A BRIEFING ON GENERATIVE AI IN HIGHER EDUCATION

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By Steve Burrell, VP IT & CIO

> "The university of the future will not look like the university of today. In the wake of the AI explosion, we have likely reached a generational, fast and furious change across education. Universities need to find, create, and sustain their differentiators — their best-in class programs and advantages that attract students — or risk losing market share in an increasingly transparent and AI-enabled world [as] younger students (and lifelong learners) are getting smarter about their learning options, costs, and returns. They will be aggressive voters with their time and money."
>
> — Mary Meeker, 2024 Special Report on AI and Education

Abstract

This document is an executive briefing on generative AI and its implications for higher education.1 It provides an overview of the status of generative AI, its applications and challenges across various industries, and its potential impact on teaching, learning, research, and administration at NAU.23 It also discusses the risks and ethical concerns associated with generative AI, such as data privacy, bias, misinformation, and job displacement, and suggests best practices and strategies for managing these risks. Finally, it outlines the formation of a generative AI steering group, composed of faculty, researchers, and administrators, to inform the development and implementation of a generative AI strategy and policy for NAU. *(Written By Copilot for M365)*

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A Provocation – The only two logically consistent stances are to acknowledge that AI is the biggest technological development we've confronted as a species…. or to argue that it's total hype.

- Paul LeBlanc, President Southern NH University

Executive Summary

- **Generative AI in Education**: The document discusses the impact of generative AI (GenAI) on higher education, including its potential to transform teaching, learning, research, and administration at NAU.
- **Challenges and Risks**: It addresses the risks and ethical concerns associated with GenAI, such as data privacy, bias, misinformation, and job displacement.
- **Strategic Approach**: The briefing suggests best practices and strategies for managing these risks and outlines the formation of a GenAI steering group at NAU.
- **Industry Overview**: It provides an overview of GenAI's applications and challenges across various industries, highlighting its rapid integration into tools and platforms.
- **Generative AI in Research**: Discusses the potential of GenAI in automating tasks like data analysis and literature reviews to aid researchers.
- **AI Risks and Downsides**: Highlights concerns such as bias, lack of transparency, and the potential for misinformation due to AI "hallucinations."
- **User Risks**: Emphasizes the risk of spreading misinformation and the opaque decision-making process of AI.
- **Managing Generative AI Risk**: Suggests strategies for higher education institutions to harness AI benefits while addressing ethical concerns and risks.
- Artificial Superintelligence (ASI): ASI represents AI with cognitive abilities surpassing human capabilities, capable of solving complex issues like global climate change. However, it raises significant ethical and safety concerns due to potential unintended consequences[1].
- Singularity and Transcendence: This stage hypothesizes a future where technological growth becomes uncontrollable, leading to transformative changes in human civilization. It includes the possibility of uploading human consciousness onto computers.
- Generative AI: The document notes the absence of generative AI in the AI Technology Landscape diagram. Generative AI applications, such as ChatGPT and CoPilot, leverage various AI capabilities.
- AI Integration in Work: The primer provides examples of how generative AI, like CoPilot, can streamline work processes, such as summarizing emails or generating presentations, and emphasizes the importance of understanding and interacting with AI effectively.
- The adoption of AI within the realm of higher education is not a matter of replacing jobs but rather establishing a transformative collaboration. AI enables administrators to dedicate their time to meaningful tasks, ensuring that institutional funds are not expended on easily automatable activities. To put it into perspective, the integration of AI in academic institutions affords administrators an average time saving of 10 hours weekly on administrative tasks. Given that the average annual salary for administrative staff is $80,932, this translates to a weekly allocation of approximately $389 per full-time administrative employee on tasks of lesser value in the absence of AI implementation[1].

[1] https://www.ecampusnews.com/teaching-learning/2024/02/20/the-ai-effect-higher-ed

By the time children born today are in kindergarten, artificial intelligence will probably have surpassed humans at all cognitive tasks, from science to creativity.

— Ray Kurzweil, Google, AI Scientist for 61 Years

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Introduction

> ***[…] there's a sense that humanity's mastery of science and technology is on the cusp of transforming what it means to be human in ways we haven't previously experienced as a species.*** -- Andrew Maynard, ASU Future of Being Human initiative

We are entering a new era of computing — the age of everyday Artificial Intelligence (AI) — with Generative AI (GenAI) at the forefront. GenAI is reshaping industries worldwide and developers are rapidly integrating large language models into tools and platforms, revolutionizing the way we order food, accomplish tasks at work, plan vacations, and express our creativity. A third of companies are already using generative GenAI in business functions and three-quarters are planning to adopt GenAI technologies by 2027. GenAI is leading a second round of digital transformation conversations across university campuses.

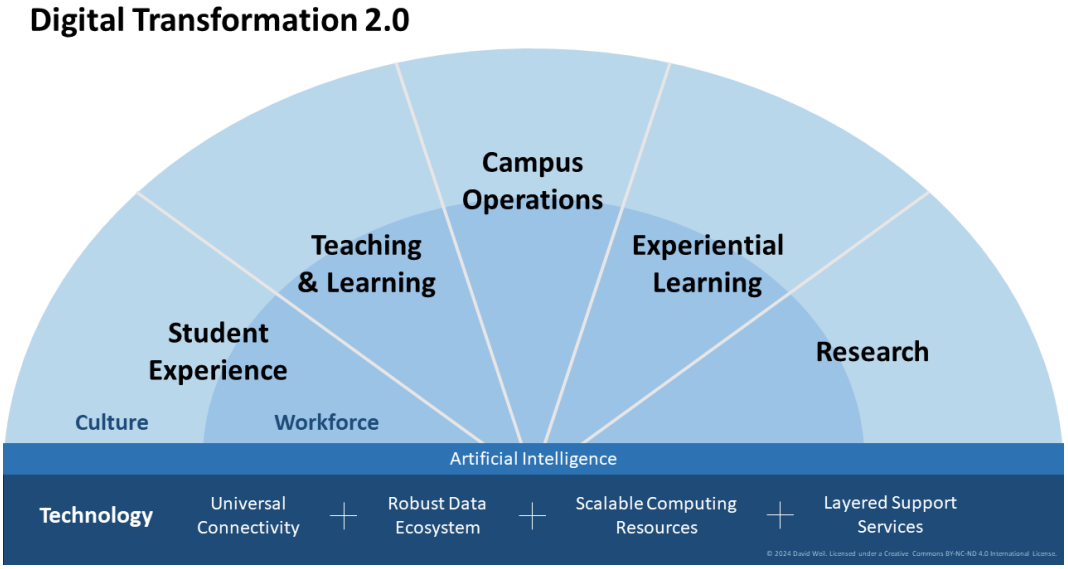


FIGURE 1 COPYRIGHT EDUCAUSE

As GenAI spreads through society and global markets, skepticism within universities persists—many faculty are still apprehensive about using GenAI tools, and staff are curious but struggle to know where to start. This document is a primer for learning about GenAI and explores how GenAI is impacting industries, and particularly the possibilities for NAU.

The Meteoric Rise of Generative AI

GenAI has experienced a meteoric rise, evoking strong sentiments from fear, to curiosity, to unbridled exuberance among AI champions. GenAI refers to technologies that can generate new content, such as text, images, and code, based on learned data patterns. While it promises substantial benefits, it also presents unique challenges and risks.

Many higher education leaders view AI as a passing trend, often drawing parallels to the hype surrounding the Massive Open Online Courses (MOOCs) in the 2010s. However, it's critical to recognize that AI is unlikely to follow a similar trajectory, especially given its extensive reach and diverse applications. ***Much like the internet and the personal computing revolution, AI's influence on higher education is poised to be disruptive and enduring.***

AI will ultimately help educators make continued progress in addressing the broad range of physical, cognitive, academic, social and emotional factors that can affect student learning and ensure that all students have equal

opportunity in education, regardless of their social class, race, gender, sexuality, ethnic background or physical and mental disabilities. This briefing paper provides an overview of the current status of the AI landscape in higher education and introduces issues and opportunities for how GenAI can enhance NAU's mission and strategies.

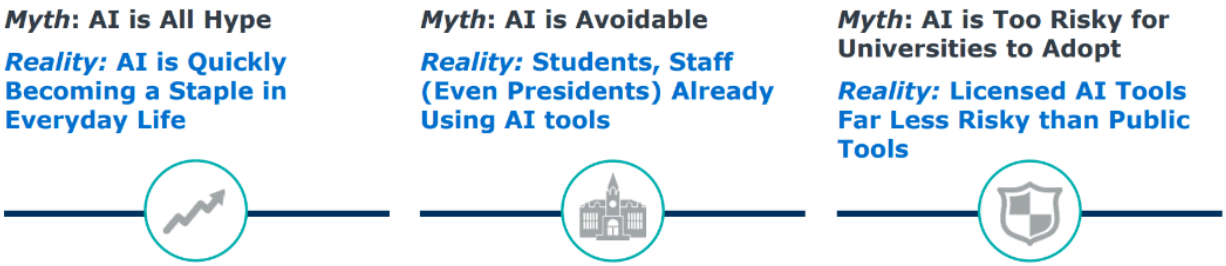
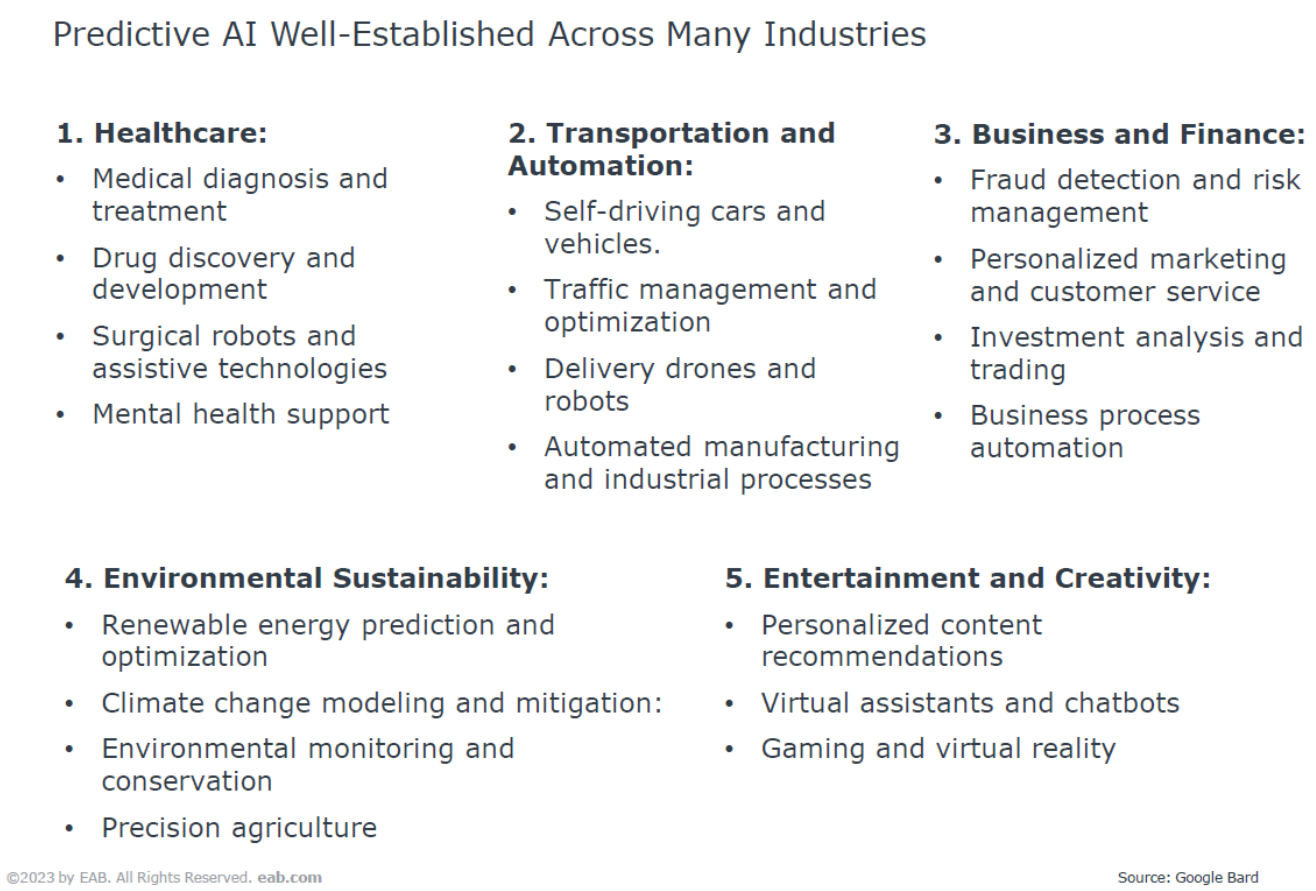


FIGURE 2 COPYRIGHT EAB



OpenAI and ChatGPT Changes Everything

The public release of ChatGPT by OpenAI on November 30, 2022, shook the foundations of nearly every industry on the planet. Even before then, most of us were already utilizing forms of AI, even if we don't realize it. From the targeted ads on your social media feeds to the use of digital personal assistants, such as Siri and Alexa, AI has been incorporated into technologies for years.

There are several reasons why ChatGPT is experiencing such dramatic adoption: It is accessible and user-friendly, and web-based access means anyone can use AI via everyday devices like PCs and phones. And users can use simple text prompts to deliver commands and process outputs.

1. Trained on vast knowledge bases. Models are easily trained on large sets of data (e.g., books, web texts, and articles from billions of Internet webpages)
2. Generates new, human-like content across domains (e.g., text, images, software) that is often indistinguishable from human outputs.
3. Offers technical capacity, availability, and affordability. Large data centers have been growing and adding specialized chips and capacity for the computational power required to run AI.[2]

ChatGPT reached 100 million users faster than any other previous mainstream technology.

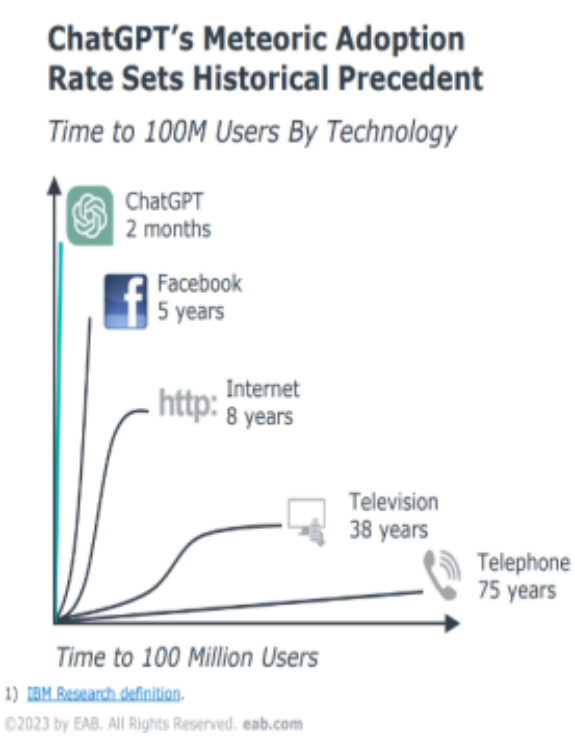


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ChatGPT's record was surpassed by Meta's Threads, which amassed 100 million users in less than a week after its launch in July, but Threads' usage appears to have dropped in the months since, with just under 100 million monthly active users as of October 2023.

[2] See Resources – GenAI Platforms in this document.

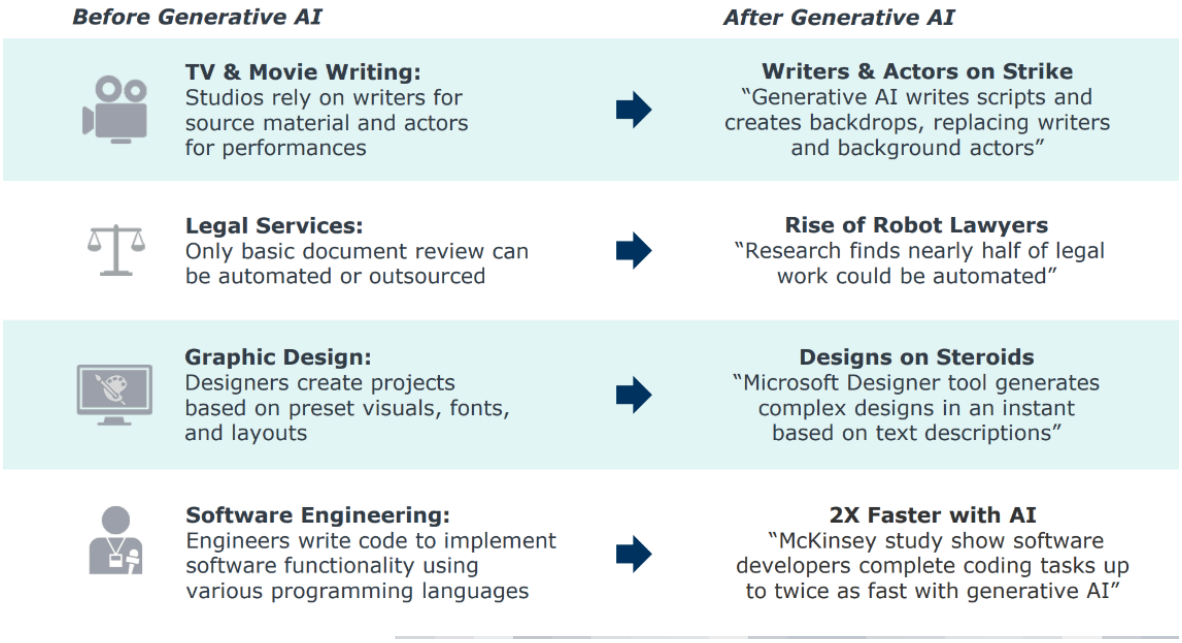
Generative AI Will Become Part of our Everyday Life

"It will change every business and every industry. Wherever you have people working, AI will augment their work, change what they can do, and change the roles they play." - Todd Lohr, Principal, KPMG LLP

Since the release of Chat GPT, AI has seemingly become every organization's top challenge—and their top opportunity. GenAI is changing software from a mere tool to an actual collaborator in the workplace and in our workflows. Anso so, there is the rapidly emerging AI economy, where organizations will be split into two groups: those who are good at AI and those who are bad at business.

