2 Two Experiments in Technologically Mediated Education: 2012 and 2020

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Writing technology is a tool for writing pedagogy, not its master. Nevertheless, proponents of technology often promote an implicit theory that technology impels us to teach differently, even in ways that are circularly defined and valorized by what the technology is capable of. In the process, much that is of value is neglected or underplayed, and we are encouraged to compromise, or adopt what is merely good enough and compromise on excellence. These two tendencies—submission to the technology imperative/inexorability and compromise—combine with situational urgency to create what I refer to as ICU (Inexorability, Compromise, and Urgency). I share and analyze two episodes of technology intrusion into the teaching of writing that illustrate ICU: the technology compromises required by "MOOC[2] mania" in 2012, where the urgency arose from an academic arms race; and the over-reliance on a grammar checker (and other compliance technologies) in urgent reaction to the pivot to distance education during the COVID-19 pandemic of 2020. In the first case, the promises of technology were interrogated and proved to be hyperbolic; in the recent case it is too early to tell whether the compromises we have made will define a "new normal."

Teachers of academic writing, writing program directors, and writing center directors are process-oriented scholars and practitioners who have long understood the affordances and challenges of incorporating new technologies into their pedagogical practices—and, most importantly, the critical need for

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2 Massive open online course.

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discourse surrounding the assessment of these tools and practices. We must continue to place ourselves at the center of these interrogations.

Considerations of technologies into pedagogical practice is at the heart of the work we do in my lab, the Naugle Communication Center at Georgia Tech. Because the space functions as both my research lab and as a site for pedagogical intervention via student consultations, I pause for a moment each day to reflect on what my earliest teaching and tutoring experiences were like. As a student, I began tutoring just before my seventh birthday, when I was recruited to go to summer school with some of the last wave of Vietnamese refugee children who were brought to the United States in 1974. It was educational intervention in its purest form—children playing and studying together in an immersive language acquisition program. Mostly this was the pedagogy of human connection. Classroom "technology" was limited to chalkboards—with occasional access to shared projectors and televisions usually housed in the school library.

In my lab and my instructional spaces today, I am surrounded by touchscreens, video-conferencing equipment, studio-quality green screens, and sundry other technologies too numerous to name. These technologies support but do not supplant the attitude that I started to develop when I was still a young peer tutor. While technologies often open pedagogical pathways, at the heart of what we do the critical process remains simple and direct: one person having a conversation with another.

Writing this in late 2020, the relationship between writing pedagogy and writing technology is more relevant than ever. In March 2020, my lab, along with the rest of my university closed its physical spaces in response to the COVID-19 pandemic. It was clear that a bricolage of technology hastily assembled to react to a health situation that had not been foreseen or planned for, would have to suffice. Fortunately, because technology is our tool, not our master, and because I had participated in an earlier episode in which technology was widely promoted as a savior—the MOOC mania of 2012—I was confident our primary mission (tutoring) could be served. Perhaps my confidence was misplaced. As I explain below, the solicitations from technology companies promising panaceas soon started to arrive, and just as in 2012, many administrators and colleagues developed unrealistic expectations that tools designed to support an essential but minor component of the writing process would be the answer to most of their problems.

But before telling the two parables of 2012 and 2020, I will explain their genre: ICU. ICU stands for Inexorability, Compromise, and Urgency (I acknowledge that this acronym is most associated with Intensive Care Units in hospitals—the association is intentional).

Writing Technology and ICU

ICU is the confluence of two factors: a faith in the efficacy of technology to support a human process (here the teaching of writing) with the satisficing compromises that this entails, in conjunction with a sense of urgency to react that undermines critical analysis of technology adoption decision making.

Affordances and the Anthropomorphic Ascription of Values to Technology

Scholars in the fields of human-computer interaction, human factors engineering, and interaction design use the concept of affordances to explain a technology's ease and convenience of use. Originally defined by the ecological psychologist, J. J. Gibson (1986), an affordance is an alignment between a human performance characteristic for a specified task and the characteristics of the environment that make the task feasible. Gibson, who was researching human and animal vision, had in mind generic tasks such as scanning the environment, but applied psychologists later adapted the concept of the affordance to more specific and purposeful actions, such as opening a door. Famously, Norman (1988) fulminated against designers who attach door handles that "ask" to be pulled, onto the side of doors that open away from the user. The affordance of a successful door handle in the case of the user pulling the door handle toward them is the alignment between a graspable and turnable door handle and the grasping gesture of the human hand. The affordance for opening a door away from the user is the alignment between a flat plate (for example) and the gesture of pushing with the open palm.[3]

Affordances can be extended from the sensori-motor interactions to the cultural realm. According to Brey (2010), a system or app discloses to us ethical assumptions that are embedded in the way it presents itself to users (Brey does not draw the parallel between disclosed values and affordances, but we see them as direct analogs.) For example, a chalkboard and its associated organization of the classroom embeds the value that teaching is defined as listening to didactic presentations. This carries with it a power difference between teacher and students: teachers are authority figures who command

3 From these modest sensorimotor examples, the idea of the affordance has blossomed into a way of conceptualizing the alignment between more complex technologies and their socio-cultural use contexts. I will leave it to others to debate whether it is a metaphorical overextension or a valid use of the term, and I will use the term to refer to any compatibility between a technology's presentation to its users and those users' cultural needs and expectations.

attention, and students have a duty to listen, watch, and take notes. This is not to say that designers of chalkboards have these values in mind or that they would espouse those values if asked. It is merely that the technology exhibits these values, fits into contexts best where those assumptions are accepted, and is most convenient and usable to users who share these values. Conversely, in a democratic and highly interactive teaching context, chalkboards have a more peripheral role or must be reinvented (not very effectively) as shared workspaces. They can still be used effectively, but there is an awkwardness to their use. They are the cultural equivalent of Norman's door handles that ask to be pulled when they need to be pushed.

