



AI, Equity, and Affordability

A Primer for Higher Education Leaders and Educators

FOREWORD BY:

James Runcie, CEO, Partnership
for Education Advancement

Commissioned by



In partnership with



Produced by



About the Organizations



Founded in 2018, Partnership for Education Advancement (Ed Advancement) is a nonprofit that works collaboratively with HBCUs in support of their mission to advance socioeconomic mobility for their students. By providing highly individualized, sustainable solutions, Ed Advancement helps HBCUs serve their students and meet strategic enrollment, graduation and advancement goals.



Axim Collaborative is a joint endeavor by Harvard and MIT. It is the successor to edX, the online learning platform launched by the two universities in 2012. edX was created with the goal of increasing access to high-quality learning opportunities, advancing digital learning technologies, and enhancing teaching and learning on campus and online through research. Today, Axim and its trustees bring forth this pioneering experience in online education matched with a dedication to making a meaningful difference in post-secondary education for students everywhere.



For more than 20 years, Whiteboard Advisors has collaborated with the most transformative organizations, individuals and investors in education. Our diverse team of educators, wonks and storytellers brings in-depth understanding of policy, technology and practice to bear on cutting-edge research, powerful writing, and the design of communications and advocacy campaigns that challenge the status quo. Whether we're working with startups or the most established organizations in education, we're passionate about taking breakthrough ideas to scale.

About the Author

ERICA PRICE BURNS

Erica Price Burns is a senior vice president at Whiteboard Advisors where she leads a team that advises Fortune 500 companies, foundations and investors working at the intersection of policy, practice and innovation. For more than a decade, Erica's research and writing on the connections between education, equity and economic mobility have been featured in CNBC, Wired, TechCrunch, Forbes and the Stanford Social Innovation Review, among others. Prior to joining Whiteboard Advisors, Erica worked for U.S. Senator and former Denver Public Schools Superintendent Michael Bennet and served in a variety of roles in Democratic politics and on Capitol Hill. Erica graduated magna cum laude from Washington University in St. Louis where she earned a degree in political science and economics.

Foreword

In higher education, waves of technological change rarely bring all institutions along equally: A rising tide does not lift all boats. Colleges and universities with greater financial and human capital resources have time, infrastructure, and money to support rapid acquisition of new technologies or platforms and the change management and training to support adoption. Meanwhile, less-resourced institutions can take decades to reach a similar level of technology adoption.

Consider the internet: UCLA and Stanford first connected two computers via ARPANET in 1969, but it wasn't until the mid 1990s that the internet became widely used on many college campuses. By the late 2000s, the internet alone was not sufficient: high-speed Wi-Fi became a [must-have](#) for many higher education students – an expectation that many [community colleges](#) (as well as other less-resourced institutions) struggled to meet. Compounding the challenge, many students at under-resourced institutions also lacked sufficient home access. The resulting [digital divide](#) is [well-documented](#), with significant impacts for teaching, learning and institutional effectiveness.

A similar adoption curve is already underway with artificial intelligence (AI). Over the past decade, machine learning embedded in existing higher education tools (everything from student success platforms to facilities optimization) has grown increasingly sophisticated – and AI functionality has become increasingly common. But the digital divide that arose during the internet era seems at risk of recurring.

As Colonel Alexander Conyers, president of South Carolina State University, said at a recent convening, “There are still places around many of our historically Black colleges and universities (HBCUs) that are considered broadband deserts; now we could become AI deserts. As HBCUs, this is a space we can't afford not to enter.”

Much like the internet, AI isn't a single platform or tool; it's a technology that will increasingly underpin the platforms or tools used by students, faculty and administrators every day. The step change in AI over the past year, with the advent of generative AI tools, will accelerate the inclusion of AI as a building block for new technologies. And as these new tools emerge, so too will the urgency of ensuring that tomorrow's technology is both accessible for all students and created by teams that reflect the diversity of the end users.

