Enhancing Higher Education With Generative AI: A Responsible Approach
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Sponsor’s Viewpoint
Enhancing Higher Education With Generative AI: A Responsible Approach

Generative AI holds tremendous promise for all stakeholders in higher education. But guardrails are needed. Strong governance and policies that empower instructors are at the core of a responsible approach to using generative AI in academia.

Generative AI is poised to take higher education by storm to improve the educational experiences of both instructors and students through immediate learning support, improved course design, deeper student engagement, more experiential learning, and personalization. But it's early days yet. Instructors and students are trying to figure out generative AI's role. The question is not if — they likely already are using it — but how they'll apply it, with the emphasis squarely on how to do so responsibly.

Generative AI promises to help instructors optimize their time with students and create more effective learning experiences. Generative AI is a transformative force, capable of streamlining everything from grading assignments to creating comprehensive lecture materials, automating routine tasks such as test-question generation, and enabling instructors to spend more time working with students during office hours and doing research.

Yet the potential of generative AI extends far beyond task automation. It holds promise for fostering personalized learning experiences tailored to individual student needs through the creation of bespoke study aids, immersive simulations, and adaptive tutoring systems, and creates new opportunities in areas ranging from course development to in-class activities to learning assessments.

However, of course, it’s important to proceed with caution. Colleges and universities using generative AI must develop clear governance and strong policies emphasizing responsible use of the technology while addressing accuracy, fairness, bias, privacy, and other concerns. Above all, they must maintain human oversight of all generative AI activities to ensure that the technology is used responsibly.

This Strategy Guide examines current and future use cases for the responsible use of generative AI in higher education, describing the benefits and best practices as well as potential pitfalls to avoid. It will explain how institutions of higher learning can get started and achieve measurable results now while building strong foundations for future success.

Establishing Guidelines, Guardrails, and Governance

When ChatGPT debuted in November 2022, the initial response at many higher-ed institutions was to try to prevent the use of generative AI for any academic purposes. Administrators, instructors, students (and many other interested parties) all had the same overarching question: How will this impact traditional ways of course delivery, learning, and student assessment?

In short order, instructors and technology leaders at major universities put that question to their broader communities and, in many cases, were surprised at the answers that came back. The University of Michigan, for instance, established an ongoing forum where instructors, students, and staff were encouraged to discuss generative AI — all viewpoints welcome. “People were free to debate,” recalls Ravi Pendse, the university’s vice president for information technology and CIO. “We had all different views.” The approach reflects the university’s emphasis on putting humans at the center of the AI-in-education experience, especially when it comes to overseeing decisions.

In those discussions, many U-M students acknowledged the potential for generative AI to curtail learning and growth, and they were clear about their desire for information and policies to prevent that from happening. The consensus: They’re in college to learn.

Pendse cochairs the university’s Generative AI Advisory Committee, which consists of 20 instructors, staff members, and students from various disciplines. (For highlights from the committee’s campus survey of attitudes on AI use, see “Generative AI Goes to College: A
Community Conversation.” After the committee issued its initial report in June 2023, U-M rolled out a comprehensive AI toolkit for all instructors, researchers, staff, and students two months later.

Joe Sutherland, inaugural director of the Center for AI Learning at Emory University, cites a historical precedent for concerns about generative AI’s potential impact on learning: “When the calculator came out, math teachers thought it was going to be the end of all numerical thinking,” he says. “And it turns out that it wasn’t.”

Still, colleges and universities need guidelines for building generative tools appropriately, says Jake Hofman, a senior principal researcher at Microsoft Research. “To use a sports analogy, you don’t want to build things that are equivalent of steroids, where students get their homework done quickly in the moment but don’t actually retain information in the long term,” says Hofman, who co-authored a December 2023 Harvard Business Review article based on that comparison. In his view, the best approach would involve designing tools that provide coaching, helping students improve over time.