Similarly, Hsi and Potts (2000) analyze desktop apps to reveal their underlying ontology, the centrality or peripherality of concepts in that ontology, and how they evolve over generations of releases. For example, in a calendar app weekends may be distinguished visually from work days, working hours may be distinguished from leisure time, and even Sunday may be marked off as a day of rest. Essentially, the app is acting as if it is making claims about its users' cultural practices, claims that the users may assent to or disagree with. The app will be usable and useful to the extent that those users share these cultural assumptions or can be encouraged to shift their practices so that they fit the technology they are using. Similar cultural assumptions are built into learning management systems (LMS) like Blackboard, Moodle, and Canvas. Each LMS has its own ecosystem, privileging different interactions over others. For example, Blackboard and Moodle tend to prioritize communication and collaboration. Canvas places more emphasis on content and assignments. Blackboard and Canvas are commercial platforms with robust 24/7 technical support systems; Moodle is an open-source system which allows institutions to customize it for their particular uses, but there is no corporate support—meaning that students and instructors sometimes cannot find "just in time" support. Again, there is no claim that the designers were intending to impose assumptions (learning is completing assignments or learning is communicating with other students, as two examples), on their users, or even that they would defend them if challenged, merely that the platforms present themselves to users in ways that privilege certain approaches over others.

One COVID-19-related example of this was the scandal caused by the United Kingdom government's decision to use machine learning algorithms to predict A-Levels (standard national university entrance exams) in the United Kingdom. These exams are taken simultaneously by students all over the country. Because schools had been closed for safety reasons, the exams had to be canceled, and predictions were used instead to sort candidates into their preferred universities. Despite expert warnings that the predictive algorithms

discriminated against students from less well-financed and state-run schools, it was these predictions that were used to calculate students' results. When the results were published, many students found their algorithmically predicted results differed by more than two grades from the estimates their teachers had provided (which originally were to be the basis for the entrance decisions). Soon after that, the UK government changed course and reverted to teachers' estimates. It is possible that the teachers' estimates were affected by wishful thinking and that the algorithmic predictions, which normed estimates by taking into account aggregate school performance in recent years, were more objective. However, a teacher's estimate can be justified by a narrative about the student, whereas the algorithm's "justification" was an inscrutable chain of statistical approximations that clarified nothing to a non-specialist. In an atmosphere of distrust, it is no surprise that members of the public felt aggrieved.

The controversy over the UK's A-Level prediction algorithm can be seen as a failure in the affordances of the decision-making technology. Within the web of decisions that significantly affect people's lives, such as which university to attend, it is important that the decision-making approach adopted, and any technology that makes or supports decisions, should not only lead to the making of effective and fair decisions, but also to the explaining and defending of the decision being made so that the people affected understand and can live with the outcome. A teacher's narrative explanation of a student's outcome can be related to shared knowledge of the student's previous performance on practice exams or continually assessed coursework. A statistical algorithm, in contrast, merely performs one of the tasks associated with decisions: making them.

These extensions of the notion of the affordance are anthropomorphic, but the anthropomorphism is figurative. The technology is not intelligent enough to *have* values or ideas, but it presents itself *as if* it does, and it is a useful technology to the extent that those values and ideas align with those of its users. More fancifully, the popular technology writer and pioneer in the hacker movement, Kelly (2010) in his controversial book *What Technology Wants* appears to claim quite literally that technology is a force in social evolution that has its own intentions.

Kelly is an extreme example of a long line of writers who propose that future trends will follow technological developments inexorably. In the context of higher education, some writers have recently argued that technology developments will propel higher education in "disruptive" new directions. Not only is there an inevitability to this forthcoming (or perhaps ongoing) disruption, but also those in higher education with a vested interest in preserving the status quo will not see these inexorable trends at work until it is too

late. The inevitable consequences are that these dinosaurs will be displaced by more nimble, non-traditional higher education providers. Christensen and Eyring (2011) build on Christensen's (1997) now controversial theory of disruptive innovation to explain and defend the innovations in one institution of higher education. Painting a broader brush, DeMillo (2011) makes similar arguments, about institutions of higher education in general. The major universities that escape DeMillo's negative judgment are few in number, and none of them are in Europe. Anything old is to be swept away. In my book (Head, 2017), I analyzed at length these authors' rhetoric and their appeal to cherry-picked case studies. But they are just recent examples of a long tradition of writers who argue that technology in all spheres of life, not just higher education, has a telos of its own.

Compromise: When Technology is Good Enough

Ceding pedagogical authority to an algorithm is inadvisable when machine evaluation mechanisms have repeatedly been proven inadequate (Perelman, 2016). As with all automated writing evaluation systems, the notion of "good enough" is always a factor. If "good enough" is what you are willing to settle for (and pay for because these platforms are usually not free), then perhaps that is acceptable. However, as I have noted in previous research:

> [There is a] more obvious difficulty with machine grading of writing. It can't be done. How can someone program a computer to check whether a complex thesis statement is complete and supportable? How can it assess whether the appropriate disciplinary sense of has been achieved in a piece of writing? How can it evaluate whether the evidence presented is valid for the thesis at hand? The problem is that algorithms cannot yet substitute for human evaluation where higher order concerns are in question. . . . (Head, 2017, p. 99)

Academic writing scholars and instructors should not be willing to accept a "good enough" model of student support because it serves us in a crisis. For example, would the costs for such platforms be better used to expand existing programs that can address more complex writing assessment? While the supplemental aspects of online writing correction tools might be helpful to some, there is a danger that students could misinterpret the capabilities of these programs—resulting in poorer than expected evaluations of their work. Additionally, we should work with IT professionals to assess issues of privacy and text ownership.