David Clark, a senior research scientist at MIT's Computer Science and Artificial Intelligence Laboratory, noted that AI is already a part of daily life for many users: "AI methods and techniques are already part of the ordinary landscape. The problem with the term 'AI' is that it is constantly redefined to describe things we don't yet know how to do well with computers. Things like speech recognition (like Siri), image recognition (face recognition in consumer cameras), and the like used to be hard AI problems." These foundational AI technologies are already common and transparent to many uses in our daily lives.

But GenAI has shown it can be broadly applied and materially improve our work, leading to a greater sense of proficiency. Even at this early stage, a third of workers say they have used GenAI at work. One-third of workers say they would switch jobs if it gave them an opportunity to use GenAI.



Generative AI Strategic Impact Predictions

While 2023 brought the world of GenAI to the masses, it also stirred up a maelstrom of unanswered questions for organizations everywhere: How can we derive practical value from GenAI? What is the most cost-effective way to operationalize it? What about data privacy? These are important issues that, like previous technology disrupters we'll learn to adapt, adopt, and overcome.

Given these factors and our early experiences, Gartner is predicting an aggressive path to GenAI adoption[3]:

[3] Gartner Predicts 2024: AI's Impact on the Employee Experience (gartner.com)

- By 2028, GenAI will be so tightly woven into personal and team productivity applications that it will scarcely merit comment by employees and will require little, if any, oversight.
- By year-end 2025, AI agents will attend over 25% of virtual and hybrid meetings, causing a shift in attendance and engagement by humans.
- By 2028, enterprises will enhance productivity by replacing 60% of workplace applications that lack GenAI-driven capabilities with those that do.
- By 2026, 50% of governments worldwide will enforce use of Responsible AI through regulations, policies, and the need for data privacy.
- By 2027, organizations will shift 80% of marketing content spend to GenAI services, but effectiveness will plummet by 50% due to overwhelmed consumers.

For these predictions to become true, experts agree the following four areas are important.

Data foundations will become more critical.

AI is nothing without data. A large language model, for instance, reshuffles the information it's been fed. More data, and better data, means better answers. And to make AI most effective, you must feed it your data. Yet, organizational data is often fragmented, lying in isolated pockets, rendering them ineffective, stagnant, and inaccessible to AI models. A data fabric solves this problem by offering a 360-degree view of enterprise data without migrating it from other sources. Organizations that embrace data fabric will more easily operationalize AI across the enterprise.

Humans and AI will work harmoniously.

AI is a partnership. AI can be enormously helpful, but it's not a solo show—it's part of a larger, integrated set of tools, processes and policies that augment humans. AI can write, humans must edit. AI can propose decisions, humans will decide. We will need to route work to AI, but we'll also have to route to other automation technology as well as humans. This makes sophisticated workflow and process automation critical for turning AI into a valuable, transformative technology.

> I think one of the key pieces is that there needs to be a symbiotic relationship between artificial intelligence (AI) and human intelligence (HI), and this idea stands as a testament to the power of collaboration. While AI technologies offer remarkable capabilities in automation, data analysis, and procedural generation, it is the ingenuity, creativity, and intuition of human artists and designers that breathe life into every frame and narrative. By leveraging AI-driven tools to augment our workflows, creators can amplify their productivity and explore new pathways of possibility. However, it is the human touch—the ability to infuse emotion, narrative depth, and artistic vision—that remains irreplaceable. As we embrace AI's potential, it is essential to recognize the intrinsic value of human creativity and the unique contributions it brings to the field. Ultimately, it is the harmonious integration of AI and HI that propels animation and visual communication to new heights, enriching the creative process and captivating audiences with stories that resonate on a profound human level.
>
> - Christopher S. Johnson
> Professor of Visual Communication Motion Designer, Animator & Educator

Businesses will need private AI.

Privacy breaches can be catastrophic. Many large public cloud providers offer pre-packaged AI services to businesses and organizations of all sizes. Unfortunately, these cloud providers often train their public AI algorithms on their customers' data. Businesses may unwittingly help the competition by sharing this data to train algorithms used by other companies. Organizations must be strategic and careful, limiting AI usage to areas where privacy can be better assured—or embrace vendors who emphasize a private AI approach.

Regulations will need to catch up.

Governments have recognized the potentially negative impacts AI could have on society writ large—from privacy concerns to misinformation to cybersecurity risks. OpenAI briefly banned ChatGPT in Italy in early 2023 due to potential privacy issues around GDPR. This may be particularly true in an election year where deep-fakes and false information by internal and foreign actors will attempt to sway voters.

In the US, the FCC recently made a Declaratory Ruling that recognizes calls made with AI-generated voices are "artificial" under the Telephone Consumer Protection Act (TCPA). The ruling makes voice cloning technology used in common robocall scams targeting consumers illegal.[4] The rise of these types of calls has escalated during the last few years as this technology now has the potential to confuse consumers with misinformation by imitating the voices of celebrities, political candidates, and close family members.

The creation of laws and the development of case law have always trailed technology innovation. This gap may be extended by the rapid development, wide application, and complications attendant to GenAI.

Disruption Caused by Generative AI will be Significant Across Many Industries

AI won't replace _____. But, _____ that uses AI will replace _____. -- Unknown

Generative AI has seen a significant increase in adoption across various industries. As of 2023, one-third of organizations surveyed were using generative AI regularly in at least one business function. Industries relying most heavily on knowledge work are likely to see more disruption—and potentially reap more value.

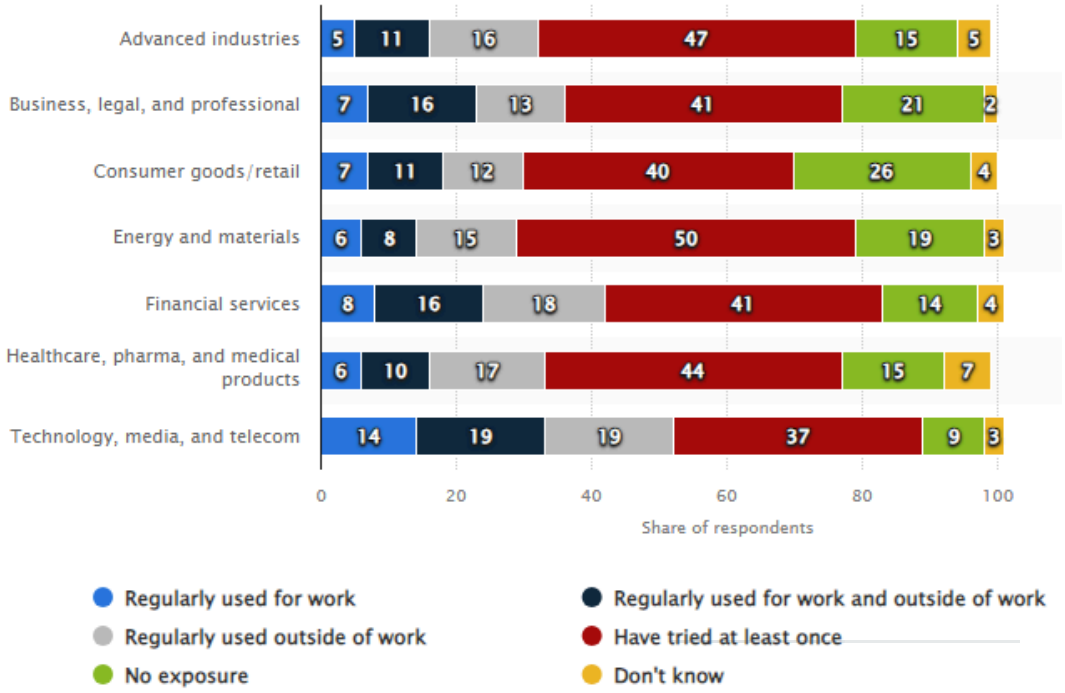
The excitement around AI has also sparked a lot of worried discussions about its effects on jobs, misinformation, deepfakes, music, art, politics and so on, as well as fearful projections about a possible existential threat to humanity. But the capabilities and ubiquitous nature of AI is making it impossible to ignore and is redefining expectations for customer service, business workflows, and personal productivity.

GenAI holds great promise for employees who are under increased pressure to get more done and eager for tools that can help them:

- Spend less time looking for information.
- Achieve faster time to proficiency in a new role or project.
- More effectively communicate with others.
- Make it easier to understand and consume information.
- Make them better writers.
- Have more effective meetings.
- Make it easier to use advanced features in applications.
- Remove mundane tasks from their responsibilities.

[4] https://docs.fcc.gov/public/attachments/DOC-400393A1.pdf

GenAI adoption rates stood at 37% in marketing, 35% in technology, and 30% in consulting industries in the US. Despite being relatively new, 79% of all respondents to one survey reported having at least some exposure to generative AI.



GenAI's ability to create and optimize designs, is poised to revolutionize various industries and spur technology innovation, across many industries. Where advances in AI and other developing sciences overlap and intertwine, new capacities could potentially change the human experience are starting to emerge.

Drug Discovery

GenAI can accelerate drug discovery by predicting molecular structures, identifying potential drug candidates, and optimizing chemical compounds. Personalized medicine and disease diagnosis can benefit from AI-generated insights.

Healthcare and Med Tech

In the field of medical technology, GenAI holds immense promise for accelerating the development of new treatments and medical devices. Much of medicine will be in the midst of a transformation based on better biological sensors tied to powerful analytics. By analyzing vast amounts of data and generating novel designs, GenAI can facilitate the creation of personalized medical solutions tailored to individual patient's needs.

Finance and Banking

Risk assessment, fraud detection, and algorithmic trading can be enhanced using GenAI models. Chatbots powered by GenAI can improve customer service and streamline financial processes.

Manufacturing and Design

Industrial design, product prototyping, and optimization can benefit from GenAI algorithms. Customized manufacturing, such as 3D printing, can be more efficient with AI-generated designs.

Creative Industries

Art, music, and literature can be enriched. For example, AI-generated poetry, music compositions, and visual art are emerging trends. Advertising and content creation can leverage AI for personalized marketing campaigns.

Retail and E-Commerce
Personalized recommendations, virtual try-ons, and inventory management can be improved using GenAI models. AI-generated fashion designs and product descriptions are becoming more common.

Energy and Sustainability
GenAI can optimize energy distribution, predict equipment failures, and enhance renewable energy systems. Environmental modeling and climate change analysis can benefit from AI-generated simulations.

Real Estate and Urban Planning
AI can assist in property valuation, urban design, and predicting real estate market trends. Generative models can simulate city growth and optimize infrastructure planning.

Legal and Compliance
Contract analysis, legal research, and compliance monitoring can be automated using generative AI. Chatbots can provide legal information and assist clients.

Transportation and Logistics
Route optimization, predictive maintenance, and autonomous vehicles can benefit from AI-generated insights. Supply chain management and demand forecasting can be more efficient.

Robotics
GenAI can streamline the design process by generating and evaluating countless iterations of robotic structures and mechanisms, leading to more efficient and versatile robots. These advancements can enhance automation in industries ranging from manufacturing to healthcare, improving productivity and safety. Moreover, GenAI can enable robots to adapt to dynamic environments more effectively, enhancing their ability to collaborate with humans in tasks requiring flexibility and precision.

A Syracuse University professor and associate dean for research wrote,

> "Robots and AI are moving beyond simple rules into framed judgment spaces. […] I see them in public transport, long-distance driving, traffic routing, and car-to-car interactions. I also see them moving into the built environment through post-market sensor networks reflecting energy monitoring, maintenance for household appliances, and supporting distributed education."[5]

Renewable Energy
GenAI can optimize the design and placement of wind turbines and solar panels to maximize energy output while minimizing environmental impact. In transportation, it can revolutionize vehicle design, leading to safer and more energy-efficient cars, trains, and aircraft.

Education and EdTech
AI-powered tutoring, personalized learning paths, and automated grading can transform education. Content generation for textbooks, quizzes, and educational materials can be streamlined.

Other Areas of High Innovation
There are synergies emerging across a multitude of technological fronts that are laying the groundwork for advances that defy convenient categorization — and yet are likely to be transformative. These include areas like nanoscale science and engineering, quantum technologies, gene editing, synthetic biology, neuromorphic computing, neuroscience, and brain machine interfaces.

[5] https://www.pewresearch.org/internet/2014/08/06/predictions-for-the-state-of-ai-and-robotics-in-2025/

Helios Foundation Considering the Impact of Automation and AI on Workforce

The Helios foundation is now incorporating data on the impact of GenAI on jobs. In general, those jobs that involve lots of human interaction such as AI will not supplant nursing. But nurses who use AI might have a distinct advantage of those who don't (or can't). AI is likely to be embedded in the tools they use to make their jobs easier or monitor critical aspects of patient care. So**, as AI becomes more integrated in systems and work, your job may not be replaced by AI, but you will be replaced by the knowledge worker who can leverage AI to do superior work.**



FIGURE SEQ FIGURE * ARABIC6 HELIOS FOUNDATION DATA SCREEN SHOT

Leveraging the Potential of AI in Higher Education

"Organizations must have a strategic vision for mixed autonomy—in other words, how they will use AI to augment humans, rather than replace them." [6] *- Dan O'Keefe, Appian*

These technologies are now poised to shape broad swaths of the knowledge economy, and the wider work force. - The Chronicle[7]

"*AI won't take your job. It's someone using AI who will take your job.*"
- Richard Baldwin, professor of international economics, International Institute for Management Development

Moving from reaction to action, higher education stakeholders are currently exploring the opportunities afforded by GenAI for teaching, learning, and work while maintaining a sense of caution for the vast array of risks AI-powered technologies pose. Higher education administrators expect investments in AI to have very positive impacts, as 78 percent of respondents in a recent survey believe AI will lead to revenue growth for their institution, according to Unveiling the AI Effect: How Higher Ed Admins Adapt and Gain.

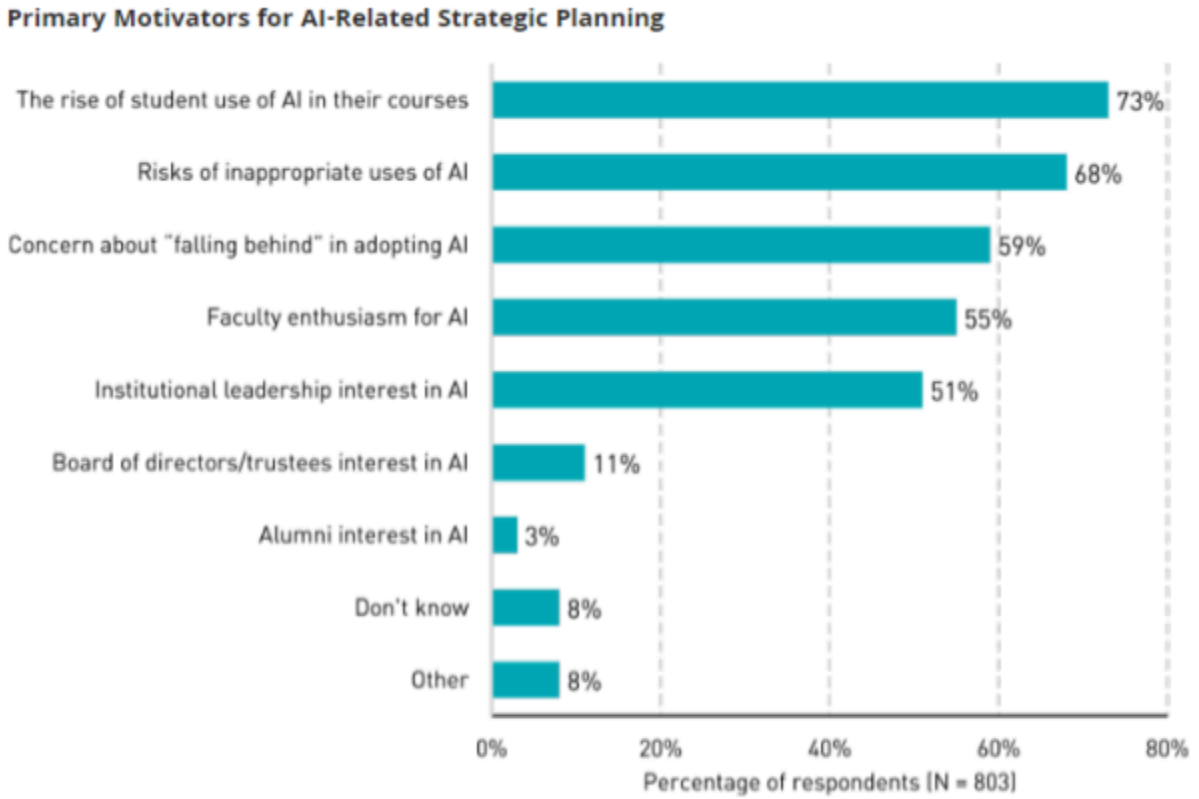


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[6] https://appian.com/blog/acp/ai/ai-data-privacy-2024-outlook.html
[7] AI Will Shake Up Higher Ed. Are Colleges Ready? (chronicle.com)

Generative AI is About Upskilling, Not Replacing Employees

Effective use of GenAI, like any previous technology, will require new skills. Employees more skilled at deriving value from GenAI are more likely to be high performers, compared with those lacking such skills.

The everyday AI era suggests a steep learning curve in security, legal, operations, development, and governance but it will profoundly alter how work gets done by accelerating time to proficiency in a role or project by enabling workers to easily accomplish complex tasks and helping employees significantly improve and apply their skills.

Preparing staff, faculty, and students for a workforce where GenAI skills are required will quickly become essential and leading institutions will adopt many forms of AI into their training repertoire, academic curriculum, and extracurricular programming.

