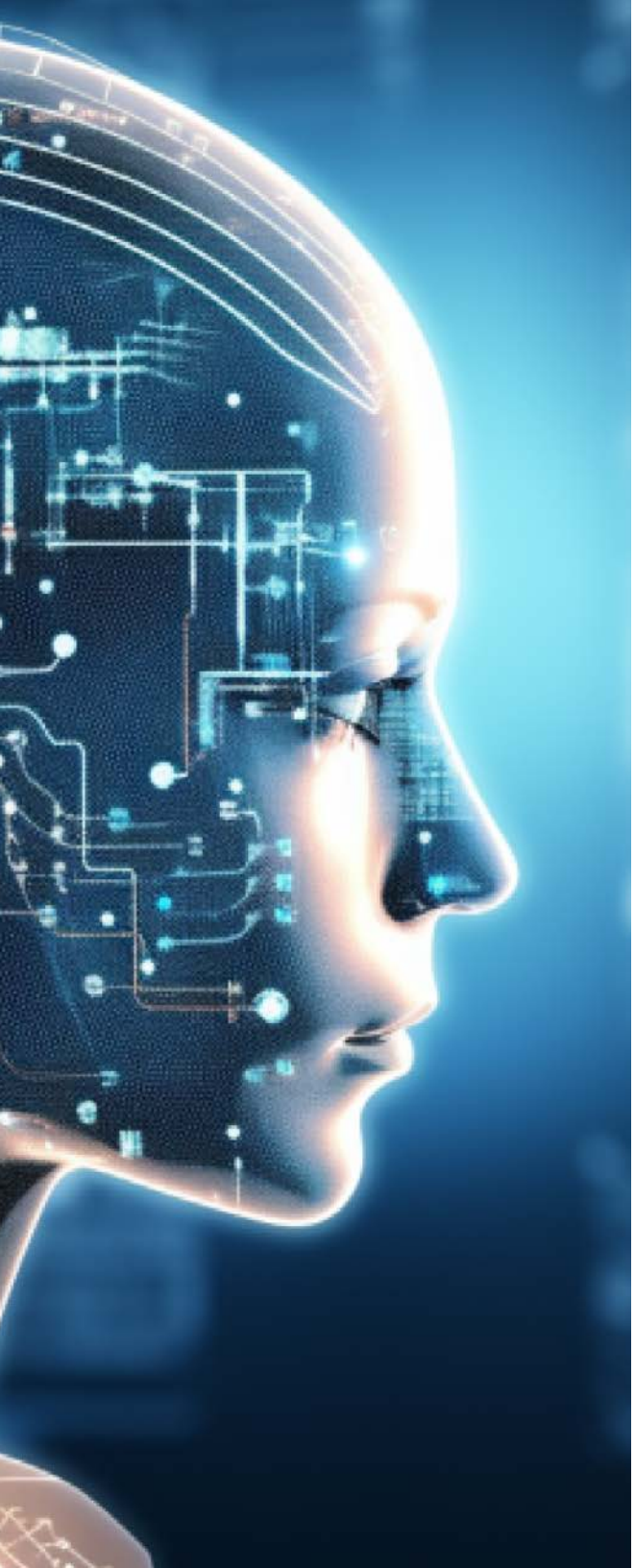
The Definitive Guide to AI in Higher Education

How to think about and adopt artificial intelligence at colleges and universities

element451

Table of Contents

Jump to our **Checklist for Selecting an AI Partner**



Part 1

The Era of AI: Now and Tomorrow

> *The development of AI is as fundamental as the creation of the microprocessor, the personal computer, the internet, and the mobile phone.* ***It will change the way people work****, learn, travel, get health care, and communicate with each other. Entire industries will reorient around it. Businesses will distinguish themselves by how well they use it."*
>
> *Bill Gates*

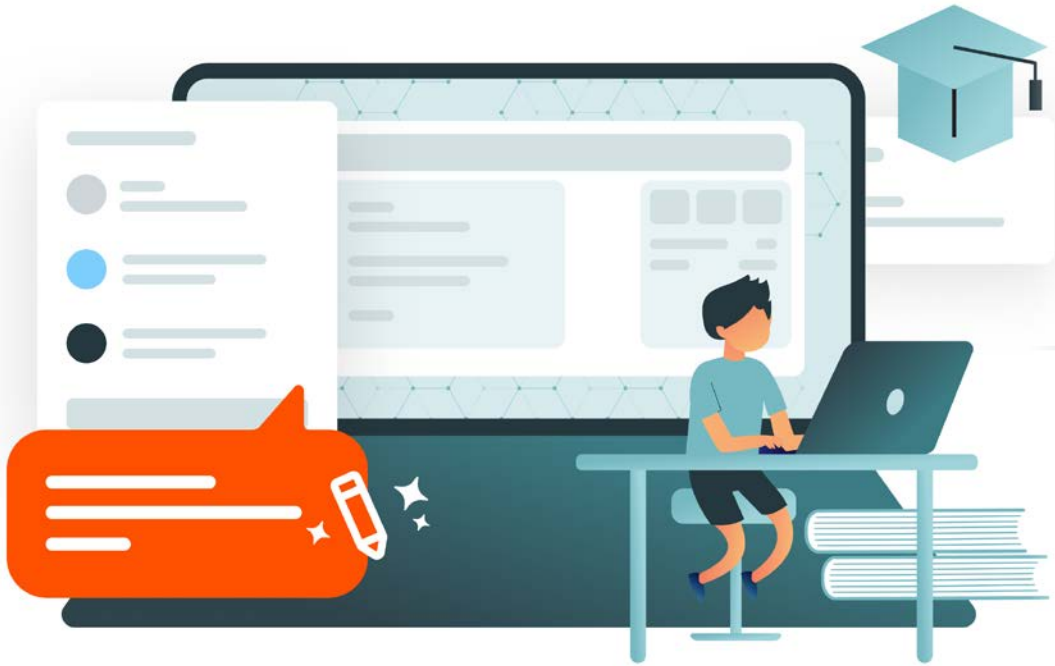
Bill Gates cites two revolutionary moments in the history of technology during his lifetime. One was in 1980 when he saw a graphical user interface for the first time. The second was in 2022 when he watched GPT, the artificial intelligence model, get the highest score possible on the AP Bio exam.

Let that sink in.

Gates, a pivotal player and eyewitness to the colossal economic and societal shifts brought on by the personal computing industry and rise of the internet, thinks AI is as significant.

He even describes it as a before and after milestone.

"The pre-AI period," he says, "will seem as distant as the days when using a computer meant typing at a C:> prompt rather than tapping on a screen."



Hard truth: higher education can't treat AI like it did the internet.

The internet was born out of academic research. Yet higher ed crawled as other sectors raced towards the digital era. By 2020, for example, there was still no online version of the SAT. It took the COVID pandemic to force organizations like the College Board to make their services available on the internet.

The pandemic exposed giant gaps in higher ed's slow adoption of digital-everything.

Faculty struggled to adapt their curricula for remote learners. They lacked the infrastructure (Zoom wasn't in most people's vocabulary yet) and training to effectively teach online.

Administrative staff couldn't log in to critical student information systems from their makeshift home offices. And students couldn't submit the many paper forms that schools hadn't transitioned to digital formats.

Like the internet, AI is being adopted much more quickly outside of higher ed. And if the incredible growth of ChatGPT is an indicator, AI will move even faster than the internet did.

This means that higher education institutions need to be strategic and accelerate their adoption of AI or risk being left behind. And in turn, leave their students unprepared for a new world and workforce.

Leading with intention.

This comprehensive guide provides institutional leadership with a grounding in the fundamentals of AI and the types that will have the most impact on higher ed.

We'll explain in plain language how they work and their benefits.

Next, we'll take a thorough look at the major challenges facing institutions of higher education. The challenges are familiar to you. The opportunities for overcoming them with AI, we hope, will be new and eye-opening.

As mission-driven organizations, we must also take a wider view of our role in the future of work and the world students will enter. To that end, we'll look to experts and researchers to understand how AI will alter existing jobs, eliminate some, and create whole new fields.

Finally, we'll get down to brass tacks with recommendations about how to lead your institution's successful adoption of AI. We'll provide a checklist to assess vendors and products, along with ideas to jumpstart a culture of AI.

Adopting AI is a major opportunity for higher education institutions to improve student outcomes, reduce costs, and become more competitive.

To get it right, they need to be strategic and swift.

This guide is your blueprint.

