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Reclaiming the technology of higher education for teaching digital writing in a post—pandemic world

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Reclaiming the technology of higher education for teaching digital writing in a post—pandemic world

Abstract

Like all disciplines in higher education, the teaching of digital writing was profoundly impacted by the COVID-19 pandemic as faculty and students moved to emergency remote teaching (ERT). Rapid shifts to synchronous and asynchronous online delivery modes reshaped classrooms built upon frequent peer review and student collaboration in writing, forcing students and faculty into educational technologies that raised issues of privacy, equity, and surveillance. Yet, digital writing faculty responded to these challenges in ways that prioritised individual autonomy of student writers with creative assessments, improved access to texts, thoughtful connections to employers and audiences beyond the academy, and enhanced classroom collaborations via digital technologies. As this Editorial explores, the story of digital writing pedagogy during the pandemic became the story of a constant push and pull with the technologies that created digital writing itself. And just as teachers of digital writing began to emerge from the disruptions of the pandemic, a new wave of digital writing technologies enter the mix: AI-powered writing generators have arrived via applications such as ChatGPT with the seeming potential to shape the role of digital literacy once again. As this Editorial argues, the technologies of digital writing can be harnessed to reflect the values of education – openness, individual autonomy, and the power of knowledge – but only when the practitioners of digital writing pedagogy understand and access digital writing tools. At this time, those tools are again in rapid flux and the digital writing landscape remains profoundly unsettled.

Practitioner Notes

1. The shift to online teaching during the pandemic affected the teaching of digital writing, leading to better practices for integrating synchronous learning technologies (e.g., Zoom).
2. Practitioners should be alert to equity and access issues and deliberate in engaging digital teaching platforms, evaluating how they affect collaboration, peer interaction, and student autonomy.
3. Practitioners should consider specifically whether teaching and assessment tools have a history of decentring and dehumanizing students.
4. The principles of promoting collaboration and peer review in digital writing classrooms should be retained in a post-pandemic classroom.
5. Emerging from the pandemic, the teaching of digital writing faces potentially profound literacy changes from the emergence of artificial intelligence writing generators.

Keywords

digital writing, pandemic, collaborative writing, peer review, surveillance, Zoom, ChatGPT

Introduction

In 2020, higher education students worldwide experienced significant educational disruptions due to the COVID-19 pandemic and higher education moved to emergency remote teaching (ERT). As schools and campuses shut down, bringing an end to face-to-face instruction, teachers quickly pivoted to multimodal teaching, subscribing to video packages that deliver learning content online via video-sharing services like YouTube and Linda.com, and adopting the Zoom Video Communications Conferencing Tool for the delivery of lectures and tutorials or seminars. Zoom was already a huge success in the education sector, but at the end of the second quarter of 2020, the company's paying customer base had increased by 458 per cent (Lambert, 2020; Cowling et al., 2022, p. 1). Serving as more than a conferencing platform for educational or business purposes, Zoom became the video conferencing tool of choice for hosting remote family reunions, birthday celebrations, and official ceremonies, pervading our lives to the extent that, as Koenig observed in 2020, of all the novel activities that the pandemic imposed on us "only one has taken over the lexicon, serving variously as a verb, adjective or noun: Zooming."

Zoom was already familiar to those of us for whom the app was integrated with our learning management systems (LMS), but not until COVID-19 made in-person contact impossible did we begin to accept and experiment with the tool and realise the possibilities it granted us. Before the pandemic, we had fashioned ourselves as multi-modal contemporary educators, teaching digital writing in blended modes. Digital writing educators who embraced technology, delivered educational materials online, and renewed our practice with some web-based instruction. It was how we saw ourselves and envisioned our future paths, paths that encompassed our established practices. These pedagogically sound practices contributed to the success of digital writing instruction. The idea of eliminating in-person instruction in place-based classrooms challenged those established practices and our envisioned future paths (Ryan & Irie, 2014). Yet, through 2020 we were – often at short notice – required to do just that: pivot to fully online teaching in emergency remote teaching mode. In meeting those challenges, overcoming them, and surpassing them with graceful fluidity, educators, like the contributors to this special issue, were able to realise their "possible selves" (Ryan & Irie, 2014, pp. 111-113).