Institutions of higher education are learning in real time how to tailor generative AI tools to suit different purposes and policies. The MIT Sloan School of Management, for example, provided instructors with a choice of flexible guidelines for generative AI use. “To use a sports analogy, you don’t want to build things that are equivalent of steroids, where students get their homework done quickly in the moment but don’t actually retain information in the long term,” says Hofman, who co-authored a December 2023 Harvard Business Review article based on that comparison. In his view, the best approach would involve designing tools that provide coaching, helping students improve over time.

Shields’ courses get right to the heart of how responsible use of generative AI will affect activities such as content creation, which has traditionally been the exclusive domain of human beings. “If we just use genAI tools to supplant our thinking and creative processes, that is a real concern,” he says. “But deployed well, genAI can provide so many benefits to students and faculty.”

Hofman, the Microsoft researcher, concurs. “It’s clear that there’s positive value in these things, and it’s clear they can also go wrong in some ways. The challenge lies in figuring out how we can tap into that positive value instead of forfeiting it.”

And then there’s the fact that generative AI is now inevitable; it’s already being incorporated into other widely used programs. For instance, Microsoft Copilot is now integrated into Microsoft 365 programs such as Excel, PowerPoint, Outlook, and Teams.

**Bottom line:** The world has changed. Trying to ban generative AI altogether, educators interviewed for this report agreed, is simply unrealistic.

**Preparing Academic Communities for an AI World**

Among the first steps many higher-ed institutions have taken is providing AI literacy training for their entire communities. At Arizona State University, instructors and staff members are offered an AI literacy course with nine training modules, says Danielle McNamara, professor of psychology and executive director of ASU’s Learning Engineering Institute. The first three modules are designed for those who need to learn the basics of generative AI. But as knowledge about the technology becomes more widespread, some instructors can skip ahead to the later modules. “We find that many need more advanced training now,” she says.

At U-M, free AI literacy training workshops are offered to all faculty members, students, and staff. There’s a high need for all types of training, especially the in-person sessions, Pendse says: “From Monday through Thursday, we have training sessions at noon, and they’re completely full. Sometimes we have as many as 150 people.”

Beyond basic AI literacy, preparing students is about encouraging a place for open discussion and inquiry, says Sunay Palsole, assistant vice chancellor for engineering remote education at Texas A&M.

“Preparing students has been an interesting challenge. You not only want them to realize the advantages of using the AI tools, but..."
you also want them to think through the disadvantages and the ethical considerations,” Palsole says. What did students see as the key disadvantage to using AI? The most common answer, he says, was: “I guess we don’t learn as much.” That led to a communitywide conversation about what learning really means in the context of academic integrity. In a wide-ranging discussion about generative AI, some students speculated that perhaps they could use the technology to design a learning process for themselves so that they could learn subjects faster and more thoroughly and better retain what they learned.

Palsole says instructors have needed guidance in adjusting their assessments in the age of ChatGPT. For that reason, Texas A&M held a session to introduce instructors to generative AI tools. “We had them go from station to station trying different AI tools. They very quickly saw the shortcomings of some of them and also what they could do to mitigate it,” he says. For example: “I tell professors to take their assignment and throw it on GPT. If it gives a satisfactory answer back, then you know your assignment needs to be changed a little bit.” The idea is to ask something that requires a more complex analysis than a simple cut-and-paste job into a generative AI tool will produce.

Indeed, the onset of generative AI is adding steam to a movement that’s been underway for some time: the shift to “authentic assessment,” which emphasizes that students be evaluated on their ability to use what they’ve learned in practical ways beyond the classroom. More formally, authentic assessment involves evaluating students on “the application of knowledge and skills in real-world situations, scenarios, or problems,” according to the Center for the Advancement of Teaching Excellence at the University of Illinois Chicago (with many other colleges and universities using similar definitions).