Against this backdrop, institutions – particularly those that have been historically underfunded – face the daunting task of considering how ever-changing AI technology will alter what needs to be taught, how it will be taught and how student expectations will change.

This resource guide offers an overview of the opportunities that AI presents for institutions and students, current uses of AI in higher education, and the importance of creating conditions for more equitable usage and adoption of this technology.

At this critical inflection point in AI adoption, it is important that historically underfunded institutions and historically marginalized learners be at the forefront. These institutions and learners may have the most to gain from the power of AI tools to advance opportunities, but they also risk facing a wider resource gap and other potential harms (e.g., algorithmic bias and discrimination and skills and opportunity gaps) if AI isn't developed and disseminated in an equitable way.

James Runcie, CEO, Partnership for Education Advancement



Overview

AI and Higher Education

Just as the term “digital technology” has come to define everything from smartphones to virtual reality, artificial intelligence (AI) is a broad term encompassing anything that relies on machines taught to reason or behave like people. AI achieves this through a variety of unique learning processes.

The capabilities of AI generally fall into three categories:



Predicting: AI uses large data sets to identify relationships between variables to create predictive algorithms. The most common type uses algorithms to solve problems, make decisions or predict human behavior, like streaming platforms that recommend movies or songs based on an individual’s previous viewing and listening habits. These types of machine learning-derived algorithms have helped institutions [identify students who may be at risk of stopping out](#) due to financial constraints, for example.



Creating: Trained on massive data sets, generative AI can create new text, images and music. Unlike AI powered by algorithms, generative AI is characterized by its randomness. Using the same prompt in ChatGPT multiple times, for example, likely will produce different outcomes. In education, AI can help faculty create multiple versions of a single test as a check on potential cheating, create personalized feedback or explanations for students based on their answers to questions, or help researchers create new solutions to [complex challenges](#).



Perceiving: AI can be trained to “see” and “hear” by searching for visual or auditory patterns. AI that mimics human senses undergirds software that supports self-driving vehicles, recognition of facial expressions and identifying speech patterns. [Voice tech in K-12 education](#) is supporting early literacy acquisition; in higher education, it can help improve accessibility for individuals with vision impairments by describing online images or graphs or support lecture note-taking for students with learning differences.

These are not technical categorizations: All three of these categories may be powered by generative AI. And over time, these categories may increasingly become an intertwined Venn diagram, with a single education technology solution relying on prediction to identify the students most likely to need an intervention and then using a creating- or perceiving-based resource to meet that need.



AI Uses in Higher Education

Higher education institutions can adopt AI-enabled tools in support of nearly every campus priority, from supporting great teaching and learning to enhancing student success resources to improving internal operational effectiveness. AI-enabled tools can increase efficiency, provide scalable student supports, and uncover insights about students and courses.

Nearly any part of the student journey could be augmented by an AI-enabled tool offering predictive insights or analysis, creating new resources, or being an extra set of eyes or ears.

Uses for AI in higher education (and the transition to the workforce) roughly fall into four areas:

Support for teaching and learning: These are technologies that support students or faculty. In general, these often allow for greater personalization (through intelligent tutors, for example) and/or efficiency (allowing instructors to offer more practice sets or exam questions through AI generation of content aligned to specific skills and competencies).

Driving student success: These are tools that support both faculty and students with resources, information and advising to help all students stay on track to graduation. This includes better predictive analytics to identify students who would benefit from additional support as well as tools like chatbots that nudge students toward behaviors known to support retention.

Informing organizational improvement: From admissions to career services and from course insights to facilities optimization, AI tools can help institutions improve practices and offerings to better meet both business objectives and the needs of students.

Supporting skills documentation: Employers want to understand what students know and can do, and higher ed institutions want their students to fully unlock the value of the skills and competencies they acquired. AI can help develop skills taxonomies based on coursework and help document students' skills through resumes and other artifacts of learning in ways that are understandable to employer HR systems.

