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Shrinking the AI Gap in Higher Education

## Navigating the Divide Between Faculty Fears and Student Realities

"If [artificial intelligence] is an outgrowth of the human drive to know, which it is, it can emerge as a positive contributor not just to what humans know, but how," wrote G. Gabrielle Starr, president of Pomona College, in a collection of opinions for *The Chronicle of Higher Education* on how AI will impact higher education. Her main argument: AI will not supplant teaching or the very act of learning, but rather encourage ways to flex the ways that students learn.

"Learning requires more than synthesis of information, for it is in the testing of knowledge that we make the biggest gains in understanding. This means that it is how we put our knowledge to work that matters. It also means that learning is a social undertaking, in which we discuss, dispute, verify, reject, modify, and extend what we (think we) know to other people and the world around us."

Optimism for generative AI technology is growing, particularly among college administrators. In a recent survey conducted by *The Chronicle*, in April 2024, 78 percent of surveyed college and university administrators see artificial intelligence as having a positive impact on teaching. Last year, when *The Chronicle* conducted the same survey, this number stood at 69 percent. Interestingly, this year's survey included sentiments for faculty members at higher-ed institutions — which sits at a more modest 46 percent.

College and University Administrators Who See AI As Having a Positive Impact On Teaching

78% (2024)

69% (2023)
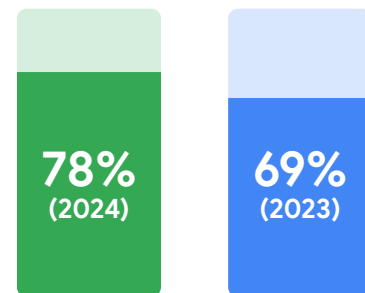
Source: *The Chronicle of Higher Education* Generative AI Research Brief

While there's a seemingly wide gap between administrator and faculty opinions on impact to teaching, both camps know and understand the inevitability of integrating GenAI in the classroom over the next few years.

Educators see the implications of this technology on supporting student learning. In EDUCAUSE's 2024 AI Landscape Study, 73 percent of survey respondents — from executive leadership and administrators to faculty — agreed that the rise of student use of AI in coursework is a primary motivator to figure out where AI falls into strategic planning. But the second-highest motivator is around inappropriate use of that AI. Particularly for faculty, responsible AI use in the classroom remains a top concern.

Throughout the higher education landscape, we've seen an evolution in the ways that institutions are integrating and implementing GenAI in the classroom to support student success — and we're exploring ways to further help instructors serve their students, and to do so as a partner committed to responsible AI practices.

Outside of the classroom, understanding the role of GenAI on campuses is critical to better serving the business needs of colleges. Higher ed finds itself in a precarious position. Slimming budgets are forcing many colleges to discontinue academic programs and, in some cases, shutter its operations completely. A demographic cliff is set to impact enrollment numbers starting in 2025 and contract the standard college-aged population throughout the 2030s. Competition from nontraditional post-secondary institutions and micro-credentialing programs is fueling increased public desire for alternative pathways to developing career skills. Within this atmosphere, colleges and universities are conceptualizing ways to remain competitive, hoping to find the right balance between maintaining enough profitability to stay open and ensuring college affordability for their students.

"With enrollment declines exacerbating financial worries and more than half of college staff members considering leaving their jobs in the next year, colleges need to learn how to rely on technology," according to Jeffrey J. Selingo, professor of practice at Arizona State University. "While much of the discussion has focused on what generative AI means for teaching, learning, and research, its immediate impact will likely be felt on functions outside of the academic core."

One way higher ed institutions are pursuing this: Attracting students from nontraditional backgrounds.

For higher ed, combating the question of "Is college worth it?" might come down to determining how to adapt to student sentiments and expectations — from across backgrounds — with an immediate need to understand the role of artificial intelligence in student learning and to implement the technology with the right guidelines in place.

> **The fact that the learner population is changing and flexing means that [colleges] have to be more adaptive to the fact that they are not just always talking to 18-year-olds. They're also talking to these lifelong-learner folks that are reinvesting in new careers, and so [colleges] are going to have to have more adaptability from a pedagogical standpoint."**

Chris Hein

Director of Customer Engineering for Public Sector
Google

More Than Meets the AI

How Educators Are Embracing (and Grappling With) GenAI Tools

Part of the hesitancy around AI among faculty in academia lies foundationally in not having a full understanding in the various ways GenAI tools can be used (or how it's currently being used).

