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AI is Transforming Higher Education.

But Is It Worth the Unintended Consequences?

Follow just about any news feed these days and you are bound to pull up multiple items on the wonders of artificial intelligence (AI) and its numerous applications across a variety of professional fields. As such, this technology's financial benefits are beyond impressive, with McKinsey predicting that by 2030, it will add some $13 trillion to the global economy, by automating jobs, creating new products, and improving service efficiencies.

But despite its promise, AI also poses its share of risk, particularly with respect to its impact on human agency and social connection, data security and employment. As one young friend puts it,

> AI is luring us into a virtual world, where our lives are mediated by algorithms and data mining…from social media, dating apps and online shopping sites; to smart home systems and driverless cars. And because of it, we are becoming more vulnerable, isolated and addicted to technology.

So how does that play out when it comes to AI's rapidly expanding role in the world of higher education?

The shift to AI is well underway

Truth is, we have long promoted the use of this high-tech tool in the online classroom, for the many ways it can augment the academic experience. Take, for example, personalized learning. By exploiting AI's predictive analytics capability, we have created adaptive learning platforms that furnish rapid feedback and customized support, designed to improve student performance.

Likewise, academic institutions have come to increasingly rely on AI for such routine decision-making tasks as recruitment, admissions and financial aid; enrollment, advising and assessment – which, in turn, not only frees up time for other responsibilities, but also reduces the need for staff. The same goes for tools like Turnitin, which checks for plagiarism, and AI Grader, to quickly grade student assignments like essays and research papers.

And many believe that it has considerable potential to expand academic access and inclusion for students with diverse abilities by enabling self-paced learning and supporting assistive technology like screen readers and voice recognition software. And of course, chatbots like ChatGPT are quickly making their way on to the campus, often with the goal of providing students with 24/7 academic and service support.

Yet while AI can certainly serve as a valuable tool for students, faculty members and institutions alike, it is rapidly evolving at a rate that's making it hard for users to keep pace with new features. In fact, after using ChatGPT to update a lesson she teaches, educator Roxanna Elden wrote:

> Experimenting with AI's capabilities is kind of like playing a game of Battleship. Sometimes, your prompt leads to such a direct hit that you feel like the room [is] spinning. On your next prompt, AI just doesn't seem to get what you're asking, even though it's something a human would understand in seconds. It's hard to know where the hits and misses are until you've played. And it's hard to play around with AI until you have a goal that you'd like it to help you achieve.

Hardly a rousing endorsement, but certainly a cautionary statement about the increasing complexity of systems that might well have a negative impact on our learning environments, experiences and outcomes, which may not be easy to spot and/or reverse. Here are just a few of the more serious reasons for concern.

1. Algorithmic Bias

AI tools are powered by machine learning algorithms, which in turn, enable it to scan and use reams of accumulated data for rapidly making decisions about anyone or anything, based on patterns of past behavior and action that are not readily discernible. That said, these algorithms are only as balanced, impartial and accurate as the programmers who develop them and the information they deploy in the process.

So if the data is skewed for any reason these tools run the risk of creating structural inequities. It's a phenomenon known as algorithmic bias and it can ultimately lead to major errors in machine-driven decision-making, which in turn, may result in information that is misleading or even incorrect.

For example, college admissions offices are rapidly adopting AI-driven software programs designed to identify potentially successful applicants – a move thought to enhance student retention over time. But if the program is written to prioritize high school seniors by the number of AP classes they have completed, it may inadvertently discriminate against students in schools with fewer AP options. And in the process, reject a diverse pool of applicants who would likely succeed regardless of high school curricula.

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Designed to interact conversationally with users, these chatbots are making their way into the higher education environment at near breakneck speed, frequently without adequate ethical oversight, government regulation and campus policies to ensure their safety. As a result, they produce unintended consequences far too often that while usually benign, can in fact be dire.
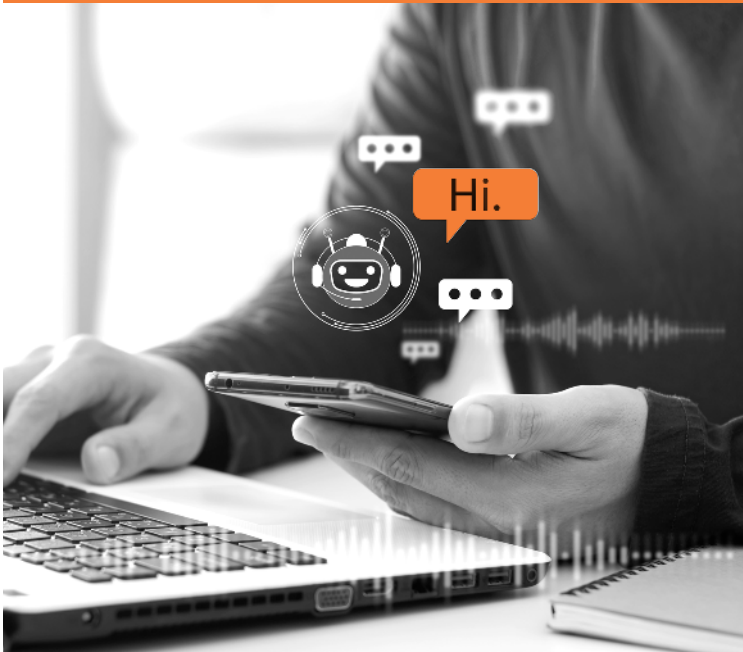
2. # Insufficient Safety Guidelines and Security Guardrails

