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EMPOWERING AI: RECONTEXTUALIZING OUR PEDAGOGICAL IMPACT THROUGH SUPPORTIVE USES OF MACHINE LEARNING

Angela Gunder, Online Learning Consortium, United States
Vincent Del Casino, Jr., San Jose State University, United States
Melissa Vito, The University of Texas at San Antonio, United States
Reed Dickson, Pima Community College, United States

***Correspondence**: Angela Gunder: angela.gunder@onlinelearning-c.org*

Abstract

Over time, the use of digital technologies has transformed the landscape of higher education, and the recent advancements in artificial intelligence (AI) are no exception. At the same time, there is a need to move from a binary of use versus eradication of AI systems in higher education toward critical examination and curation of the plurality of examples of how AI may lead to the empowerment of educators and students. This paper explores the potential benefits and challenges of incorporating AI into higher education while also discussing the implications for educators and students, as well as the ethical concerns surrounding the use of AI in education. The paper examines the benefits of using AI in higher education, including personalized learning, adaptive assessments, and predictive analytics, as well as emerging challenges, such as data privacy and algorithmic bias. The paper proposes a set of guiding ethical principles for the empowering use of AI in education, including transparency, collaboration, creativity, and accountability. Each author offers a call to action for educators who are required to reevaluate their relationship with technology broadly and the seismic shifts in interaction and communicative modes within a landscape forever changed by machine learning.

Keywords:

Artificial intelligence, digital learning, digital strategy, Chat GPT, assisted intelligence, augmented intelligence, automated intelligence, autonomous intelligence

Introduction

While the historical application of artificial intelligence (AI) within education spans decades (Bozkurt et al., 2021), recent advancements in the functionality and accessibility of machine learning tools like ChatGPT, Bing, and DALL-E have resulted in myriad educators categorizing the usage of these tools along a volatile spectrum running from cataclysmic disruption to limitless opportunities for innovation and advancement (Dhawan & Batra, 2021). Even in examining the plurality of definitions of the initialism “AI,” including artificial intelligence, assisted intelligence, augmented intelligence, automated intelligence, and autonomous intelligence (Rao & Verweij, 2017), one can make inferences about how the interactions between humans and machines are positioned in terms of their ethicality, value, and impact (Lynch and Del Casino 2020). Usage of AI in education has included a variety of cases and stakeholder groups and has been inclusive of the instructional design and curriculum development processes, student support services such as adaptive learning and personalized tutoring, as well as administrative tools like data reporting and analytics (Ouyang & Jiao, 2021). The benefits of incorporating AI into education have focused on creating new efficiencies within the teaching and learning process promoting accessibility and retention of learning content for students, rethinking assessment practices, and personalize course content and teaching to better align the educational experience to the specific needs and goals of individual learners (Chaudhry & Kazim, 2022; Chen et al., 2020). As discussions continue to surface regarding the positioning of AI within our ecosystem of teaching and learning practices, these lines of discourse have also raised new questions about the purpose, nature, and impact of interactions between humans and machines within education (United States Department of Education, 2022a; United States Department of Education, 2022b).

Moving from a harmful binary of use versus eradication, a need emerges for scholars and practitioners to

critically examine and curate a plurality of examples of AI in education across a spectrum of empowerment. This paper explores the role of empowering AI in education across a series of cases, looking reflexively at both how AI enhances and supports educational experiences, as well as how we enable and advance the abilities of AI in education through our roles as designers, developers, evaluators, researchers, and leaders. Ultimately, this paper provides a shared perspective for reframing this critical moment in the rapidly evolving history of AI as a point of reflection, criticality, and strategy for defining our learning futures through the lens of empowering uses of technology.