This next-generation AI will transform work and augment human capabilities in three ways: It will unleash creativity; It will unlock productivity; And it will uplevel skills. The potential of GenAI is contrasted with the dystopian narratives where AI replaces humans and challenges are humanity. The reality paints a more balanced picture. GenAI use-cases suggest a distinct return on employee (ROE) benefit, which posits that GenAI will have a fundamental impact on improving employee efficacy. **Hence, the narrative is quickly becoming that GenAI should "complement people" rather than replace them altogether**.

Applications of Generative AI in Higher Education

At the heart of our rapidly evolving world lies the potent and promising synergy between humans and AI, and the role of colleges and universities is pivotal in shaping an AI-integrated future. This calls for an educational reform that is nimble, innovative, and far sighted, moving beyond traditions to forge proactive leaders who can skillfully harness AI for the advancement of society.

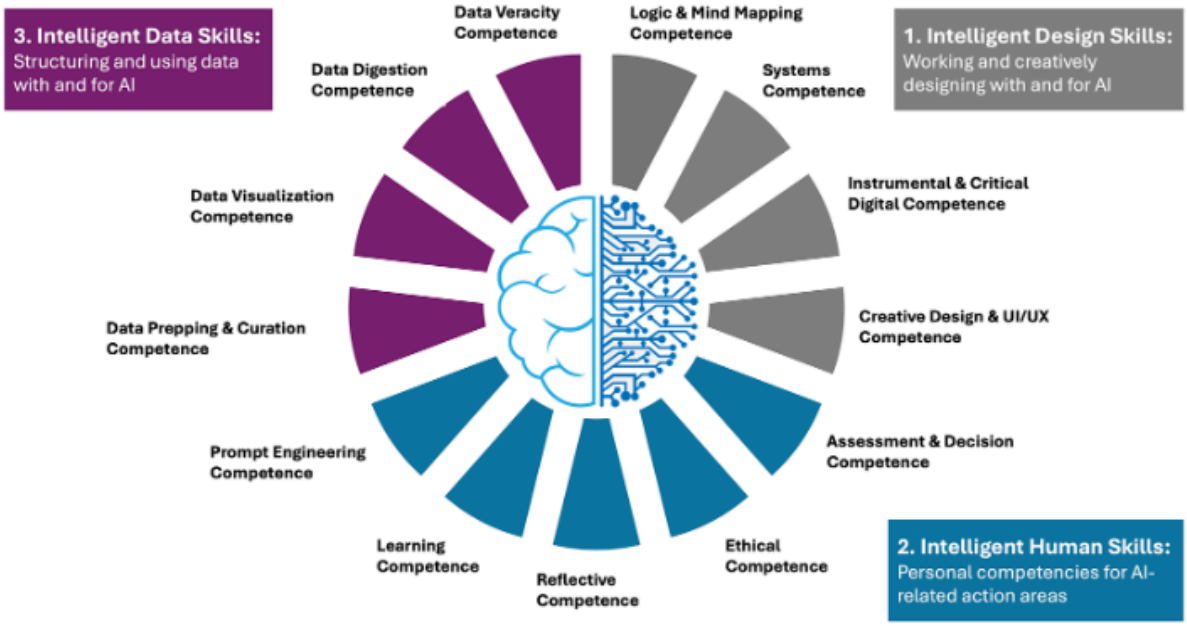
GenAI holds the **potential to transform nearly every aspect of campus life**, ranging from teaching and learning to student services, research, enrollment and marketing, advancement, HR, finance, facilities management, and IT. Here are some of the ways GenAI can impact students:

1. Offer new ways to engage students in critical thinking, writing and analysis.
2. Serve as a tool for instructors in the creation of course material.
3. Provide personalized learning support and answering students' questions immediately.
4. Offer writing and brainstorming support.
5. Provide research and analysis support.
6. Offer visual and audio multi-media support.
7. Enhance administrative support.

Higher education institutions must prepare students for the challenges and opportunities of the AI-driven workplace while advancing their own goals of academic excellence, efficiency of operations, and fueling discovery, creativity, and innovation.

The framework introduced by BenMesoud (2022) advocates for a comprehensive educational paradigm shift, preparing individuals to navigate the complex interplay of human and AI interactions across various dimensions of society. It sets the stage for not only responding to the AI revolution but anticipating its trajectory, ensuring that the next generation is ready to harness AI's potential for the greater good. The competencies included in this model are not merely additive but should become the bedrock of education in a society where technology and humanity converge. They are the pillars upon which a new AI world is being built—a world in which education should not merely react to technological shifts but actively shape them.

Figure 1. Competencies and Skills Needed for the New AI World



Credit: ©2022 Fawzi BenMessaoud

FIGURE 8

Innovations in Teaching and Learning

GenAI AI can automate routine tasks such as syllabus creation, test writing, grading, simulation development, lab manuals, answering routine student questions, summarizing committee minutes and outcomes, writing proposals, and collaborating with other faculty. GenAI has the potential of giving back hours of time to faculty while improving their engagement with students and enhancing learning outcomes.

Integration of AI Into the Curriculum

The university can integrate GenAI across all disciplines to ensure that students gain a comprehensive understanding of these technologies. Additionally, incorporating hands-on projects and experiential learning opportunities with GenAI allows students to apply modern work concepts in real-world scenarios, fostering practical skills and innovation.

AI-Powered Learning Platforms

The university can adopt AI-powered learning platforms that personalize educational experiences based on individual student needs and preferences. These platforms can offer adaptive learning paths, interactive tutorials, and personalized feedback, enhancing student engagement and comprehension. Moreover, they provide students with opportunities to develop AI literacy and proficiency as they navigate through their academic coursework.

Collaborative Research Projects

Facilitating collaborative research projects between students and faculty members allows students to gain practical experience in applying AI techniques to solve real-world problems. These projects can span various disciplines, encouraging interdisciplinary collaboration and innovation. Moreover, partnerships with industry organizations provide students with opportunities to work on cutting-edge AI projects and gain insights into industry practices and trends.

AI-Driven Student Support Services

Implementing AI-driven student support services, such as virtual advisors and chatbots, can enhance the efficiency and effectiveness of student advising, counseling, and support. These AI-powered systems can provide personalized guidance and assistance to students throughout their academic journey, helping them navigate course selection, career pathways, and academic challenges more effectively.

AI-Enabled Administrative Systems

Leveraging GenAI in administrative systems can streamline various institutional processes, such as admissions, enrollment management, scheduling, and resource allocation. Predictive analytics can help optimize course scheduling and resource allocation based on student demand and institutional priorities, while natural language processing (NLP) algorithms can automate routine inquiries and administrative tasks, freeing up staff time for more strategic initiatives.

AI-Enhanced Information Workers

AI can significantly enhance the productivity of knowledge workers in a university by automating routine tasks, summarizing and analyzing large amounts of information, quickly generate summative notes, summarize email threads, create presentations from various sources, customize training, and stimulate collaboration and idea generation – all contributing to information workers productivity and effectiveness.

The following sections take a closer look at GenAI Applies to each of these areas.

Generative AI in the Curriculum

In the education world, we've seen the ways educators can use AI to produce lesson plans, quizzes, and report cards. But I would argue the most important potential of AI isn't to enhance human productivity. It's to enhance and support human thinking. -- Dr. Carmen Garcia, Superintendent of Morgan Hill Unified School District

As GenAI becomes more capable and prevalent it will require upskilling and reskilling to equip workers with the necessary skills to adapt and thrive in this evolving landscape of the "everyday AI era" with the same impact personal computing made on knowledge work in the 1980's. It also raises the important issue of preparing students for AI-enabled GenAI increasingly becomes embedded in jobs and our lives.

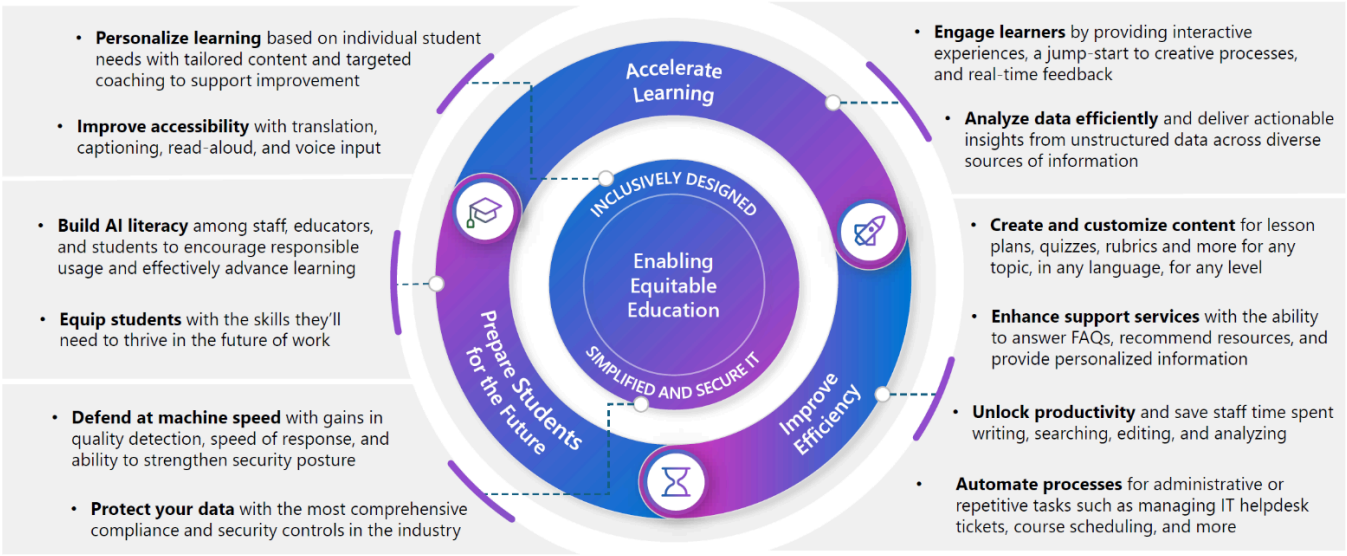
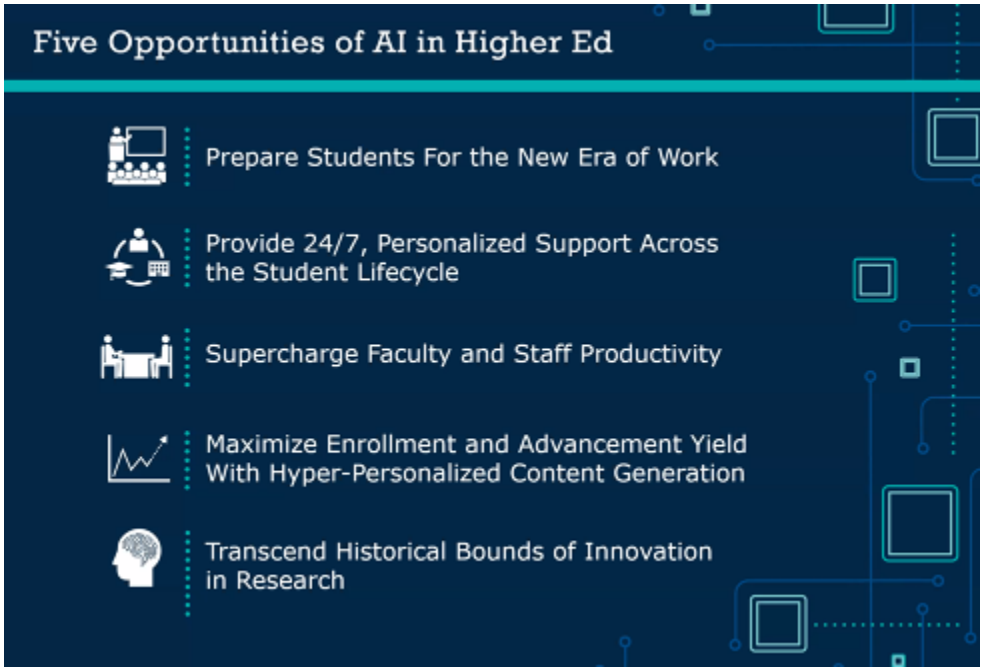
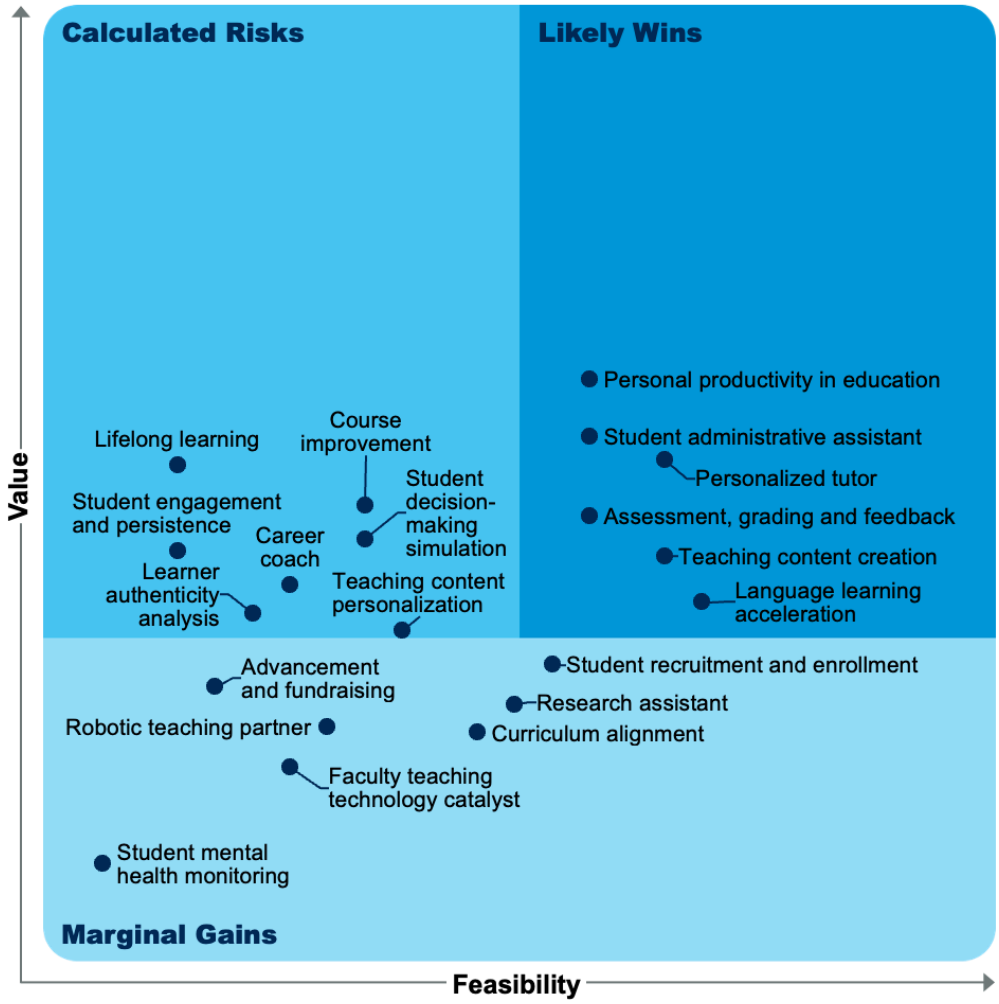


FIGURE 9 COPYRIGHT MICROSOFT


Five Opportunities of AI in Higher Ed
Prepare Students For the New Era of Work
Provide 24/7, Personalized Support Across the Student Lifecycle
Supercharge Faculty and Staff Productivity
Maximize Enrollment and Advancement Yield With Hyper-Personalized Content Generation
Transcend Historical Bounds of Innovation in Research



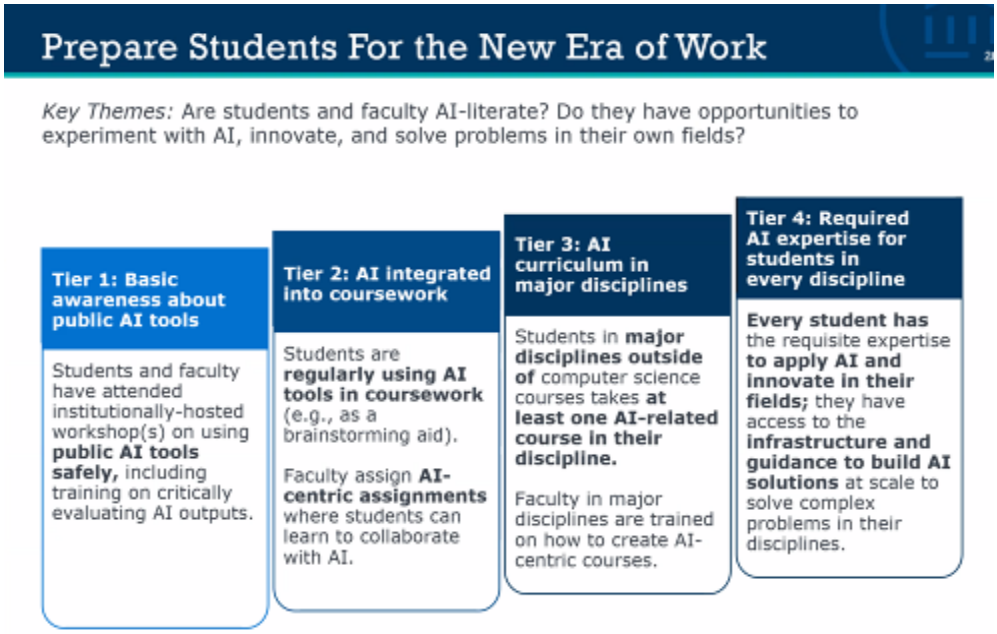
Source: Gartner

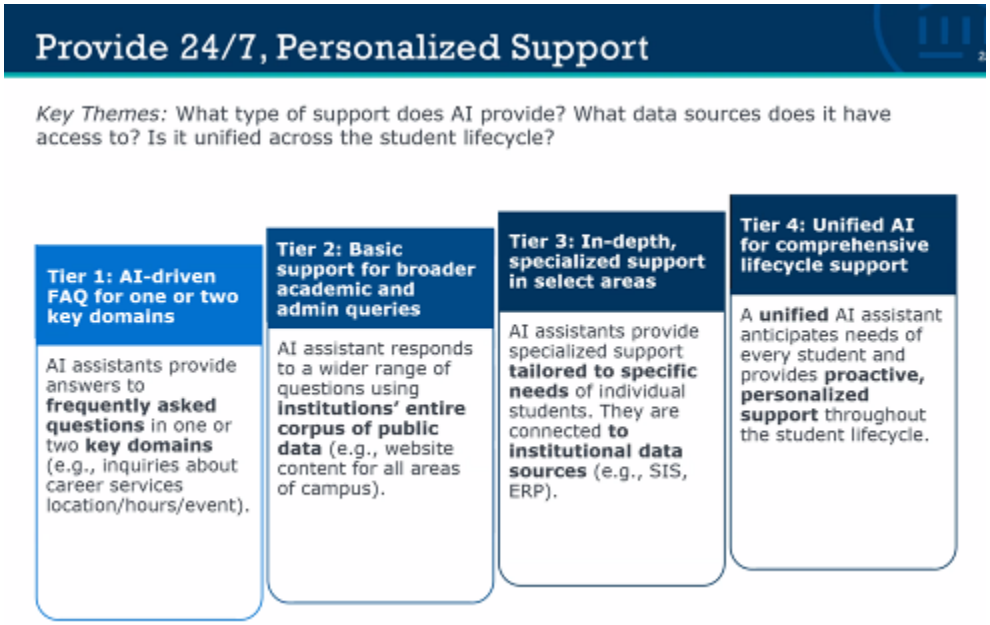
Use Case Resources

- [Empower your workforce with Microsoft 365 Copilot Use Cases - Training | Microsoft Learn]

AI Maturity Models for Higher Education

Preparing Students for the New Era of Work





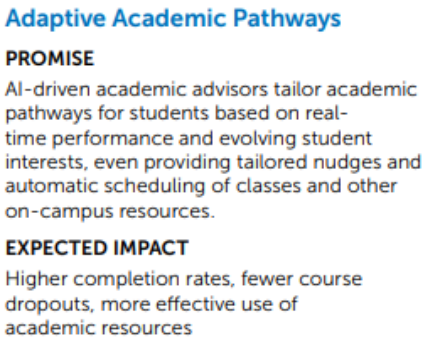
While generative AI presents exciting opportunities for higher education, institutions must carefully navigate its implementation. By considering ethical principles, fostering collaboration, and providing faculty development, institutions can successfully incorporate generative AI into their curricula and prepare students for an AI-infused future.