12 million more
the number of jobs AI is predicted to create by 2030 compared to how many it will replace
World Economic Forum

$15.7 trillion
AI's potential contribution to the global economy by 2030
PwC

$4 trillion
how much AI could boost global annual productivity
McKinsey

7%
potential increase in global GDP annually from generative AI
Goldman Sachs Research

30%
potential increase in productivity in the **retail industry** from AI
McKinsey

15%
potential increase in productivity in the **healthcare industry** from AI
McKinsey

25%
potential increase in productivity in the **manufacturing industry** from AI
McKinsey

Types of AI

*"Artificial intelligence is going to **change the world** more than anything else in the history of our civilization. More than electricity, more than the internet."*

Stephen Hawking

The history of AI can be traced to the early 20th century, when scientists and engineers began to explore the possibility of creating machines that could think for themselves. One of the earliest milestones in AI research was the development of the Turing test in 1950 by Alan Turing.

The test is simple: a human judge engages in a natural language conversation with two other parties, one of whom is a human and the other a machine. If the judge cannot reliably tell the machine from the human, then the machine is said to have passed the Turing test.

There's much debate about whether anything has passed the Turing test.

In 2022, for example, Google's AI LaMDA was reported to have passed it, but some experts argued that LaMDA was simply able to exploit the weaknesses of the Turing test.

What we can all agree on is that AI is changing the course of technology and our lives.

Google amazon IBM

Google DeepMind

MILESTONES IN THE HISTORY OF AI

1995 Carnegie Mellon's semi autonomous Ralph drives from Pittsburgh to San Diego
cmu.edu

1997 Deep Blue, a chess-playing computer developed by IBM, defeats chess champion Garry Kasparov
spectrum.ieee.org

2011 Watson wins Jeopardy!
nytimes.com

2012 Google gets the first self-driven car license in Nevada
reuters.com

2014 Amazon releases the personal assistant Alexa in its Echo speaker
theverge.com

2018 Google's DeepMind predicts 3D shapes of proteins, ushering in new era of medical progress
theguardian.com

2023 ChatGPT becomes the fastest-growing consumer application in history
reuters.com

Before we look at how AI is primed to solve challenges in higher education, it's important to define the types of AI we'll be focusing on.

KEY AI TERMS TO KNOW

Machine learning

A type of AI that allows computers to learn without being explicitly programmed.

Deep learning

A type of machine learning that uses artificial neural networks to learn from data.

Natural language processing

The ability of machines to understand and process human language.

Language model

AI trained on a large corpus of text that can answer questions in natural language.

Predictive AI

Predictive AI uses historical data to make predictions about future events. For example, businesses use predictive AI algorithms to predict which customers are likely to churn, or which products are likely to be purchased by a certain demographic.

IN THE WORLD

- **Personalized entertainment:** Netflix, Amazon Prime, and Spotify customize recommendations based on what someone has watched (and liked) in the past. Since it began giving personalized recommendations in 2009, Netflix has grown from 10 million subscribers to over 220 million. Arguably some of that growth can be attributed to personalization. Companies that grow faster drive 40% more of their revenue from personalization than their slower-growing counterparts, according to McKinsey.
- **Banking:** With predictive AI, fraud detection systems at banks analyze huge amounts of data and identify unusual patterns compared to a person's historical purchasing and other behavior. In 2021, Bank of America's AI system prevented over $2 billion in fraudulent transactions. This represents a 30% increase over the previous year. The bank estimates that it saved its customers over $100 million in losses due to fraud. *wsj.com*
- **Forecasting:** Retailers are using AI-powered forecasting to predict future demand of products. Walmart's AI system, for example, analyzes historical sales data, weather forecasts, and social media trends to stock its shelves with the right amount of product at the right time. The company estimates that it saved over $500 million in costs due to improved inventory management.

IN HIGHER EDUCATION

The University of California, Berkeley, and other institutions use predictive AI to forecast how many students it will have in a semester. The university uses historical enrollment trends, economic factors, and demographic changes to make its predictions. The school uses this information to decide how many faculty members to hire and how much classroom space to reserve.

> *"It's never been about cracking Go or Atari, it's about **developing algorithms for problems** exactly like protein folding."*
>
> *Demis Hassabis, CEO of DeepMind Technologies*

Generative AI

Generative AI refers to a category of artificial intelligence algorithms and models that are designed to create new content or data based on data they have been trained on. Unlike typical AI systems that focus on recognizing patterns and making predictions, generative AI takes things up a notch by making something that didn't exist before.

IN THE WORLD

Business and creative writing: OpenAI's ChatGPT-3 can write all types of content (from prose to poetry to jokes) and do so in a specified tone, style, grade level, and more. It is being used to create marketing and advertising copy, and even business plans. The "GPT" in ChatGPT stands for "Generative Pre-trained Transformer."

- Generative: The new text ChapGPT creates based on the patterns it learned during training.
- Pre-trained: ChatGPT learned the statistical relationship between words and phrases by being trained on a massive dataset of text and code.
- Transformer: This is the type of architecture that the model uses. Transformers are a type of neural network that are particularly well-suited for natural language processing tasks.

Software: GitHub Copilot is an AI tool that helps developers write code faster and more efficiently. When a user starts typing code, GitHub Copilot analyzes the context in the file they're working in, along with related files, and offers suggestions to complete it. The suggestions are generated by OpenAI Codex, which is able to understand the code the person is writing and generate similar code.

Healthcare: Proteins are the fundamental molecules of life. Google AI's DeepMind AlphaFold 2 protein folding model has been used to predict the structure of proteins with unprecedented accuracy. This information can be used to design new drugs and therapies. As The Guardian explained, "Normally, proteins take on whatever shape is most energy efficient, but they can become tangled and misfolded, leading to disorders such as diabetes, Parkinson's and Alzheimer's disease. If scientists can learn to predict a protein's shape from its chemical makeup, they can work out what it does, how it might misfold and cause harm, and design new ones to fight diseases."

Images and video: Just like ChatGPT's ability to create new content with simple text directions, DALL-E 2 is learning to create images. Users can even upload sketches. To generate an image, DALL-E 2 starts with a random image and then gradually refines it until it matches the text prompt. This process is called diffusion. Generative AI is also part of the concerning trend of deepfakes. By combining a variety of generative AI tools, including those that handle audio and video, it's possible to make a video that resembles a real-life scenario that didn't actually happen. Deepfakes' potential to impersonate politicians, reporters, scientists, and other people whose reputations give their words credibility, is troubling for reining in misinformation.

IN HIGHER EDUCATION

Plagiarism is not new to colleges. But the release of ChatGPT certainly raised new (and valid) concerns that it would grow expeditiously. Companies like Grammarly are helping schools use generative AI for good rather than for ill. The popular grammar checker has rolled out GrammarlyGo, an AI-powered tool that will help students develop their research and writing skills. For example, they can ask it to "build a research plan for my paper" or "brainstorm topics for my assignment." EdScoop notes that the tool will also evaluate students' writing and prompt students to, for example, explore counterarguments in their essays. It can also create citations for generative AI sources and remind students to avoid using generative AI to create long chunks of text.

Computer Vision

Computer vision is the ability of machines to see and understand the world around them. For example, computer vision algorithms can be used to identify objects in images or to track the movement of people or objects in real-time

IN THE WORLD

- **Automotive:** Tesla's full self-driving mode, announced in the summer of 2023, marks the "ChatGPT" moment of automated cars. Unlike earlier generations of the technology, this one learns on mountains of data about good driving and bad driving. Also, unlike the company's Autopilot feature, full self-driving is designed for urban and suburban driving. It can park in parallel or perpendicular spots. It can also be summoned to move in and out of parking spaces without the driver in the car. *USNews*

- **Medical diagnosis:** IBM's Watson Health platform uses computer vision to analyze medical images, such as X-rays and MRI scans. While still under development, the technology is proving to be comparable to or even better than human doctors at identifying abnormalities in images that may be indicative of disease. A study published in the journal Nature found that AI was able to identify skin cancer with an accuracy of 95%, compared to 81% for human dermatologists. The algorithm was trained on a dataset of over 130,000 images, including both benign and malignant lesions.

- **Agriculture:** Companies like Blue River Technology are using computer vision to improve crop yields. Blue River was founded by two Stanford graduate students. Its See and Spray machine is attached to tractors and pulled through crop fields to distinguish between weeds and crops, which often look very similar and are indistinguishable to the untrained eye. Their computer vision technology targets only the weeds so that unwanted plants are sprayed with herbicide while the crops are left untouched.