The Special Issue

This special issue was conceived the following year, in 2021, when envisioned future paths had evaporated, and a new normal was ushered in loudly, marking the death of the old normal. The new normal would deprive us of certainty and control and seemed only to offer us what Barnett termed 'an unknown future.' Advocating for an ontological turn, Barnett theorised an “unknown-ness” from which a new World would emerge, replacing the old World at unprecedented speed (2012). Such was the pace of change through 2020, when teachers switched to ERT, often with no opportunity to

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manage that transition but thinking that it would be a temporary shift in teaching mode.[1] Now, of course, we understand that there will be no neat end to the pandemic and that the term 'post-pandemic' is a contested term as new waves of COVID-19 emerge and as most countries still grapple with the continued effects of the virus, whether that is with honouring and adjusting to the loss of several million people lost to the disease or those struggling with long COVID-19. These challenges problematise what we originally labelled a 'post-pandemic' world.

Bearing that in mind, the special issue called for papers from digital writing instructors on the impact of the pandemic on digital writing instruction, lessons learned, and advances made. The approaches our contributors share are not reactive responses. They address significant themes and speak to teaching aspects, from redesign to assessment. They are purposeful, pedagogically well-considered, research-informed, and creative. As Cowling et al. have argued recently in an Editorial in this very journal, "Moving online may be beneficial for students and staff, but such a pivot requires careful consideration of the affective, cognitive, and behavioural changes that are a required response as part of the transition" (2022, p. 5). We believe the authors of the papers in this special issue meet those research and pedagogical challenges.

The values of education reflected through, and challenged by, digital writing

Before we can properly understand the impact of COVID-19 on the teaching of digital writing in higher education, it is essential to scaffold a definition of "digital writing" itself. Indeed, in 2023, it might be reasonable to ask: is not all writing in higher education already digital? Certainly, we all recognise that writing by hand does exist, but the ubiquity of the digital nature of all writing in higher education almost makes attending to the 'digital' aspect of teaching writing appear anachronistic. For most higher education environments it would indeed stand out for a faculty member to teach without relying upon digital writing platforms at every stage: manually typing documents rather than a word process, handing out physical copies instead of posting them on an LMS, or asking students to compose assignments by hand. Every phase of the production of writing in higher education is today commonly digital. In fact, we have moved so far from the days when handwriting was ubiquitous in higher education that best practices in assessment would now characterise the requirement of handwriting alone in student responses as ableist (Brown & Broido, 2020).

Most conceptualisations of digital writing in higher education must attend to at least three phases of digital writing production, and the affordances of the digital technologies in each phase: the classroom environment, the composing environment, and the dissemination environment. Each of these three locations for digital writing are shaped by the faculty experience, the student experience, and the readers' experiences, as determined by the particular engagements that are allowed, encouraged, or disabled by the digital platforms themselves. And just as 'post-pandemic'

[1] We recognise that our unknown futures may include many such abrupt shifts and that they may be caused by climate change disasters, wars, strikes, shootings, or any number of other disasters or public health emergencies (short or long-lived). We also acknowledge that there are many other examples of previous switches to ERT mode such as one precipitated by an earthquake in New Zealand in 2010 (see Mackey, et al., 2012).

is a contested term, with different stakeholders arguing for competing definitions shaped by their individual engagements with the pandemic, so too is 'digital writing' a contested term shaped by individual experiences and individual engagements with digital writing technologies made possible by educational technology (EdTech). For example, rather than describing their practice as digital writing, Zimmer and Hodges describe themselves instead as "writing in digital settings" or teaching "multimedia writing". They state that: "Writing in digital settings adds multimedia considerations such as graphics, illustrations, videos, and additional features such as hyperlinks and structural shifts" (2021, 227). Others might describe themselves as Online Writing Instructors or practising Online Writing Instruction (OWI) and employ the Personal, Accessible, Responsive and Strategic or PARS approach (e.g., Borgman & McArdle, 2020).