Faculty members may not be aware that they're already using AI-powered software — whether that's writing assistants or adaptive-learning platforms, like learning management systems (LMS), or even chatbots. Instructors may not see the immediate benefits that GenAI software can provide to lessen their own workload — like automating tedious administrative tasks and providing knowledge resources to students — and to free up their time to focus on academic research.

We're seeing instructors integrate AI into their curricula in unique ways to change how students interact with the learning materials. "You can take all this data about how students are progressing towards mastery of competencies, concepts, and skills, and put it into dashboards so that instructors and administrators — and, even potentially, students — can get feedback on what things are challenging to learn, which ones are being broadly mastered by students, and what things should be prioritized to teach," said Lukman Ramsey, head of AI solutions for public sector and education at Google, describing one way that colleges can make full use of large language models (LLMs), machine learning (ML), and AI.

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More Than Meets the AI

At Georgia State University, for example, a chatbot was integrated into a government course, where students were nudged on studying and on completing their assignments — leading to higher rates of completion for students. Particularly, sizable gains were found among the first-generation college students in the course.

But throughout academia, lingering concerns among faculty persist around GenAI misuse and ethics — particularly when used within the classroom. "In an academic context, we should approach language models as engines for provisional reasoning," according to Ted Underwood, professor of information science and English at the University of Illinois at Urbana-Champaign. "We will need to teach students to contest it. Students in every major will need to know how to challenge or defend the appropriateness of a given model for a given question."

Outside Higher Ed

At Arizona State University Preparatory Academy — a public charter school serving K-12 students in the Phoenix area and affiliated with Arizona State University — there's an incessant push to evaluate faculty and student needs and to determine whether some new technology solution fits the bill. For example, the school created Archie, a GenAI math tutor that was designed as a more engaging, contextualized chatbot that seamlessly integrates handwriting and vision recognition. With math literacy rates facing a historic decline, Archie offers a more personalized approach to better meet how students learn math.

More Than Meets the AI

Higher Ed Sentiments
On How AI Should Be Used

👍 Appropriate Uses

Personalized student support (including tutoring, academic advising)

Teaching assistant (including offering student feedback, improving accessibility of course materials)

Research assistant (including sorting and analyzing data, finding and summarizing literature)

Administrative assistant (including automating tasks, drafting communications like email)

Learning analytics (including analyzing and visualizing student success data, providing student retention insights)

Digital literacy education (including preparing students for a digital workforce)

👎 Inappropriate Uses

Trusting GenAI outputs without human oversight

Simulating human judgment (including grading student work, peer-reviewing academic work)

Representing AI-generated work as self-produced

Failing to cite AI for submitted generated content

Making high-stakes decisions without human insight (including student admissions)

Conducting invasive data collection or surveillance

Relying on AI instead of human agency

Giving GenAI tools unauthorized access to sensitive data

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More Than Meets the AI

Most faculty express a need for more administrative guidance or for official college policies around how the technology should be used in coursework. At ASU Prep, one method of bridging that gap between administrative enthusiasm and instructor hesitation is to work hand-in-hand with teachers to make sure that any tool or software they bring on supports the current teaching standards of the institution.

"We hold [AI technology] accountable to our full pedagogical perspective," said David Sudarma, chief technology officer at ASU Prep. "Where we would say: 'Look, this technology has to hold up against the same academic accountabilities and same academic outcomes that we hold our academy to." For Sudarma and the rest of the team at ASU Prep, integrating GenAI can be used to help evolve teaching models in the classroom, but he emphasizes that there should be a method for assessing the efficacy of a technology on student outcomes.

Pencil Spaces

Institutions can also turn to collaboration or partnership with external organizations to modify pedagogy to better match learner needs in a much shorter time frame than having to rethink teaching methodologies from the ground up. For example, various schools at Stanford University are testing areas to support blended teaching models by working with Pencil Spaces, a tutoring platform that runs on Google Cloud and offers colleges and universities with an opportunity to test out how coursework can be offered through different modalities — whether that's online-only, in-person, or hybrid.

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From Face-to-Face to Flex-to-Fit

What Evolving Learning Modalities Mean for Tomorrow's Classroom

Preference over learning modalities in the higher ed landscape has shifted in recent years. In a 2023 survey conducted by Tyton Partners, 55 percent of faculty members showed a preference for face-to-face courses compared to 31 percent of students. For college students today, there's an overwhelming preference for modalities that are more accessible — whether that's a form of hybrid or blended courses, where students can come in on some days or for some portions of a lesson, or in the form of fully online courses, synchronous or asynchronous. College administrators and instructors must come together to find ways to tap into GenAI to cater to these changing student expectations around modality.