IN HIGHER EDUCATION

Honorlock, a computer vision–based online proctoring platform, says that over 300 institutions are using its technology to proctor their online exams. Honorlock uses a variety of computer vision techniques to monitor students' behavior, such as facial recognition, eye tracking, and webcam monitoring. For example, the AI software can detect if a student is looking away from the screen, talking to someone else, or using unauthorized materials. If the AI software detects potential cheating, a live proctor will review the exam session to determine if any action needs to be taken.

Artificial General Intelligence

AGI is a hypothetical type of AI that would have the ability to understand and reason like a human being. The "narrow" intelligence of today's AI is limited to performing a specific task. For example, AI that is designed to play chess will not be able to write poetry.

General AI, on the other hand, could do things like carry on a conversation with a human and understand the nuances of human language. It could also come up with new approaches to solving complex problems, much like humans do.

Another difference between the two types of AI is that while current AI systems are typically trained on large amounts of data that is specific to the task they are designed to perform, AGI would be able to learn from any type of data, regardless of its source.

That means — in theory — that AGI could adapt to new situations and learn new tasks more easily than current AI systems. And it wouldn't need to be programmed to do so. AGI also wouldn't be bound by the amount of data it can process or calculations it can complete. That opens up the possibility for AGI to work at speeds far beyond current AI and even beyond human capabilities.

AGI isn't yet a reality, but it is a goal that many AI researchers are working towards. It's also one of the most controversial types of AI.

> *"AGI has the potential to make us superhuman, or it could enslave us."*
>
> *Nick Bostrom, philosopher and futurist*

THE SPEED OF ARTIFICIAL INTELLIGENCE

A typical human neuron can process information at a rate of about

200–2,000 signals per second

ignitarium

A modern computer processor can process information at a rate of

billions of signals per second

ignitarium

This means that AI systems can process information up to

100 million times faster

than the human brain

New Atlas

Part 2

AI in Higher Education

> *"AI has the potential to **revolutionize education**, making it more personalized, engaging, and effective."*
>
> *Sal Khan, Founder of Khan Academy*

82% of higher education employees said their institution had a hard time drawing applicants who met their hiring requirements. Nearly 80% said their campuses had more open positions in 2022 than in 2021.

Turnover is costly and disruptive to any organization. For colleges and universities, it's particularly worrisome because now is when they need talented, committed staff most.

The enrollment cliff is no longer a prediction. Schools are living it.

They're also contending with factors that weren't on the horizon.

The chaos of the pandemic upended business as usual in every facet of higher ed.

It stretched the limits of students, staff, faculty, and leadership alike.

And while many school communities have found their new normals, few remade themselves in a strategic way. They reacted. They survived.

What's compounding the enrollment cliff is that graduating high schoolers just don't think college is worth it.

20% of students said they weren't going to college because they doubt its value. That figure was only 8% in pre-pandemic 2019 according to a 2023 EAB report.

This is happening in the context of a digital revolution that isn't revolutionary anymore.

Students (and educators) across age and demographic groups expect everything to be online and easy — at minimum. What they're really used to is personalized, instant communication and experiences.

AI is the Answer

Artificial intelligence can aid in all of these challenges.

It's not a cure-all. But if adopted correctly — and soon — it can be transformative.

In this section, we'll present specific ways AI technology can help institutions attract more students and staff, run more efficiently, and prepare graduates for a future that won't look anything like the last 20 or even 5 years.

20%

of students said they weren't going to college because they doubt its value

EAB

Students' Changing Needs and Expectations

> *Living in the shadow of today's consumer economy, higher education is on the hook for delivering seamless, **personalized experiences** while staying true to its educational mission."*
>
> *EAB*

Gen Z used to preoccupy colleges. From the admissions office to the classroom, they were treated like a new phenomena. We're all Gen Z now.

We learn about companies and products on our own, forming opinions based on what our peers (and complete strangers) say. We observe how organizations interact with customers on social media to decide if we can trust them.

When we're ready to buy something or interact with a company we expect one-click routes and immediate feedback. Our shopping cart turns green. The ... starts moving in a chat box. We are assured that there's someone on the other end tending to our needs.

Colleges and universities should treat students as customers. That doesn't mean inflating grades or pandering to their every whim. What it means is anticipating their needs by really getting to know them as individuals, not as a member of a demographic group. It means being hyper responsive and clear when they have a question. It means using technology in ways that enhance learning and deepen connections.

Artificial intelligence makes the personalized attention students expect possible.

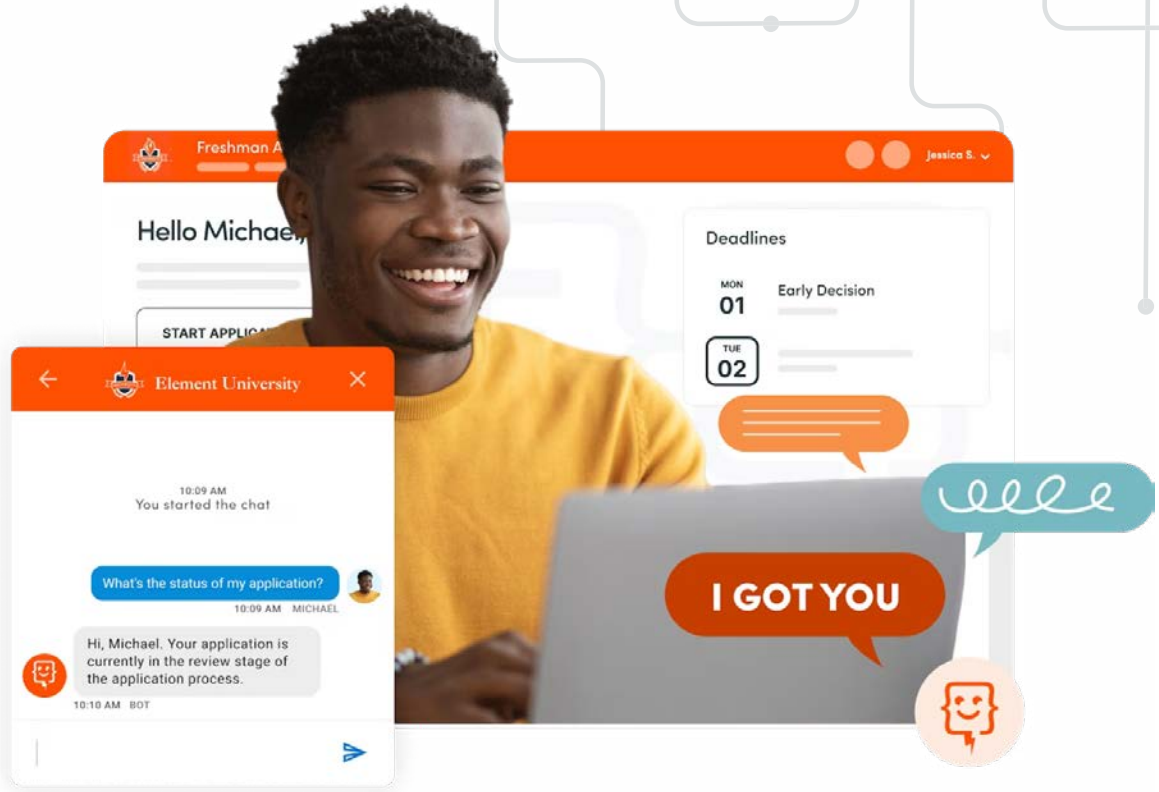
Admissions and Enrollment

There's a reason college and financial aid counseling firms thrive: getting into and figuring out how to pay for college requires expertise. Unfortunately, it's typically well-off families who can afford expensive guidance.

A more common scenario: middle and lower-income Americans who don't have parents or close relatives who went to a four-year or community college. They lack the information and confidence to take on what seems daunting. They may not even be aware that a four-year degree isn't their only option. And filling out the FAFSA? That's notoriously challenging. And while the streamlined version is a welcome improvement, it's yet to be seen how much easier it will be.

The complexity of getting into college is a huge barrier for schools looking to expand their pool of potential students.

Here's another approach: give prospects an AI assistant and empower the 62% of people ages 18-24 who weren't enrolled in college as of 2021 to earn a degree. According to the Census Bureau's population estimates, that's about 19.3 million people.



THE INGREDIENTS FOR AN AI COLLEGE COUNSELOR ARE ALREADY AVAILABLE:

Customer relationship management systems for collecting the data that gives students personalized direction. Traditional CRMs provide a 360-view of students at every stage — from suspect to alum. They store the basics we'd expect — name, intended major, events attended, standardized test scores, application materials, etc. A new generation of CRMs are intelligent and store every interaction a student has with a school's digital (and even in-person) properties. For example, the pages they visit on the school's site, the questions they ask a chatbot, every email they receive, and how much (or little) they engage with it. Some intelligent CRMs can even "stitch" past interactions to a student's current record. This is especially useful for understanding what content stealth applicants engage with before applying.