Even before generative AI began disrupting the learning-evaluation paradigm, many Texas A&M instructors were already shifting to the approach. “Using some form of application exercise — that is, authentic assessment — has become paramount given that rote information can easily be generated using AI tools,” Palsole says. In fields such as software engineering, some instructors also ask students to describe how they will approach a problem before beginning work on the solution, another nuance that lends to better assessment.

### Ensuring Better Outcomes for Students and Instructors

One of generative AI’s most dramatic benefits is the ability to support students in the moment. “For students, the idea that you can

## Generative AI Goes to College: A Community Conversation

In 2023, the University of Michigan surveyed 6,037 faculty members, students, and staff about their attitudes toward using generative AI in higher education. Major findings, shared in a public report, included:

- Nearly 60% of faculty members, undergraduates, and graduate students surveyed reported using generative AI in some form, as had 40% of staff members.

- Overall, faculty responses indicated that instructors had less experience with generative AI tools than did students at any level.

- Respondents in all roles acknowledged the potential benefits of applying generative AI in higher education, and the majority described themselves either as "mostly positive and hopeful" or neutral about AI technology overall.

- However, respondents in all roles also expressed concerns about the potential for “misinformation and disinformation” and privacy violations, as well as uncertainty about how generative AI will evolve.

- Respondents in all roles indicated the need for more generative AI information and resources along with additional training opportunities.

- Faculty members identified the top areas where they expected generative AI to influence their teaching as creating assignments, writing, and discussing the technology’s capabilities and limitations. Researchers cited the top areas of impact as summarizing research papers, generating text, and programming.

Source: University of Michigan
have something like a 24/7, constantly available resource is new,” Hofman says. Electronic “study buddies” can be a huge help when students need it and instructors aren’t available. “Sometimes a student might be doing homework late and need help on a problem,” Hofman says. “A genAI tool can give help specific to the context they’re working on, and it also can speak in the student’s language” — which is itself a benefit.

Pendse, of U-M, takes a similar stance. Instructors and administrators noticed that students often get stressed out when they can’t get help right when they need it — for instance, when working on assignments late at night. “Now that help is available 24/7,” thanks to generative AI class assistants, Pendse says.

Of course, it remains important to balance the benefits of always-on availability against generative AI’s potential risks, including hallucination, bias, plagiarism, and sometimes outright fabrication. For that reason, U-M has developed overarching governance for using the technology safely and responsibly, while acknowledging in its 78-page report that “this topic is a (fast) moving target and our understanding, policies, and guidelines will also constantly evolve.”

With the appropriate guardrails in place, the benefits of using generative AI can be attractive. Case in point: The Maizey no-code generative AI tool (named after one of U-M’s school colors, maize) improved student performance at the university. Faculty researchers tracked the work of 1,000 students in eight sections of a supply-chain class before and after using Maizey and found that student performance increased by an average of 5% to 9%. “That’s significant,” Pendse says. “The students who are here are already really good students. For their performance to improve that much was impressive.”

Another benefit: Instructors who deployed the tool began saving 10 to 12 hours per week on office hours. “They could spend more time with students who needed real help beyond just answering the more mundane questions,” Pendse says. “That gave them more time to do their research, too.”

Far from giving students an easy crutch that supplies the correct answer, researchers at Microsoft and elsewhere have found that generative AI tutors can help students attain greater levels of understanding tailored to their levels and needs. The key is designing the experience so students first try to solve problems on their own before engaging with the “tutor.”

Take the example of a classic SAT-prep test. Students can read the answer in the back of the booklet, but that doesn't provide much insight into how the solution was derived. When students try to solve the problem on their own first, the generative AI tool can help drive the ability to retain and apply that learning. Hofman says: “In our experiments, we’ve seen huge value if the learner tries to answer the question unassisted first, as opposed to consulting the generative AI first.”