PURDUE GLOBAL™

GenAI lends itself well to personalizing student experiences. Purdue Global — an online university affiliated with Purdue University — has created an intelligent tutoring system for its students. Contextualized within the college's LMS and supported by Gemini, the Purdue Global Learning Assistant (PGLA) has, so far, helped instructors reduce the amount of time on answering student questions around more basic or general information in their classes, and has given students the ability to tailor their learning experience by getting remote real-time assistance on the subject-matter they're studying — something typically unavailable to them in-person in a large lecture hall.
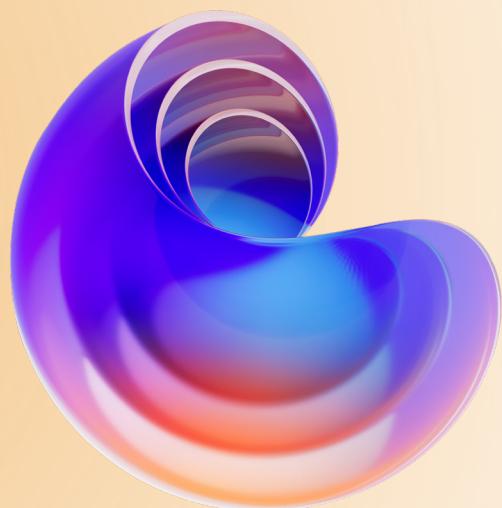
From Face-to-Face to Flex-to-Fit

"For our students, what's really powerful about personalized tutoring experiences is that they get the help that they need on their own terms," said Steven Tom, chief customer officer and senior vice president at Adtalem Global Education, a medical and healthcare post-secondary education provider. The organization rolled out its first LLM-powered AI tutor in 2020 to support its largely adult-learner population.

> **Most of our students have families; most of our students are working professionals. They can access the tutor on their terms at night, after work. And they can also get that personalized help that they need."**

Steven Tom
Chief Customer Officer and Senior Vice President
Adtalem Global Education

"What we found very consistently is that the students who engage in dialogue with the AI tutors...did learn better in terms of comprehending the information introduced," according to Ying Xu, an assistant professor at the University of Michigan whose research centers around educational applications of artificial intelligence. "But, also, they are better able to apply the concept they learn into solving a similar but different problem."

Backed by funding from the National Science Foundation, Xu and her team are exploring how student-facing AI tutoring platforms impact student learning. AI tutors are allowing for more adaptive learning journeys for students, meeting them where they currently are rather than being constrained to a strict learning agenda. This also creates new pathways for adult-learners, who lean heavily on more flexible modalities.

No Learner Left Behind

How GenAI Is Improving Student Retention and Overall Equity in Higher Ed

"This is the biggest equity opportunity we've ever had," according to Ethan Mollick, an associate professor at the University of Pennsylvania's Wharton School of Business. He argues that services like personalized tutoring can make learning more equitable. Students across all ages can use these GenAI tools to get feedback on their schoolwork and to use as a 24/7 study partner — things typically only provided through specialized tutoring services (available only if a college offers access to them or if a student has the resources to pay for them).

"We need platforms that are affordable, accessible, and agile," said Charles Iacovou, founding dean of the School of Professional Studies at Wake Forest University, while sitting on a panel at this year's ASU+GSV Summit. He noted that most students in the United States don't get their degrees by the age of 25 — the majority of today's students are adult-learners, and those students' needs may vary widely from the needs of college students who fall within the traditional age range.

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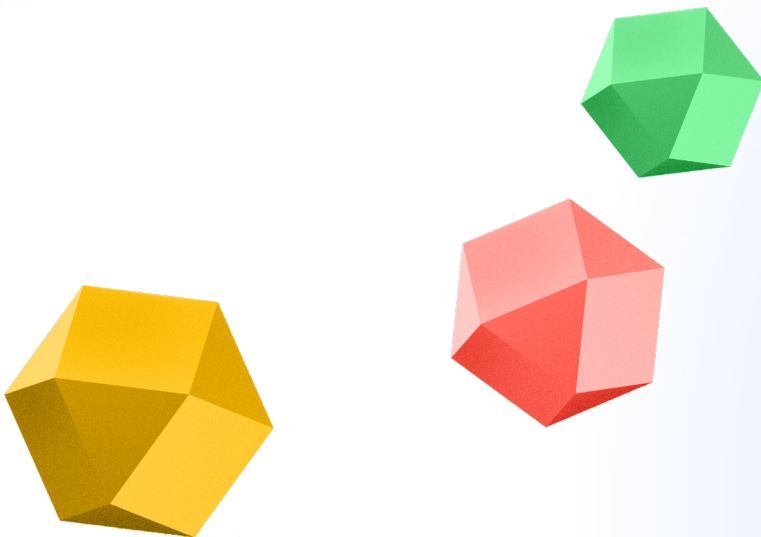
No Learner Left Behind

From a student success perspective, artificial intelligence has the potential to help identify interventions earlier and quicker to help [prevent students from stopping out of college](#), particularly for student populations most at risk.