Our authors frame their pedagogical approaches in several ways and as our volume demonstrates, higher education faculty and students engaged in critical reflection and debate about the nature of digital writing tools at every stage of writing production. Most often, the critical inquiry began when some aspect of shared higher education values were challenged or curtailed by some aspect of digital writing platform affordances. As readers will see, faculty and students alike praise digital writing when the affordances support access to classrooms, encourage the autonomy of individual writers, promote community among writers, and assist writers in connecting with audiences within and beyond higher education. Conversely faculty and students decry the digital nature of these writing platforms when they impede student access to classrooms, suppress or discourage individual voices, isolate writers from each other or readers, or fail to share writing products with audiences.

For faculty teaching digital writing during the pandemic, the contestation occurs when digital affordances impinge on these values of higher education; or, more simply put, upon their ability to teach. If digital writing platforms curtail a student's ability to compose, restrain a faculty member's ability to read and respond, or reduce either's ability to share writing with an audience, both faculty and students are likely to revolt against the digital nature of writing. It might be tempting to see the fights over access, autonomy, privacy, and surveillance within the pandemic period of teaching digital writing as unique, but in fact these arguments have been part of digital writing as long as "digital" has been present in higher education. When we look at the nature of digital writing in higher education, pre-pandemic, we can more easily identify how the promise of digital writing platforms to support access, encourage autonomy, promote community, and connect with audiences frame the contests of pandemic digital writing.

The origins of digital writing in higher education

It might be simple enough to offer that digital writing in higher education first emerges as a concept with arrival of the personal computer, or microcomputer (Waldrop, 1985). Prior to widespread access to personal computers in the 1980's and 90's, digital writing would have been limited to writing on client terminals of mainframe computers. And early pioneers in the computers and composition community were happy to experiment with mainframes: Lisa Gerrard at UCLA programmed her research on mainframes; Hugh Burns at the University of Texas wrote grammar exercises for his writing students; and Cynthia Selfe was among a range of writing teachers

experimenting with ways to program writing teaching platforms (Hawisher, et al., 1996, pp. 41; 42-46).

Though it might provide little comfort for teachers of digital writing during the pandemic in 2020, contests around classroom and technology access were thus also clearly present at the early days of digital writing in higher education. At its earliest stages, digital writing in higher education challenged access for faculty and students alike through financial and technical demands: access to mainframes was potentially costly and limited to those with required technical proficiencies that were not common among all faculty. And the very nature of computers themselves required a shift from being tools of calculation to tools to support learning of digital writing, known also as the "Copernican Turn" (Hawisher, et al., 1996, p. 46). As Cowling et al. note, with the advent of personal computers in the 1980s a slow shift commenced with educators moving away from the chalkboard and paper-based learning activities (p. 5).

Early issues of access based on financial and technical proficiencies for teachers, and later students, would transition into issues of cost for both students and teachers. The act of conducting digital writing via a computer remained challenging for some years; even though the 'personal' computer held promise of a vision where most anyone could conveniently perform home office tasks, including writing, it took many years for this to become a reality. Few will remember now, but from roughly 1976 until 1985, around 400 versions of word processing software emerged, before the market consolidated around fewer hardware options, fewer software options, and fewer word processor options (Bergin, 2006a; Bergin, 2006b.) Once word processing softwares became widespread around roughly 1995, the access requirements around technical proficiencies would drop, but the financial costs would actually increase. And the definition of teaching digital writing would increasingly transition to mastering the affordances of word processing programs (Moran, 1983).