Case Study: Negotiating a World of Machine Learning and AI in Higher Education

Where some see a dramatic shift, as provost at San José State University, I have seen a slow but ongoing set of changes that have shifted how higher education, as an industry, intersects with a world of technological change. It was not too long ago, in historical terms, that academics lamented the changes wrought by radio and television, concerned that distributed education would "cheapen" higher education (House-Peters, Del Casino, and Brooks 2019). Online education was seen as the next great "onslaught" against the hegemony of a higher education regime that valued the professor as an independent operator filled with knowledge that few (if no) others possessed (ibid.). And, yet, this moment does feel different in that the human-centered notion of education is being challenged by automated practices and machine learning algorithms that can be as, if not more, responsive to student learning needs, albeit in still quite idiosyncratic ways. This has further decentered the "sage-on-the-stage" and disrupted the notion that the core values of a liberal arts education, which stretches back centuries, based on the Socratic Method are now suspect. The so-called revolution in artificial intelligence also enters the milieu of higher education at a time when the fragility of the industry has been heightened by COVID-19 and dramatic changes in patterns of enrollment.

And yet, the world of human-nonhuman relations, automated life, and technological interventions in our teaching and learning environments are here to stay. In that way, we are trying to build a curriculum that more effectively engages the robotic worlds in which we now inhabit and build the critical skills to assess what it means to live in a world where machines can take on many of the mundane tasks that were reserved for the most educated. In practical terms, we are working toward a new suite of pedagogical practices that educate students in digital and creative literacy, that give them the tools to operate in, and better yet, navigate an automated world. ChatGPT is but a first step into a much wider world. So, why not teach with it instead of assuming that we can regulate it? Can we also educate students on its limitations - after all, AI and machine learning algorithms remain based on the world in which we live and are also always based on human constructs of that world. Put another way, there are more than enough examples of how such AI systems reflect back the deeply imperfect, if not at times outright sexist, racist, and ableist, practices of a world that remains deeply tense and fraught. On the flip side, such AI practices can help students take a step forward in ways that could help them build confidence in their own intellectual capacities. Embedding, for example, the criticality that comes with investigating how AI engines co-produce our worlds is not only a valuable intellectual exercise but a practical skill that helps students earn degrees and jobs in the future.

At San José State University, an institution located in the "heart of the tech best," so to speak, we are beginning conversations on how to not just regulate the spaces of automated academic life but how to build the creative capacities of our students so that they are better equipped to step into a world that is governed by the reality that all of us work alongside and with robots and robotic technologies. This means that we are investing in pedagogical strategies that not only take on the complexity introduced by automatic learning systems but also provide new ways for students to express their authentic selves and find opportunities to invest themselves in their education. One material example of this work is a recent project on counter-storytelling led by my colleague, Dr. Jonathan Gomez from Chicana and Chicano Studies, as part of a broader suite of HSI Initiatives at our institution (see Gomez 2023). This project teaches faculty to engage students in their own stories and find stories that help them reflect not only on their own learning experience but also on course content. A particular example is a project that helps students create a sense of self through a project that asks them to trace the history of women in STEM fields. Another asks students to examine how their own stories can trace their classroom learning in new ways. Presenting through a digital format provides an opportunity for students to work beyond the space of automated knowledge production - the rote response that often comes from stale prompts that ask students to all answer the question in a similar way - and find a way to express their own experience while demonstrating their subject-matter competency. The ideas that undergird this approach are not necessarily new

ones, but the evaluation of AI in the spaces of higher education have forced academics to pivot more quickly to alternative teaching, learning, and assessment strategies. Such counter-storytelling strategies that re-center human creativity within the learning environment and challenge the AI engines that offer to provide students with rote answers to rote questions.