"

How can we take what we're doing and do it better? Particularly around our data, around interventions. How is generative AI helping to provide that kind of just-in-time assistance to the student or just-in-time intervention that gets a human involved at the right time?"

Steven Tom

Chief Customer Officer and Senior Vice President
Adtalem Global Education

These questions are less rhetorical than they are instructional for a path forward on how colleges and universities should evaluate the role that GenAI technology can play in improving student outcomes.

From Hesitation to Innovation

Building a Roadmap for Integrating GenAI at Colleges and Universities

"We focused on working alongside our academic leaders early and taking a view that it's complementary to what they're doing," remarked Tom, when describing the process for getting the buy-in from its faculty members for Adtalem's AI tutor. "We had to get our faculty comfortable with the fact that this was going to be an assistive complementary technology and something that was going to bolster our students' ability to really master concepts."

For instructors and administrators across higher ed, adoption and integration of GenAI tools in the classroom are taking place because of a mutual agreement in the technology's role in impacting their students' success. Initiatives at institutions are popping up in a joint effort between faculty and administration to ensure that instructors are getting the support they need to implement GenAI in their curricula.

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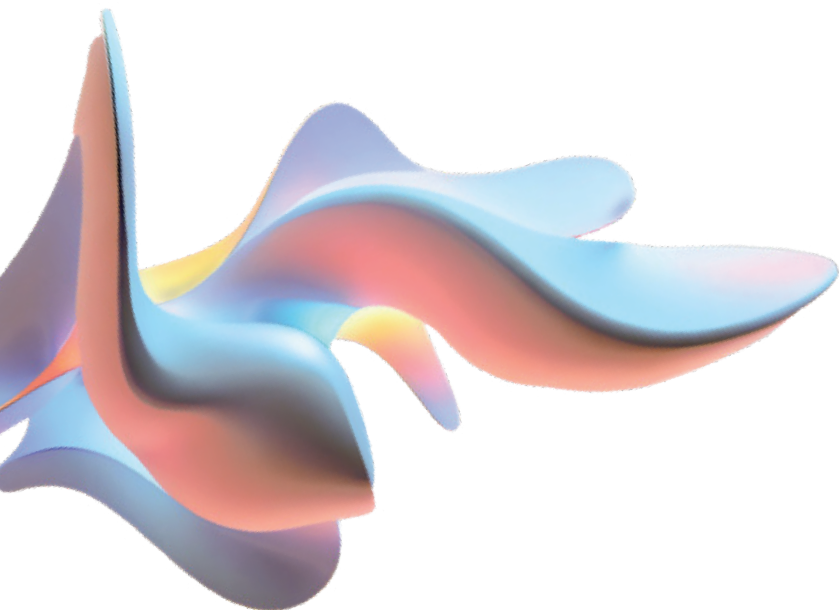
From Hesitation to Innovation

At Arizona State, an online course on "Teaching and Learning with Generative AI" has been set up to help faculty see the benefits and opportunities of using AI technology in the classroom. At the University of Texas at San Antonio, a "pedagogical partners" program pairs professors with grad students and upper-division students to give instructors a first-person perspective on how students are already using GenAI.

Colleges and universities are also working to ease concerns around ethical misuse by creating policies around AI use within their curricula. Some institutions have taken steps towards creating guidance and policies. At some institutions, like Cornell University, general guidelines have been laid out for instructors and students on how to engage with GenAI tools in the classroom. At other colleges, such as Drexel University, official university policies around academic integrity and AI have been created.

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Working with the right partners sits at the foundation of ensuring that artificial intelligence technology supports higher-ed institutions' mission for improving student outcomes.

Not sure where to start with generative AI? See what your public sector peers are doing and use our 10-step, 30-day plan to hit the ground running with your first use case. Download the guide at https://inthecloud.withgoogle.com/exec-gen-ai-ebook-ps/dl-cd.html.

Google is committed to helping colleges and universities find or develop the right solutions to advance their objectives — all while ensuring a commitment to responsible AI practices.

From supporting student retention to developing personalized learning tools, learn how we're working with higher-ed institutions to adapt GenAI for their specific needs. Discover 5 GenAI use cases in education at https://services.google.com/fh/files/misc/ps_genai_education_ebook.pdf.