GenAI as an Assistive Technology: GenAI can be a powerful tool to assist students with learning disabilities in several ways: **Creating More Accessible Content**: redesign elements of the course to make it more accessible; **Accessibility in Testing**: Advanced speech synthesis technologies can improve the user experience for students

with disabilities by reducing the turnaround time for producing alternate format materials and providing a more natural and clear text-to-speech voice; **Simplifying Complex Texts**: can convert complex texts into more understandable resources by creating simpler sentences or replacing popular quips with plainer alternatives.

Skills Assessment and Gap Analysis: Generative AI tools can help institutions assess students' skills and identify gaps. By analyzing student performance data, institutions can tailor their teaching methods and content to address specific learning needs.

Adaptive Learning Platforms: Generative algorithms analyze student performance data to tailor educational content. These platforms adjust content, difficulty levels, and pacing based on individual needs improving learning outcomes

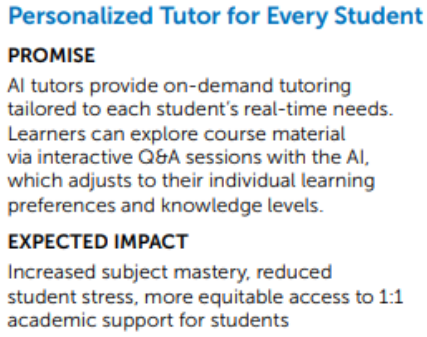


Automating Learning Material Creation: Generative AI can assist educators in designing and updating curricula. It can **automate the creation of high-quality learning materials**, such as textbooks, lecture notes, assignments, quizzes, multiple-choice questions (MCQs), and test papers. These materials can be tailored to specific courses and teaching objectives.

Personalized Learning Paths: Higher educational institutions can use generative AI to **analyze students' performance data** and create **personalized learning paths**. For instance, they can automate skills gap analysis using AI models and transformers to provide student-centric courses and assignments.

Enhancing Student Engagement: Generative AI can be used to create interactive and engaging content. For example, it can generate virtual simulations, interactive scenarios, and adaptive learning experiences that enhance student engagement and understanding.

Automating Administrative Tasks: Beyond the classroom, generative AI can streamline administrative tasks. It can automate processes related to student enrollment, scheduling, and resource allocation, freeing up faculty and staff to focus on teaching and research.



Faculty Development and Training: Institutions should invest in faculty development programs to equip educators with the necessary skills to integrate generative AI effectively. Training sessions, workshops, and collaborative efforts can foster a better understanding of AI's potential in education.

Collaboration and Interdisciplinary Approaches: Integrating generative AI requires collaboration across disciplines. Institutions can encourage cross-functional engagement, bringing together experts from computer science, education, ethics, and other relevant fields.

Ensuring responsible implementation of GenAI: The infusion of GenAI aligns with ethical considerations and responsible practices. This includes addressing issues related to bias, privacy, transparency, and accountability.

Faculty Using Generative AI at NAU

Chris Johnson Professor of Visual Communication utilized ChatGPT to craft a one-minute animation assignment for a music video centered around Route 66. With basic prompts, I organized and streamlined my thoughts on the assignment, established clear learning objectives, and even developed a robust rubric for grading.
Jaewook Lee Professor of Art and Design, employs generative AI tools tailored for visual imagery to craft immersive backgrounds for 3D media art and games.
Aleksey Kolpakov Assistant Professor, Undergraduate Public Administration, uses AI in my classes to develop the

grading rubrics using Bloom taxonomy, assess critical writing skills and evaluate some elements of critical thinking for practitioners in public administration. In *Artificial Intelligence and Governance*, I review the application of AI in the US and foreign governments and the impact of AI on administration, and public policy.

See How AI Could Save (Not Destroy) Education | Sal Khan | TED and,
Utilizing GenAI in your Classroom - GenAI - Research Guides at Northern Arizona University

Generative AI in Human Resources Administration

Adoption of GenAI has been slow to gain momentum in the human resources space but offer HR functions compelling capabilities such as using chatbots in recruiting and onboarding. GenAI has the potential to revolutionize human resources administration by automating repetitive tasks, improving decision-making processes, and facilitating more personalized and data-driven approaches to talent management and employee engagement. However, it's essential to consider ethical considerations, such as data privacy and bias mitigation, when implementing GenAI solutions in HR contexts.

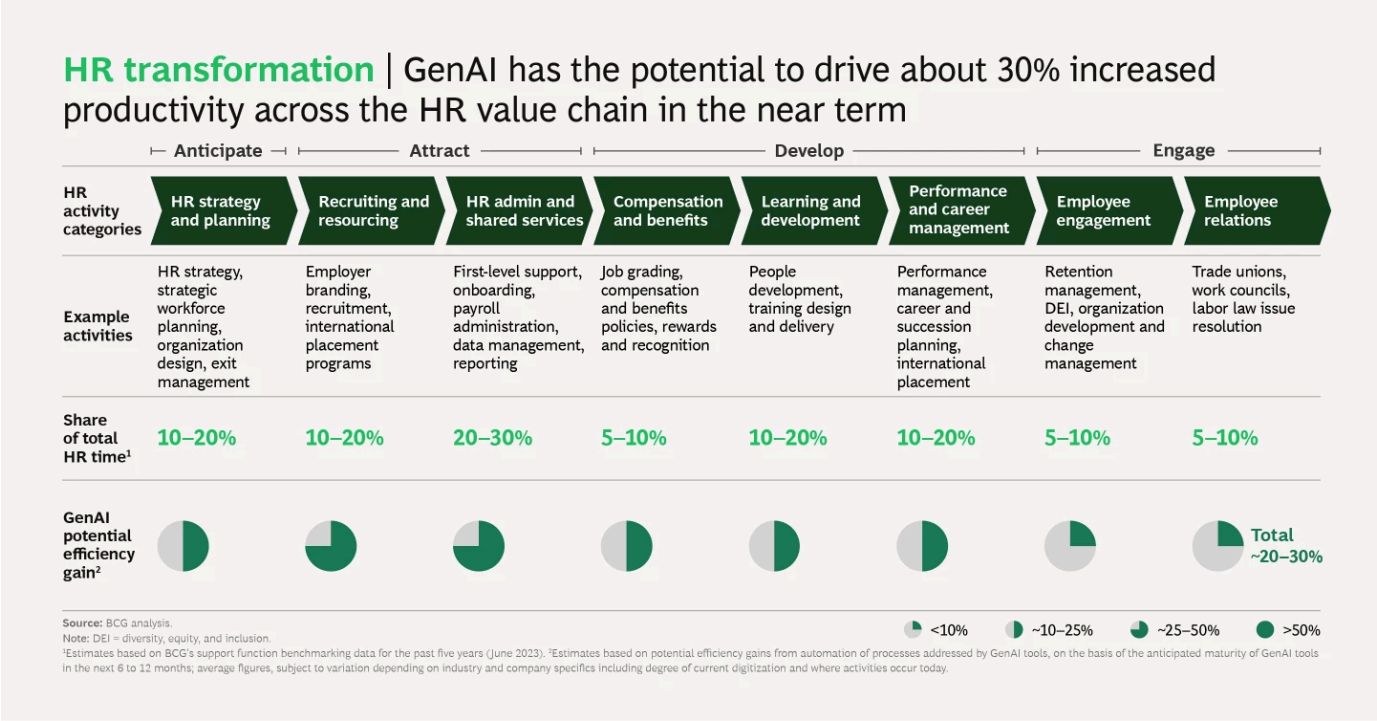


FIGURE 11 HTTPS://WWW.BCG.COM/PUBLICATIONS/2023/TRANSFORMING-HUMAN-RESOURCES-USING-GENERATIVE-AI

Mitigate Bias and Discrimination**: Generative AI can help reduce bias and discrimination in the workplace by detecting and rewriting biased language in job descriptions, evaluations, and feedback.**

Resume Screening and Candidate Matching: GenAI can analyze resumes and job descriptions to identify relevant skills, experiences, and qualifications, saving time and resources while ensuring a more objective evaluation of candidates. GenAI can also help match candidates to job openings based on their profiles and the specific requirements of the position.

Chatbots for Candidate Engagement: Chatbots can engage with candidates through various stages of the recruitment process, providing information about job opportunities, answering frequently asked questions, scheduling interviews, and collecting feedback, and can reduce the administrative burden on HR professionals.

Predictive Analytics for Employee Retention: GenAI can analyze historical data on employee turnover, performance, and engagement to identify patterns and predict future retention risks. By identifying at-risk employees early on, HR departments can implement targeted retention strategies to improve employee satisfaction and reduce turnover rates.

Diversity and Inclusion Initiatives: GenAI promote diversity and inclusion by identifying bias in recruitment and performance evaluation processes and detect patterns of bias and recommend strategies for mitigating bias and promoting diversity in hiring, promotion, and talent development practices.

Personalized Learning and Development - AI-powered learning platforms can deliver personalized training and development programs tailored to individual employee needs and learning styles. By analyzing employee performance data, career goals, and skill gaps, GenAI algorithms can recommend relevant learning resources, courses, and development opportunities to help employees enhance their skills and advance their careers. [OBJ]

Generative AI in Student Services



GenAI has the potential to revolutionize student support services by offering personalized services on demand via chatbots addressing common queries regarding enrollment, course registration, financial aid, and more. By automating routine administrative tasks and enhancing the learning experience, GenAI not only streamlines operations, but it can also enhance the quality of student services, contributing to a more supportive and student-centric environment. Ethical considerations and data privacy concerns must be carefully managed to ensure the responsible and secure implementation of GenAI in student support services. GenAI can also assist in career counseling, providing guidance on choosing majors, internships, and job opportunities:

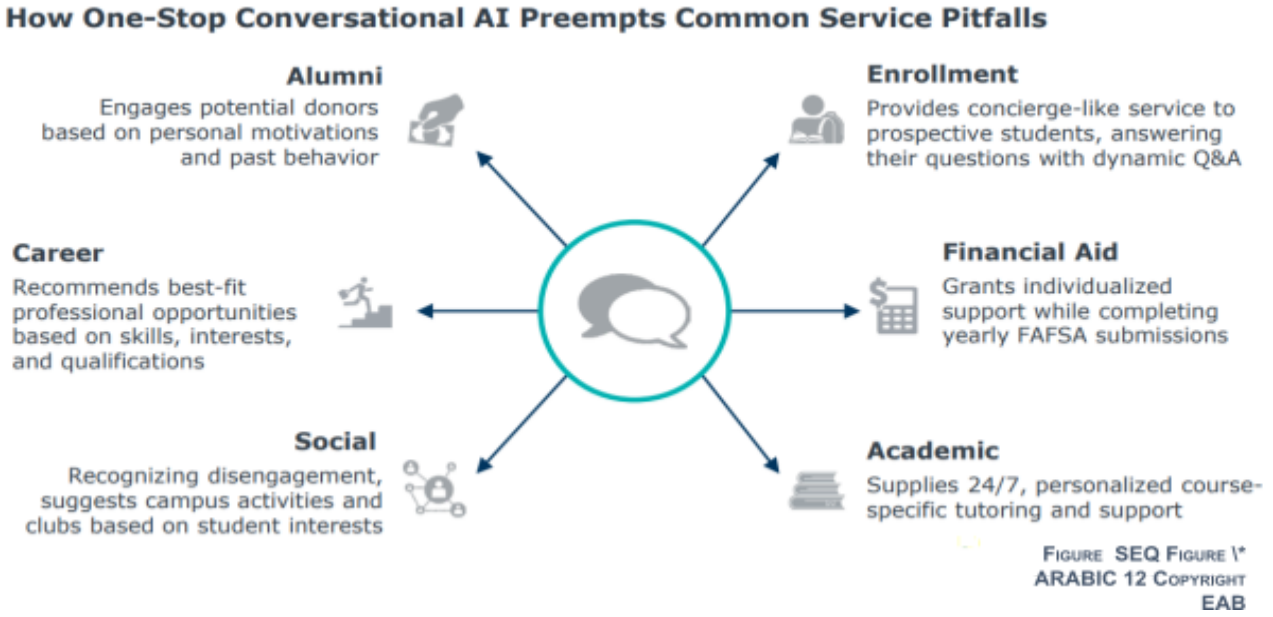


FIGURE SEQ FIGURE * ARABIC 12 COPYRIGHT EAB

John Gartin, Director of Student Life Experience is developing a large language model and chatbot for "Navigating Majors and Careers" and "Academic & Career Planner for College & University.

AI-Powered Career Coaches

PROMISE

AI coaches identify right-fit jobs based on comprehensive student profiles, including academic qualifications, skills, preferences, professional experiences, and even personality and work style. AI can then align profiles with appropriate job openings, tailor resumes and cover letters, and fill out applications.

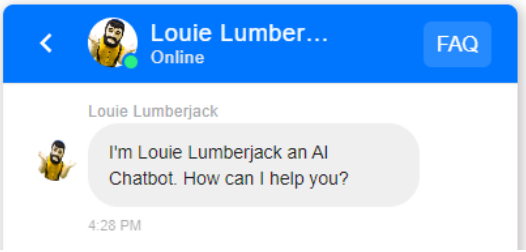
EXPECTED IMPACT

Higher job placement rates, data-driven career planning, improved alumni relations

Course Recommendation and Advising Support Systems - AI can analyze student profiles, academic history, and career goals to recommend suitable courses or majors. Personalized course suggestions can improve student satisfaction and retention.

Retention Strategies and Early Alerts - AI algorithms can detect early signs of student disengagement or academic struggles on a course-by-course basis allowing Institutions to intervene promptly, offering support services or counseling to improve student success, often earlier in a term than traditional human triggers.

Since 2020, ITS has leveraged Louie Lumberjack, a comprehensive large language model chatbot providing support for current and prospective students via the ITS help desk. It is based on the Kommunicate platform and leverages ChatGPT, can perform data collection, and can-do bot to bot and live agent handoff.



Generative AI in Enrollment Management

Incorporating generative AI into enrollment management creates a synergy between efficiency and empathy. While AI provides precise targeting and resource optimization, the human touch ensures a resonant connection with students.

Personalized Communication and Engagement: GenAI can create personalized messages, emails, and chatbot interactions for prospective students. These tailored communications can address individual concerns, provide relevant information, and foster engagement. Automated responses can handle routine inquiries, freeing up staff to focus on more complex tasks.

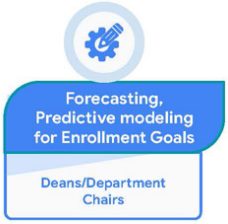


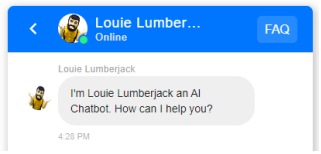
Predictive Analytics for Enrollment Trends: GenAI models can analyze historical enrollment data, student demographics, and other relevant factors to predict future enrollment trends. Institutions can use these insights to optimize recruitment strategies, allocate resources effectively, and plan for capacity.



Customized Marketing Content: GenAI can generate marketing materials, such as brochures, social media posts, and videos, which resonate with specific student segments. Tailored content can highlight unique program features, campus life, and career opportunities, increasing the appeal to prospective students.

Automated Application Review and Decision-Making: GenAI can assist in reviewing and evaluating student applications. It can identify patterns, assess qualifications, and recommend acceptance or rejection. This streamlines the admissions process, reduces manual workload, and ensures consistency.