The competition is definitely on among tech companies to develop generative AI systems grounded in algorithms that are trained to generate a range of outputs from text and audio, to images and video. Of these systems, conversational AI – also known as chatbots – are experiencing ultra-rapid adoption, as exemplified by ChatGPT, which has seen the fastest growth of any consumer application in history, having crossed the 1 billion users mark in March.

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For instance, just a few months ago, ChatGPT was shown threatening users by insisting that its rules were "more important than not harming" people. In another particularly devastating case, a man died by suicide after a series of disturbing talks about global warming with a sophisticated chatbot he had allegedly come to think of as his closest confidante.

Likewise, after devising a way to make ChatGPT technology ask for sensitive user information, researchers at Cornell University recently warned that these AI systems could become a convenient tool for hackers, intent on stealing student data. In fact, ChatGPT's developer, OpenAI, recently confirmed a data breach in the system, caused by vulnerability in the code's open-source library, which enabled users to view the chat history of other active users.

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3. Threats to Creative Thinking

Creative thinking is not only an essential skill in our technology-driven world, it is truly the engine of innovation that will keep us moving in an era of massive and disruptive change. As such, it is a messy process that requires us to access a variety of strategies and viewpoints with which to create new knowledge and devise novel solutions. And although AI can help mobilize this skill, it cannot replace it.

In truth, AI and creativity are two fundamentally different concepts in that the former is rooted in rapid-fire analysis and results; the latter, in time-consuming activities like divergent thought and random experimentation. Put simply, AI is incapable of thinking out of the box and throwing out the rule book, while creativity demands it. So as we become increasingly dependent on AI in our academic lives, we may be undermining both the ability and the motivation to access our creativity.

Research shows that this approach to learning increases technology addiction by educating our brain to pursue quick hits of dopamine, rather than learning material that is complex and challenging – a phenomenon that is greatly shortening our attention spans, as well.

4. Over-Dependence on Technology

Given the speed and accuracy with which generative AI tools are able to answer questions and solve problems, students run the risk of becoming much too dependent on technology to make the learning experience far easier. As such, they could well become less likely to step out beyond their comfort zones to engage with material that helps build the critical thinking skills they will need in an ever changing world.

By the same token, these tools are more apt to generate information in a format that reduces subject matter into bite-sized content streams, which while easy to consume, are short on substance. And research shows that this approach to learning increases technology addiction by educating our brain to pursue quick hits of dopamine, rather than learning material that is complex and challenging – a phenomenon that is greatly shortening our attention spans, as well.

So Where Do We Go From Here?

While AI can certainly offer a number of opportunities for delivering the promise of higher education that benefits students, faculty and institutions alike, we will need to establish a framework for addressing the inherent challenges. To begin with, our colleges and universities must take the time to determine their goals for successfully incorporating right-fit AI tools on both the administrative and the academic sides of the house.

Likewise, campus leaders should empower a working group of faculty, staff and students, from across departments and disciplines, to develop governance policies and standards for determining where and how AI can best be implemented with the least amount of risk. These standards should above all include best practice measures for collecting, employing and protecting student data used to "train" AI tools chosen to optimize the student lifecycle from admission and enrollment, through graduation and beyond.

For example, to mitigate algorithmic bias, data programming teams should be recruited with diversity in mind to provide a full range of cultural perspectives. Once assembled, these teams must be required to rigorously test and regularly audit machine learning algorithms to ensure that both input data and output decisions fairly mirror real-world circumstances.

This campus working committee would also work closely with edtech companies around developing and vetting AI systems under consideration, with an eye toward spotting potential safety issues and design flaws, as well as incorporating features that complement the learning process. For instance, technologies should augment, rather than replace, the role of instructors and support staff, as well as promote ethical guidelines for AI-generated content. By doing both, we can provide both learning experiences and student services that preserve the all-important human connection, while ensuring content, which is accurate, challenging and suitable.

Equally important, we must furnish extensive training for both faculty and administrative staff in not only using AI systems effectively and transparently, but also identifying and mediating issues as they arise. For example, by understanding how this technology identifies patterns, analyzes information, and predicts outcomes, educators can help students catalyze, rather than compromise, creative and critical thinking skills.

The Bottom Line...

Let's face it. Artificial intelligence is here to stay and will only become more ubiquitous over time, as federal and state governments work quickly to pass legislation focused on protecting the public from AI's potential harm.

But by providing administrators, educators and students with ample opportunities to collaborate with principled edtech companies, we can develop and test, implement and monitor AI tools that are safe, valuable and ethical in meeting the needs of everyone concerned. And in doing so, forge new and ever more innovative trails in the way we teach and learn.

Dr. Susan C. Aldridge

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