Urgency: "The Train is Leaving the Station"

One of the most enduring metaphors from the MOOC year was that of the train—as in "We need to be on this train—preferably driving it," a call to arms that Georgia Tech's Provost, Rafael Bras, frequently issued. The problem for most institutions (and, I continue to argue that Georgia Tech was one of those institutions) is that they had no idea where the train was going, and, perhaps worse, they had no idea what to do once it arrived at the unknown destination. An auxiliary metaphor was the "tsunami"—the wave of disaster that would destroy universities that did not "get on the train." The urgency in 2012 was the result of complaints about the rising costs of higher education, and delivering content at scale was Silicon Valley's innovative answer—an answer quickly embraced by the media and by legislators who were eager to cut more spending on public universities.

Similarly, in a crisis, like the pandemic, the momentum behind technology adoption can be unstoppable. There can be a strong temptation toward embracing tools and practices that offset increased workloads at the expense of providing students with the necessary skills and habits of mind to be truly successful.

Whether the sense of urgency arises from organizational enthusiasm, as was the case in 2012 MOOC episode, or an exogenous agent, as in the 2020 pandemic, the outcome is similar: there is not or appears not to be enough time to analyze the evolving situation critically, and as a result bandwagon effects, arms races, FOMO (fear of missing out), public safety concerns, and political pressure to deny or downplay any disruption of operations all contribute to a rush to technology adoption and compromise.

Two ICU Episodes in Writing Technology

The following case studies share the aforementioned qualities of ICU: a faith in the efficacy of technology (with satisficing compromises); and a sense of urgency that undermines usual protocols through an insistence that rapid decision-making is the only reasonable approach to technology adoption because some crises outweigh the need for critical analysis. The first example, which focuses on the 2012 "tsunami" of Massive Open Online Courses, discusses how many elite universities rushed to win a kind of "moon shot" race, only to produce, in some cases, poorly designed and now obsolete courses. The second example discusses the same kind of reactionary arguments for expediency that resulted from the sudden need in 2020 to pivot courses online—a legitimate need given the COVID-19 pandemic—but a need that

shifted quickly from providing the critical tools to facilitate online learning to more problematic technology adoptions that were not critical to the moment and that were sometimes more about convenience than about well-designed pedagogical tools.

2012: The Year of the MOOCS

Because the first MOOCs were products of elite universities, many of which did not have large distance learning programs, quality of instruction seemed more dependent on reputation than on actual pedagogy. However, reputation mattered because elite universities had the luxury of failing: "Elite schools . . . can afford to play in the most disruptive sandboxes with minimal risk, pitching any failures as important research—and whatever happens in the aftermath of these failures will register as little more than a toy tossed aside for some new plaything" (Head, 2017, p. 133). And, in fact, that is precisely what happened with MOOCs. Georgia Tech has created several graduate programs, like the Online Master's of Science in Computer Science, and while those programs are scaled-up versions of programs we offer locally, they are neither massive nor open (that is, free).

In other parts of the world, the desire to implement MOOCS tended to focus more on social inclusion and educational access, with a strong focus on a general audience rather than full-time students. In a report from the European Association of Distance Teaching Universities that surveyed 89 institutions from 24 (mostly European) countries, Ubachs and Konings (2018) found that the top four reasons for offering MOOCs were as follows: 1) flexible learning opportunities; 2) increase institution visibility; 3) reach new students; and 4) innovative pedagogy. The report also reflected a declining interest in MOOCs, with some institutions concerned about quality issues and access. Also, respondents repeatedly mentioned the need for reliable online student proctoring and assessment.

Many of the original arguments about providing open access education were based on notions of altruism and public good. However, too little attention was given to how access would be fully realized. Another long-term problem has been maintenance and management of the MOOC courses—the fact that MOOCs were "free" for students does not correspond to the necessary and ongoing operational costs of keeping those courses pedagogically sound. The result has been that some MOOC offerings, which may not have been particularly well-designed in the first place, are now no longer updated. The idea that MOOCs could be "good enough" because they were free and open has, in some cases, created a database of courses that are the

equivalent of moldy and outdated textbooks—some of the information might still be useful, but the overall experience is lacking.

2020: The Plague Year

Like regular course meetings, academic support services like the Naugle Communication Center had to close as a result of the COVID-19 pandemic. In the pre-pandemic world, my work as a course instructor benefitted from the tools all instructors had access to at my university, but I also enjoyed access to tools I had in my communication tutoring lab. And, of course, the staff in my lab was also accustomed to the same access for the work they needed to do. Suddenly access to many of the technologies located in the lab or in classroom spaces was gone, and I found myself, along with my colleagues, investigating the availability of tools we might use for the pivot to remote instruction. Simultaneously, I began to be bombarded with solicitations about platforms claiming to make instruction more expedient. Some of the platforms being marketed focus on test proctoring, some focus on enabling connections (asynchronous and synchronous) between instructors and students or between student groups, and some promise to keep students "honest" by preventing cheating through different kinds of surveillance. As a teacher of academic writing, I was particularly concerned about the platforms related to the writing process. One of these platforms, Grammarly, a grammar-checking interface, was representative of platforms that address expediency over pedagogy; I will examine that platform as a case study later in this chapter.

Prior to the COVID-19 pandemic, the word "pivot" was, for many people, made famous on the American television show *Friends* (Varinaitis et al., 1999) when the characters try to move a large couch up a narrow and winding staircase. After shouting, "Pivot" several times, one of the characters finds his new couch wedged between floors. However, the punchline comes at the end of the scene when another asks, "What did you mean when you said 'pivot'?" Similarly, in 2020 faculty found themselves trying to answer the call to pivot their courses to remote delivery without a complete understanding of what that meant, and like the characters in *Friends* they found themselves stuck between where they came from and where they thought they were heading. Staff in university centers for teaching and learning, along with distance education support teams (where such centers or teams existed) rushed to help faculty but were quickly overwhelmed with the volume of assistance needed.