Chatbots for Real-Time Assistance: AI-powered chatbots can provide instant responses to student inquiries related to admissions, financial aid, deadlines, and program details. Chatbots enhance user experience by offering 24/7 support and reducing response time.

Financial Aid Optimization: Generative AI can assist in optimizing financial aid packages based on individual needs, merit, and available resources. This ensures fair distribution of aid and encourages enrollment.



Hyper-Personalized Outreach for Prospective Students

PROMISE

AI produces personalized content for individual students, tailored to the distinct styles and tones of various senders (such as renowned professors, deans, or presidents). This content can then be automatically distributed across multiple channels, including social media, emails, and text messages.

EXPECTED IMPACT

Stronger engagement, higher application conversion rates, better brand perception

24/7 Enrollment Concierge

PROMISE

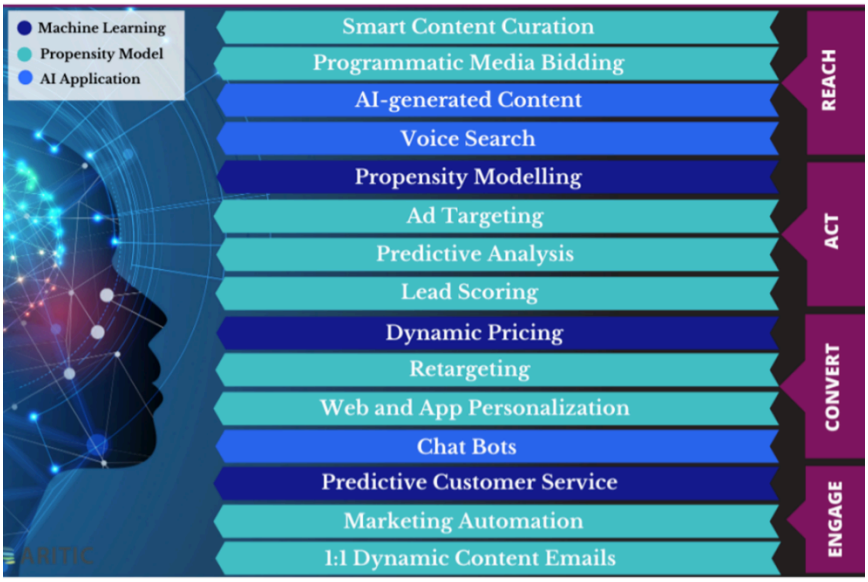
Conversational AI bot offers around-the-clock support to applicants, providing tailored responses and nudging them about financial aid, deadlines, housing, and more.

EXPECTED IMPACT

Smoother applicant journey, increased yield, and reduced administrative workload

Generative AI in Marketing

GenAI holds immense potential to revolutionize traditional digital marketing work by generating creative content, used in print, websites, email, and social media posts, reducing the time and effort required in content creation. AI can also analyze consumer behavior and preferences to generate personalized marketing strategies, improving customer engagement and conversion rates. By providing insights into market trends and customer sentiment, AI can help marketers make data-driven decisions, fostering innovation and growth in digital marketing.



Personalized Marketing Campaigns: GenAI helps marketers develop personalized marketing campaigns by analyzing user preferences and creating tailored content for individual customers. This enables businesses to deliver more targeted and relevant messages to their audience, increasing engagement and conversion rates.

Sentiment Analysis: GenAI can aid in sentiment analysis by generating synthetic text data that has been labeled with different sentiments such as positive or negative. This assists marketers in understanding customer sentiment towards their products or services, enabling them to make informed decisions about their strategies.

Targeted Advertising: By leveraging GenAI algorithms, advertisers can analyze vast amounts of data quickly and gain insights into consumer preferences and interests. This information allows them to create targeted advertising campaigns that resonate with their target audience, resulting in higher ROI for their marketing efforts.

Customer Segmentation: GenAI algorithms can efficiently categorize market and customer data, help marketers identify distinct customer segments based on various attributes such as demographics, behavior patterns, or purchase history. This segmentation enables businesses to tailor their marketing strategies for each segment effectively.

Predictive Analytics: Through GenAI techniques like deep learning models, marketers can leverage predictive analytics to forecast future trends and consumer behavior accurately. These insights allow businesses to make proactive decisions regarding product development, pricing strategies, or promotional activities.

Marketing Performance Optimization: GenAI algorithms help optimize marketing performance by analyzing large volumes of data like demographic information, customer data, and market trends. This analysis enables businesses to identify areas where they can improve targeting, engagement, and conversion rates.

Generative AI in Technology and Facilities Management Services

Facilities Management

Predictive Maintenance: Generative AI can analyze data from IoT sensors and historical maintenance records to predict when maintenance is needed. It can identify patterns of equipment behavior that precede failures. This can help in prioritizing repairs and reducing downtime.

Space Optimization: By analyzing usage data, AI can generate optimal layouts and workflows for different buildings and spaces. This can help in better utilization of the available space and improve the efficiency of facility operations.

Energy Management: AI can analyze energy consumption data to identify inefficiencies and suggest improvements. This can lead to significant energy savings and contribute to sustainability goals.

Security and Safety: AI can analyze data from security cameras and other sensors to automatically detect unusual activity and potential safety hazards. This can enhance the response to situations by maintenance staff and security personnel to the safety of students and staff.

Asset Management: AI can keep track of the university's assets, predict their lifespan, and suggest when to replace or upgrade them. This can help in budgeting and long-term planning.

Communication and Coordination: AI can automate and streamline communication and coordination among different departments and staff. This can improve the overall efficiency of facility management.

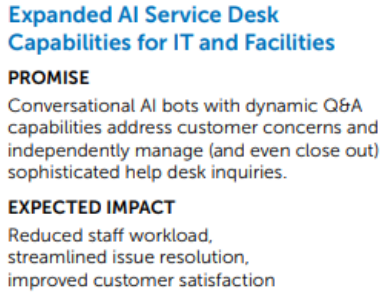
Preventative Maintenance: GenAI can be used to identify and plan preventative maintenance activities based on specifications of equipment and facilities predictive data.

Information Technology Services

Security: Generative AI can analyze patterns in network traffic and user behavior to detect anomalies and potential security threats. It can also generate security protocols and guidelines based on the specific needs and vulnerabilities of the university's IT infrastructure.

Application Development: AI can generate code, automate testing, and provide insights into code quality and performance. This can speed up the development process and improve the quality of applications.

Support Services: AI chatbots can provide 24/7 support to students, faculty, and staff, answering common questions and troubleshooting IT issues. This can improve the efficiency of support services and free up IT staff for more complex tasks.



Infrastructure Documentation: AI can automate the documentation of IT infrastructure, keeping track of hardware, software, and network configurations. This can help in maintaining an up-to-date inventory of IT assets and understanding the dependencies and interactions between different components.

Data Management: AI can analyze large volumes of data to provide insights into student performance, resource utilization, and other aspects of university operations. This can support data-driven decision-making and strategic planning.

Training and Education: AI can generate personalized learning resources and tutorials for students, faculty, and staff, helping them to better understand and utilize the university's IT resources. OBJ

Generative AI in Fund Raising and Alumni Services

GenAI can significantly enhance fundraising efforts, donor cultivation, and the promotion of a philanthropic culture in a university setting:

Fundraising Appeals: Generative AI can create compelling and informative fundraising appeals that resonate with potential donors. It can quickly generate text-based solicitation material designed for hyper-specific donor segments.

Donor Segmentation: GenAI can segment prospects or donors based on similarities such as geography, age, donation history, preferences, major in college, graduation year, and other factors. This can help to customize fundraising strategies to better engage and retain donors.

Proposal Writing: Generative AI can assist in proposal writing by generating content, editing for length, helping with word choice, making style consistent, and avoiding repetition. This can create efficiencies and enhance the work of grant writers.

Donor Outreach: AI can help develop a strong fundraising campaign, including drafting donor outreach copy and social media content.

Alumni Career Support: GenAI can generate personalized career advice, job recommendations, and professional development resources based on the alumni's field of study, interests, and career goals.

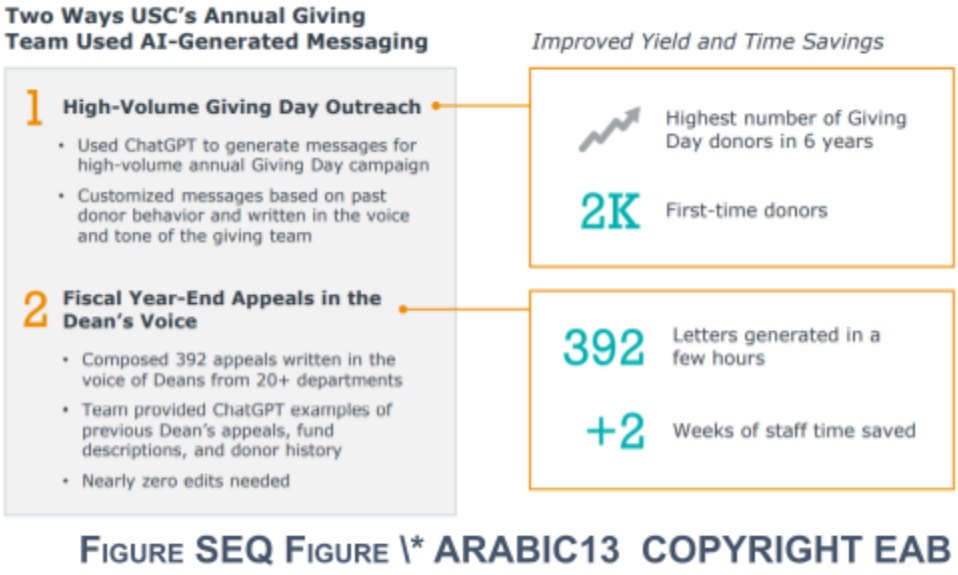


FIGURE SEQ FIGURE * ARABIC13 COPYRIGHT EAB

Alumni Networking Opportunities: GenAI can help connect alumni with each other, fostering a strong and active alumni network. This can be done by generating virtual networking events or recommending connections based on shared interests or fields.

Alumni Continued Learning: GenAI can provide alumni with personalized learning resources, courses, and research relevant to their field of interest. This can help alumni stay updated with the latest developments in their field.

Alumni Engagement: GenAI can generate personalized newsletters, updates, and event invitations to keep alumni engaged with the university.

Mentorship Programs: GenAI can match alumni with current students for mentorship programs based on shared interests, fields of study, or career paths.

Ethical Considerations: While generative AI offers many benefits, it's important to navigate the ethical implications of using AI for donor solicitation[2]. It's crucial to validate the content generated by AI at every level and ensure that the terms used in your writing are sensitive and appropriate.

Generative AI in Administrative Services

"Generative AI will reshape how every team operates." -- Clara Shih, CEO of Salesforce AI.

Content creation to improve efficiency and productivity: GenAI can deliver first drafts in seconds and knowledge workers can produce high-quality content in less time. This increase in speed and quality of content will transform every aspect of administration. This will free you up knowledge workers to respond quickly to changing student/customer needs and give employees time to deepen customer relationships.

Better student services: Institutions are struggling to meet customers' rising expectations for speedy solutions and increased personalization. Instead of having students lose patience with trying to discover which office can provide the help they need, AI Bots can provide insights into policy, procedures, handbooks, etc. to provide information in succinct and accurate ways. Alternatively, providing warm hand-off to a live person when needed.

Summarize Conversations to Identify Actions: GenAI can quickly craft the exact response required by combining knowledge culled from multiple articles and sources. And where personal engagements with students are conducted, GenAI can automatically generate post-call summaries from meeting transcripts.

Audit Analysis: GenAI can automate the process of summarizing complex audit reports. It can analyze large volumes of data, identify patterns and anomalies, and generate concise summaries. This not only improves efficiency but also allows administrators to focus on strategic decision-making. NAU's Internal Auditors recently used GenAI to summarize complex information concerning the university's perceptions of risk to quickly arrive at a summary document to bring focus to NAU's most prevalent risks.

Sentiment Analysis: GenAI models analyze customer feedback, reviews, and social media posts to gauge sentiment and proactively address customer concerns.

Supply Chain and Inventory Management Demand Forecasting: GenAI can be used to predict demand patterns, optimizing inventory levels, and reducing stockouts and improving supply chain efficiency.

Distribution Optimization: AI algorithms optimize delivery routes, considering factors like traffic, weather, and fuel costs. Logistics teams benefit from efficient transportation planning.

Contract Review: GenAI can review complex contracts comparing them to current contracts and desired language in a fraction of the time it would take a human. It can identify key terms, obligations, and potential risks, provide a detailed analysis that aids in decision-making.

Legal Analysis: Generative AI can assess legal documents, court cases, and legislation. It can provide insights into legal precedents, interpret complex legal language, and predict potential legal outcomes.

Instantaneous Access to Institutional Knowledge for Back-Office Functions (e.g., Finance, Legal, HR)

PROMISE

Conversational AI bots trained on institutional knowledge—from internal policies to legal documents to financial statements—accelerate staff access to information and expedite knowledge-intensive tasks such as due diligence and contract analysis.

EXPECTED IMPACT

Increased efficiency, reduced time spent on data searches, better decision-making

Regulatory Compliance: AI models can monitor regulatory changes, interpret legal guidelines, and recommend necessary actions. Compliance officers' benefit from timely alerts and insights.

Financial Reporting and Analysis: GenAI can automate financial report generation, including balance sheets, income statements, and cash flow statements, and can help budget planners with trend identification and analysis.

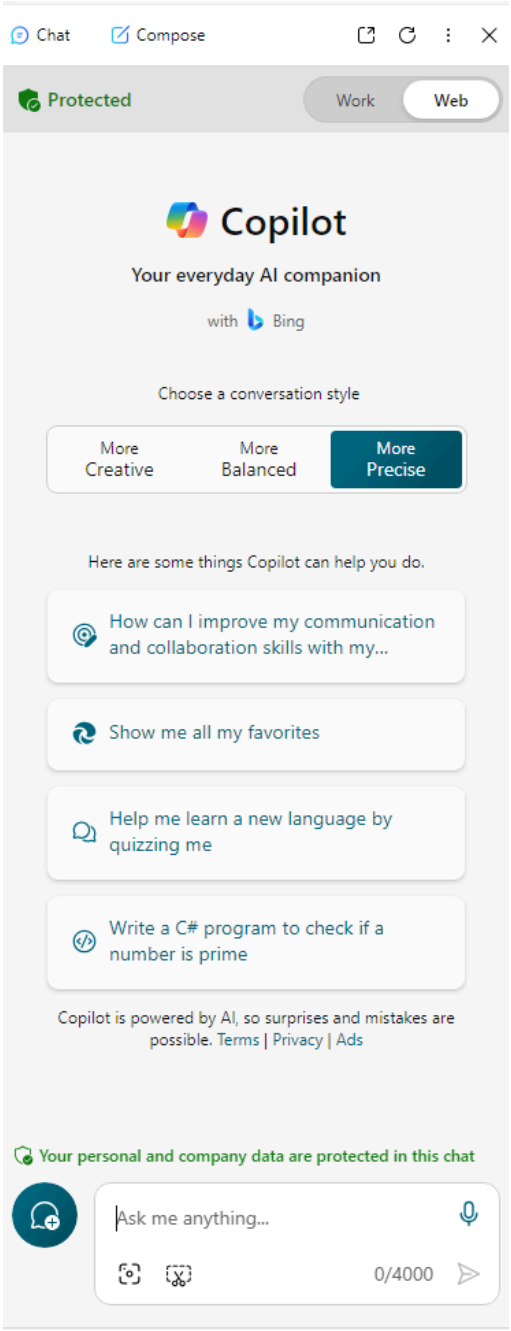
Expense Management: GenAI can categorize expenses, detect anomalies, streamline reimbursement processes and ensure accuracy and reduce manual effort.

Generative AI Enhances our Humanity

Generative AI can significantly enhance efficiency and productivity of humans. AI-powered tools streamline processes, reducing errors, and reduce the time it takes to generate high quality content. This leads to increased productivity and gives professional employees the gift of time and opportunity.

Microsoft CoPilot for Edge and M365 CoPilot Studio

The use of Microsoft CoPilot for Edge and M365 has been enabled in the NAU IT ecosystem. All members of the NAU community can utilize CoPilot for Edge. CoPilot for M365 costs $360/yr per person and further integrates Microsoft CoPilot capability in the Microsoft 365 productivity suite, Outlook, and Teams. Data consumed or produced is protected in the same way as Outlook and M365 information is. Copilot sets a new baseline—one where every employee gains the skills to write, draw, design, code, analyze data, and more.



Virtual Assistance and Automating Routine Tasks: AI-powered virtual assistants assist with tasks such as booking appointments and can automate routine tasks like data entry, writing emails, creating reports, or generating code.

Data Analysis **& Decision-Making**: GenAI can analyze large amounts of data and generate insights, summaries, or predictions, aiding in decision-making processes.

Better Collaboration and Communication: AI-powered tools bring team members together and facilitate communication, leading to better collaboration and a positive work environment.

Content Generation: It can generate new content such as articles, blog posts, or social media updates and can generate graphs and imagery reducing the time and effort required for these tasks.

Bridge Language and Cultural Barriers: Generative AI can act as a "business translator" and provide multilingual capabilities. This promotes inclusivity and enhances productivity and understanding in the workplace.

Learning and Training: CoPilot can generate personalized learning materials or training content based on the learner's needs and progress.

Idea Generation: CoPilot can generate new ideas or solutions, fostering creativity and innovation.

Document Search and Summary: Copilot can save time by finding whatever users need in their files or summarizing content in those files. It can also summarize Teams meetings and related materials.