Generative AI can also help students quickly understand the framework for a specific course or piece of learning and how it relates to their overall educational journeys or desired career paths. That context is often missing from the traditional higher-ed experience, Hofman says. “Some students want to know ‘Why am I learning this?’ and ‘Why now?’” Generative AI can suggest ways for them to connect the dots of the overall curriculum. “For instance, it can make connections between abstract concepts and techniques in math and how they might be applied to real-life scenarios that a student is interested in, such as in science, engineering, or business,” Hofman says. Not all students need such reinforcement, but for those who do, that’s a powerful capability that doesn’t add more work to instructors’ plates.

Guarding Against Bad Information

The possibility of getting inaccurate or biased results is among the top concerns university communities have about generative AI. ChatGPT and its ilk have an unfortunate tendency to sometimes “hallucinate,” or make up information that’s incorrect but seems right. In many professions, the specter of generating wrong answers naturally alarms people. However, a variety of strategies can help.

“To ensure ethical AI, we need to create AI systems where humans are always kept in the loop. AI should augment and enhance humanity, not replace it. It’s really important for each individual to learn AI literacy skills.”

RAVI PENDSE
Vice President of Information Technology and CIO, University of Michigan
First, and most important, humans should oversee the use of generative AI in a higher-ed setting and, where possible, check AI-generated decisions. Another protective practice involves labeling results with confidence-based highlighting. “For instance, the tool could code results with a green, yellow, or red light depending on the degree of certainty of its accuracy,” Hofman says. Microsoft research on the approach shows learners are good at paying attention to that cue and treat the results accordingly.

As with other sources of information, generative AI doesn’t necessarily need to be 100% accurate to be useful, Hofman says. It may give people pause to think about applying a tool, specifically in something like a math setting, that might give the wrong answer. “That’s scary. But on the flip side, if it’s right most of the time, it’s mostly helpful,” he says. “Students understand that their human TAs [teaching assistants], for example, aren’t right all the time, but they are still helpful.” Confidence labeling of this sort can help manage student expectations.

At U-M, instructors who build their own tutorials and other materials with generative AI have the option to specify a set of trusted information against which results can be generated. Maizey’s “temperature-control” feature allows instructors to direct the tool to use only the information specified, to look out to the large-language model (LLM) to answer the question, or both. If the instructor decides that the tool should use both, it will then make a judgment on which is a better answer. Maizey is also equipped with a “verify-this-information” button that shows the source of the answer. However, as with any generative AI tool, that doesn’t entirely eliminate the possibility of hallucinations.

In addition, educators emphasize that students are still expected to do accurate work, regardless of whether they’re using generative AI, other technology tools, or even traditional sources such as textbooks and research papers. “It’s still their responsibility to verify the information in a variety of ways,” Pendse notes, adding a caveat about the importance of rigorous human oversight. “To ensure ethical AI, we need to create AI systems where humans are always kept in the loop. AI should augment and enhance humanity, not replace it. It’s really important for each individual to learn AI literacy skills.”

Making Generative AI Available to All

No question: Generative AI has the potential to reshape higher education. But delivering on that promise requires making sure that the technology is accessible to the entire academic community. For that reason, many colleges and universities are now taking steps to ensure that people with visual, hearing, physical, or other disabilities can still use the same tools and technologies available to everyone else.

Ravi Pendse of U-M says all the university’s AI offerings, including its no-code Maizey platform, are designed to work with digital accessibility tools. “As part of our core values, U-M always strives to deploy tools that support accessibility standards,” he says. “We do not want to put out any tools or services that a section of our community cannot use.”

At Arizona State University, the Institute of Education Sciences recently awarded the Learning Engineering Institute a three-year, $3.75 million grant to build out AI-enhanced applications that the school describes as better serving the needs of an increasingly mobile student population. The initiative includes a multimodal app that will incorporate generative AI to present material aurally and visually to ensure more widespread accessibility.

The principle of generative AI accessibility extends to other areas. Joe Sutherland of the Center for AI Learning of Emory University is looking into ways to provide access to people in rural areas of Georgia who don’t have high-speed internet connections. He believes that the issue can be addressed with minimal financial investment. Libraries will play a major role.