During this early period of word processor proliferation, even the most technically savvy teachers of digital writing remained wary of personal computer platforms. Most of their concerns focused on student autonomy and protecting the ability of teachers to hear student voices. More bluntly, teachers of digital writing saw the potential for plagiarism almost everywhere. This was on display at the 2004 Computers and Writing Conference, where Lisa Gerrard presented the keynote address. In 1994, she had presented a talk on the first ten conference meetings (1982-1994) which was later published (Gerrard, 1995). But in 2004 her presentation was an overview of mindset of some of the most seasoned practitioners of digital writing from 1994-2004. What were we teachers of writing and technology studying? How were they framing the interaction between machines and writers? Gerrard's two papers published in *Computers in Composition* in 1995 and 2006 provide an insider's overview of the key concerns that dominated debates about what we might call 'digital writing' until 2006.

As Gerrard traces, for roughly two decades researchers of the digital writing community spent a great amount of time proving to their colleagues that when students used a word processor to compose their assignments, the machines were not writing on behalf of the students. The first generation of writing teachers to receive word-processed essays – it turned out – were not entirely convinced that Word Perfect was not composing on behalf of the writer. As mentioned above,

many of these digital writing practitioners were not only writing teachers, but also software developers, and so were uniquely positioned to talk to other faculty who were suspicious about who was really doing the composing – machines or people.

How could anyone suspect that a word processing tool in the mid-eighties would be able to join alongside a writer in the composing process? Unlike the digital writing tools of the pandemic, these were very crude programs. At that time, the goal of word processing software was to make the program output look something like a typed page. What You See Is What You Get (WYSIWYG) was a long way off.[2] Even by 2004, the idea that word processors were not only handling content, but also creating content in such a way as to aid the writer while the writer was expressing thoughts in the composing process, would require a profound misunderstanding of both computer software and the composing process. Like their colleagues teaching digital writing during COVID-19 twenty years later, the earlier generation of teachers were wary of digital writing tools interfering with the voices of their students.

Spellcheck was present in the mid-eighties, and it was already inserting itself into the composing process. Early versions of spelling check simply underlined a misspelled word and allowed writers to return later and make a correction, or have the correction made for them, as they desired. Returning later to make the revision(s) was the less intrusive option since it allowed the writer maintain focus on expression and review the spellcheck suggestion once the writer had shifted from invention to editing. But there was already firmly planted in the minds of these writing teachers the idea that machine processing was playing a role in the writing process. At that time, the exact nature of that role was unclear, and it was characterized specifically in terms of fearing that the machine was doing the writing for the students. Gerrard characterized it as the “Theme of Fear and Power” and reports that ‘In 1984, we worried both about students who feared computers and about the power the machines might hold over them’ (p. 284). Early writing digital writing instructors worried about losing control and the spectre of ‘thought control’. She spelled it out this way: “We wondered if style analyzers would take over students’ revisions and if invention aids would contract rather than guide their imaginations” (p. 284).

Ironically, she reports in 1995:

> We no longer seem to worry that technology will write students' papers for them (as my colleagues used to suspect) or destroy their individuality. Our concern is not so much what the computer will do to the individual but how we may abuse technology. We fear humans finding new ways to manipulate one another, particularly on networks--instructors spying on student conversations; racist, sexist, and homophobic messages; and unauthorized distribution of text. Now seen as socializing agents, computers raise issues of privacy, equal access, control of the distribution of information, censorship, and software piracy (p. 284).

[2] See Brad A. Myers (1998) for an overview of what was then called HCI (human computer interaction) and early text editing, the introduction of the mouse and Windows and early versions of WYSIWYG.

In her follow up article, published ten years after the first, she again writes that colleagues need not worry about computers writing essays for students, and she is optimistic that the abuses they imagined would take place in the social realm were unfounded. Now both of those earlier more pessimistic doubts have been realised.

As we go on to discuss, AI text generators mean that in 2023 we *do* worry about technology writing our students' papers and thanks to smart phones and social media, it feels like for nearly two decades we *have* been worrying about exactly the kind of abuses Gerrard predicted in 1995 around racist, sexist, and homophobic content, surveillance and loss of privacy.