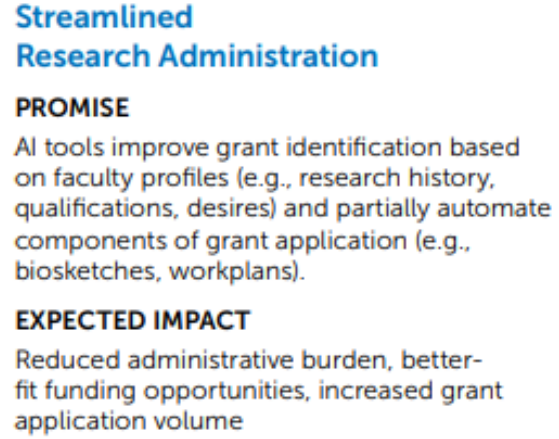
Generative AI in Research

GenAI holds immense potential for revolutionizing research at higher education institutions. Lead agencies like the NSF and USDA-NIFA, together with other partners, have funded 25 AI institutes, which are carrying out a broad spectrum of research of critical importance to US competitiveness, food security, public safety and

education, and myriad other targets. Researchers can use these AI models to automate time-consuming tasks such as data analysis, literature reviews, and content generation, allowing them to focus on higher-level problem-solving and hypothesis testing.

Automated Literature Review: Generative AI can analyze vast amounts of existing research papers, summarizing key findings, identifying gaps, and suggesting relevant literature. This can save researchers time during the literature review process.

Proposal Writing Assistance: **Grant Proposal Generators**, powered by AI models like GPT-4, can help researchers turn project ideas into detailed and persuasive grant proposals. These tools streamline the writing process and increase the chances of securing funding.



Customized Proposal Templates: AI can generate personalized proposal templates based on the specific requirements of different funding agencies. Researchers can then adapt these templates to their own projects.

Data Synthesis and Analysis: GenAI can assist in analyzing complex datasets, identifying patterns, and generating insights. Researchers can use these insights to strengthen their proposals.

Predictive Modeling: AI models can predict the impact of proposed research, estimate potential outcomes, and assess risks. This information can be valuable for grant applications.

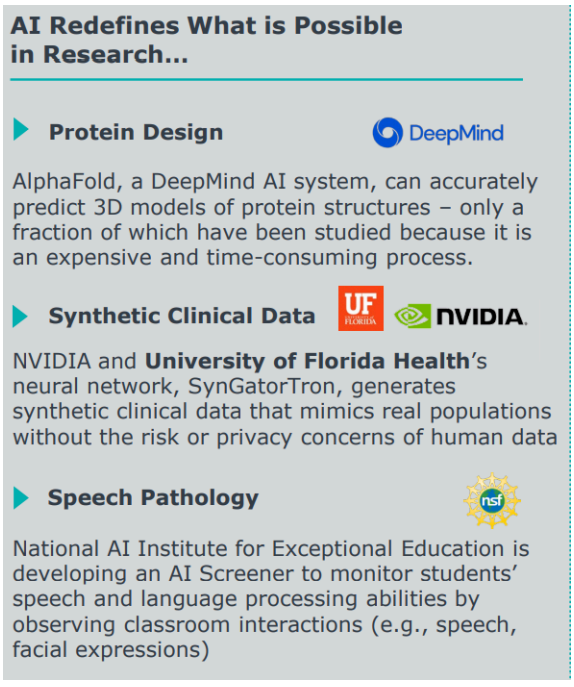
Automated Abstracts and Summaries: AI can generate concise abstracts, summaries, and executive overviews for research papers and proposals. This helps reviewers quickly grasp the essence of the work.

Enhanced Collaboration: AI-powered collaboration tools can facilitate communication among researchers, helping them co-create proposals and share ideas more efficiently.

Ethical Considerations: AI can assist in identifying ethical implications of research proposals, ensuring compliance with guidelines and regulations.

Customized Funding Opportunities: AI algorithms can match research topics with relevant funding opportunities, suggesting grants that align with a researcher's work.

Natural Language Generation: AI-generated content can be used to draft sections of proposals, such as project descriptions, methodologies, and expected outcomes.



Generative AI Risks and Downsides

The hype about GenAI has given rise to concerns about its impact on employment, misinformation, politics, etc., and anxiety about an existential risk to humanity. We are already experiencing bias, inscrutability, unaccountability and GenAI's tendency to "hallucinate," to name just four.

- Hartmut Nevin, Quantum Artificial Intelligence Lab at Google.

Generative AI, while offering numerous benefits, can also lead to unintended consequences inherent to how models are trained to exploitation by bad actors:

Biased Outputs: If the training data is skewed or inaccurate, the AI system could generate misleading or harmful outputs. This could lead to potential legal and ethical implications.

Lack of Transparency: The decision-making process of AI can be opaque, making it difficult to understand how a particular output was generated. This lack of transparency can lead to trust issues.

Misinformation and Misinterpretation: Generative AI can inadvertently create and propagate misinformation. This can occur when the AI, in its attempt to generate novel content, produces information that is inaccurate or misleading. Additionally, AI "hallucinations," where the AI generates outputs that don't accurately reflect reality, can lead to confusion or misinterpretation among users.

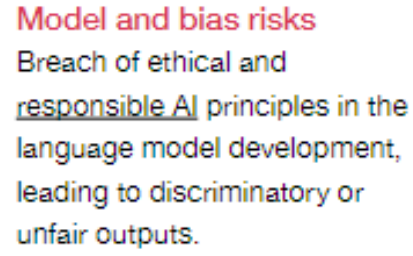
Data Security: Generative AI systems often require large amounts of data for training, posing a risk of data leakage if not properly managed.

Intellectual Property Violation: If an AI system is trained on copyrighted material and generates similar content, it could potentially infringe on intellectual property rights or violate copyright laws.

Dependence on AI: Over-reliance on generative AI could lead to a loss of human skills and creativity. It's important to strike a balance between human intelligence and artificial intelligence.

The Bias of Data

AI systems, for example, may be trained on data that can change over time, sometimes significantly and unexpectedly, affecting system functionality and trustworthiness in ways that are hard to understand. AI systems and the contexts in which they are deployed are often complex, making it difficult to detect and respond to failures when they occur. AI systems are inherently socio-technical in nature, meaning they are influenced by societal dynamics and human behavior. AI risks – and benefits – can emerge from the interplay of technical aspects combined with societal factors related to how a system is used, its interactions with other AI systems, who operates it, and the social context in which it is deployed. These risks make AI a uniquely challenging technology to deploy and utilize both for organizations and within society. Without proper controls, AI systems can amplify, perpetuate, or exacerbate inequitable or undesirable outcomes for individuals and communities. With proper controls, AI systems can mitigate and manage inequitable outcomes.



User Risks

A potential consequence of using GenAI is the inadvertent creation and propagation of misinformation. The decision-making process of AI can be opaque, making it difficult to understand how a particular output was generated. This lack of transparency can lead to trust issues. Users, without fully understanding the underlying mechanisms of AI, may unknowingly contribute to the spread of false information generated by these systems.

This could occur when the AI, in its attempt to generate novel content, produces information that is inaccurate or misleading.

Another potential issue is the phenomenon of AI "hallucinations", where the AI generates outputs that don't accurately reflect reality but are instead artifacts of the AI's training data or algorithms. These hallucinations can lead to confusion or misinterpretation among users, further worsening the issue of misinformation. It's crucial for developers and users alike to be aware of these potential pitfalls and work towards mitigating them.

NAU faculty have expressed concerns about GenAI technology:

- Increased potential for cheating and plagiarism.
- Unintended consequence of decreased students' creativity, literacy, and critical thinking skills.
- Issues related to accuracy and reliability of AI-generated content.
- Tempting for students to use it as a short-cut.
- Students without access could be left behind

User risks

Unintended consequences due to users becoming unwitting parties to the creation of misinformation and other harmful content. For instance, they might pass off AI-generated hallucinations – erroneous or nonsensical responses – as fact.

False Positives and Antiplagiarism Tools

Concerned about academic integrity, many academic colleges have turned to plagiarism detection services in student assignments. Despite these measures, savvy students often find ways to cheat these software programs. And as AI continues to advance, differentiating between AI-generated and human-generated content will only become harder over time.

The endeavor to detect AI use can result in false positives, as demonstrated by a faculty member at Texas A&M who erroneously failed his students based on his AI detection results, even temporarily withholding graduation diplomas. Embracing policies of academic integrity that penalize AI use will also ultimately embrace biases like unfairly targeting non-native English speakers, whose work might be easier to detect, when everyone is using AI.

Data risks

Error propagation, intellectual property (IP) or contractual issues (due to lack of approvals to use data for such purposes), or misleading and harmful content caused by low-quality data used to train generative AI models.

Rather than chasing this unachievable goal of stopping student AI usage, institutions should redesign assessments (e.g., oral examinations to evaluate foundational skills) as well as use new kinds of assignments that foster higher-order skills. Realizing this potential, however, will require instructors to rethink learning objectives and understand the capabilities and limitations of AI.

Legal Quagmires of Digital Property

Generative AI poses several risks related to data security and intellectual property. Firstly, the loss of data is a significant concern. As these systems often require large amounts of data for training, there's a risk of data leakage if not responsibly managed.

Secondly, generative AI can inadvertently infringe on intellectual property rights or violate copyright laws. For instance, if an AI system is trained on copyrighted material and generates similar content, it could potentially lead to legal issues.

Lastly, generative AI models can also pose liabilities if they're based on false or biased data. If the training data is skewed or inaccurate, the AI system could generate misleading or harmful outputs, leading to potential legal and ethical implications. Therefore, it's crucial to ensure the integrity and legality of the data used in generative AI systems.

Impacts of Carbon Neutrality, Sustainability of AI's Appetite for Electricity

AI risks sustainability should also be part of the conversation. AI requires staggering amounts of computing power. And since computers require electricity, and the necessary GPUs (graphics processing units) run extremely hot (and therefore need cooling), the technology consumes electricity at a colossal rate. Data centers, which house AI models and other computing infrastructure, currently account for approximately 1 to 1.5 percent of global electricity consumption. NVIDIA is on target to ship 1.5 million additional AI server units per year by 2027. If these servers operate at full capacity, they will collectively consume at least 85.4 terawatt-hours of electricity annually equivalent to the energy usage of many small countries.

Equity and AI

Some experts have sounded a note of concern that the gains from these new advances in AI risk being limited only to those with the financial resources to afford the latest technologies, which may reinforce economic inequality. Generative AI has the potential to both address and worsen equity issues.

> "*The degree of integration of AI into daily life will depend very much, as it does now, on wealth*."
>
> – The Pew Foundation[8]

Equitable Access: On one hand, it can democratize content creation, allowing individuals without specialized skills or resources to generate high-quality output, thereby leveling the playing field. It can also be used to create personalized learning experiences, potentially reducing educational disparities.

Perpetuating Stereotypes: If not carefully managed, generative AI could exacerbate equity issues. For instance, biases in training data can lead to AI systems that perpetuate harmful stereotypes or discrimination.

Job Displacement: Additionally, the widespread use of AI could lead to job displacement in certain sectors, potentially widening economic disparities. Therefore, it's crucial that as we develop and deploy AI technologies, we do so with a keen eye on their equity implications.

Academic Integrity: A major concern is the ease with which students can misuse AI tools to complete assignments, undermining the learning process and academic honesty.

Quality and Reliability of Information: AI-generated content may not always be accurate or reliable, leading to potential misinformation. Some groups may be more susceptible to misinformation and the effects of such can be harmful.

Bias and Ethical Concerns: AI systems can inherit biases from their training data, leading to skewed or unfair outcomes. Ethical implications of AI in decision-making processes also raise concerns.

Data Privacy and Security: The extensive data required to train and operate AI systems poses significant privacy and security risks. AI's potential is undeniable, but privacy concerns are legitimate. When you upload data to a software or platform not owned or licensed by your institution, you run the risk of sharing personal data which could be stolen or used inappropriately.

Dependence and Skill Erosion: Overreliance on AI tools can lead to erosion of fundamental skills among students and staff.

[8] https://www.pewresearch.org/internet/2014/08/06/predictions-for-the-state-of-ai-and-robotics-in-2025/

Managing Generative AI Risk

"Advanced AI could represent a profound change in the history of life on Earth and should be planned for and managed with commensurate care and resources." - The Asilomar AI Principles[9]

Though there continues to be debate over the pros and cons of deploying AI technology in the field of higher education, there is an emerging consensus that the extraordinary range of current and future benefits will carry the day. While GenAI offers transformative potential for higher education, it is imperative that institutions address the associated risks and ethical concerns proactively. By developing informed strategies and policies, higher education can harness the benefits of AI while mitigating its challenges.

It is important to be clear-eyed about the fact that these risks will not prevent campus communities from using a product that serves as a personal assistant to them in their daily lives. But training and awareness campaigns can mitigate these risks substantially. When possible, institutions should create avenues for leveraging AI capabilities safely. For example, institutions can partner with vendors or other institutions to develop their own instances of AI chatbots with built-in guardrails.

Privacy

As GenAI platforms develop and mature, there will be increased focus on data privacy and protection. But for now, it's crucial to be aware of the privacy risks, especially when using sensitive data. And be sure to only use AI-driven technology with partners and software you trust. A good rule of thumb for now is to assume that anything you put into ChatGPT may eventually be accessed by the general public. Don't enter anything that you would not be comfortable posting on your institution's website. Microsoft CoPilot provides more security and can be used in the same way we would use MSWord or Outlook when it comes to protections of GenAI inputs and outputs.

Equity

Bias in AI algorithms is a costly human oversight that can have a significant impact on marginalized and underrepresented communities. AI must be ethical and equitable in its approach to ensure it empowers communities and benefits society.

- Workforce diversity, equity, inclusion, and accessibility processes are prioritized in the mapping, measuring, and managing of AI risks throughout the lifecycle.
- **Training Data Quality and Human Oversight**: Organizations must prioritize training data quality, ensure human oversight, and integrate AI with comprehensive DEI (Diversity, Equity, Inclusion) strategies.
- **Educate Workers**: Educate workers to take advantage of AI's evolving capabilities. This includes segmenting tasks for either AI automation or AI augmentation, transitioning tasks across work roles, and evaluating performance to reflect employees' learning and the help they give others.
- Institutions must address ethical concerns related to generative AI. They need to ensure that the technology is used responsibly and that biases within training data are minimized. Incorporating discussions about ethics and bias into the curriculum is essential.

[9] Asilomar AI Principles - Future of Life Institute

Policy Development

Some higher education institutions have taken steps to create policies specific to AI while others are taking a more measured approach of applying broader policy like Appropriate Use Policy to cover uses of GenAI. An exploration of the policy context for AI could include some or all the following:

- **Conduct a thorough policy audit.** Policy review and development should involve not only crafting new policies but also examining and updating the existing policy library.
- **Review existing institutional policies that could apply to various uses of AI.** Consider the potential risks faced by students and faculty due to the misapplication of policies that were not originally designed with AI in mind, such as a plagiarism policy that predates the ways AI can be used in the writing process.
- **Establish and engage in cross-functional conversations on campus.** Involve students in meaningful ways and stay abreast of evolving AI technologies (especially those embedded in publicly available tools) to ensure responsible use and equitable integration.
- **Create task forces or agile groups to explore and track use cases and navigate the complex landscape of AI.** This approach parallels the collaborative efforts needed during events such as the COVID-19 pandemic.

The NIST Security Framework

NAU ITS subscribes to the National Institute of Standards and Technology (NIST) framework for our cybersecurity program. On March 30, 2023, NIST launched the Trustworthy and Responsible AI Resource Center, which will facilitate implementation of, and international alignment with the AI Risk Management Framework (AI RMF 1.0) and companion NIST AI RMF Playbook, AI RMF Explainer Video, AI RMF Roadmap, and AI RMF Crosswalk. Watch the event and read remarks here.

Corporate Actions

Companies, institutions, and governments have been attempting to set standards and install guardrails to prevent AI-aided fakery and propagation of hallucinations, and misleading information.

Companies who stand to gain from the use of generative AI are taking some proactive steps. Meta said that it will begin attempting to identify and label all AI-generated content on Facebook, Instagram, and Threads. The company said it's working with "industry partners on common technical standards" to do so.

Google became the latest major company to sign on to an industry effort to label AI-created media called the Coalition for Content Provenance and Authenticity, joining tech industry peers like Adobe and Microsoft. The group aims to bring together the Adobe-led Content Authenticity Initiative, which provides a "nutrition label" of sorts for content and news industry-focused Project Origin, according to its website.

Existing Laws and Policies for Data Protection and Security

Designated teams or individuals should revisit internal policies and procedures, including privacy policies, data use policies, information classification and management policies, and terms of service, to ensure that they account for planned or permitted uses of generative AI.

Federal Guidance

The risks posed by AI led to the passage of rules designed to police the use of AI in Europe. Subsequently, the Biden administration announced a new consortium dedicated to AI safety, with companies like OpenAI, Adobe, Google, and 200 others on board as partners. It's yet another piece that builds on the sweeping executive order Biden signed last fall. One of the body's stated goals is establishing guidelines for "watermarking synthetic content." More recently, The FCC banned the use of AI-generated voices in robocalls.

Best Practices (thus far) on Adopting Generative AI

The following list of considerations is compiled from various sources of guidance.