“There needs to be more opportunities for people to be able to participate in these technologies,” Sutherland says. “No one should be left behind.”

Making Security a Top Priority

Instructors and others are rightfully concerned about the possibility that generative AI tools could be a conduit for proprietary information — including everything from student grades and personal information to institutional and instructor intellectual property — to make its way out of the university. U-M’s generative AI platform is secure and hosted by the university in a private cloud setting, ensuring that no prompts or user data are used to train outside AI models. “Private information stops at our boundaries,” Pendse says.
At Emory, the Office of the Provost, where Sutherland works, takes advice on security precautions from a wide body of experts. Emory’s Center for Ethics is staffed by experts in digital humanities to handle all matters related to artificial intelligence, including security, copyright, and accessibility. “We want those governance processes to emerge organically from within our faculty senate and be vetted by subject matter experts who are former CISOs [chief information security officers] and cybersecurity experts,” Sutherland says. “We take a very deliberative approach to making sure all perspectives are represented.” (For more on accessibility, see “Making AI Available to All.”)

But when a technology is developing as fast as generative AI, it’s tough to strike the right balance between developing the right policies and acting quickly enough, he acknowledges. “You can’t write rules fast enough for this stuff. You can’t just say, ‘Hands off, we’re not going to do anything,’” Sutherland says. “You need to have some policies in place to prevent bad actors from taking advantage of folks — and to signal to executives what may be regulated in the future. But you can’t do too much because you might restrict innovation.” And, he adds: “You can’t write a rule for something that you don’t know.” Emory’s AI Governance Policy focuses on trying to prevent confidential data from being leaked out. “We need to manage the risks,” Sutherland says.

Sharing Information About Acceptable AI Use

Although it’s still fairly early in the generative AI revolution, many higher education institutions have developed some policies and practices for generative AI use. Institutions that have jumped out to an early lead in developing generative AI policies, such as those interviewed for this report, are eager to share what they’ve created. Many have already made some of their thinking public and expect to provide more information down the road.

In keeping with its mission, U-M expects to open up what Pendse and his colleagues have learned about developing generative AI policies and procedures in higher ed; Pendse says: “Our goal as a public institution is to help others.”

But they don’t want to just throw the material out there without guidance. “It’s our intention, in the future, to open-source our code, but we’ll do so with appropriate support and guidance,” Pendse says.

At ASU, McNamara shares that public spirit. Much of what she and her colleagues have developed over the past year is available on the ai.asu.edu site. McNamara also expects to make her institution’s research about generative AI in learning publicly available in the future. “We’ve started a small number of studies this year,” she says. “We will build on that and keep working toward experimentally exploring the impact of incorporating generative AI in classes.”

Continuing AI Engagement After Graduation

With the age of generative AI fully upon us, many of the experts interviewed for this report recognized a need for training that will prepare students for AI beyond the campus. “The skills our students will need when they leave university are different than they were 20 years ago,” says McNamara. So ASU is building a set of AI literacy courses designed to help students leverage and incorporate generative AI both while they’re learning and after they graduate and enter the working world.

For similar reasons, Emory University plans to launch a certificate program on AI workforce readiness later this year. Courses in the program will discuss how organizations can use generative AI and LLMs for everything from project planning to marketing to data visualization. But the program will also examine the technology’s limitations and emphasize the importance of responsibility around issues such as privacy protection, bias prevention, and avoiding copyright infringement and plagiarism. Says Sutherland: “It will be available to anyone who wants to learn how to use these technologies — and be ready for the new economy.”
CONVENGE ALL STAKEHOLDERS in the university community for an open-ended discussion about generative AI use. Encourage tolerance for differing viewpoints.

DON’T BAN GENERATIVE AI use entirely. Instructors and students are almost certainly already using or experimenting with it. Instead, offer instructors a range of generative AI policies, from strict to loose, that they can adapt according to their needs.