In sum, early practitioners of digital writing were concerned about student access to classrooms, the autonomy of individual writers, and the ability of students of digital writing to create their messages with the support – rather than influence – of their digital writing tools. The fact that teachers of digital writing during the pandemic would be concerned with these same issues almost two decades later speaks to the durable nature of the issues of access and autonomy in digital writing.

The values of collaboration and audience in digital writing

Post 1995, in the years after the emergence of the personal computer, but before the pandemic, the dominant themes of digital writing pedagogy were promoting community among writers, and assisting writers in connecting with audiences within and beyond higher education. Over time those individual personal computers of the 1990's became connected. The emergence of the World Wide Web ushered in new forms of possibility for building community via digital writing. Seemingly, the arrival of the Web – and later, Web 2.0 – would be a great force for democratization for practitioners of digital writing. With little more than access to a personal computer, and the internet, students and teachers of digital writing could now communicate with the globe.

Early visions of what it would mean to teach digital writing on the web were concerned with the new affordances of audience. Readers seemed much more available to writers, and their responses were much more immediate, or perhaps 'in your face' (Otte, 2003, p. 85). Experiments with collaborations between digital writers, readers, and reviewers, became more common as students and teachers began to explore more immediate and informal modes of communication (Fischer, et al., 2003). By 2005, the Web was proliferating with sites that encouraged user participation, including Myspace, Flickr, and YouTube, and "emphasizing peers' social interaction and collective intelligence, and present[ing] new opportunities for leveraging the Web and engaging its users more effectively" (Murugesan, 2007).

The height of Web 2.0 would be characterised by the emergence of Wikipedia. Self-styled as "the free encyclopedia anyone can edit," it represented a true democratisation in the Web by further blending the roles of digital writers, editors, and readers. In its early days it was seen as both "an extraordinary revolution and a degenerate hive mind" (Reagle & Korner, 2020, p. 3). However, it was not too much longer before digital writing faculty saw the potential of a Web 2.0 tool for providing a platform for student writers – creating a way for the audience to speak directly with its

writers (Cummings, 2009; Purdy, 2009). Although teaching with Wikipedia has its followers (Johinke and Di Lauro, 2020), it has never become a staple of digital writing pedagogy. Practitioners during the pandemic had an additional tool for keeping digital writing students engaged with their audiences, but this was mostly limited to the faculty who were engaged with teaching Wikipedia pre-pandemic: not many faculty would have the additional capacity to add this sometimes complex practice to their teaching portfolio from a remote classroom.

At roughly the same time, a new internet phenomenon was to emerge: social media. Although social media sites such as Facebook, Twitter, Wechat, and TikTok would come to define internet communications for many people, its adoption into digital writing classrooms was more problematic than traditional Web 2.0 sites such as Wikipedia (Vie, 2008). Many social media platforms lacked effective internal review, and engaged a business model of promoting misinformation to prolong user engagement and heighten advertising. Additionally, the framework of sites such as Twitter were extremely fluid, with extremely brief textual interactions that resisted the any sort of moderate stability, challenging the ability of digital writing teachers to predict a model of engagement for lesson planning. While sites like Wikipedia were indeed controversial, their features of collaborative peer review of content reinforced the values of digital writing and provided relative predictability.

Thus the teachers of digital writing were engaging the values of collaboration and audience in digital writings during the years preceding the pandemic. Of course, there were additional important phenomena to emerge that would affect digital writing during the pandemic, including EdTech developments such as the learning management system, and the tools of online teaching (Cowling et al., 2022). But during these years, the definition of digital writing continued an emphasis on the autonomy of individual writers, while adding the values of promoting community among writers, and assist writers in connecting with audiences within and beyond higher education.