- Organizations should inform employees about the implications and consequences of using generative AI tools in the workplace.
- Organizations should review and understand the generative AI system's terms of use and other relevant materials, including privacy policies, to understand how personal data is handled, processed, and protected.
- If there are specific GenAI tools that the organization wishes to recommend, discourage use of, or issue special warnings for, be sure to communicate that clearly and affirmatively.
- Organizations must identify risks of using generative AI in context, including legal, regulatory, or ethical obligations, and potential liabilities associated with generative AI tools.
- Organizations should provide employees with new or existing resources that advise about the responsible use of any automated processing tool. Existing educational resources should be updated where possible to expressly address generative AI tools. Relevant training and workshops may include training on ethics, bias, data inaccuracy, security concerns, intellectual property rights, confidential information, and data minimization.
- Software developers and data scientists accessing generative AI models through APIs or building applications that use these models should be trained on ethics, bias, data inaccuracy, security concerns, intellectual property impacts, trade secrets, and data minimization.
- Given the speed at which generative AI technologies are developing, leadership at organizations should designate personnel responsible for staying abreast of regulatory and technical developments and ensure that company policies and employee practices reflect such changes.
- Employees should only use generative AI tools or systems approved by the organization.
- Organizations should communicate when and how the organization will require employees to disclose whether internal and/or external work product was created in whole or part by generative AI tools.
- Organizations should recognize the creative approaches that many employees will take to professional use of generative AI tools. Typically, organizations should not create blanket bans on use by job title (e.g., HR employees), but rather provide employees with clear guidance on how they can or cannot use generative AI tools to perform their essential job functions (e.g., restricting or prohibiting HR employees from inputting employee names, addresses, social security numbers, etc. into ChatGPT).
- Organizations should update internal documentation, including employee handbooks and related policies, to reflect policies regarding Generative AI use.
- Employees should be regularly reminded that: generative AI outputs can be incorrect, out-of-date, biased, or misleading. Individuals are responsible for the content they create, regardless of the assistance of generative AI tools, and employees are encouraged to independently verify the accuracy of any outputs. Verification is particularly important when employees use AI in situations that require legal certification of accuracy, e.g., financial reports, court filings, and due diligence documents.
- Employees should be advised that content from generative AI tools may be subject to copyright protections or implicate holders of intellectual property. Depending on the circumstance, organizational leadership may also advise employees to refrain from using AI-generated content if there is a question about intellectual

property rights. The organization should decide whether, to what extent, and in what situations, it is determined that compensation should be provided to those whose intellectual property is implicated by the output of a generative AI, including if there is direct use, derivative use, or when it is clear that the material was a source for the output.

- € Coding outputs by generative AI should be checked and validated for security vulnerabilities.
- € Characteristics of trustworthy AI systems include valid and reliable, safe, secure and resilient, accountable and transparent, explainable and interpretable, privacy-enhanced, and fair with harmful bias managed. Creating trustworthy AI requires balancing each of these characteristics based on the AI system's context of use.
- Policies, processes, procedures, and practices across the organization related to the mapping, measuring, and managing of AI risks are in place, transparent, and implemented effectively.

EDUCAUSE Recommendations for Generative AI

EDUCAUSE provided the following recommendations[10]

- **Assess the current landscape (local and beyond):** Understand the current uses of AI within the institution. Identify where AI is being used, what types of data are involved, and the impact on students and faculty.
- **Engage stakeholders:** Involve various stakeholders—including faculty, students, technology professionals, staff, and legal experts—in the conversation. Understanding different perspectives is crucial for creating comprehensive policies and guidelines.
- **Clarify existing policies:** Review and clarify existing policies related to data privacy, academic integrity, and ethical conduct. Ensure that AI-related considerations are integrated where necessary. Especially consider crafting an AI policy that is in addition to and different from a plagiarism policy and develop a handbook to help educate and encourage effective practice.
- **Understand AI-provider policies:** Consider how policies govern the AI coming from or embedded in third-party tools.
- **Educate the community.** Provide education and training on AI technologies for faculty, students, and staff. Help them understand the potential benefits, risks, and ethical considerations associated with AI.
- **Define ethical principles.** Develop a set of ethical principles that guide the use of AI within the institution. Consider dimensions such as transparency, fairness, accountability, and privacy.
- **Undertake risk assessments.** Conduct risk assessments to identify potential risks associated with AI use, and proactively consider how to respond to the risks. For example, some AI contract language allows data provided by students to be used in the development of new products. Policy development should include evaluating the impact on students' well-being, academic integrity, research, and data security.
- **Plan for iteration.** Recognize that AI technologies and ethical considerations are evolving. Establish a framework that allows for continuous iteration and adaptation as technology and ethical norms develop.
- **Communicate about policies.** Clearly and regularly communicate the AI-related policies to the entire community. Ensure that everyone is aware of the guidelines, expectations, and consequences associated with AI use.
- **Remember to monitor and audit.** Implement mechanisms for monitoring and auditing AI applications within the institution. Regularly assess their impact on and adherence to ethical principles.
- **Collaborate with other institutions.** Collaborate with other educational institutions and organizations to share insights, best practices, and collective wisdom while navigating the ethical landscape of AI in education.
- **Establish protocols for AI tool selection and use.** Develop policies and/or guidelines addressing tools that may be used in instruction regarding a centralized review of privacy, security, and quality.

[10] Exploring the Opportunities and Challenges with Generative AI | EDUCAUSE Review

Go-Forward Strategies

> *"[AI] is affecting almost every part of the economy. I think these tools will lead to more widely shared prosperity. If we play our cards right, the next decade could be some of the best 10 years ever in human history."*
>
> -- Erik Brynjolfsson, Stanford University
> Senior Fellow of the Stanford Institute for Human-Centered AI (HAI)

NAU's Public Statement on Generative AI

NAU has received inquiries from inside and outside of the institution as to our disposition and intentions around GenAI. Our response to date has been:

> *NAU's approach to the use of artificial intelligence (AI) at NAU is rooted in the understanding that artificial intelligence technologies have the potential to significantly change the ways in which we work, teach, and learn. We support the responsible and ethical use of AI technologies in the classroom, and we recognize the importance of preparing our students for future careers that will use AI technologies.*

According to EAB's research, there are several approaches to adopting generative AI – and adoption strategies may vary within various areas of the institution, with some functions able to invest or take on risk at greater rates than others:

Different Possible Approaches to AI Adoption
By Difficulty, Cost, and Impact

	Difficulty	Cost	Impact
Making basic use of basic tools Using ChatGPT and AIs embedded in office softwares to produce better deliverables more quickly, to analyze data more easily, and to support staff development	○	○	◔
Pushing the envelope on ChatGPT Developing advanced prompt-engineering capabilities and practices. Discovering and developing non-writing use cases (data analysis, coding, etc.)	◔	◔	◑
Acquiring specialized AIs from vendors Buying commercial software packages purpose-built to tackle admissions challenges like application processing and to provide key functionalities like chatbots	◑	◕	◕
Building your own tools Flexibly creating your own AI-enabled software to address particular admissions-office challenges and opportunities, as the need arises, using third-party APIs	●	◕	●

○ Least ● Greatest

FIGURE SEQ FIGURE * ARABIC14
COPYRIGHT EAB

Governance and Steering

Universities are forming taskforces and working groups, led by faculty or staff members, to address specific aspects of AI, such as its impact on writing assignments. While these taskforces are praiseworthy and provide an excellent starting point, it is essential to also establish president-led, university-wide taskforces that can systematically uncover AI's impacts across campus. Universities must ensure that these taskforces include diverse representation from faculty, staff, and students who can contribute various perspectives on AI. A comprehensive plan can also prevent siloed thinking and redundant and unnecessary product purchases throughout the campus.

Prior Recommendations of the Provost's Taskforce of Faculty on AI[11]

> "We support the responsible and ethical use of GenAI technologies in helping us foster student learning and success, and we recognize the importance of embracing the role these technologies will play in our work and the professional futures of our graduates."

The taskforce established the following principles:

1. People, not technology, must be at the center of our work;
2. We should promote digital inclusion within and beyond our institutions;
3. Digital and information literacy is an essential part of a core education;
4. AI tools should enhance teaching and learning;
5. Learning about technologies is an experiential, lifelong process; and
6. AI research and development must be done responsibly.

Faculty Guidelines

The Provost's taskforce also provided the following initial guidance to faculty for the use of GenAI technologies at NAU:

Communicate appropriate use to students

Provide and discuss clear syllabus policy statements that define permitted and prohibited use in your courses—developed in collaboration with our instructional designers, we offer sample syllabi statements to use as a starting point in offering guidance to students, which may be modified to fit specific course or assignment needs. Unauthorized uses of GenAI, as defined by the instructor, may constitute an academic integrity violation.

Do not mandate student use

Accessibility, personal concerns regarding adoption, and other barriers may cause undue burden on students. Faculty should provide a non-GenAI option for students when incorporating these tools into student assignments.

GenAI detection

Current GenAI detector technologies (e.g., Turnitin Originality) are imperfect and may return false positives and false negatives—be cognizant that results such detectors produce cannot be considered definitive evidence of an academic integrity violation.

Protect confidential data

Grounded in our Data Classification and Handling policy, faculty should not enter data classified as Internal, Sensitive, or Highly Sensitive (Level 2 and above), including non-public research data and personally identifiable

[11] https://in.nau.edu/wp-content/uploads/sites/90/2023/08/genAI-taskforce-report.pdf

student information, into publicly available GenAI tools. Information shared with GenAI tools using default settings is not private and could expose proprietary or sensitive information to unauthorized parties.

Experiment with GenAI in courses

There are myriad possibilities: Explore using GenAI to outline schedules and topics for new modules or lessons or generate variations of exam questions that assess student learning. Ask students to explore a high-level topic using GenAI chatbots and report their detailed findings, create their own practice exams by generating questions on key course topics, or create and refine outlines and first drafts of writing assignments.

Include GenAI in curricular decisions

Applications of GenAI in professional practice abound, and these technologies have already augmented the standard toolkits in many occupations. Seek opportunities to make curricular changes that build on the changes you anticipate happening and better prepare students for the evolving professional landscape.

Looking ahead

A consensus within the higher education community for how to best integrate GenAI technologies in fostering student learning is still emerging, and these technologies are rapidly evolving. We'll continue to support our institutional community, with efforts that include:

- Coordinating and communicating with academic leaders to ensure that information about GenAI is broadly disseminated to faculty and students and fostering awareness of these technologies across the institution.
- Equipping faculty with the necessary knowledge to effectively use these technologies through a commitment to regular updates of existing library guides and other resources with topics and content specific to GenAI technologies.
- Launching broad professional development efforts, coordinated through the Teaching and Learning Center, to offer faculty information about GenAI, support the integration of these technologies in classes, and offer advice on learning assessment techniques that are resilient to GenAI;
- Developing new courses that offer students opportunities to learn more about GenAI, its capabilities and potential, and how they might be used professionally.
- Coordinating with our Career Development office to integrate GenAI in how we prepare students for career success; and
- Augmenting training offered to students and graduate teaching assistants to explicitly address GenAI considerations.
- It is also recommended that faculty avoid mandates for the use of technologies that may be an undue burden for students. It is acknowledged that the current reality is that tools that aim to detect AI uses in course work are imperfect at best.
- Developing guidance on acceptable uses of GenAI in non-instructional work, such as work that faculty do in research, scholarship, and service or as part of university business processes.

Additional GenAI Guidelines for all NAU Employees

The guidelines from the Provost's Taskforce could be generalized to administrative functions and staff. The last bullet in the previous list also suggests extending the guidance to include non-instructional uses. As such, additional general guidance should include the following:

- The use of **AI should be done in compliance with existing State and Federal laws. Laws and federal guidance are changing quickly. Please refer frequently to this website for updates. _____.**
- The use of AI must adhere to existing NAU policies including the Appropriate Use policy.
- Use the software approval checklist to initiate the assessment and approve new or updated third party software and services that integrate with generative AI APIs or offer generative AI features. Internal reviewers should consider the data sets used to create the outputs, as not all tools raise the same risks.
- Use designated and approved Generative AI.
    a. **Microsoft Copilots** – Considered the preferred platform and is secure when used in conjunction with NAU credentials. It respects GDPR and EU boundary commitments too.
    b. **OpenAI's ChatGPT Generally** considered insecure. *Use with caution*
    c. **Duet AI for Google Workspace**. Generally considered insecure. *Use with caution*
- The use of GenAI in any context should consider the essential need for protecting confidential data and not put personally identifying information (PII) into GenAI tools. This even extends to the use of Microsoft CoPilot.
- Individuals are 100% responsible for the generative AI output you use. Generative AI-produced content may be biased, inaccurate, completely fabricated, or contain copyright-protected or proprietary information, therefore requiring prudent human review prior to use.
- When in doubt, reach out. As this industry rapidly changes, it is impossible to consider every scenario you might encounter. Work with ITS to connect with the right people to help move your project forward, explore use cases, and mitigate risks.

Additional Areas of Guidance to Develop

Employee Training and Education. Identified personnel should inform employees of the implications and consequences of using GenAI tools in the workplace, including providing training and resources on responsible use, risk, ethics, and bias. Designated leads should provide employees with regular reminders of legal, regulatory, and ethical obligations.

Employee Use Disclosure. Organizations should provide employees with clear guidance on when and whether to use organizational accounts for GenAI tools, as well as policies regarding permitted and prohibited uses of those tools in the workplace. Designated leads should communicate norms around documenting use and disclosing when GenAI tools are used.

Outputs of GenAI. When GenAI is used for coding, appropriate personnel should check and validate outputs for security vulnerabilities.

AI Governance at NAU

We have informally discussed the opportunity for AI governance through three lenses:

1. Instruction
2. Research
3. Administration

A Generative AI steering group, comprised of appropriate faculty, researchers, and functional administrators would help clarify and prioritize issues, identify opportunities, and raise important concerns about the application of GenAI in the NAU enterprise. Given the overlaps of interest among these groups, our initial conclusion is this should be one taskforce, sharing and discussing the broad range of issues and opportunities associated with the rapid development of GenAI. In the spirit of shared governance, the steering group would provide recommendations to the IT and Data Governance Trustees. The Trustees would provide topical and timely issues for the steering group to consider.

NAU Executive Leaders identified the following five themes associated with AI at NAU:



Overall, the disposition of the workshop participants reflects a recognition of the potential benefits of AI in enhancing efficiency and effectiveness across various aspects of work, while also acknowledging the need for careful consideration of equitable, ethical, and practical issues associated with its use. The participants expressed a desire to promote generative AI, among their priorities including faculty hires with AI expertise, integrating AI learning outcomes into existing programs, and developing new programs in AI applications. Participants keenly noted the need to address issues such as academic integrity, appropriate and inappropriate uses of AI, broad awareness of access, and the inclusion of cultural humility before a deeper use of AI at NAU is realized.

Alignment of AI with University Mission and Strategy:

- **Enhance access and student success.**
- **Support the mission of leveraging knowledge.**
- **Promote effective use and stewardship of resources.**
- **Prepare all students for an AI world.**
- **Target various aspects of the Strategic Roadmap.**
- **Ensure that AI enhances student skill and competency development.**
- **The potential for AI to impact the relevance and impact of the program portfolio over time.**

Participants were asked to identify opportunities, drawbacks and potential threats does AI present for the fundamental missions of teaching, learning and research at our institution:

Opportunities	AI can reduce the time spent on knowledge transmission, allowing more focus on critical thinking skills, knowledge creation, and humanization of knowledge.
	It can assist in identifying interests, issues, and making connections for students, enhancing their learning experience.
	AI can improve operational efficiencies, such as compiling and organizing meeting notes, summarizing data, and generating presentations.
	It can support research by providing new ways to approach questions and resources that may not have been previously known.
Drawbacks:	There is a risk of over-reliance on AI, which might lead to a decline in critical thinking and problem-solving skills.
	Concerns about plagiarism and the potential for AI tools to do the thinking for students, which could undermine the learning process.
	The possibility of AI being used as a crutch, reducing the development of analytical skills.
Potential Threats:	AI might perpetuate bias and inequity in teaching, learning, and research.
	The rapid pace of AI technology development raises concerns about data privacy and ethical use.
	There is an inherent conflict between the energy use of AI tools and the institution's carbon neutrality goals.
	AI isn't yet equitably accessible across student and employee groups, which could exacerbate existing inequalities

More information about NAU's AI Program is available at Artificial Intelligence | Information Technology Services (nau.edu). Join the Generative AI Innovation Pioneers discussion on MS Teams at Generative AI @ NAU | General | Microsoft Teams

What's ASU doing?

"Rather than dictate how AI will best be leveraged in the learning and research environment, ASU has looked to faculty and staff to lead in their respective areas of innovation for greater impact.

To launch the university's recently announced collaboration with OpenAI, ASU has issued an innovation challenge for faculty and staff users to submit proposals for how to best utilize ChatGPT Enterprise for enhancing student success, forging new avenues for research, and streamlining organizational processes to support student outcomes. Gonick notes that over 150 proposals were submitted in the first, and those under the most prominent consideration include use-cases dealing with using AI for operational efficiency and staff training, enhancing learning design capacities, academic writing assistance, and AI-assisted behavioral health applications." From: Can AI And ChatGPT Reshape Academia: Arizona State Believes So (ampproject.org)

Conclusion

> *Whatever you think AI is right now, it will be something different in a few years. If your AI literacy efforts don't address fundamentals that transcend today's AI, then you'll be playing a constant battle of whack-a-mole. It's not just about prompting. It's about understanding how to approach challenges and collaborations, or even recognizing a challenge. It's about judgment and decision making, clarity and precision of communication, creativity, critical thinking, etc.* — Tim Dasey, MIT

GenAI is not a trend – it's a transformative force reshaping industries across the globe. Businesses are integrating AI-powered tools to optimize processes, enhance efficiency, and gain a competitive edge. A new generation of learners, shaped by technology, is entering higher education and institutions that don't embrace GenAI risk falling behind.

GenAI is advancing quickly and holds great promise for revolutionizing how we educate, research, and administer our institutions. However, Institutional leaders must overcome a variety of complex obstacles including a lack of understanding and misconceptions, resistance to change, budget constraints, governance and policy frameworks, and staff readiness.

Institutions that don't adapt/adopt AI-powered tools are missing a critical opportunity to align GenAI capabilities with the expectations of employers and students. This means missing out on:

- **Higher enrollment rates:** AI-powered personalization and targeted marketing can lead to more qualified leads and a higher conversion rate.
- **Improved student satisfaction:** AI can provide faster, more personalized support, creating a better overall student experience.
- **Greater efficiency:** AI can automate tasks, freeing up staff to focus on high-impact activities.
- **Informed decision-making:** AI can analyze data to identify trends, predict student behavior, and support more strategic decision-making.
- **Competitive advantage:** Institutions that embrace AI will be better positioned to attract and retain students in the increasingly competitive higher education landscape.[12]

The exploration of generative AI (GenAI) in the context of higher education, particularly at Northern Arizona University (NAU), reveals a landscape of immense potential and significant challenges. This GenAI primer underscores the transformative power of GenAI while advocating for a cautious and informed approach to its adoption.