For higher education — and particularly for under-resourced institutions — AI-enabled tools present two primary opportunities:

- **Leverage automation for cost savings and improved outcomes:** By automating tasks and creating efficiencies or by better identifying the highest-value approaches, AI can help institutions with limited resources free up capacity for higher-order activities or make the most of limited budgets.
- **Leapfrog to enable data-driven decision making:** For institutions that haven't had the resources to prioritize investments in IT infrastructure over the last decade, the rise of AI represents a moment to leapfrog past institutions that have adopted previous generations of IT solutions. For example, multi system insights (e.g., algorithms that pull from both the student information system and learning management system) were previously only available to institutions with a robust data warehouse and data science team. Today, AI built on top of data lakes (which utilizes unstructured data versus categorized/mapped data in a data warehouse) provides a [lower-cost](#) option to garner similar insights.

Case Study: South Carolina State University



Over the past few years, South Carolina State University, with the support of the Partnership for Education Advancement, invested in several AI-enabled solutions to further its enrollment goals. The collaboration started with a web bot and automated text messages to engage students and limit summer melt, and it has expanded to also include a pilot for a data lake. The data lake will enable AI analytics, building off of student information

and other data from across a unified data system and analyzing it to offer new insights.

“Our goal was strategic enrollment management,” said Colonel Alexander Conyers, President of South Carolina State University. “Our freshman class of 2019 was around 300 students. Fast forward to today — we welcomed 1,200 students [this fall]. And a lot of that came from AI.”

As President Conyers noted, the work of South Carolina State University allows it to “stay engaged with students, better store and retrieve information and improve the customer service experience for students so that wherever they go on campus, they don’t need to tell their story every time. Next, we’ll look at graduation and retention.” A full case study of South Carolina State University’s efforts is available [here](#).

Support for Teaching and Learning

Generative AI’s [early headlines](#) were about academic integrity and its potentially negative impact on assessing mastery, but AI holds significant potential to improve teaching and learning. As mentioned earlier, content-generating AI tools allow real-time, personalized feedback as well as more opportunities for low-stakes practice and formative assessment, while perceiving AI can help students with disabilities (including those with low or no sight) and those with learning differences.

- **Intelligent tutoring:** For the past few decades, education technology has worked toward providing, in a scalable way, the kind of one-on-one tutoring historically available only to the most privileged. Generative AI represents a step change in making that a reality. While automated feedback previously depended on a library of pre written responses, generative AI offers a nearly infinite set of potential responses that are truly personalized.

- **Accessibility and scaffolding:** Institutions have long looked for ways to support students with a range of academic and physical needs – from offering note takers in class for students with dyslexia to other accommodations for students with specific needs. Today, generative AI can “listen” to lectures and take down both verbatim transcripts as well as provide a summary of the content covered. It can automate captions for online images to describe them for individuals with low or no sight, and can even extrapolate data from a visual chart to better describe it for those who cannot see it.
- **Content generation:** Generative AI can help faculty create new exams based on a sample exam. In this way, generative AI can allow faculty to circumvent the well-known challenge of students sharing previous terms’ exams without spending tremendous time recreating the wheel every semester or quarter. These same tools can help faculty develop rubrics, syllabi, and practice sets and can even help automate common grading feedback, providing a starting point for instruction and freeing up additional time for faculty to offer deeper feedback and insights.

Driving Student Success

Using predictive analytics for student success in higher education is [not new](#). Generative AI tools, however, can augment current strategies. Additional insights enable academic advisors or student support coaches to be more effective and efficient, while student-facing tools allow for data-enabled, self-service guidance to support a student’s academic journey.