Looking forward to reclaiming the technologies of digital writing

Emerging from the worst of the pandemic, any reasonable observer would be likely to say that the contours of conversations around teaching digital writing would be focused on what it means to return to classroom teaching from the relative isolation of remote teaching. Composition has always been a field concerned with building community among its students in classrooms and structuring that community around multiple drafts of writing assignments. Face-to-face engagement among student writers through frequent peer review sessions have been a hallmark of writing classrooms since the 1980s, and the disruption of moving teaching online had posed challenges in relocating that pedagogy away from a physical classroom. And as readers of this special edition know very well, teachers of digital writing employed a number of strategies to ensure that the principles of the face-to-face writing classroom survived online. Returning to the physical classroom ought to be a relative breeze when compared with the demands of teaching digital writing during the pandemic.

But dear reader, this is not the case. The classroom to which teachers of digital writing are returning is radically different from the one they left. The use of AI-writing generators, popularised

lately by the emergence of ChatGPT, has changed not only the meaning of teaching digital writing but the meaning of literacy itself. The fear that Gerrard dismissed back in 1995 that technology would write essays for their students has, of course, come to fruition in late 2022/early 2023.

We are now awash in freely available artificial intelligence applications that will produce a startling amount of text based on queries and inputs from users, generated via proprietary (and therefore invisible) algorithms to exceedingly large databases of text that have been "scraped" from the web. And due to the frightening power of machine learning employing neural networks, no one can definitively say how AI arrived at its 'answers' to your questions (a problem with its research track, known as "explainable AI"). What we do know is that the outputs are based on probabilities, by comparing your textual inputs with databases, and that most of the documents in the databases are likely used without permission. At the same time, visual literacy is also being shaken by similar developments in AI: tools like DALLE·2 and Stability AI represent a new class of technologies primed to render digital images based on textual inputs. Similarly, Google has developed an AI engine called MusicLM that will produce music based on text inputs (Marcelline, 2023).

What are these engines? They include ChatGPT and GPT-3 Playground from OpenAI; ALPA and Blenderbot 3 offered by Meta's OPT175B database; BLOOM, a French multi-language system with approximately 176 billion datapoints; Nvidia's AI Tool Demo Playground; and Stability AI's – Image, Text, and Multimodal projects. In short, all of the major tech companies are enabling (and encouraging) a community of developers to engage their competing AI engines and develop applications as soon as possible. Microsoft, an investor in OpenAI, is expected to include AI image generators in its next release of PowerPoint and AI text generators in its next release of Microsoft Word (Warren, 2023a). It is a safe assumption that all versions of office productivity software applications will soon integrate some version of AI generative technologies (Naughton, 2023). Indeed, as we write this Editorial, announcements are being made daily about this integration.

As it has become popular to say, teaching digital writing has encountered its "calculator moment": calling from memory the days when handheld calculators first arrived in mathematics classrooms, teachers of digital writing are faced with a similar proposition their colleagues in mathematics encountered decades ago (Rosenblatt, 2022, para. 8). Mathematics teachers realised that all students could quickly access handheld calculators for their assessments. They also began to realise that their students would live in a world with easy access to handheld calculators (Rudnick & Krulik, 1976). Thus, they shifted their emphasis from teaching calculation to teaching quantitative reasoning. Teachers of digital writing are faced with the same challenge today: our students can not only access AI writing generators in their classrooms, but they will likely be able to access them for writing purposes throughout their careers. Indeed, with the arrival of these tools in most word processors in the next twelve months, that moment is arriving soon.

What does the arrival of AI writing generators mean for the teaching of digital writing? It means that faculty now have to think more about what it means to write alongside AI and incorporate this awareness into teaching strategies. Since these tools have only recently arrived and are rapidly emerging, it remains difficult to know exactly how this will translate into a new approach to writing. But it seems clear that for most writers investigating a topic via their word processor, they will simply open an AI chat interface and start asking questions in a conversational format. Indeed,

Microsoft has announced that it will incorporate ChatGPT into Word (Warren, 2023b, para. 2). Whether they take the AI responses as relevant and accurate is another question. And whether or not they take those responses from AI chat itself and pass them off as their own thinking is another question altogether.