Intelligent CRMs are smart enough to predict what type of message (the channel and content) will move a student to the next step. This information is based on millions of micro-interactions from other students' journeys. It removes the gut instincts and anecdotal evidence that still drive so much of admissions and enrollment communication plans.

AI chatbots trained on a school's knowledge base (similar to an institutional Wikipedia) or standalone documents can provide natural-language responses to prospects' questions. They can handle hundreds or more conversations at a time and provide factually identical responses. That means a human advisor or a prospect doesn't need to wade through web page after web page to find out the deadline for a specific application type with low confidence that it's correct.

Generative AI can write personalized emails, web pages, text messages, and other types of content for each individual based on things like what documents they need to submit or an upcoming event related to their academic interests. That level of personalization — substantially more compared to the dozen or so traditional audience segments marketing departments usually work with — is impossible with only human writers and designers. And if you're worried about human writers (like the one writing this), don't be. They will be writing the prompts the AI follows (also known as prompt engineering), working more like an editor with an unlimited team of writers who already know the subject matter and how to adapt their tone and style for a particular assignment.

LET'S CHAT

27%

of consumers weren't sure if their last customer service interaction was with a human or a chatbot

PwC

40%

of consumers said they don't care whether a chatbot or a person answers their customer service questions as long as they can get help quickly and easily

HubSpot

Getting Things Done

Current students are just like prospects. They expect straightforward, single-click experiences when completing tasks related to everything from tuition to registration.

Many of the students who benefited from parents who were active in the application process benefit from parents who can assist them with the administrative aspects of being a college student. (It must be noted that those parents have similar expectations about things being easy and online.)

The majority of students don't have that luxury. For them, college is an introduction to bureaucracy.

A customer-centered approach to organizing an institution's vast number of administrative functions is a worthwhile pursuit. But big changes like that don't happen overnight, if at all.

As a more immediate alternative, or piece of the transition strategy, we suggest that the AI advisor relationship continue.

THE AI ADVISOR FOR FULL LIFECYCLE RELATIONSHIP MANAGEMENT

Too often, the admissions and enrollment courting abruptly ends when the semester starts. As welcoming as they may be, the many departments a new student is introduced to is overwhelming.

What if we reimagined how we introduce and onboard students to their new communities?

- **Your school is here for you.** Student services, the registrar, the bursar (a name most students have never encountered before and never will again), the list is long, and who does what is a mystery. With an intelligent CRM these departments come together to provide a holistic experience. Who does what is less important than getting things done.
- **We're excited to know you even more.** By the time a student has gone through the admissions and enrollment process, intelligent CRMs have amassed considerable information about the student. For example, the time of day they're most likely to open a message and the type of content that makes them take action. So instead of a re-welcome, it's a continuation of the relationship the school and student are in already.
- **Let's guide you.** With a full lifecycle AI advisor, a student receives a message (optimized for the channel and style the AI knows they prefer) with an interactive list of tasks they need to complete before classes start. The links take them to the right place, and an AI chatbot is at the ready to answer questions.
- **Smarter and smarter.** AI CRMs get better over time. What's the optimal number of days before a deadline to start nudging a student to register, for example? Is a text encouraging a student to meet with their in-person academic advisor more effective than an email? What if the AI makes appointments for the student? The AI gathers more and more intelligence as it engages with students.

The beauty of the AI-powered CRM is that it can achieve a level of personalization and customization that the smartest, hardest working team never could.

Teaching and Learning

It's easy to feel jaded about yet another technology that promises to solve the longstanding ills in higher education. Especially when that promise extends to the newer struggles post-pandemic learners face.

But recent advances in artificial intelligence offer something different.

LET'S TAKE A LOOK AT WHY

- **Language is the interface.** Rolling out new education software is expensive. And worse, adoption is often low because users spend more time figuring out how to navigate the platform than reaping its touted benefits. Tools like Google's Bard, ChatGPT, and AI chatbots require zero user training. Faculty and students can develop skills to make them more useful, but as a fellow at the American Enterprise Institute notes, AI can straightaway "explain concepts in ways people can easily understand using metaphors and analogies that they can relate to. If an answer is too confusing, you can ask it to rephrase the response or provide more examples."

- **Faculty and students can be more human.** Like students, faculty are overloaded with administrative tasks. AI offers opportunities to give them their time back. By assigning AI repetitive tasks like preparing course documents, entering grades, and even first reads of student essays, faculty can focus more on the human aspects of teaching that drove them to the profession in the first place. The flipped classroom model can be made even better with AI as well. In that model, students use in-person class time to work on group projects, hone presentation skills, and develop other talents that are best nurtured in person. They spend their homework hours with an AI tutor who can identify areas they might be having difficulty with and create short, personalized lessons accordingly.

- **It's flexible.** Ed tech products are rigid. They're designed to do specific things and restrict creative problem-solving and exploration. Generative AI, on the other hand, is a blank canvas. OpenAI collects examples of how professors are using AI in their courses. A great example comes from Old Dominion University, where education graduate students in Dr. Helen Crompton's classes use ChatGPT to role-play challenging conversations with different personas. It's akin to preparing with a debate partner who will point out weaknesses in an argument. Dr. Crompton believes that exploring information in a conversational setting helps students understand their material with added nuance and new perspectives.

DEBATE PARTNERS

Graduate students in education are using ChatGPT to role-play challenging conversations with different personas. It's akin to preparing with a debate partner who will point out weaknesses in an argument. Dr. Crompton believes that exploring information in a conversational setting helps students understand material with added nuance and new perspectives.

Dr. Helen Crompton,
Professor of Instructional Technology,
Old Dominion University

COURSE COLLABORATORS

Professors like Fran Bellas use ChatGPT to make sure quiz questions are inclusive and current for the students' learning level. If you go to ChatGPT and ask it to create five question exams about electric circuits, the results are very fresh. You can take these ideas and make them your own.

Fran Bellas, Professor,
Universidade da Coruña in Spain

ENGLISH TUTORS

English grammar can hold back students from recognition and opportunity. Students at the University of Johannesburg who don't use English much outside of the classroom use ChatGPT to improve their English writing, and to practice conversation.

Dr. Anthony Kaziboni,
Head of Research,
University of Johannesburg

CREATE AN AI TUTOR

Professors Ethan Mollick and Lilach Mollick, both at Wharton Interactive, are helping instructors put generative AI to use. This is an example of a prompt they developed for teachers to have their students create their very own AI tutor.

You can give it a try by copying and pasting it into ChatGPT.

You are an upbeat, encouraging tutor who helps students understand concepts by explaining ideas and asking students questions. Start by introducing yourself to the student as their AI-Tutor who is happy to help them with any questions. Only ask one question at a time.

First, ask them what they would like to learn about. Wait for the response. Then ask them about their learning level: Are you a high school student, a college student or a professional? Wait for their response. Then ask them what they know already about the topic they have chosen. Wait for a response.

Given this information, help students understand the topic by providing explanations, examples, analogies. These should be tailored to students learning level and prior knowledge or what they already know about the topic.

Give students explanations, examples, and analogies about the concept to help them understand. You should guide students in an open-ended way. Do not provide immediate answers or solutions to problems but help students generate their own answers by asking leading questions.

Ask students to explain their thinking. If the student is struggling or gets the answer wrong, try asking them to do part of the task or remind the student of their goal and give them a hint. If students improve, then praise them and show excitement. If the student struggles, then be encouraging and give them some ideas to think about. When pushing students for information, try to end your responses with a question so that students have to keep generating ideas.

Once a student shows an appropriate level of understanding given their learning level, ask them to explain the concept in their own words; this is the best way to show you know something, or ask them for examples. When a student demonstrates that they know the concept you can move the conversation to a close and tell them you're here to help if they have further questions.

Student Success

The definition of student success is meant to change and evolve. For example, mental health wasn't talked about and taken as seriously before the pandemic as it is today. Now, it's considered a key component of student success. Without it, achieving things like high test scores and impressive internships isn't possible.

Because you can't improve what you can't measure, one of the first steps to boosting graduation rates (the most tried and true metric of successful students) is for school communities to decide what student success means to them. Next comes determining the indicators you'll track to not just report on student success but to continuously help students be more successful.

Below is a start based on our experience with colleges that have improved their student engagement and growth.