- **Improved prediction for targeted supports:** Building AI on top of a data lake that pulls data from multiple systems enables institutions like Ivy Tech Community College to develop better models to identify students who may need additional support. Ivy Tech’s predictive model can identify students in need of intervention with 80% accuracy within the first two weeks of the term, offering a much longer runway for coaches, advisors or other staff members to help students stay on track.
- **Insights for personalized learning paths:** Predictive AI models can also help guide students to the academic pathways that are statistically more successful. Illinois Institute of Technology, for example, built AI on top of a data lake and used the insights to create a recommendation engine for course choices. Students receive personalized recommendations for courses based on their previous academic record and the course sequence that has supported student success historically.
- **Nudges to stay organized and engaged:** AI chatbots and AI-supported text messages can support students by reaching out to acknowledge and normalize common concerns or other feelings. Recognizing that first-generation students in particular may be unfamiliar with the jargon of higher education and may benefit from additional help, a web bot and chatbot available 24/7 allow institutions to provide empathetic answers when students seek them— even outside of normal business hours.

Case Study: Norfolk State University + Mainstay

Historically Black colleges and universities (HBCUs) are well-known for their strength in building community and creating a welcoming experience for their students—so it’s no surprise they’d want that experience to extend to the technology solutions that support student success.

Chatbots and managed text services that push resources to students have shown [success](#) in improving grades, reducing summer melt and increasing enrollment. But an emotionally intelligent AI bot trained with data from predominantly white

institutions may not be the right fit for all institutions.

Through its partnership with Ed Advancement, Norfolk State University – an HBCU in southern Virginia – led student focus groups to inform and improve content within an AI-powered chatbot. In cooperation with chatbot company Mainstay and the Yale School for Emotional Intelligence, Norfolk State students helped ensure that text messages about important deadlines and campus activities fostered a sense of community and belonging in a culturally relevant way.

Based on the insights from the Norfolk State students, Mainstay updated the language used by the bot to better reflect the HBCU experience – for example, referencing college decision day as “the time for you to choose your home for the next four years” rather than just the day to commit to a school. Mainstay found that thousands more students responded to the improved language from the AI bot compared to the previously used reminders.

Informing Operational Improvement

AI also holds promise to help institutions with their internal operations, including improvements to enrollment management and the student experience.

- **Enrollment management improvement:** Recruiting new students is an ongoing priority for colleges and universities. While using algorithms to expand the reach of institutional recruitment [is not new](#), many less-resourced institutions have not yet adopted these approaches. Employing AI-powered chatbots to answer questions during the application process and nudge students over the summer – with financial aid deadline reminders, for example – can reduce summer melt and improve matriculation numbers.
- **Improvements in student experience:** Right now, students facing financial or personal challenges may need to go across campus from office to office sharing and resharing their hardships. Instead of asking a student to recount potentially sensitive or difficult information multiple times, a unified data system with dashboards built on top can help highlight relevant information and ensure faculty and staff go into meetings with the information necessary to meet a student’s needs.

Georgia State modified its emergency aid program to operate as a “push” – driven by AI-powered analytics – rather than a “pull” (e.g., student initiated). This approach enabled staff to anticipate student needs and provide resources proactively rather than waiting for a student to bring forward their financial need in order to receive emergency aid.

- **Course improvement:** AI-enabled analytics could help faculty and advisors identify the course topics or times during the school term (quarter, semester, etc.) where students have historically struggled and then improve the resources used or pedagogy to close gaps in understanding before they even emerge.

Supporting Skills Documentation

AI has the potential to help students document valuable skills they've developed over the course of their education in a format that employers (and the applicant tracking systems and other IT tools they often rely on) can use. As employers increasingly hire for skills, creating a skills-based, machine-readable articulation of skills can be a meaningful asset for students.

- **Skills mapping:** AI-driven skills mapping allows individuals and institutions to translate coursework, accomplishments and extracurricular experiences directly to in-demand employer skills. Skills mapping can help returning students map their existing individual strengths and weaknesses, allowing them to bypass courses that would be redundant for them and create a customized plan of study. Graduating students, meanwhile, can use skills maps to develop their resume. Similar to the “push” notifications in other contexts, AI could suggest non academic (but highly transferable) skills that might be indicated by an individual’s experience (for example, taking a heavy course load while also working part time might indicate strong time management).