Along with an increase in use of learning management systems like Blackboard and Canvas, video-conferencing platforms like Zoom, Microsoft Teams, and WebEx rushed to accommodate the surge of users. Sudden-

ly, however, there was an issue of scale akin to MOOCs. While instructors were not attempting to reach thousands of users (or in the case of many MOOCs tens of thousands), the challenges for synchronous interactions with students did involve adjusting for scale. Instructors may have used video-conferencing for one-to-one meetings with individual students, but now they needed to reach their entire class at once. One of the biggest complaints at my institution is that our main video-conferencing platform only allows users to see nine participants at a time. Once the issues of creating classroom interaction substitutes were solved, instructors began to face other challenges. How would students take their exams? How could students get supplemental assistance with projects? How would students work in small groups? Developing new course materials and reconfiguring for remote course delivery to achieve the best student outcomes are labor intensive tasks. For some instructors, the sudden and unwished-for move to remote learning represented a significant and unwelcome new workload. Tools that might alleviate that workload are positioned to be embraced in the current crisis because instructors have so many additional demands on their time. It is easy to understand how extraordinary stressful situations can lead instructors (and administrators) to make decisions that are more about expediency than striving for pedagogical excellence.

As the months of the pandemic have passed, qualitative assignments, like essays and research papers, have been suggested as alternatives for exams. Consequently, companies that provide automated writing analysis have become a focal point. Automating the difficult work of providing feedback and evaluating writing has long been a point of contention with writing scholars. The questions surrounding the capabilities of machine-learning to provide a platform that might replace the time-intensive work doing by writing instructors (or instructors in any discipline that favors writing assignments that require qualitative assessment) are not new. As was the case with MOOCs, the arguments for machine-grading, test proctoring, plagiarism checking, are unsurprising. Companies like Grammarly (a grammar checking service), Honorlock (a proctoring service), and Turnitin (a plagiarism detection service) have increased their marketing efforts in an attempt to leverage the current crisis to increase customer base. From the first hours of universities shifting to remote instruction, email boxes began to fill with advertisements for platforms that claimed to make teaching more efficient. Concurrently, many instructors reacted first about the shift to remote teaching by expressing concerns about academic dishonesty (Head, 2020). The task of suddenly moving courses online, along with the shift to more qualitative assessments, left faculty stressed in ways that were novel for some of them. Even academic

writing faculty, who are generally acclimated to the time-consuming nature of qualitative assessment of student writing, were finding preparation for class online a burden. Therefore, it is not surprising that companies offering "easy" answers for taking away some of the faculty workload might be more enticing than ever.

Having said that, the year 2020 promises to initiate a disruption far more significant than anything discussed or even imagined in 2011. Had MOOCs not been developed during the preceding decade, many colleges and universities would have been incapable of pivoting to remote teaching with such urgency during the spring of 2020 when the COVID-19 pandemic created new or expanded remote learning approaches. In the United States, most colleges and universities managed surprisingly well to move online during the late spring and summer. (In the United States, most institutions scaled down operations during the summer months when most students are on vacation or working in internships.) In Europe, the closing of many institutions happened between terms, giving instructors a few weeks to prepare classes for online delivery. However, nobody was under any illusion that this was a planned experiment. In any case, there was little time to plan, and the pedagogical adaptations that needed to be made were compounded by domestic circumstances that affected the interactions among students, faculty, and staff. Because most students in large, high-status universities in the United States live on campus or rent accommodation near campus, as opposed to commuting to classes from their family homes, and because their college years are widely accepted to be a transitional period between adolescence and adulthood during which they form enduring social bonds with future friends and associations, and because so many of these students come to their institution of choice from other states or countries, the evacuation of campuses caused severe personal disruption in their lives and the prospect of a yearlong void in their personal and professional development.

While campus life is sometimes different in other parts of the world, students still felt a new kind of disconnect with their usual academic communities, and some students had to relocate for health or financial reasons in addition to shifting to online lectures for their course. I was scheduled to be in Germany teaching a seminar at TU-Dortmund in summer 2020. Our team of eight instructors quickly reformatted the seminar as a synchronous online course, but throughout the term students and instructors struggled to connect (literally and figuratively) and had to manage our interactions alongside other people in our personal spaces.

For these two reasons—the suddenness and unplanned character of the shift to remote teaching, and the personal displacement and stress experi-

enced by so many students—the technological innovations that many higher education pundits and politicians had argued for so vehemently in 2012 are now under attack. The broader social context, in which going to college is seen as the first flight from the family nest, meant that students and families were divided in whether the health risks of returning to campus at the beginning of the 2020-21 academic year offset the diminished quality of learning and personal growth that continuing to learn remotely would imply. This, coupled with a widespread minority opinion among members of the American public that the COVID-19 pandemic was a hoax or exaggerated, the belief early in the pandemic that the disease affected college-age people only mildly, and the desire of state and local governments to restart local economies by reopening campuses and businesses, led to pressure to bring students back in person. Many students experienced only a partial return, however. Although they moved back to campus, some of their courses were still taught in a remote or hybrid mode, where hybrid learning often was little more than remote learning with a few in-person experiences peppered throughout the term. Many colleges and universities in the United States decided not to reopen for in-person teaching in August or September, 2020. Some large universities, under pressure from state governments to reopen, remained open for in-person teaching only for a few weeks before the levels of COVID-19 infection required them to send students home. Others temporarily suspended in-person teaching for a few weeks to assess the situation. As I write this in fall 2020, some universities have already announced that they will continue remote teaching throughout the academic year, with in-person classes not returning until the summer or fall of 2021, at the earliest. My own institution has invested $13 million so far in health infrastructure (e.g., surveillance testing, contact tracing, extra isolation and quarantine accommodation locations) even though state appropriations have been reduced, and the levels of transmission on our campus are under control. Many students remain dismayed that they are not enjoying the full college experience, including in-person classes or hybrid classes with authentic in-person experiences, and like all universities and colleges that continue to teach students who are on campus, we have contingency plans to evacuate if necessary.

