

Artificial Intelligence: Considerations for Colleges and Universities

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One commonality among our colleges and universities is the dedication to provide distinctive and meaningful educational experiences to our students. It is clear on any campus that human intelligence and human relationships drive these educational experiences. As such, the prospect of applying artificial intelligence (AI) in higher education may seem unwise or even threatening to these important parts of institutional cultures and student success. However, this is exactly why it is important to engage and explore what AI means for your institution and students now.

Many AI experts expect artificial intelligence to be as ubiquitous as electricity and, like electricity, to enable remarkable advances. However, it is important to note that this expectation is generally not for sentient, human-like computers, called "general AI". Rather, this expectation is for more applications using "narrow AI". Narrow AI is the type of targeted applications of AI we already see making predictions (e.g., shopping recommendations) and communicating (e.g., voice controls). In other words, when you think about AI, don't expect HAL from 2001: A Space Odyssey. Instead, think of current analytics and interactivity incrementally improved and integrated into more applications.

For some institutions, AI is no stranger on campus, usually as part of the curriculum or research in a cognitive psychology, philosophy, or computer science program. However, what is interesting is where we see new applications of AI appearing in higher education in changes to curriculum, student support, and operations.

AI influences on curriculum include a new interdisciplinary college at MIT, a "robot proof" curriculum concept at Northeastern University, and an AI baccalaureate at Carnegie Mellon. Bellevue College recently approved a Robotics & Artificial Intelligence associate's degree. Western Governors describes their degrees and approach as helping to advance the democratization of AI. Other examples include incorporating AI courses into medicine, art, law, political science, agriculture, and business as well as into new programs such as data science, innovation, or cybersecurity.

In terms of student support, institutions like Arizona State and Georgia State are using chatbots (i.e., conversational AI applications) to engage and support students via text messaging. This engagement has reportedly improved matriculation rates significantly. Georgia Tech has made headlines with an AI teaching assistant that was so effective, students did not realize the online interactions were with an AI application. Portland State and Southern Oregon University are among the institutions using an AI based math assessment to better place students into the appropriate math class; the program also provides customized review modules to help students improve. Other applications include improved prediction of freshman enrollment and retention.

Applications of AI in other campus operations include the use of AI at the University of Washington to ensure that the Wi-Fi network is always available and working. The University of

Texas at Austin uses AI to monitor and adjust sprinkler systems across the campus. At Simon Fraser University, a system using AI to distinguish recycling from trash reduces the rate of trash contaminating the recycling and supports the University's Zero Waste initiative.

It is no accident that many of the institutions leading the way in AI are big, well-funded, technical, or all of the above. While these characteristics lowered the barriers to early entry in AI for them, this does not mean that AI is only for those type of institutions. It just means that, to paraphrase William Gibson, the future just arrived there first.

What is key to leveraging AI in higher education is bringing the right elements together: people, data, computing, algorithms, and purpose. Together, these elements are like an "AI ecosystem" in that they are interdependent on each other. There is also a sense that this AI ecosystem should be uniquely adapted to their environment to be sustainable. As such, institutional learning and knowledge are important in the long run.

The bottom line is: now is the time to start cultivating the AI ecosystems at your institution, especially people and data. Early efforts in these areas can build momentum in knowledge and capabilities that can be very hard to catch up with later. Even more, these unique human and data resources can create distinctive institutional resources that are fine-tuned to best serving your students.

Current expectations for the effects of AI on the workforce are less about replacing people and more about supporting people. Concepts like "augmented intelligence" and "human-in-the-loop" describe processes that combine the strengths of people (e.g., human interaction, handling exceptions) with the strengths of AI (e.g., repetitive work). Combining the best of human and AI resources may enable staff to focus on work that has the most value for students. This shift to working with AI will require trust and leadership. It will also require advancements in data literacy among faculty and staff.

Part of the foundation for success with AI is advancing the data sense-making and analytic capabilities of the institution. This will involve many people across the institution some of whom may not be comfortable with data and analysis. Institutional research (IR) can provide a centralized core for analytics/AI and leadership for analytic/AI strategy and support. Developing institutional analytics and AI expertise is important for institutional knowledge and memory and ensuring institutional interests.

Data is another foundational element we should be working to develop now. While it may seem that we already have a lot of data, we will likely need more but be strategic, ethical, and transparent about it. We need to look at our systems and processes to ensure data stewards (i.e., the people responsible for inputting and managing certain data) are capturing the right information from each transaction. Data governance (i.e., documentation, policies, and practices about data) for analytics and AI is important to ensure effective data stewardship, data quality, provenance, use, and privacy. Partnership between IR and IT is especially key here, in addition to collaboration and support from multiple stakeholders.

Data privacy and ethics are top priorities in AI thanks to numerous examples of what not to do. New legal requirements such as the General Data Protection Regulation (GDPR) in the European Union and California Consumer Privacy Act (CCPA) in California add to the urgency. In this context, education data laws, Family Educational Rights and Privacy Act (FERPA), and health information law, Health Insurance Portability and Accountability Act (HIPAA), may not sufficiently address the kinds of issues that could violate student and employee trust in the use of their data. There are good examples of data privacy principles (e.g., University of Michigan's Learning Analytics Guiding Principles) that may help start important conversations with students, faculty, and staff and lay the groundwork to support trust, transparency, and insight.

Higher education institutions need to develop the capabilities to follow the ongoing advances in AI and lead how AI is applied to serve our missions and students. There is an urgency to this as all of our institutions are under pressure to better serve our students and find new business models while maintaining our distinctive cultures and communities. AI is not a silver bullet, not an easy solution, and not a sufficient solution in and of itself. However, by engaging AI with the human intelligence and relationships that have served our institutions for decades in the past, we can build distinctive, AI ecosystems to help serve our students for decades to come.

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