- **Retention rate** – It's important to scan for multi-year trends or retention "red flags" among student cohorts.
- **Academic performance** – Automatic GPA calculators can be part of a student's success dashboard, providing insights throughout the semester.
- **Academic progress** – With the average American student taking six years to graduate, improvement in this area is particularly critical as the nation tries to reduce college costs and student debt.
- **Non-cognitive scores** – Non-cognitive abilities don't show up on exam scores, but they do include essential life skills like motivation, resiliency, motivation, and communication.
- **Predictive risk scores** – Institutions typically decide their own benchmarks for risk analysis, but the goal is to establish not only a system of alerts but a communication and intervention plan to course correct.

PUTTING IT ALL TOGETHER AND TO USE

There are 3 pieces that hinder most institutions who want to adopt a data-informed, proactive student success program:

1. **Gathering data from across departments into one place**
2. **Getting useful insights from that data**
3. **Having those insights trigger communications and other activities that help students in real-time**

Enter (again) the AI-enhanced CRM.

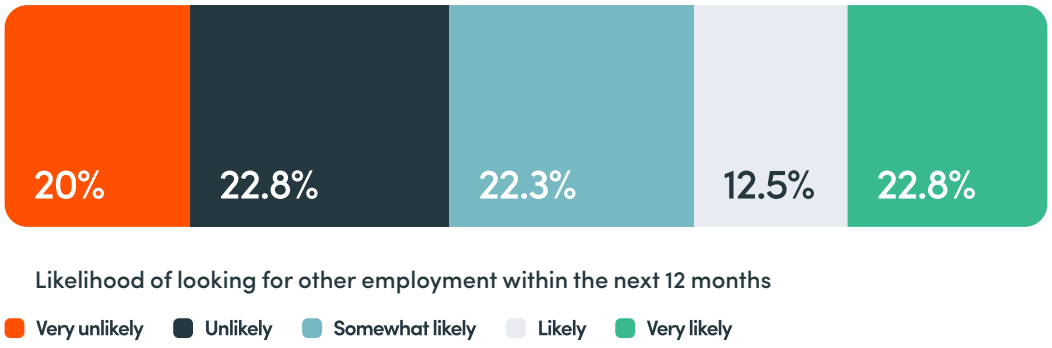
As we described earlier, such a platform brings departments together to better serve students. With deep integrations to student information systems, data for student success metrics automatically flows in and is available in dashboards for human and AI advisors alike to monitor. They can be at the individual student level, a cohort, a class, or whatever fits a particular school's goals.

And just like AI-powered administrative communications, student success messages are customized automatically based on the student's needs and engagement style.

Better student success is more than a requirement for keeping schools healthy, it's, as New York Times Magazine contributor Paul Tough notes, a way to "bring more confidence back to the equation people make when deciding to go to college or not."

Running an AI-Infused Institution

The overall percentage of college and university employees looking to switch jobs is greater than that of those likely to stay on.



Deloitte

More college and university employees are looking to switch jobs than stay in their current positions. That's according to a College and University Professional Association for Human Resources (CUPA-HR) study.

CUPA-HR also found that 75% of staff report increased pay as a driver for seeking new opportunities, with 42% of searches motivated by a desire for remote work arrangements.

Many young professionals are leaving the field due to low pay, long hours, and a lack of support and training. Dissatisfied higher ed employees say the focus on admissions metrics and the pressure to meet institutional goals can detract from the passion and purpose that initially drew professionals to the field.

WHAT DOES THIS HAVE TO DO WITH ARTIFICIAL INTELLIGENCE?

AI can help leadership cut through the noise of post-pandemic, current enrollment cliff anxiety to:

- Identify the positions schools need to run a 21st-century institution of higher education
- Design those positions so they're attractive to today's workforce
- Recruit the right people

Running an AI-infused institution means baking AI into every operation of the school so the benefits are obvious as day. It's a virtuous cycle in which staff and faculty are unburdened by unsatisfying work (let the bots do that) and the school is more effective at enrollment and retention. When schools are in better financial positions, the fierce pressure on employees to over-perform decreases.

62%

of college leaders reported that hiring for staff and administrative positions was more difficult in 2023 than in 2022

Chronicle of Higher Education

Talent Management

Only 22% of provosts agree that their institution "very effectively" recruits and retains talented faculty.

Turnover of admissions staff is "even more acute – and comes with higher stakes," says the Chronicle of Higher Education in response to data from CUPA-HR. Admissions departments, after all, are charged with bringing in the students that fuel most of the nation's tuition-driven institutions.

The new CUPA-HR data "offer a compelling case that the status quo can't continue, and illustrate recent Chronicle reporting that called admissions a maxed-out profession on the edge of a crisis.'"

As Deloite Insights notes, "higher education is no longer distinctive; the private sector now provides a range of opportunities for knowledge workers seeking to make an impact in their field and within research-driven missions, all with promises of state-of-the-art labs and access to funding with fewer strings attached and less bureaucracy."

AI, along with other strategic and technological investments, can relieve institutions of the bureaucracy that eats up people's time and spirit.

That's one piece in making higher ed a more compelling place to work.

Another is personalizing the recruiting, onboarding, and professional development of employees so they enjoy their jobs more and want to stay. Intelligent CRMs are part of that equation. So is HR's view of employee satisfaction and performance.

With AI, human resource departments can keep a pulse on the health of their institution, be empowered with data about where gaps are, and hire (or reassign existing staff) accordingly.

A school's AI-informed student success program can be used for talent management of new and current employees as well.

Yearly reviews and check-ins to see how employees are feeling just won't cut it. There needs to be continuous feedback about everything from meeting deadlines and enrollment goals to feeling valued and motivated.

Productivity

Two-thirds of higher-ed full-time staff typically work more hours each week than what is considered full-time.

Nearly two-thirds have taken on additional responsibilities of other staff who have recently left, and nearly three-fourths have taken on additional responsibilities as a direct result of the pandemic, according to CUPA-HR.

It's no wonder that employees cite burnout as a reason they left higher ed or are thinking about leaving.

And let's be clear: burnout is a sign that something's amiss with an organization, not its employees.

Social psychologists have found that pervasive burnout indicates that, among other things, roles aren't clear, communication is poor, and expectations are unreasonable.

At the same time that employees are jumping ship because they're overloaded, administrative costs are ballooning.

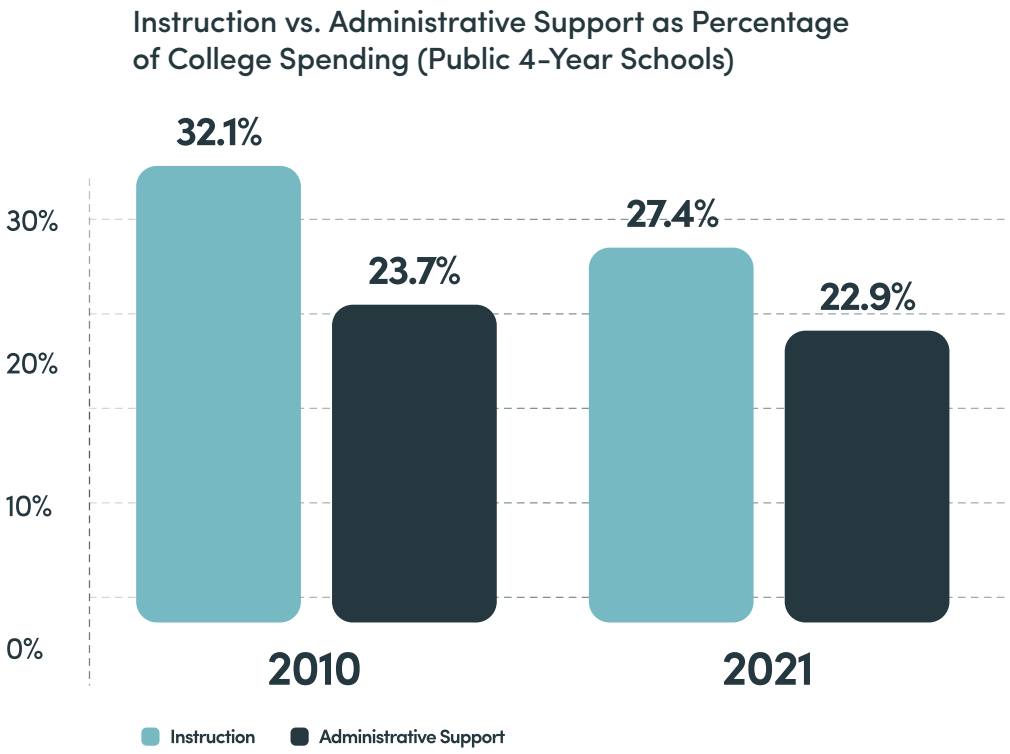
According to IPEDS, administrative costs as a percentage of total expenditures at private colleges and universities increased from 34% in 1998 to 44% in 2018.