PROVIDE ONGOING AI LITERACY TRAINING for the whole community — faculty, students, and staff. The technology is advancing rapidly, so training will have to continuously evolve along with new developments. Establishing and maintaining an online library of relevant resources will also help people continue learning about AI.

CHECK OUT WHAT OTHER INSTITUTIONS HAVE CREATED before you do a deep dive into drafting your own generative AI policies and governance strategy. Many schools are widely sharing what they’ve developed, and learning from others’ experiences can help ensure the most responsible approaches to using generative AI.

USE GENERATIVE AI TO PROVIDE CONTEXT to learners. Some students are keen to know how a particular course fits in with a particular major or career path. AI tools can enable them to go deep in understanding where learning fits and to experiment with different options.

EXPLORE COMBINING AUTHENTIC ASSESSMENT PRACTICES with generative AI use to enhance students’ ability to link what they’re learning to practical, real-world situations.

SHARE THE THORNY ISSUES WITH STUDENTS, including how to ensure that generative AI tools are enhancing learning rather than replacing it. Listen to their views on what really constitutes learning and what they see as the roles of both humans and AI.

TEACH STUDENTS HOW TO GUARD AGAINST BAD INFORMATION that may be generated by AI by, for example, applying confidence-level color coding. At the same time, make sure students understand the steps they need to take to verify all information they generate or receive.

KEEP HUMANS AT THE HELM. Be sure that people are assigned to oversee generative AI’s use, review its decisions, and verify the resulting information.
Harnessing the Potential of Generative AI: A Collaborative Approach

At Anthology, we believe the role of technology in education has never been more central—or more exciting. The rise of generative artificial intelligence (AI) comes with both opportunities and risks, and close collaboration between educators and educational technology providers is fundamental to ensure that innovation is delivered in responsible and ethical ways.

From as early as 2018, we have been in close discussions with institutional leaders from around the world to devise AI strategies that are purpose-fit for education. Based on this experience, we recently published our Trustworthy AI Approach, which details our strategy to embrace AI as an organization, and our AI Policy Framework, which provides guardrails for institutions as they look to create AI policies of their own. A central tenet of our approach, which has been reinforced by the experts quoted in this report, is what we call humans in control. Technology should facilitate connection between instructors and learners, not replace it.

In accordance with this report, we see significant potential for generative AI to lighten the administrative burden for instructors. In our development of tools that assist faculty with production tasks, we’ve observed that the acceptance rate for AI-generated suggestions is right around 50%, with instructors also regularly tweaking the content to get the best overall output. In essence, that means instructors are finding value in these suggestions but not forgoing their autonomy to design distinct courses. That’s a balance we find most encouraging.

Our research also supports the advice of Sunay Palsole of Texas A&M, who notes in this report that adopting authentic assessment is crucial in the AI era. We conducted in-depth tests on the accuracy of anti-plagiarism tools to detect submissions authored by ChatGPT and found that the results were both inaccurate and biased. In response, we released a white paper to help institutions embrace authentic assessment and incorporated tools in our technologies to make this easier for instructors.

A central tenet of our approach, which has been reinforced by the experts quoted in this report, is what we call humans in control. Technology should facilitate connection between instructors and learners, not replace it.
Finally, if there is one message we’d like to highlight from this terrific report, it’s about the importance of collaboration. Our experience in bringing AI technologies to market indicates that close partnerships between institutions and technology providers lead to the best results, as seen, for example, in our work with the University of Leeds and Microsoft, which has greatly improved efficiency for faculty.

Generative AI has significant potential to improve education. Ensuring that this potential is realized in an ethical manner requires clear guidelines and policies, which can only be achieved by the sharing of best practices and collaboration across the sector. Anthology thanks the experts who contributed to this guide — as well as those from our global learning community who inspire us every day — for taking the time to detail their experiences and expand this important (and exciting) conversation.

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