This is all a far cry from higher education's "business as normal." Not long ago, little could excite more passion among faculty than their diverging views on students using computers and smartphones in class. Some faculty viewed student-owned devices as engines of distraction and barred them from the classroom. Others incorporated their use into in-class discussions and discovery activities. As Thorp and Goldstein (2010) observe, "Classroom discussions are more incisive when laptops are present as fact-checking and

information-gathering tools. The phrase, 'go home and look it up,' has been replaced by 'someone look it up, now'" (p. 16). With memories of COVID-19 lockdowns still fresh in our minds (or ongoing), and with many students still experiencing remote teaching, we can see that this controversy has become moot. When the world is a classroom and interactions among students and teachers is virtual, we cannot control engagement by preventing the use of technology: it is a given.

The affordances of technology for innovative pedagogy are many. However, those qualities and properties can create positive or negative experiences and outcomes for both students and instructors. Technology is also adopted not just because it has the right affordances (sometimes it does not) but also because of other issues of the moment. Those issues may be genuine or hyped. In the case of the pandemic, the need to shift to untested or less desirable technologies was imperative; however, a short-term compromise should not lead to long-term adoption—an argument that must be made because when the dangers recede there may be a ratchet effect, and the state-of-emergency assumptions are not walked back.

ICU in Writing MOOCs

In the group of four universities (Georgia Tech, Ohio State, Duke, and Mt. San Jacinto, which formed a loose consortium to discuss our MOOC design and implementation) teaching writing MOOCs in 2012, only one developed a course on basic writing: Mt. San Jacinto. Those colleagues who taught that MOOC reported machine-grading was useful to students who needed a great deal of help with basic grammar and mechanics, an unsurprising result when research has shown that many local errors can be assessed through automated writing evaluation platforms. Yang et al. (2002) found that such platforms focus on surface features such as word, sentence, and essay length, rather than on the content of the text or the creativity and style of the writer. Additionally, these platforms are unable to assess idioms, metaphors, humor, and words or phrases from different dialects (Graesser & McNamara, 2012).

Getting local-level feedback from faculty, especially from faculty who are from disciplines other than academic writing, may be inefficient and cause tensions between students and faculty. As Cavaleri and Dianati (2016) summarize in their aptly named article, "You Want Me to Check Your Grammar Again?" instructors "may feel that it is not their responsibility to provide detailed grammatical feedback on students' papers, or they may not feel confident that they have the 'know-how' to explain complex grammatical rules (Jones et al., 2013)" (A223). Likewise, O'Neill and Russell (2019) emphasize

the writing and communication centers often focus on high level concerns and have less time in sessions to spend on grammar/mechanics (43).

As we learned when designing our MOOC, evaluation mechanisms are only as good as the algorithms that drive them. In our experience, those algorithms were implemented by coders at the vendor organization, Coursera, who had no experience teaching writing. The evaluation code built into the platform used superficial textual pattern matching algorithms, which constrained the feedback we could give to students. For example, any student response that consisted of a personal pronoun followed by a noun or verb would suffice for the algorithm to mark it as "complete." This became known as the "I Trout" problem (based on the arbitrary word combination a member of our instructional-design team used to test the system), after a particularly absurd "correct" answer that came to our attention.

Once I decided to take on the challenge of teaching a MOOC, I was committed to our mission: Investigate how this new technological approach might help students learn to be better communicators. At the end of the experiment, I had made two overarching discoveries: 1) platforms are built for teaching subject matters where there are clear right and wrong answers, which is why they do not adapt to academic writing; and 2) a thorough consideration of how to integrate any technology into a course is an imperative in the modern higher education landscape.

MOOCs have sometimes inspired professors to incorporate more technology into their teaching practices. Ignoring technological innovation in the context of higher education is a move that any instructor, or administrator, does at their peril given the public push for universities to add more learning environment options. And, the political arguments aside, any instructor who genuinely cares about their students should be investigating the ways that technology can help students be more successful. As Chris Anson noted in our shared 2019 European Association of Teachers of Academic Writing (EATAW) keynote, *Technological Gains and Losses: A Heuristic Approach to Analyzing Affordances for Classroom Instruction and Support for Writing* (which was the genesis of this chapter), technology can make it possible for skilled teachers to focus on higher touch interactions (like engaging with students in a collaborative writing exercise, e.g.) if they are not wasting time on routine tasks that can be handled more efficiently through technological interventions (like providing basic lectures or discussing course administration).

Post-MOOC, many faculty members imagined short-term scenarios in which they might need to shift a class online. Bad weather, travel to conferences, are two examples. However, this definition of hybrid was limited. COVID-19 created a scenario in which faculty were forced to shift online and, for many

of them, that is where they wish to remain until the crisis has ended. But, in the same way that MOOCs changed education (even if not in the ways that disruptors imagined), the post-COVID-19 landscape will be different.

Grammarly: A Case Study in ICU[4]

One program for improving writing that has been highly advertised to students writing in English is Grammarly.[5] At my institution, a wide range of constituencies have been approached about an institutional subscription to Grammarly, a web plugin service that purports to offer users "Great Writing. Simplified." From solicitations to student government to student affairs to the library to individual faculty members, Grammarly has been working hard to get my university to sign up for an institutional subscription to their platform. Interestingly, their marketing efforts have not been directed, at least not without a redirect, to our writing center or writing program faculty, the very experts who are best positioned to judge its appropriateness as a tool for teaching academic writing. Grammarly is not unique in this cross-marketing approach. Each day since the pandemic began, I have received solicitations for technological interventions promising to make teaching easier and more efficient.