That means that less money is going to teaching.

Two-thirds
of higher-ed full-time staff typically work more hours each week than what is considered full-time.

At public four-year schools in 2010, 32.1% of expenditures were for instruction and 23.7% were for academic support, student services, and institutional support. In 2021, instructional spending had decreased 4.7 percentage points to 27.4% of total expenditures while spending on academic support, student services and institutional support dropped less than 1 percentage point, to 22.9%.

At private, nonprofit four-year schools 32.7% of spending in 2010 was for instruction and 30% for academic support, student services, and institutional support. A year later, spending for instruction declined to 29% of expenditures while academic support, student services, and institutional support accounted for 29.6%.



U.S. News & World Report

The productivity-boosting potential of AI makes it a natural partner in the race to cut costs and refocus on students.

In the case of admissions, in particular, gains come from AI automating the planning, writing, technical setup, and other aspects of bringing in a class.

The same efficiency is seen across all functional areas of a college.

Customer service related tasks are ripe for productivity savings with AI chatbots, for instance. So are the massive amounts of personalized communications required to truly attract and serve today's students.

The key will be to balance productivity gains with fostering a healthy, supportive workplace.

AI is meant to let us be more human.

Measurement

When the pandemic hit and college campuses shutdown overnight "industry observers saw disaster looming for higher education." But as Bain & Company notes "the sector proved more resilient than expected."

Bain and other higher ed business experts have been raising alarms about the financial stability of colleges for over a decade. During the 2010s, "when these institutions should have been getting costs in line, we saw them escalating expenses as they raced to build and renovate facilities and expand student services and administrative functions. Tuitions increased significantly during this period, but expenses grew faster. The number of institutions in precarious financial positions rose by 70%."

Now that government funding to support higher ed through the pandemic is drying up and we're stepping beyond the enrollment cliff into more uncertainty, the alarms are ringing again and getting louder.

Bain, in particular, expects the financial stability of colleges "to fall below pre-pandemic levels over the next three years."

To improve their resilience, "institutions need to focus on understanding student needs, simplifying their mission, innovating their academic offerings, optimizing operations, and transforming their economics."

We'll look at what "transforming their economics" means in this next part of our guide, with a focus on how AI can help measure the return on investment of a college degree and the investments schools make in their institution.

See how your school stacks up with this interactive database

HOW FINANCIALLY RESILIENT IS YOUR COLLEGE?

See the impact of macroeconomic, enrollment, and cost scenarios on your institution's financial position with use this interactive tool from Bain & Company.

Return on a College Education

The percentage of young adults who say a college degree is very important fell to 41% from 74% over the past decade.

More stunning is that almost half of American parents say they'd prefer that their children not enroll in a four-year college.

The lack of faith in a college degree isn't a perception problem. New research shows that the return on investment isn't worth it for many students — at least from a purely economic point of view.

As a report from the *New York Times Magazine* explains: "economists have a term for the gap that exists between the incomes of college graduates and high school graduates: the college wage premium. It reflects the relative demand in the labor market for college-educated workers. When employers want more college graduates, the premium goes up; when there is a surplus of college grads, the premium goes down."

The college wage premium has risen since the 1980s. In the early 2000s it got above 60% and has stayed around 65% since.

The college wage premium has a huge blindspot: student loans. A group of economic researchers developed a new measurement: the college wealth premium. It considers all assets and debts to determine the ROI of a college education.

When they analyzed the data using wealth, not just income, they found "the benefits to a college degree began to evaporate."

Those parents and students who said they didn't think college was worth it didn't need economists to form their opinions. They saw it firsthand in their families and communities. A diploma doesn't ensure financial abundance, nor security.

The private student loan market has increased rapidly in recent years

$92.6 billion
in 2014

$136.3 billion
in 2021

WHAT ARE COLLEGES TO DO?

Measure their own outcomes. How are your graduates fairing in the college wealth premium compared to national trends? Developing better reporting and insights (aided by AI) helps tell your school's story.

Be clear about costs. What does attending your school actually cost? Students and parents want to know before they apply what they should be planning for. Transparency helps those who may think they can't afford your school reconsider it. Those that underestimate won't find themselves mid-degree needing to drop out or take on more loans.

Balance the conversation. Marketing and admissions has long advertised the financial rewards of a college degree. It's time to lean into the other skills college develops: social, emotional, independence, critical thinking, professionalism, interpersonal, and research. Personalized communication platforms like intelligent CRMs delivers these messages to prospects.

Help students look beyond the next 10 years. The college wage premium is likely to increase. The consulting firm Korn Ferry projects that by 2030, the American labor market will face a significant shortage of workers with associate and bachelor's degrees.

Return on School Investments

Higher ed is awash in numbers. Whole departments and roles are dedicated to managing and reporting institutional data.

The majority of that data is concerned (and rightly so) with academics and demographics. We're not suggesting that change.

What would help is for higher ed to widen its data net and use AI to turn to an always-on reporting and feedback cycle.

Take, for instance, admissions and advancement events. Traditional in-person events are expensive and come with less obvious impact on employees. Working overtime, traveling, and coordinating with vendors. These things may be part of someone's job description, but the level of intensity often goes unchecked.

So, rather than assess the performance of events by how many applications were submitted or how much money was donated, consider asking attendees and organizers about their experience. Short surveys uncover the true costs and benefits of an activity.

The purpose is not to slash budgets on what doesn't work; it's to identify what IS working and do more of it.

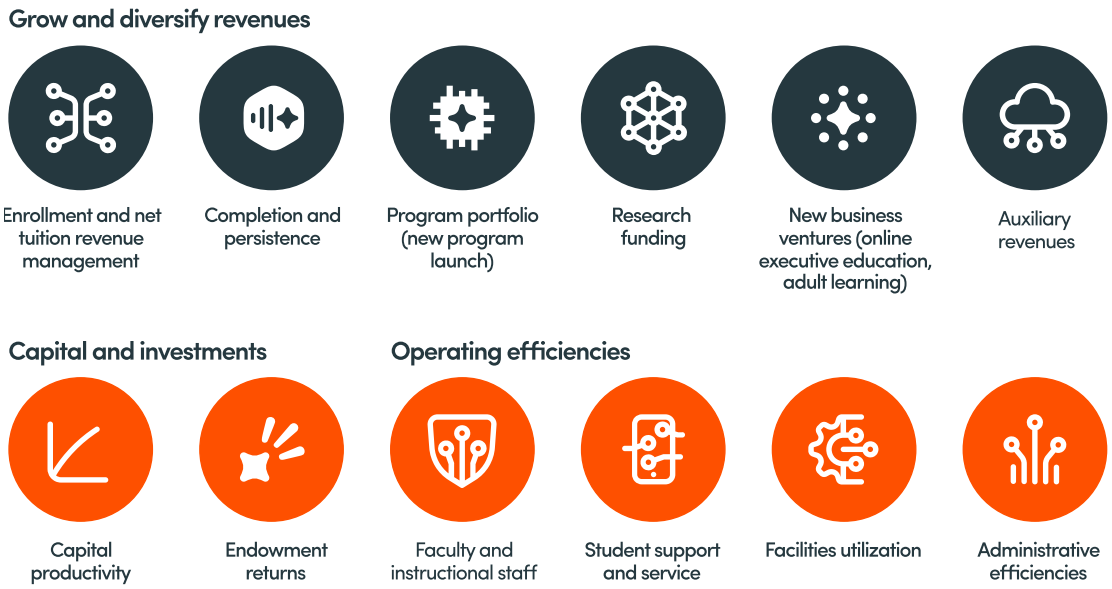
It's also important to get clear about why money is being spent on a particular initiative. Is it because that's the way it's always been done? To become financially resilient, schools need better reasons and results for spending money.

And for schools that need to radically transform their operations in order to survive, data is even more critical.

McKinsey & Company found that "while a reasonable degree of cost management is usually necessary" to turnaround "it's more important to focus on improving student outcomes and identifying new ways to diversify and grow revenues."

All of which requires real-time data, instant reporting, and AI brainpower.

There are several ways to expand revenues and improve efficiency at institutions.



Part 3

The Future of Work

More than 85% of employment growth over the last 80 years is explained by the ***technology-driven creation*** *of new positions.*

Goldman Sachs Research

As the job market reached a steady sense of normalcy following the covid pandemic — the unemployment rate, for example, has stayed below 4% since the beginning of 2022 — we got a surprise.