Generative AI in Faculty Development and Student Learning

The case outlined below describes the approach taken at the University of Texas San Antonio (UTSA) in addressing the academic use of generative AI, with a focus on the specific tool, ChatGPT. The Academic Innovation team at UTSA began planning in early December 2022 to be ready to roll out programs and resources as faculty returned to campus in mid-January. With input from the provost and academic deans, the UTSA Academic Innovation team quickly developed a plan to focus on education, while regularly seeking feedback to understand faculty and student behavior, interest, concerns, and opportunities. Our goal was to support faculty in experimenting with ChatGPT and exploring its usage in the classroom. By mid-January, UTSA unveiled a proactive faculty development plan. Central to this plan was the establishment of an extensive, constantly evolving repository of research and resources. This trove of information was made readily available to the faculty via diverse channels such as the university website, Teams site, and other media. While efforts were made to enhance education for faculty members, there were no new policies introduced that would limit or prohibit the use of ChatGPT. A unique aspect of this initiative was the gathering of a diverse cohort of 35 faculty members from fields as varied as business, physics and astronomy, writing, communication, and math. All of these faculty members were active users of ChatGPT, collaborating regularly to provide instantaneous feedback, share ideas, and contribute to the development of best practices. The Academic Innovation Center, newly inaugurated at UTSA, served as the central hub for this initiative, fostering a communal space for faculty to discuss ChatGPT, whether virtually or in person. The center not only encouraged experimentation and the formation of learning communities but also facilitated connections with teaching and learning consultants and instructional designers. Furthermore, it provided specific resources tailored to aid the testing of innovative ideas. Included in the development plan were regular educational sessions that leveraged the knowledge of local and national experts on the application of ChatGPT in education. There was also utilization of the nationally recognized model of Faculty Champions, department-specific faculty members acting as peer experts, to distribute resources for ChatGPT within their own departments. Finally, a critical component of this progressive plan was the active involvement of both faculty and student governance, which ensured a constant flow of communication and an ongoing, real-time pulse-checking mechanism. The incorporation of concise surveys was a key part of this feedback mechanism.

Examples of Usage at UTSA

ChatCPT is currently being integrated into the UTSA Writing Program within six different courses involving eight faculty and over 400 students. Students respond to an assignment without using ChatGPT, then run the same assignment through ChatGPT, and compare the two examples for style, accuracy, and engagement.

In addition to the Writing Program, an interdisciplinary community of practice has convened and is engaging in multiple pedagogical strategies for incorporating ChatGPT into the curriculum. Math faculty at UTSA challenge students to determine the accuracy of the information they receive using ChatGPT to help them think critically and expand their information literacy skills. Communications students use ChatGPT to brainstorm approaches to assignments, using the tool for support with thematic analyses and organizing ideas. One of our Business faculty has flipped his classroom and employs active learning in conjunction with the usage of ChatGPT. A faculty member in the Physics department is exploring combining gamification of learning and the usage of ChatGPT to create new activities and assessments.

The reflections and efforts of these faculty have helped us identify key questions and early opportunities:

- What types of assignments are best handled through ChatGPT?
- What are the best types of prompts and questions to deploy to increase the accuracy of ChatGPT?
- What types of communications are best handled by ChatGPT?
- What skills and knowledge in this area will students need to prepare them for the workforce?
- What benefits exist for students in writing courses for whom English is not their first language? How

might ChatGPT support them in checking their grammar, sentence construction, and spelling? And how might this process help them with increased confidence and knowledge?
- How might we encourage our students to think of ChatGPT as a potential tutor or 24/7 virtual assistant?
- What are the best assessments and strategies to measure the impact on student learning?

The dynamic nature of this topic means that our knowledge and resources will continue to evolve in the coming months and years, but by working through this values-centered approach, we are confident in the innovations and efficiencies that will emerge from the holistic support of generative AI within our academic contexts.

AI and Critical Digital Literacies

While my role as the chief academic officer for the Online Learning Consortium, a global non-profit supporting digital learning, has brought me into the raging debates on the usage of AI in education, I have been most profoundly impacted by machine learning tools within my course design and facilitation work as a lecturer for The University of Arizona. For almost a decade, I've taught fully-online classes for the university at both the undergraduate and graduate levels on topics of instructional design, web design, and digital media, serving in the roles of instructional designer, curriculum developer, facilitator, and quality assurance specialist. In that my strategy and policy development work within my CAO role is informed by my work as an educator, I was keen to explore the ways in which augmented intelligence, or the process of using systems to "augment human decision making and continuously learning from their interactions with humans and the environment" (Rao & Verweij, 2017, p. 2), might support my teaching. Furthermore, I was interested in better understanding the voiced struggles and difficulties of educators who were engaging with the difficult process of renegotiating their own teaching experiences through the lens of AI.