Grammarly advertises its product as more than just a grammar checker, explaining that they help writers create texts that are stylistically better, which raises the immediate question: which style is improved? For teachers of academic writing, a great deal of attention is given to questions of style—especially discipline-specific style. However, students often conflate proofreading with revision, and are, therefore unlikely to understand exactly what a platform like Grammarly can realistically promise. Grammarly is good at evaluating the rules of grammar and word usage but cannot pick up on subtleties of meaning and context in the way that a person can (Nova, 2018). Therefore, students need to understand that Grammarly can only assist them in identifying and fixing a portion of their composition errors. They must employ alternative methods to fully address potential problems in a text.

Despite this greater sophistication in communicative competence, today's students do not excel in writing for the sake of writing. They want to make a difference in the world and are therefore only motivated to learn

4 The author acknowledges the research contributions for some of the information in this case study from an internal report about Grammarly written by her with members of her lab: Brandy Ball Blake, Maria Chappell, Aaron Colton, Leah Misemer, Rob Griffin, Jeff Howard, and Kendra Slayton.

5 Programs like Grammarly exist in other in other languages. For example, Rechtschreibpruefung24, a grammar checking and readability analysis service for German texts.

to communicate information they care about. In contrast, "[i]n the typical five-paragraph essay, for example, the writer employs a prescribed method, almost a formula, to shape each section of the essay, and you don't deviate from that structure even if your audience changes. Nor do you need to because, in the traditional five-paragraph essay, the audience is unchanging: it's the professor" (Davidson, 2017, p. 93). Grammarly might "improve" the writing if the professor in question understands "good writing" as grammatically correct sentences, but teaching students actual writing competencies requires more sophisticated approaches. Warner (2018), a higher education journalist makes similar points in a recent book, arguing that writing courses should operationalize their learning objectives through experiences, rather than assignments or proficiencies. His reasoning is similar to Davidson's: students develop general competencies best when they are engaged in meaningful content-driven work, not when they are forced to concentrate on form and technique.

At best, Grammarly appears capable of improving the quality of a given document without promoting language acquisition or active learning. Students may be tempted to accept Grammarly's corrections without reviewing and evaluating them, especially if a student believes that proofreading at the local level is what matters most. This is particularly an issue for students whose first language is not English. For confident and experienced writers who are capable of considering the suggestions made by the program, Grammarly does offer some affordances for improving a text. At worst, Grammarly may overwhelm more inexperienced writers with comments and suggestions, including erroneous or unnecessary changes, that they do not understand. In this way, Grammarly does not help writers become better writers because it does not teach writers how to make decisions about what is correct in a given discourse scenario. This is analogous to how the plagiarism platform Turnitin analyzes documents against known sources, and while identifying matches for students to consider, does not teach them how to use source materials or help them understand when a matched passage might be acceptable. In all these cases, just as with the UK A-level prediction algorithm, the decision-*making* aspect of a situation is prioritized at the expense of decision *explanation*.

Many of the authors seem to agree that using Grammarly is better than nothing. Grammatical and other proofreading errors in professional writing can be frustrating, embarrassing, and undercut author credibility, even if the errors do not affect understandability at all. If Grammarly is only being used to fix these "superficial" non-critical errors, then it is immensely helpful in saving the student time and, in some cases, the cost of employing a copy editor.

One of the fundamental questions is how might a program like Grammarly cause harm that outweighs its benefits. Dembsey (2017) identifies several shortcomings in Grammarly, including repetitive comments, "incorrect use of terms, incorrect explanations, false positives, [and] insertion of errors" (p. 83). Such responses can cause confusion for students. Dembsey also notes that while Grammarly does offer explanations for its suggestions, it cannot clarify those explanations. The fact that some of Grammarly's suggestions are flawed, and that students may be unable to discern what suggestions to take up, indicates that Grammarly may benefit more able writers but harm less competent ones. Like the Mt. San Jacinto experience discussed earlier, this supports the findings of Jones and her colleagues (2013) who found that their grammar intervention benefited stronger writers more than weaker writers, and suggested that this was because more able writers "have clearer communicative and rhetorical intentions for their writing than less able writers, enabling [stronger writers] to make more appropriate use of their grammatical understanding to shape text appropriately" (p. 1256).

O'Neill and Russell (2019) argue that Grammarly sometimes provides inaccurate suggestions because of a lack of context, explaining that previous studies show that automated checkers may be better suited for more advanced writers who "have sufficient grammatical understanding to be able to filter suggestions that are incorrect," whereas "automated feedback can overwhelm students with low English proficiency" (p. 43). Cavaleri and Dianati (2016) noticed that "students felt some of the recommendations were flawed or hard to understand" (A233), making student usage problematic. Similarly, Gain et al. (2019) conclude that there is a great deal of user/student decision-making necessary for using Grammarly.

Overall, O'Neill and Russell (2019) caution that Grammarly is best used in a context where experts can "manag[e] students' expectations about the feedback by making them explicitly aware that it was not infallible" and can point out incorrect suggestions from Grammarly (p. 52). They argue that "the program is currently not accurate enough for independent use to be justified" (p. 42), which is to say, students need more expert guidance than the platform provides.

Grammarly may be useful if corrections pertaining to grammar, punctuation, and spelling are helpful to the revising process; however, such a program does not assist with the content and organizational needs that EFL/ESL/ELL students have when dealing with their specific writing requirements. The emphasis on grammatical and lexical analysis, if the corrections are applicable can be useful for word/sentence-level errors (Ghufron & Rosyida, 2018), but they can be a crutch that English language learners rely on without considering other issues of language fluency.

Chen and Cheng (2008) offer an excellent overview of automated writing evaluation and its effectiveness for EFL learners. The implementation of platforms like Grammarly were perceived somewhat favorably when used for early drafting and revising followed by human feedback from the teacher and peers during later writing stages. However, it is important to note the autonomous use of tools such as Grammarly with limited human intervention was frustrating to EFL/ESL/ELL users and limited their acquisition of writing processes. The researchers recommended that instructors need clear pedagogical plans for an automated writing evaluation platform's relevance to the learning of writing.