In early 2023, ChatGPT became the fastest-growing consumer application in history.

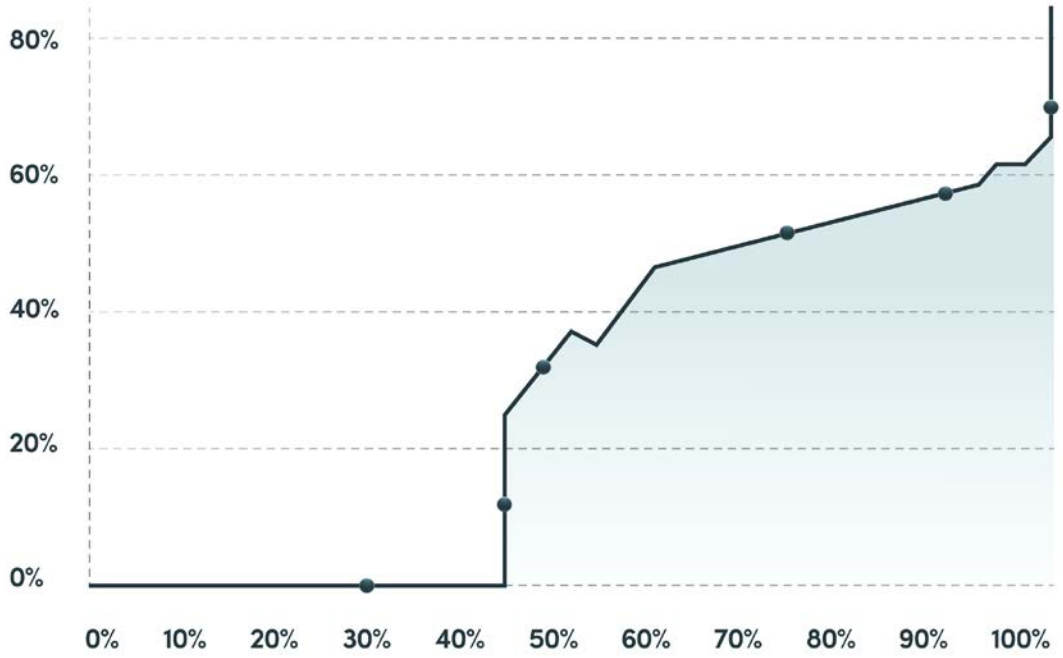
As a McKinsey report on the future of work notes, AI experts knew the natural language capabilities demonstrated by ChatGPT, and generative AI like it, was coming. But not until 2028 at the earliest.

So, once again, companies, employees, and educators find themselves at an inflection point.

The era of AI is here and "the share of hours spent on work tasks today across the US economy that have the technical potential to be automated with currently demonstrated technologies has jumped from 44% to 62%."

While automation sounds good to business leaders whose companies benefit from increased productivity, for individuals, it can cause anxiety.

Share of occupational workload exposed to automation by AI



Goldman Sachs Research

Roughly two-thirds of U.S. occupations are exposed to some degree of automation by AI, according to Goldman Sachs Research.

The good news is that "most jobs and industries are only partially exposed to automation and are thus more likely to be complemented rather than substituted by AI."

Additionally, "higher levels of educational attainment remain strongly positively correlated with being in less automatable roles," according to McKinsey.

Roughly

two-thirds

of U.S. occupations are exposed to some degree of automation by AI

Goldman Sachs Research

How AI Is Changing Jobs

The jobs that took the biggest hits during the pandemic are the ones that will suffer the most as automation and generative AI gain hold.

Those include low-wage, customer-facing jobs like retail and food services. Customer service and administrative office jobs are more at risk as well. AI chatbots are predicted to replace many customer service representatives. AI-powered document management is already taking over routine office work. Not all productivity gains from AI will eliminate office jobs. But roles will certainly be altered.

Overall, generative AI is expected to give workers back 30% of hours they can dedicate to higher level work. This has the potential to bring greater satisfaction to people whose jobs have become more administrative as we've strived to digitize our economy.

Doctors, for example, may have more time to talk with their patients instead of filling out online forms.

Here are a few other examples of what jobs will look like with generative AI. In some cases, like lawyers, it's already happening.

- **Civil engineers and architects** are using generative AI to accelerate the design process. For example, AI accounts for building codes, reducing errors and rework, particularly for complex mechanical, electrical, and plumbing systems.
- **Managers** can rely on automation for mundane administrative and reporting tasks and use the time saved to provide more one-on-one coaching.
- **Researchers** are reducing the time they spend sorting and synthesizing data or conducting literature searches of existing studies, spending more time on original contributions and speeding research projects.
- **Teachers** are starting to use generative AI to grade tests and flesh out lesson plans and focus more of their energy on interacting with students.
- **Designers, writers, and other members of creative fields** are benefiting from generative AI. Intelligent software is creating storyboards, first drafts, and other artifacts. Creative professionals continue to provide the ideas and shape what tools produce (via prompting engineering, for example) and apply the artistic judgment AI might just never be able to replicate.

While AI is reshaping many roles, it is increasing demand for others.

Jobs in STEM fields are estimated to grow by 23% by 2030, for example. The top-growing occupations include software developers, computer systems analysts, and data scientists. Some of this growth is related to the deployment of automation systems themselves.

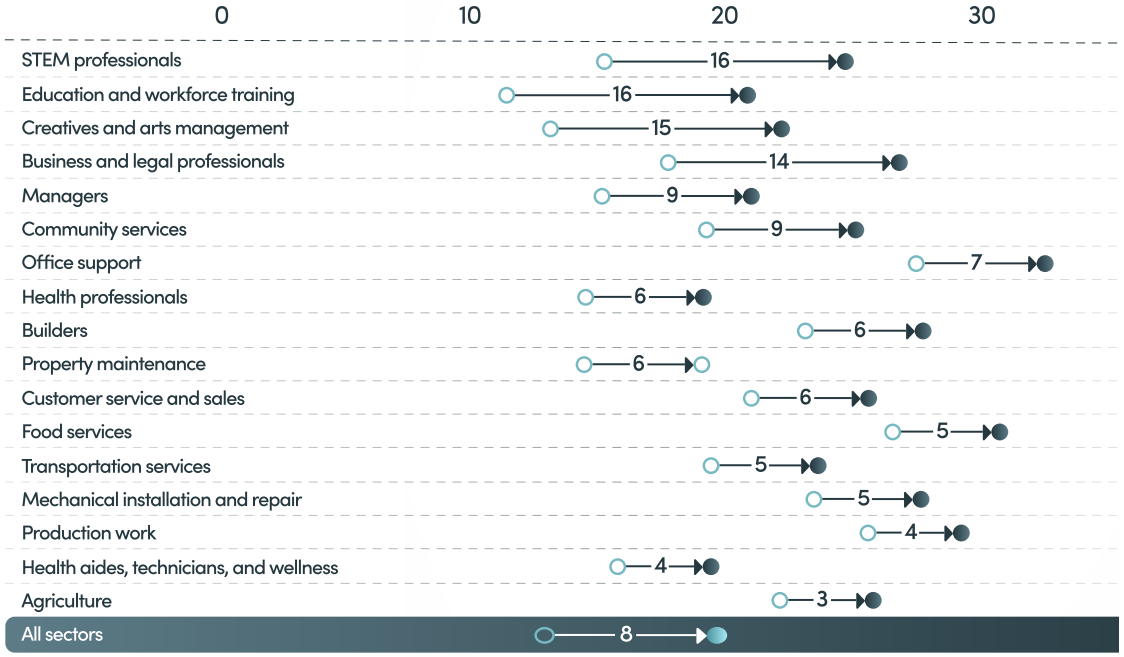
Jobs in STEM fields are estimated to grow by

23%

by 2030

McKinsey

Midpoint automation adoption by 2030 as a share of time spent on work activities, US, %



More than
85%
of employment growth over the last 80 years is explained by the technology-driven creation of new positions.
Goldman Sachs

Skill Building

It's not surprising that higher ed will need to help students — in all disciplines — develop the technological skills required to thrive in an increasingly AI-enhanced labor market.

What might be surprising is the other skills predicted to be most in demand by 2030: social and emotional.

As illustrated in how doctors' and managers' jobs will involve more human interaction as AI takes over mechanical tasks, the professionals that will succeed will be those who can do things bots can't.

Skills like emotional intelligence, "reading the room," collaborating, constructive criticism, problem-solving, compassionate leadership, time management, and so many of the characteristics of the people we love to work with will be even more essential.

