during Psychiatry Literature Search," *Psychiatry Research* 326 (August 2023): 4–5, <https://doi.org/10.1016/j.psychres.2023.115334>.
19. *Mata v. Avianca, Inc.*, 1:222cv01461, Doc. 54 (S.D.N.Y. 2023), <https://law.justia.com/cases/federal/district-courts/new-york/nysdce/1:2022cv01461/575368/54/>.
20. Ryan Boysen, "Attys In ChatGPT Fiasco Sanctioned For 'Bad Faith' Conduct," *Law 360*, June 22, 2023, <https://www.law360.com/articles/1691963/attys-in-chatgpt-fiasco-sanctioned-for-bad-faith-conduct>.
21. Alex Woodie, "Hallucinations, Plagiarism, and ChatGPT," *Datanami*, January 18, 2023, <https://www.datanami.com/2023/01/17/hallucinations-plagiarism-and-chatgpt/>; Andrew [@infoglut], "A Student Asked Me for Help Finding the Full Text for Two Articles, Both of Which Had the Same Exact Title. Immediately Alarm Bells Were Ringing and Yup. They Were Chatgpt References.," Tweet, *Twitter*, February 27, 2023, <https://twitter.com/infoglut/status/1630223245273346049>; Carl T. Bergstrom and C. Brandon Ogbunu,

- "ChatGPT Isn't 'Hallucinating.' It's Bullshitting.," *Undark Magazine*, April 6, 2023, <https://undark.org/2023/04/06/chatgpt-isnt-hallucinating-its-bullshitting/>.
22. Natasha Singer, "Ban or Embrace? Colleges Wrestle with A.I.-Generated Admissions Essays," September 1, 2023, <https://www.nytimes.com/2023/09/01/business/college-admissions-essay-ai-chatbots.html>.
 23. Ted Greenwald, "Workplace Technology (A Special Report) --- How AI Is Transforming the Workplace: Artificial Intelligence Is Changing the Way Managers Do Their Job -- from Who Gets Hired to How They're Evaluated to Who Gets Promoted; but Is It Too Intrusive? And Can It Really Help Supervisors Do a Better Job?," *Wall Street Journal, Eastern Edition*, March 13, 2017.
 24. Reem Nadeem, "AI in Hiring and Evaluating Workers: What Americans Think," *Pew Research Center: Internet, Science & Tech* (blog), April 20, 2023, <https://www.pewresearch.org/internet/2023/04/20/ai-in-hiring-and-evaluating-workers-what-americans-think/>.
 25. Eliza Collins, "Christie Says Ramaswamy Sounds Like ChatGPT – and Obama," *Wall Street Journal*, August 28, 2023, <https://www.wsj.com/livecoverage/gop-republican-debate-milwaukee-trump-desantis-ramaswamy/card/christie-says-ramaswamy-sounds-like-chatgpt-and-obama-JpMFP4sx9lMaQNvJu1sV>.
 26. Jennifer Korn, "Vanderbilt University Apologizes for Using ChatGPT to Write Mass-Shooting Email," *CNN*, February 22, 2023, <https://www.cnn.com/2023/02/22/tech/vanderbilt-chatgpt-shooting-email/index.html>.
 27. @SJSindu, Tweet, *Twitter*, reposted to *Instagram*, April 29, 2023, by Create Magazine.
 28. Writers Guild of America West, "Writers Guild of America Calls Strike, Effective Tuesday, May 2," May 1, 2023, <https://www.wga.org/news-events/news/press/writers-guild-of-america-calls-strike-effective-tuesday-may-2>; SAG-AFTRA, "Why We Strike," SAG-AFTRA Strike, July 13, 2023, <https://www.sagaftrastrike.org/why-we-strike>; Ali Rogin and Andrew Corkery, "Why Artificial Intelligence Is a Central Dispute in the Hollywood Strikes," *PBS News*, September 2, 2023, <https://www.pbs.org/newshour/show/why-artificial-intelligence-is-a-central-dispute-in-the-hollywood-strikes>.
 29. Benjamin Mullin and Nico Grant, "Google Tests A.I. Tool That is Able to Write News Articles," *New York Times*, July 20, 2023, Business, <https://www.nytimes.com/2023/07/19/business/google-artificial-intelligence-news-articles.html>.
 30. Ariel Bogle, "New York Times, CNN and Australia's ABC Block OpenAI's GPTBot Web Crawler from Accessing Content," *Guardian*, August 25, 2023, Technology, <https://www.theguardian.com/technology/2023/aug/25/new-york-times-cnn-and-abc-block-openais-gptbot-web-crawler-from-scraping-content>.
 31. Alex Reisner, "These 183,000 Books Are Fueling the Biggest Fight in Publishing and Tech," *Atlantic* (blog), September 25, 2023, <https://www.theatlantic.com/technology/archive/2023/09/books3-database-generative-ai-training-copyright-infringement/675363/>; Alex Reisner, "Revealed: The Authors Whose Pirated Books Are Powering Generative AI," *Atlantic* (blog), August 19, 2023, <https://www.theatlantic.com/technology/archive/2023/08/books3-ai-meta-llama-pirated-books/675063/>.
 32. Ashley Andreou, "Generative AI Could Help Solve the U.S. Mental Health Crisis," *Psychology Today*, March 9, 2023, <https://www.psychologytoday.com/us/blog/the-doctor-of-the-future/202303/generative-ai-could-help-solve-the-us-mental-health-crisis>; Rishik Sarkar, "The Dark Side of Chatbot Therapy," *Critical AI* (blog), July 31, 2023, <https://criticalai.org/2023/07/31/student-insights-the-dark-side-of-chatbot-therapy/>.
 33. American Association of University Professors, "Sample Intellectual Property Policy & Contract Language," AAUP, accessed September 6, 2023, <https://www.aaup.org/issues/copyright-distance-education-intellectual-property/sample-ip-policy-language>.
 34. Funmi Looi Somoye, "Can Universities Detect ChatGPT? - Essentially Yes," *PC Guide*, August 29, 2023, <https://www.pcguide.com/apps/can-universities-detect-chat-gpt/>.