Ranalli (2018) was concerned with the use of automated written corrective feedback among EFL/ESL/ELL students in low and high-level writing courses. Ranalli's findings showed that the 82 ESL students receiving generic automated written corrective feedback had fewer successful error corrections compared to when receiving specific feedback. The students also indicated lower ratings of clarity and helpfulness from such programs.

Nova (2018) evaluated the strengths and weaknesses of Grammarly, which are presented in a case study analysis of three Indonesian graduate students' perceptions of the program. Strengths included the provision of useful color-coded feedback, ease of use and a high rate of evaluation speed. The drawbacks focused on misleading feedback, weaknesses in detecting errors pertaining to differing types of English usage and the lack of context and content evaluation. While correction leading to short-term writing improvement was considered a positive among the three students, misleading feedback was cited as frequent, often leading to changes in intentional meanings. In keeping with some of the other studies, this study supports the idea that Grammarly, while helpful for basic correction, may subvert the intended meaning by providing generic feedback that a confused EFL/ESL/ELL user may not be able to evaluate and implement.

Grammarly touts its privacy policy as being "trusted by millions of users" and is one of their primary selling points. However, many users have found that Grammarly is problematic in the same way that the plagiarism detection platform TurnItIn is—while you retain rights to your work, that work is no longer private. Grammarly's terms of service and license agreement (n.d.) state that "You retain all right, title, and interest in and to your User Content," but it also says: "By uploading or entering any User Content, you give Grammarly (and those it works with) a nonexclusive, worldwide, royalty-free and fully-paid, transferable and sublicensable, perpetual, and irrevocable license to copy, store and use your User Content (and, if you are an Authorized User, your Enterprise Subscriber's User Content) in connection with the provision

of the Software and the Services and to improve the algorithms underlying the Software and the Services. [Emphasis added]" Students within the European Economic Area can exercise their rights under GDPR, which, at least, allows them to request that their personal information be deleted after using the program, but there is no reference in the Privacy Policy about user content—only personal details. Therefore, encouraging students to use a program like Grammarly should only be done with a clear disclosure about what using the service means for their content ownership and personal privacy.

While questions of privacy for Grammarly are limited to a student exposing personal information and sharing texts, all technologies represent different levels of privacy concerns. Users make decisions to cede some of their privacy (usually by accepting user agreements they never read) because they decide the benefit of the program is worth the exchange of the information they are expected to share. However, the pivot to remote instruction created a situation in which students felt compelled to use certain technologies.

Students have grown up with the internet surrounding them, which is not an experience shared by their older teachers. As a consequence, students and faculty may differ in their expectations about what amount of personal disclosure by a student is appropriate, although, arguably instructors in countries with stricter privacy laws than we have in the US are likely more attentive to these issues. Many writers have documented how this tendency manifests itself in young people's use of social networks (e.g., Palfrey & Gasser, 2015). This liberality with personal information persists into the college years. So, it is interesting how the demands of COVID-19-era remote teaching technologies clash with students' desire to manage their identities with their classmates and teachers. Although students may be freer in their sharing of personal information on social networks, and may even curate this image through video, using tools like YouTube, they are more reticent to reveal their living circumstances through live video in a classroom setting, whereas they would be content to cede privacy for the perceived convenience of programs like Grammarly. I observed greater reticence when working with my students in Germany, many of whom were unwilling to turn on video cameras and expose their personal environments. American students, however, especially those who are living in university housing have been more willing to expose their residential environments.

Certainly, a program like Grammarly is more sophisticated because, unlike Coursera, writing evaluation functionality is central to their service. However, the shortcomings indicate a lack of awareness of the moves that matter most in academic writing (or their business model does not require it). As Grabill notes in his keynote address at the 2016 Computers & Writing annual conference, "In the [American] marketplace right now, there are at

least eight serious products that promise to improve writing via some sort of robot. And there are many more robots running around out there embedded in other things. Almost none of them were developed by teams with anything close to a fraction of the writing expertise assembled in this room."

More specifically, Carbone's (2012) analysis of three grammar checkers found that Grammarly misdiagnosed or poorly explained 21% of the 52 errors it tagged in his experimental document, and Carbone did not do an analysis of issues that were missed. Another concerning observation about Carbone's data is that most errors identified by Grammarly were for the use of passive voice (14 tags). Writing instructors will understand why this is a problem: students must learn to write in their disciplines and passive voice is the expected discourse convention for some scholarly communities.

Conclusions

Whatever the "new normal" looks like as we move past the pandemic, it seems certain that educational practices will forever be changed. Just as I was, in the beginning, an unwilling participant in the MOOC experiment, many of my colleagues now find themselves grudging participants in a vast experiment. In many ways, the pandemic has become the catalyst for the greatest pedagogical experiment in history, and as such, educators must be vigilant about analyzing and evaluating its early results.

While MOOCs and the COVID-19 pandemic are two examples of reactive pedagogy, it is important to acknowledge that in the case of academic writing, technological interventions have always been susceptible to ICU thinking. As digital literacy has taken hold, teachers of academic writing have sometimes struggled to balance the changing contexts of traditional writing and multimodal composition, and non-academic companies will continue to entice students (and some faculty) into believing that there can be a quicker and easier ways to negotiate the changing academic communication landscape.

As scholars and teachers of academic writing, we have a responsibility to question the affordances presented by automated writing evaluation platforms. We must not allow ourselves, in the current crisis, to be tempted to abdicate parts of our workload, although that would be understandable given the current demands.