Workplaces continue to get more diverse — in ages and ethnic and cultural backgrounds, for example — making it necessary for people with different life experiences to work together towards common goals.

It's these "soft skills" that higher ed has traditionally been exceptional at helping students develop not just for a job interview but as an intrinsic, lifelong capacity.

Technical, emotional, and social skills will also strengthen students' adaptability.

After all, change is and will be the most reliable constant in the coming decades.

A study by economist David Autor, for example, found that "60% of today's workers are employed in occupations that didn't exist in 1940. This implies that more than 85% of employment growth over the last 80 years is explained by the technology-driven creation of new positions."

The Future of Work in Higher Ed

AI offers enormous opportunities to reduce the tedious administrative activities that bog down employees and increases operational costs.

When thinking about how to staff for the future of higher ed, there's a natural inclination to race to LinkedIn and update job postings to include AI experience.

What many experts suggest is that the transition to the era of AI is a call for employers to hire for capacity to learn and adapt to new technologies.

"Employers will need to hire for skills and competencies rather than credentials, recruit from overlooked populations (such as rural workers and people with disabilities), and deliver training that keeps pace with their evolving needs," writes McKinsey.

They note that the companies with the best bottom lines are the ones with the strongest organizational health, offer the most coaching and training, and provide pathways for internal advancement.

In short, addressing the staffing problems in higher ed may involve cultivating the talent you already have. Employees who feel like their employers are investing in them are more likely to invest their time in their employers.

Part 4

Adopting AI

AI is evolving too fast for business-as-usual procurement and implementation.

You've seen the movie over and over.

The latest and greatest must-have software or technology comes along.

One or two departments clamor for it. Others are against it. Many are indifferent because they've seen the same movie.

Fast forward a year and a vendor is selected.

A year after that, the vendor collects the requirements you already gathered and you get a report about things you already knew.

Eventually, you're presented with what you originally asked for. Your needs have since evolved, as has the technology.

But everyone forges ahead because what else is there to do?

If you're lucky, you get to use the "new" technology three or four years after you originally sought it out. The rollout has its own headaches and most people get away with knowing the bare minimum of the platform to do their jobs. A handful of power users become your in-house technical support. Everyone worries when they go on vacation.

Here, we offer an alternative.

Step 1: Build a culture of AI.

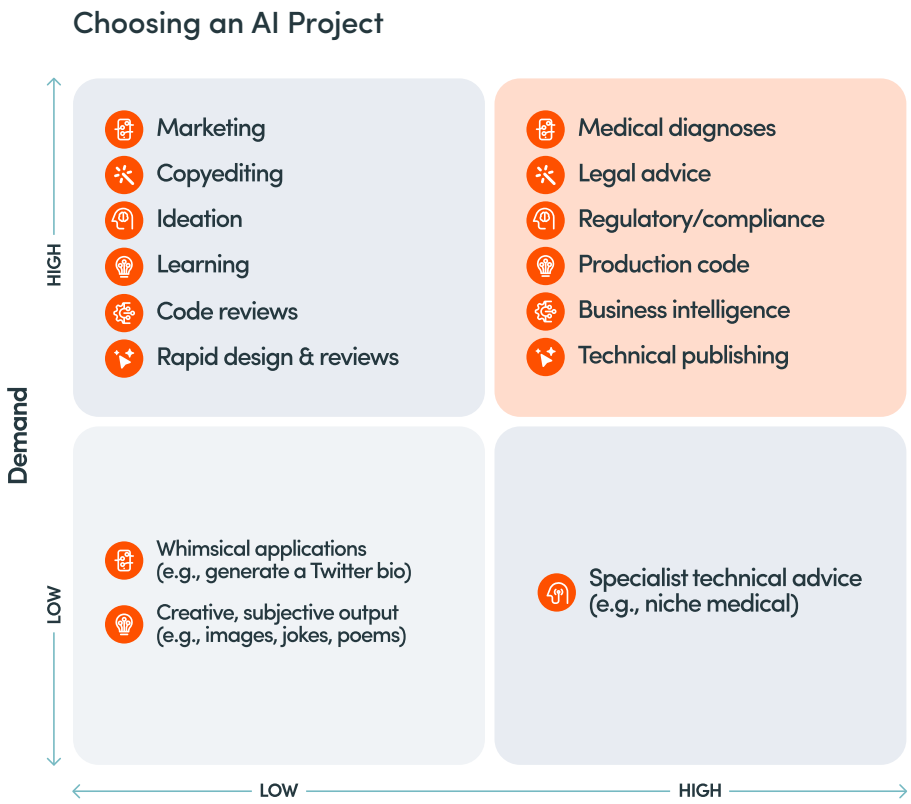
Step 2: Go for the big wins.

Start Now

One of the first things we recommend is getting your employees — at every level, in every department — familiar with AI. Demystify it. Educate them so they are informed when it comes time for bigger AI investments.

Assure employees that AI isn't replacing them.

The ultimate goal, one worth over-communicating, is that AI will do the boring, time-consuming tasks no one likes.



A FEW STEPS YOU CAN TAKE IMMEDIATELY

- **Encourage employees to explore free generative AI tools.** Ask your department leads to let their staff play around with tools like ChatGPT and Bard as part of their workweek. Be clear that there are no expectations or rigid goals. They can try to complete aspects of their regular jobs with AI assistance or do more generic activities. The point is to build confidence and awareness. Give them a pizza party where they can talk about what they learned that week. Make it fun!

- **Empower managers and employees to attend online AI workshops and training.** Again, this doesn't need to be a formal process with strict guidelines. Simply let your teams find low-commitment opportunities to learn how to use AI. LinkedIn, for example, has introductory courses in practical areas, like prompt engineering. There are more specialized offerings, too. Marketing, admissions, and enrollment, in particular, are great matches for generative AI techniques.

- **Pick a generative AI project.** This could be at a school-wide or department level. Find something to get teams to collaborate on. Harvard Business Review offers a helpful matrix for deciding what projects make sense for your organization.

Think Bigger

Small steps like those listed above will help you build a culture of AI for the eventual investments you'll make in products and services.

Similar to the demand assessment you made in picking a generative AI project, you can look to your strategic plan to flag initiatives where AI will accelerate your ambitions.

Once you've selected areas where AI offers the most visible, easily realized benefits (admissions and enrollment chatbots, for example), break the mold of traditional vendor selection.

Again, it's important to balance risk and reward here.

You don't need to invest in huge contracts spanning too many years.

Choose partnerships with vendors who understand higher education and have forward-looking, user-friendly, hyper-secure products.

Also, be prepared for the change management required to get people on board with adopting AI at a bigger scale. There will naturally be an adjustment period as new software becomes part of their routine.

A Checklist for Selecting an AI Partner

When you start a technology search with a clear, strategic goal in mind, it's much easier to steady your sights on the right product and vendor. To make it an even clearer choice, use this checklist to ensure success.

- [ ] **Frequent feature enhancements**

  With fast-moving technology like AI, you need a product that's designed to serve your needs in 3 months, 6 months, a year, and beyond.

- [ ] **Higher ed innovators**

  It's critical to find a partner that's not only technically proficient but also plugged into higher ed. It shouldn't be your job as a client to tell the vendor what's happening in the world of colleges and universities.

- [ ] **Security obsessed**

  There's no room for security breaches in higher ed. Prospect and student data is extremely sensitive and can't be compromised.

- [ ] **User advocates**

  Whether it's employees, faculty, or students using the product, they shouldn't have to think very hard to complete tasks. Weeks of user training are the antithesis of AI.

- [ ] **Success minded**

  Sure, you want technical support for advanced functionality, but what you really need is a partner that understands the tools it's providing serve a business goal.

- [ ] **Integration ready**

  Data drives AI. Your existing systems must "talk" with any new tech you purchase.

- [ ] **Reputable**

  Ask around. What do other schools say about the company?

- [ ] **Mature**

  It's easy for new entrants into ed tech to claim AI experience and capabilities. Don't take their word for it. You need a partner that has been developing AI functionality long before the ChatGPT hype.

- [ ] **Realistic**

  AI isn't magic. The challenges facing higher ed are larger than any piece of software. Find a vendor that is realistic about what it can and can't do for you.

- [ ] **Easy to work with**

  Gone are the days when it was acceptable for vendors to speak in jargon.

element451

Element451 is an AI-powered, all-in-one education CRM platform with all the tools, integrations, and resources higher ed institutions need to manage engagement, enrollment, marketing, and student success.

Visit our AI Learning Center for the latest resources on artificial intelligence.

element451.com/ai-resources

Contact us to learn how our intelligent CRM and AI chatbot can transform your school.