We are teaching digital writing at a moment when literacy is fundamentally changing. We are trained to think that when we see writing, a human wrote it. It may not be a human we know; it may be a team of humans, but somewhere behind the writing is a person. This is no longer true. And it may take a long time for our brains to adapt. Further, since it is reasonable to assume that the literacy landscape of our future is likely to be comprised of a lot of text for which origins are permanently murky, our very thinking about originality, plagiarism, and intellectual property may begin to shift. This is not to say that we will be teaching digital writing in a world without attribution, but we may be forced to operate in a landscape where much attribution will be undeterminable.

Teaching digital writing in the future will also mean teaching with a greater awareness of the AI tools that are present and how they operate. Those who are generally familiar with how an AI-powered writing generator operates know that the application is not writing text in a traditional sense; there is no sentience behind the output. These tools are producing text based on predictive algorithms engaging deep data sets. In addition, there is no “fact-checking” in most of the results. This is due again to the explainability problem, meaning that no one can say with confidence how and why an AI writing generator arrived at its particular output (Keenan & Sokol, 2023).

There is an undeniable disconnect between those who are teaching digital writing today, and those who are developing the tools for digital writing. Stability AI CEO Emad Mostaque said on New York Times podcast *Hard Fork* that “The world has been creatively constipated, and we’re going to let them poop rainbows” (Roose & Newton, 2022). For Mostaque and other tool developers, writing (along with drawing and/or making music) is a form of expression that most people find difficult. Developers see their AI tools as making that communication simpler, and if it is simpler, then more people will use AI tools to communicate. And they will communicate more. Ipso facto, we will have a more productive world.

Thus, while many software developers often think of coding as an act of solving problems, and transfer that thinking to writing as also “a problem to solve,” digital writing teachers are more concerned with the challenge of building literacy skills within their students. We know that writing with digital tools is a complex process, and doing so opens doors to expression, discovery, critical thinking, lifelong learning, and joy. If AI writing generators force digital writing teachers to shift, we will.

But for teachers of digital writing, our question has to be this: what are those shifts? What does the emergence of AI writing generators mean for the teaching of digital writing today? What strategies can we teachers of digital writing adopt in response to these rapidly developing tools? Returning from the pandemic to the teaching of digital writing means not only moving from enforced remote learning to a physical classroom but also engaging fundamental shifts in literacy due to the emergence of AI generators.

In the face of these developments, there are a few emerging approaches to teaching digital writing in an environment rife with AI writing generators. In the Department of Writing and Rhetoric at the University of Mississippi in the United States, a group of writing teachers decided to teach with AI writing generators in the fall of 2022. Although they are in the process of writing up their results, a few emerging principles are taking hold, and they can serve as signposts of all faculty in higher education. Here, then, are some early recommendations for teaching digital writing in the presence of AI-powered writing generators.

Distinguish between writing to learn and writing to report learning.

If the digital writing assignment based on writing to learn, then consider actively engaging the new AI writing generator technologies in the classroom. Explore the new tools alongside your students. If, however, the purpose of the writing assignment is to report learning (e.g., exams or term papers), then AI writing generators should not be used. AI tools will displace students' thinking in assessment contexts, making it difficult – if not impossible – to determine what a student knows.

Scaffold the engagements with AI writing generators: define their specific application for a specific purpose in the stages of your classroom writing process.

Defining writing process stages is a common approach to teaching digital writing assignments. However, clearly defined stages are essential for successful integration of AI writing generators. For example, the team of teachers at the University of Mississippi designed a digital writing argument assignment with stages for inventing a topic, researching that topic, drafting, and finding a counterargument. For each of these stages, they paired a specific AI writing generative tool with strengths to match that task.

For instance, when trying to find a topic, students at the University of Mississippi used Elicit's Brainstorm Research Questions tool (https://elicit.org). Elicit is an AI generator that describes itself as a tool with a "main workflow [as a] Literature Review. If you ask a question, Elicit will show relevant papers and summaries of key information about those papers in an easy-to-use table." The engagement with the tool occurred during class time, and afterwards, students completed reflections on their thoughts about using Elicit. Students also used Elicit in the next stage of the writing process, where they were asked to identify articles related to the topic they had chosen for argument. After this stage, students again conducted reflection.