References

Anson, C. M., & Head, K. J. (2019, July 2). *Technological gains and losses: A heuristic approach to analyzing affordances for classroom instruction and support*

for writing [Keynote address]. European Association of Teachers of Academic Writing annual conference. Gothenburg, Sweden. https://2019.eataw.eu/video-recordings-and-session-material/

Axelrod, A. (2019, August 11). A century later: The Treaty of Versailles and its rejection of racial equality [Radio series episode]. *Code Sw!tch*. NPR. https://www.npr.org/sections/codeswitch/2019/08/11/742293305/a-century-later-the-treaty-of-versailles-and-its-rejection-of-racial-equality

Brey, P. (2010). Values in technology and disclosive computer ethics. In L. Floridi (Ed.), *The Cambridge handbook of information and computer ethics* (pp. 41-58). Cambridge University Press.

Carbone, N. (2012, October 31) An experiment with grammar checkers. *Seeing and learning: Making visible what students think and apply*, Blogger. http://nccei12carbone.blogspot.com/2012/10/an-experiment-with-grammar-checkers.html

Cavaleri, M., & Dianati, S. (2016). You want me to check your grammar again? The usefulness of online grammar checkers as perceived by students. *Journal of Academic Language & Learning, 10*(1), A223-A236.

Chen, C.-F. E., & Cheng, W.-Y. E. (2008). Beyond the design of automated writing evaluation: pedagogical practices and perceived learning effectiveness in EFL writing classes. *Language, Learning & Technology, 12*(2), 94.

Christensen, C. M. (1997) *The innovator's dilemma: When new technologies cause great firms to fail*. Harvard Business School Press.

Christensen C. M., & Eyring, H. J. (2011). *The innovative university: Changing the DNA of higher education from the inside out*. Jossey-Bass.

Davidson, D. N. (2017). *The new education: How to revolutionize the university to prepare students for a world in flux*. Basic Books.

Dembsey, J. M. (2017). Closing the Grammarly gaps: A study of claims and feedback from an online Grammarly program. *The Writing Center Journal, 36*(1), 63-100.

DeMillo, R. A. (2011). *Abelard to Apple: The fate of American colleges and universities*. MIT Press.

Gain, A., Rao, M., & Bhat, S. K. (2019) Usage of Grammarly—online grammar and spelling checker tool at the health science library, Manipal Academy of Higher Education, Manipal: A study. *Library Philosophy, and Practice*, 1-14. https://eprints.manipal.edu/154019/

Ghufron, M. A., & Rosyida, F. (2018). The role of Grammarly in assessing English as a foreign language writing. *Lingua Cultura, 12*(4), 395-403.

Gibson, J. J. (1986). *The ecological approach to visual perception*. Erlbaum.

Grabill, J. (2016, May 20). *Do we learn best together or alone?: Your life with robots* [Keynote address]. Computers & Writing annual conference, Rochester, NY, United States. https://www.youtube.com/watch?v=LHatYx8ziEs

Graesser, A. C., & McNamara, D. S. (2012). Automated analysis of essays and open-ended verbal responses. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol 1: Foundations, planning, measures, and psychometrics* (pp. 307-325). American Psychological Association.

Grammarly. (n.d.). Terms of service and license agreement. Retrieved December 2, 2021, from https://www.grammarly.com/terms

Head, K. J. (2017). *Disrupt this!: MOOCs and the promises of technology*. University Press of New England.

Head, K. J. (2020). Let's add compassion to our online curriculum. Coping with Coronavirus: How faculty members can support students in traumatic times. *The Chronicle of Higher Education*, 13-14. https://icc.edu/faculty-staff/files/CopingWithCoronavirus.pdf

Hsi, I., & Potts, C. (2000). Studying the evolution and enhancement of software features. *Proceedings of the International Conference on Software Maintenance,* 143-151. https://doi.org/10.1109/ICSM.2000.883033

Jones, S., Myhill, D., & Bailey, T. (2013). Grammar for writing? An investigation of the effects of contextualized grammar teaching on students' writing. *Reading and Writing, 26*(8), 1241-1263.

Kelly, Kevin. (2010). *What technology wants*. Viking.

Norman, D. (1988). *The design of everyday things*. Basic Books.

Nova, M. (2018). Utilizing Grammarly in evaluating academic writing: A narrative research on EFL students' experience. *Premise Journal, 7*(1), 80-97.

O'Neill, R., & Russell, A. (2019). Stop! Grammar time: University students' perceptions of the automated feedback program Grammarly. *Australasian Journal of Educational Technology, 35*(1), 42-56.

Palfrey, J., & Gasser, U. (2015). *Born digital: How children grow up in a digital age*. Basic Books.

Perelman, L. (2016). Perelman-grammar checkers do not work. *WLN: A journal of writing center scholarship, 40*(7-8), 11-20.

Ranalli, J. (2018). Automated written corrective feedback: How well can students make use of it? *Computer-Assisted Language Learning, 31*(7), 653-674.

Thorp, H., & Goldstein, B. (2010). *Engines of innovation: The entrepreneurial university in the twenty-first century*. University of North Carolina Press.

Ubachs, G., & Konings, L. (2018). *MOOC strategies in European universities. Status report based on a mapping survey conducted in December 2017 – May 2018*. EADTU. https://tinyurl.com/MOOC-Strategies

Varinaitis, A. S., McCreery, G., & Rein, P. (Writers), & Tsao, A. (Director). (1999, February 25). The One with the cop (Season 5, Episode 16) [TV series episode]. In D. Crane, M Kauffman, K. S. Bright, & M. Curtis (Executive Producers), *Friends*. NBC.

Warner, J. (2018). *Why they can't write: Killing the five-paragraph essay and other necessities*. Johns Hopkins University Press.

Yang, Y., Buckendhal, C. W., Juszkiewicz, P. J., & Bhola, D. S. (2002). A review of strategies for validating computer-automated scoring. *Applied Measurement in Education. 15*(4), 391- 412.