Case Study: Grambling State University

Grambling State University in Louisiana has a single individual responsible for supporting 5,300 students as they transition from college to meaningful careers. Williams College, by comparison, has half as many students but employs seven individuals dedicated to supporting students with career education and an additional seven who handle career center operations and employer engagement.

In addition to their current student population, Grambling State has a tight relationship with its alumni—part of its “Gram Fam”—and the career services team also regularly supports alumni looking to make a career change.

The HBCU, like many of its peer institutions, serves a population that is disproportionately Pell-eligible (over [85% Pell eligible](#), in the case of Grambling State University), and

many are first-generation students. Additionally, many of its students balance significant personal responsibilities like jobs and families in addition to their studies.

Last year, the institution—at the recommendation of career services—approved a new requirement: Every senior needed to have a career services-approved resume to graduate. “I receive a wide range of resumes,” said Livingston of Grambling State. “Some are beginning resumes, and some are advanced; many of our students have not had guidance about the resume-writing process.”

To support students in creating resumes, Grambling State turned to Hiration, a resume tool that can leverage ChatGPT to help write resumes. Livingston noted, “Having [students] start with a technology that helps them draft resumes allows

me to review them in a reasonable time frame, which frees up time for me to teach them how to further develop those resumes.” The tool also offers students support with resume development after hours. “I have 200 resumes in the queue,” Livingston shared. “Instead of five days at my desk reviewing them, with our new process I can spend two days at my desk and three days helping students articulate their transferable skills.”

Grambling State is not yet using the AI aspects of Hiration—among other things, accessing the AI functionality is more expensive. Over time and with equitable access, AI holds the potential to support career services by helping students translate experiences to skills, as well as providing insights into the skills particular employers seek and how best to craft resumes that reflect those.

- **Transcript review and resume creation:** As employers increasingly seek skills beyond degrees in their hiring processes, AI-enabled transcript development could empower students to more easily identify and articulate the skills and competencies embedded in their course of study. Over time, AI-enabled tools may even be able to help students describe their skills with the preferred terminology of each employer to demonstrate how learning maps directly onto job requirements.



What AI Means for Curriculum and Skills

AI isn't just a tool for learning – it's also creating a set of new skills to be learned. This is true both for those students interested in developing AI as well as those who are users of AI – which, over time, will be all students.

"AI is not going to go away," says Rick Gallot, president of Grambling State University. "Our students will be more competitive if we help them to better utilize it."

Building Inclusive Design Teams

Generative AI creates new text or images from two primary inputs: the data sets it is trained on and the weights that are created during the training process. If either of these aspects are not representative of the overall population, the AI will likely behave in ways that show preference toward one group or characteristic or that are biased against other groups or characteristics.

Ensuring responsible development of AI will require intentional support of AI education at a wide range of institutions—not just the most elite schools. HBCUs and minority-serving institutions (MSIs), in particular, can and must be part of the equation in developing a next-gen AI workforce with the range of experiences and backgrounds to support equitable AI development. "We need to avoid blind spots," President Gallot shared recently. "If all the experts out there are only Ivy League graduates, they will know the Ivy League way – but there may be a different way."

Part of the challenge in bringing this to life will be attracting AI faculty. Higher education overall has [struggled](#) to recruit and retain faculty in computer science and emerging technologies where private sector jobs are a lucrative and compelling alternative. This challenge will likely be even greater for AI skills, for which there is significant demand in the private sector, creating a hurdle for under-resourced institutions that cannot compete with private sector salaries.

Preparing AI Users

In addition to the importance of preparing the next generation of AI developers, higher education will also play a role in developing the next generation of AI users. In the same way that the internet has become ubiquitous in everyday life, AI will likely expand to underpin both personal and professional activities.