The next stage of the argument assignment had students draft their argument papers. For this stage, students engaged Fermat (https://fermat.ws). Fermat is an AI writing generator that describes itself as "a collaborative canvas where you can augment your own workflow using AI." After discussing the difference between AI-assisted and AI-generated writing, students could use Fermat to help them in drafting their essays. University of Mississippi faculty review the rules for citation with students as well to ensure that they are able to delineate between their ideas and ideas provided by AI. This stage also ended with reflection.

In the last stage of the assignment where students engage AI, they again use Fermat to help generate counter-arguments. Students have commented that this is the context in which AI has proven to be the most beneficial, as developing counter-arguments is always a challenge. This stage is also completed with a reflection.

Require fact checking

AI output is not writing, and it is only sometimes accurate. It often has verisimilitude but lacks consistency. Therefore, students need to manage its integration into their writing. In fact, some faculty who have promoted active engagement with AI have heard from students that they would prefer to write without AI interaction, given the additional demands placed on students who need to review AI suggestions (Fyfe, 2022).

Engage student reflection about the use of these tools

As the assignment referenced above demonstrates, active reflection on the use of AI in writing is an indispensable activity when integrating a new technology into writing practices. Assigning short reflective writing prompts will give students the space to process the impact of these technologies for their writing. Reflection also allows students to place these new engagements into context. Last, reflection can also help students sort through which AI engagements are useful, and which are not.

Prepare student to cite AI writing, and remind them that the balance between sources and their thinking has not changed

Citation systems still have not provided clear recommendations on how to address AI-writing generators. But for writing teachers, the basic requirements of attribution remain necessary. Student writers still need to delineate which ideas are their own, and which ideas are borrowed from elsewhere. Although methods for these citation systems are still evolving, the tactics of quotation, paraphrase, and summary, are still necessary tools in digital writing classrooms.

Final thoughts on the contested nature of digital writing

As noted above, many have compared the arrival of generative AI into digital writing classrooms a calculator moment, or when the arrival of a transformative technology so profoundly shifts the capabilities of the workplace and larger culture that the goals inside the classroom must change. With the power of accurate calculation ubiquitous, it made little sense for mathematics classrooms to insist on emphasizing raw calculation as a student learning outcome.

If digital writing is encountering a shift, it may be less of a calculator moment, and more of a Wikipedia moment. As discussed previously, many readers will recall that more than twenty years ago the arrival of Wikipedia was seen as a great disruptor of higher education classrooms. But in those intervening years, Wikipedia has transformed from being viewed as plagiarism factory to being “the Good Grownup” of the internet (Harrison, 2019). In fact, teachers of digital writing reported that teaching with Wikipedia during the pandemic was an effective coping strategy (Choi

& Shetty, 2023). Technological disruptions often arrive as extreme threats to the teaching of digital writing, but in fact emerge as modifications and even supports.

We have offered that the definition of "digital writing" in higher education is a contested space, with faculty and students valuing access to classrooms, the autonomy of individual writers, community among writers, and connection with audiences within and beyond higher education. Consider that the arrival of Wikipedia in higher education classrooms was first seen as a threat to the very notion of authority of knowledge, an essential value if higher education. And yet Wikipedia became an ally of digital writing in higher education, increasing access to knowledge, building autonomy and community among student writers by connecting them to audiences beyond the classroom.

The integration of Wikipedia into higher education classrooms provides a hopeful model for the integration of generative AI into digital writing classrooms. In the coming months, as the Pandemic begins to fade, teachers of digital writing will sort through the impacts of AI-powered digital writing generators and fulfil the mission of helping students learn to write in a world with ready access to such tools. The essays in this volume help us to understand the stakes.

Conflict of Interest

The author(s) disclose that they have no actual or perceived conflicts of interest. The authors disclose that they have not received any funding for this manuscript beyond resourcing for academic time at their respective university.

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