Using ChatGPT and content from a course on the sociocultural significance of the evolution of digital media, I used the machine learning tool to generate elements of a course map (i.e. learning objectives, thematic unit descriptions), syllabus, and lecture content (i.e. lecture notes, presentation scripts). I also asked ChatGPT to generate summaries of content that I had created for the course as a way to assess which salient points it would glean from the curriculum. Both the challenges and benefits of ChatGPT as instructional design assistant stood out immediately. While the process of generating learning content was reduced from days to seconds, the content that was generated required a level of informed review before it could be incorporated into my course. Beyond the documented issues with ChatGPT producing incorrect or non-existent citations and references, there were also significant issues with the positioning of the content around the dominant sources that it was summarizing. For a course that focuses on international examples of digital media authorship, ChatGPT provided only Western, colonial examples from the global north, an example of AI carrying the biases and discriminatory views of its creators (Benjamin, 2019; Noble, 2018). This provoked immediate questions about the critical digital literacies required to use machine learning tools ethically and effectively within my classroom, both as teacher and student.

While these challenges could have immediately been codified as reasons for banning ChatGPT from the educational experience, they instead surfaced new opportunities to reimagine the usage of machine learning as a lever for quality and equity within the educational experience. Beyond validating my role as facilitator of the learning experience through its limitations in determining veracity and bias within the information generated, ChatGPT also presented me with new opportunities to engage my students in using machine learning tools to understand the importance of a plurality of digital literacies, cultural relevance, and discourse analysis within digital environments. My experience also highlighted a burgeoning perspective on machine learning as catalyst for reimagining assessment practices, opening up new questions on what we should be teaching (Siemens, 2023), as well as reflecting on where we are failing by "assessing process rather than outcome" (Gleason, 2022). These challenges to curriculum design, thankfully, sit squarely within the opportunity space for AI to be incorporated into the teaching and learning process as a catalyst for critical conversations around our roles and responsibilities as co-constructors of knowledge, with both educators and learners seated at the table.

Pedagogical Openings through AI-Connected Reflective Practice

Alongside every crisis in education, critical opportunities emerge for rethinking how we approach equitable teaching and learning. As Program Manager for Faculty Development at Pima Community College, I have seen

countless tech-averse faculty suddenly pivot amidst the COVID outbreak toward daily workshops on multi-modal teaching, and toward the short courses we offer in educational technology, online pedagogy, and instructional design. Likewise, amidst daily headlines about Bing and ChatGPT, faculty are suddenly reaching out with an openness toward pausing and reflecting, existentially, on the hows and whys of teaching. As faculty begin to explore use cases for the latest large language models (LLMs), we again are witnessing what I call a "pedagogical opening." While it's hard to say how long this opening will last, it is clearly an opportunity to help faculty revisit their core beliefs about teaching and learning - and find new ways to sustain it.

As a designer of faculty development experience, I have been especially interested in examining emerging AI-connected practices that help faculty make space for parallel inquiry into reflective practice, tech-enhanced pedagogy, and equitable learning. Through my work with deans, department heads, and faculty across and within their disciplines—which involves one-to-one course walkthroughs, and departmental and college-wide workshops—I have observed pedagogical openings that appear to be less transient than what emerged with the COVID outbreak. In other words, amidst these new AI technologies, there appears to be a more sustainable path toward supporting critical reflective practice (Brookfield, 2017) in higher education through AI-connected reflective practice. This practice, in my analysis, emerges through collaborative AI learning experiences that center around applied inquiry around essential questions (Wiggins & McTighe, 2005) that we might call "evergreen" or recurring essential questions. What can teachers do that generative AI cannot? How can students advance, rather than bypass, substantive inquiry through AI? How can we expand equitable learning through AI? How do we communicate to students our expectations for the ethical, educative use of AI? How can we respond, educatively, to the perceived misuse of AI? These new kinds of AI-connected questions are also accompanied by a re-emergence of older, evergreen essential questions about pedagogy, albeit with a new AI spin. Faculty are suddenly open to imagining new practices that move beyond writing-as-assessment or banking models of teaching (Freire, 2017) toward promoting digital learning artifact creation, and the co-construction of knowledge. Perhaps faculty are revisiting these questions of practice simply due to the unmistakable recognition that students may already know more than faculty do about generative AI. Or perhaps it is simply because we are suddenly facing a technology so disruptive that it renders traditional teaching practices untenable. As educational development practitioners, many of us have been promoting pedagogy-driven tech, as opposed to tech-driven pedagogy. Amidst the latest generative AI, however, this case study demonstrates that the more urgent and sustainable educational development imperative resides in the work of promoting AI-connected, reflective practice.

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