- **Next-gen digital literacy:** Students using AI will need to understand the expectations and guardrails for how to use it ethically and in alignment with academic integrity policies (e.g.,

Can students use AI as a personal librarian or research assistant, helping identify sources and gather information? When does that cross a line into academic dishonesty?). They also need to deeply understand AI's limitations and flaws to ask critical questions and use it appropriately.

- **AI skills:** Just as there are tricks to making search engine queries more effective (e.g., using quotation marks or AND/NOT boolean terms), there are techniques for creating generative AI prompts that will yield more useful outputs. Understanding how AI works will empower students to understand capabilities and limitations to use it most effectively. Similarly, students may need a new mental model for how best to use AI. With the calculator, for example, students are generally taught to do the problem, and use a calculator to check their work. But with AI, the opposite is true—AI can do a first draft or a first cut of research, but it requires a human to check for accuracy, because AI can either make up or misconstrue facts (sometimes called “hallucination”).



Considerations, Limitations and What's Next

While AI has tremendous promise, it also has the potential to widen – rather than close – existing resource and opportunity gaps.

- **Bias and disparate impact:** As noted above, AI reflects the data it's fed and the worldview of those who develop it. Without enough focus on representative training data and a development team with diverse perspectives, an algorithm may drive negative outcomes for a particular group (an outcome known as “disparate impact”).
 - Representative training data: One infamous example of bias in training data comes from an AI-powered [resume tool built by Amazon](#). By training the tool on the resumes of current engineers— who were disproportionately male—the AI tool began to weed out resumes from women or those that included women's sports or club teams.
 - Representative development teams: Bringing multiple perspectives to bear can help mitigate the potential for bias and can make the tools more impactful for a wider range of users. In particular, making generative AI culturally responsive (as Norfolk State University worked to do with its chatbot) necessitates development teams that reflect the population of end users.
- **Cost and equitable access:** For many ed tech tools, AI features are offered at an additional cost. Hiration, for example, offers a free option with no AI features; the full version is \$20 a month. Paid versions of otherwise free tools like ChatGPT and Claude are similarly \$20 a month. Even when a per-person cost seems relatively minimal, it can be out of reach to offer at scale for under-resourced institutions. Ensuring the benefits of AI are equally distributed and accessible to everyone begins with ensuring the tools themselves are broadly available.
- **Implementation best practices:** Like all technology, AI is a tool; the same tool used in different ways can have wildly different impacts. Early warning tools can help keep students enrolled, or, if poorly implemented, they could increase the likelihood a student will stop out.

What's Next

Colleges and universities don't have the luxury of sitting back to wait and see how AI shakes out. Even amid a rapidly changing landscape, there is a very real risk associated with not acting: Limited access to AI development courses for students may dramatically decrease the diversity of the talent pool for AI development for years to come. And students will increasingly expect access to both AI-powered tools and courses to learn AI skills.

A first step for institutions may be finding ways to use AI in support of an institutional priority. Because AI covers such a wide range of applications and use cases, it is not hard to find solutions that are AI-enabled, and these point solutions offer a relatively easy entry point into AI. Connecting an AI-enabled solution to help solve an urgent need can help create a flywheel for future adoption of AI tools.

Additionally, high-quality insights depend upon high-quality data. For institutions looking to dive in more deeply, particularly on institutional operations, a necessary first step is assessing data collection, governance, structure and security. These steps are a prerequisite for implementing campus wide AI analytics.

Embracing AI solutions won't happen overnight. It will require a range of thoughtful mitigation strategies and will likely require partnership and support from a range of nonprofit partners and funders. But together, institutions and these partners can help ensure the benefits of AI are more equitably shared. Achieving equitable access and usage may not be easy. But as President Gallot noted, "Being bold is a necessary requirement to entering a space with so much potential."