This primer underscores the transformative power of GenAI while advocating for a cautious and informed approach to its adoption. The future of higher education at NAU and beyond will undoubtedly be shaped by the thoughtful application of GenAI, ensuring that it serves to enhance human capabilities and enrich the educational experience.

Calls to action:

1. **Establish a Generative AI Steering Group**: As NAU considers the integration of GenAI into its teaching, learning, research, and administrative processes, it must also navigate the ethical and practical risks associated with this technology. The formation of a GenAI steering group is a proactive step towards developing a comprehensive strategy that balances innovation with responsibility. The formation of a GenAI steering group is a proactive step towards developing a comprehensive strategy that balances innovation with responsibility.
2. **Address Risks and Promote Responsible Use of AI**: Identify and manage the risks associated with GenAI, such as data privacy, bias, misinformation, and job displacement, by adopting best practices and

[12] UPCEA (2024). UPCEA-EDDY-Emerging-Technology-Whitepaper-2024.pdf (educationdynamics.com)

strategies. Ensure the ethical use of GenAI by addressing concerns over bias, transparency, and misinformation, and by promoting responsible AI practices.

3. **Adopt a supportable set of AI Tools and platforms:** There are many LLMS and GenAI tools emerging in the market. NAU has adopted Copilot as the core tool every university community member will have access to. While AI is likely to appear embedded in many other NAU software
4. **Consider Target Hires:** Recruit and retain faculty, researchers, business analysts, and IT staff who bring diverse AI skills and can serve as mentors and advisors in developing AI capabilities and integration of AI into curricula.
5. **Integrate GenAI Across the Curriculum**: Explore and leverage the applications of GenAI in various industries to enhance teaching, learning, research, and administration at NAU. Consider the connections to career ready, teacher education, and health services/medical college education initiatives.
6. **Consolidate AI Information: Consolidate** information about AI and make it easy for the NAU community to consume information. Consider a single website to inform the community of AI issues, use-cases, and activities for teaching, research, administration, and personal productivity among other categories of inquiry.
7. **Provide Access to Training about GEnAI tools: Provide** training to the community. Provide a mini course in Canvas for faculty and students and promote during orientation to ensure students have knowledge of AI capabilities and how to properly use it in academic settings.
8. **Promote GenAI to Enhance Productivity**: Utilize GenAI tools like CoPilot to streamline work processes, improve efficiency, and enable staff to focus on higher-value tasks. Develop and promote use-cases that have impact on
9. **Expand CoPilot Access and Training for Equitable Use: Our** goal is to ensure that every member of our institution, regardless of their role or background, can benefit from the transformative potential of generative AI technology. By providing comprehensive training and support, we empower our faculty, staff, and students to leverage CoPilot effectively and ethically and bridge the digital divide by fostering an environment of inclusivity and technological fluency at NAU.
10. **Extend AI guidance to K12 institutions: AI can transform K12 teaching and administration.** The pipeline of students to NAU will soon come with new AI skills and expectations of leveraging them in their college experience. NAU must also well prepare teachers and administrators to effectively use AI in K12 schools to improve college preparedness and create efficiencies that allow teachers to focus more time on instruction and student support.
11. I**dentify funding to support innovative AI application development**: Fund innovators and early adopters to explore use-cases. Consider running a request for proposals for AI projects in specific areas of application or focused development.
12. **Prepare for the Long-Term Future of AI**: Consider the implications of Artificial Superintelligence (ASI) and the Singularity and prepare for the transformative changes they may bring to human civilization. Integrate AI technologies into strategic and tactical plans and share outcomes broadly to inform the NAU community members, stimulate curriculum development, and enhance the institutions career-ready

These actions will help NAU develop ai, navigate the challenges, and leverage the opportunities presented by GenAI, ensuring a responsible and strategic approach to its adoption and integration. If you need further assistance or details, feel free to ask!

Resource: Industry Adoption of Artificial Intelligence

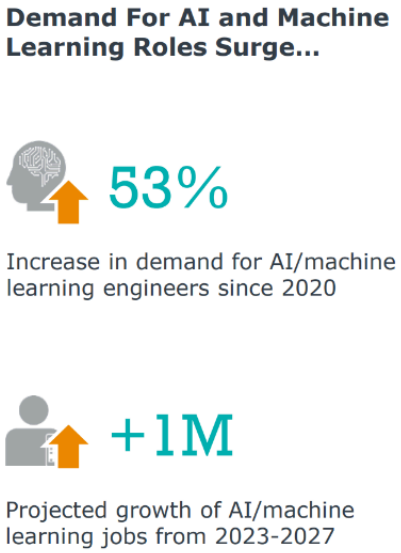
Generative AI has become a creative phenomenon, captivating the digital landscape. It leverages deep learning algorithms to generate art, music, and other creative content based on user input.

Market Size and Revenue: The global artificial intelligence market is projected to reach **$298 billion** by 2024[1]. Generative AI revenue worldwide is expected to grow significantly from 2020 to 2032[1]. Companies adopting AI are witnessing revenue increases across various functions[1].

Industry Adoption Rates: **Technology** and **Consulting** sectors lead the way, with **35%** and **30%** adoption rates, respectively. **Teaching** and **Accounting** industries follow at **19%** and **16%** adoption rates. **Healthcare** exhibits the lowest adoption rate at **15%**.

Enterprise Outlook: By 2026, over **80%** of enterprises are expected to utilize generative AI APIs, models, or deploy GenAI-enabled applications in production environments, a substantial increase from less than **5%** in 2023[3].

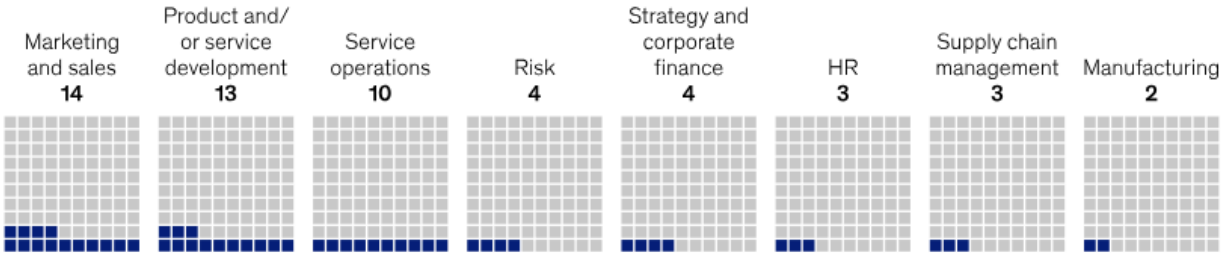
Generative AI's transformative potential is reshaping industries, fostering creativity, and driving innovation across the board.



EAB Suggests:

1. Discourage the use of AI plagiarism detectors
2. Voice your support to incorporate AI tools in the classroom
3. Encourage faculty to set clear course and assignment-level guidance
4. Facilitate ongoing experimentation with AI tools

Share of respondents reporting that their organization is regularly using generative AI in given function, %[1]



Most regularly reported generative AI use cases within function, % of respondents

Marketing and sales		Product and/or service development		Service operations	
Crafting first drafts of text documents	9	Identifying trends in customer needs	7	Use of chatbots (eg, for customer service)	6
Personalized marketing	8	Drafting technical documents	5	Forecasting service trends or anomalies	5
Summarizing text documents	8	Creating new product designs	4	Creating first drafts of documents	5

[1]Questions were asked of respondents who said their organizations have adopted AI in at least 1 business function. The data shown were rebased to represent all respondents.
Source: McKinsey Global Survey on AI, 1,684 participants at all levels of the organization, April 11–21, 2023

Resource: Generative AI Platforms

There are few companies who can marshal the computer resources necessary to host CPU hungry generative AI applications. Nevertheless, the list is growing quickly…

1. OpenAI's ChatGPT
2. Microsoft Copilot: Your everyday AI companion
3. Google Bard Now Gemini Google rebrands its AI services as Gemini
4. Microsoft Azure OpenAI
5. IBM Watson
6. AWS GenAI Solutions
7. DALL-E
8. Midjourney
9. Anthropic Claude 2
10. Meta's Llama 2
11. Sora (openai.com) (Videos from text prompts)
12. Gen-2 by Runway (runwayml.com) (Videos from text prompts)
13. Lumiere (lumiere-video.github.io) Morph Studio
14. Stable Video — Stability AI (open source)
15. Script To Video Creation In Minutes with Pictory

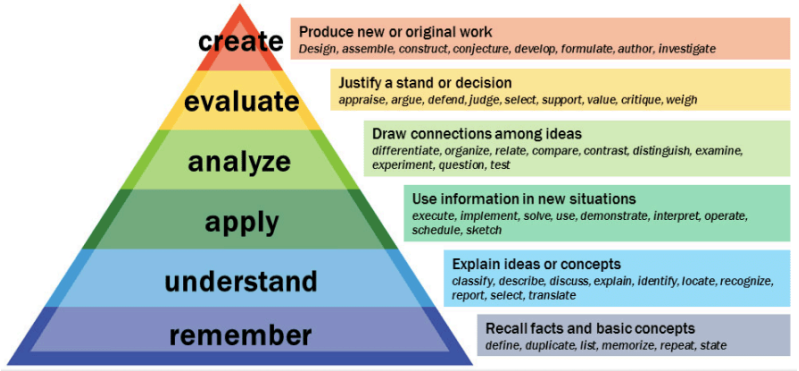
AI Generated list as of 7/26/24

1. **ChatGPT** - Developed by OpenAI, it's widely used for conversational AI and text generation.
2. **DALL-E 2** - Another OpenAI creation, this platform generates images from textual descriptions.
3. **Midjourney** - Known for creating high-quality AI-generated images.
4. **GitHub Copilot** - An AI-powered code completion tool developed by GitHub and OpenAI.
5. **Jasper** - Popular for generating marketing content and copywriting.
6. **Claude** - Developed by Anthropic, it's designed for generating and understanding text.
7. **Synthesia** - Specializes in creating AI-generated videos.
8. **Runway** - A creative suite for generating and editing videos using AI.
9. **AlphaCode** - Developed by DeepMind, it's used for coding and programming tasks.
10. **Scribe** - Helps in automating documentation and writing tasks.
11. **Cohere Generate** - Focuses on generating text for various applications.
12. **ElevenLabs** - Known for its AI-generated voice library.
13. **Beautiful.ai** - Automates the creation of presentations.
14. **Tome** - Applies data to enhance presentations.
15. **Wix** - An AI-centric website-building platform.
16. **Framer** - Another tool for AI-driven website creation.
17. **Microsoft Power Apps** - Used for developing applications with AI integration.
18. **Pico** - Automates app-building processes.
19. **Shortwave** - Assists with email writing and management.
20. **Wondershare Filmora** - Polishes and edits videos using AI.

Resource: Blooms Taxonomy for Artificial Intelligence

In the education world, we've seen the ways educators can use AI to produce lesson plans, quizzes, and report cards. But I would argue the most important potential of AI is not to enhance human productivity. It is to enhance and support human thinking. -- Dr. Carmen Garcia, Superintendent of Morgan Hill Unified School District

	RECOMMENDATION	AI CAPABILITIES	DISTINCTIVE HUMAN SKILLS
CREATE	Review	Suggest a range of alternatives, enumerate potential drawbacks and advantages, describe successful real-world cases	Formulate original solutions incorporating human judgement, collaborate spontaneously
EVALUATE	Review	Identify pros and cons of various courses of action, develop rubrics	Engage in metacognitive reflection, holistically appraise ethical consequences of alternative courses of action
ANALYZE	Amend	Compare and contrast data, infer trends and themes, compute, predict	Critically think and reason within the cognitive and affective domains, interpret and relate to authentic problems, decisions, & choices
APPLY	Review	Make use of a process, model, or method to illustrate how to solve a quantitative inquiry	Operate, implement, conduct, execute, experiment, and test in the real world; apply creativity and imagination to idea & solution development
UNDERSTAND	Review	Describe a concept in different words, recognize a related example, translate	Contextualize answers within emotional, moral, or ethical considerations
REMEMBER	Amend	Recall factual information, list possible answers, define a term, construct a basic chronolgy	Recall information in situations where technology is not readily accessible



Resource: Reference Materials

NAU Resources

- Home - GenAI - Research Guides at Northern Arizona University
- Generative Artificial Intelligence in Teaching and Learning | Academic Affairs (nau.edu)
- Artificial Intelligence | Information Technology Services (nau.edu)

About

- How AI Works (every.to)
- How GenAI is Forcing an Inevitable Ability/Efficiency Trade-Off
- Mary Meeker on AI and Higher Education | BOND (bondcap.com)
- What is generative AI and how does it work? – The Turing Lectures with Mirella Lapata (youtube.com)
- Guidelines for the use of Artificial Intelligence in Research/Scholarship/Creative Activities | Chapman University
- 10 DISTURBING AI Breakthroughs Coming In 2024 (youtube.com)
- What's the future for generative AI? - The Turing Lectures with Mike Wooldridge (youtube.com)
- AI Use Cases for Business Leaders (azureedge.net)
- List: Top Books for Learning About Generative Artificial Intelligence (businessinsider.com)

- Why there's no standard AI policy in higher education, and what professors are doing about it | New England Public Media (nepm.org)
- How to Cite ChatGPT and Generative AI in APA - APA 7 Citation & Style - LibGuides at Western Technical College
- Learning paths | Udemy Business (Learning Paths in Udemy created for various foci for GenAI)

AI Evolution

- AI singularity may come in 2027 with artificial 'super intelligence' sooner than we think, says top scientist (msn.com)
- 'Up to 1,000x faster': AI startup wants to make GPU training obsolete with an extraordinary piece of tech — meet the Tseltin machine which may come to a device near you sooner than you think (msn.com)
- 10 Overlapping Challenges Facing the World (substack.com)

Assistive Technology

- AI & Accessibility | Center for Teaching Innovation (cornell.edu)
- 3 Ways AI Can Help Students with Disabilities | EDUCAUSE Review
- Using Artificial Intelligence to Help Students with Learning Disabilities Learn - The Tech Edvocate

CoPilot (Microsoft)

- Introducing the Microsoft 365 Copilot Early Access Program and new capabilities in Copilot | Microsoft 365 Blog
- Microsoft COPILOT - Your New AI Best Friend - YouTube
- A pro-code guide to build your custom copilot faster (microsoft.com)
- Microsoft Copilot for Microsoft 365 | Microsoft 365
- How to use Copilot on Microsoft Edge Browser
- The Right Way to AI (azureedge.net)
- Frequently asked questions about Copilot | Microsoft Learn
- Overview of Copilot | Microsoft Learn

Career Development

- A prototype application of GenAI in career development, "Dynamic Mapping of a Student's Major, Career, and Experiential Learning Through GPTs", by NAU's John Gartin, Director of Student Life, NAU Career Development. (You Tube)

Enrollment Management

- How Colleges Are Using Artificial Intelligence To Improve Enrollment And Retention (forbes.com)
- Generative AI in Higher Education: A 360-Degree Approach | RNL (ruffalonl.com)
- AI in Higher Education Enrollment Marketing - 3 Enrollment Marketing, Inc.
- AI for Enrollment Leaders PowerPoint Presentation (eab.com)
- How graduate enrollment teams are using AI (eab.com)

Fund Raising

- "How GenAI Will Revolutionize Charities and Fundraising Organizations" - https://blog.hartehanks.com/how-generative-ai-will-revolutionise-charities-and-fundraising-organizations
- "JustGiving to Revolutionize Fundraising with GenAI" - https://justgiving.tech/justgiving-to-revolutionize-fundraising-with-generative-ai-cd32410e4250
- "A beginner's guide to AI in annual giving" - https://www.evertrue.com/blog/artificial-intelligence-guide/
- "How nonprofits can leverage GenAI to optimize fundraising campaigns" - https://www.salesforce.org/how-nonprofits-can-leverage-generative-ai-to-optimize-fundraising-campaigns/
- ChatGPT and Annual Giving: 3 use cases - Evertrue
- How Generative AI Transforms Fundraising - Spiceworks

Education

- AI Will Shake Up Higher Ed. Are Colleges Ready? (chronicle.com)
- 29 Cutting Edge Applications of Artificial Intelligence – Burnie Group
- Digital Transformation 2.0: The Age of AI | EDUCAUSE Review
- AI in Education: Transforming Learning and Teaching (msn.com)
- Statement Release at IGF Kyoto | Artificial Intelligence in Higher Education | Elon University
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- 7 Things You Should Know About Generative AI | EDUCAUSE Review
- 2024 EDUCAUSE AI Landscape Study | EDUCAUSE Library
- Integrating Generative AI into Higher Education: Considerations | EDUCAUSE Review
- Generative AI Hits Education, Ushering in a Sea Change for Schools (govtech.com).
- Why college professors are adopting ChatGPT AI as quickly as students (cnbc.com)
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- Exploring the Opportunities and Challenges with Generative AI | EDUCAUSE Review
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- Elevating Government Productivity: Microsoft 365 Copilot at the Forefront - Microsoft Community Hub
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- Advancing Meaningful Learning in the Age of AI – Artificial Intelligence Tools – Faculty Support | Oregon State Ecampus | OSU Degrees Online
- Generative AI: Your Assistant as an Administrator or Faculty Member - UPCEA
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- Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations.
- Classroom Policies for AI Generative Tools. Lance Eaton.
- Cross-Campus Approaches to Building a Generative AI Policy, *EDUCAUSE Review*
- Understanding AI In Education. JISC
- Unexpected Bedfellows: Using ChatGPT to Uphold Academic Assessment Integrity, *EDUCAUSE Review*
- 43 Examples of Artificial Intelligence in Education | University of San Diego Online Degrees
- Can AI And ChatGPT Reshape Academia: Arizona State Believes So (ampproject.org)

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- New report finds recent grads want AI to be taught in class (insidehighered.com)
- US Department of Education https://tech.ed.gov/ai/
- UNESCO Guidance https://www.iesalc.unesco.org/wp-content/uploads/2023/04/ChatGPT-and-Artificial-Intelligence-in-higher-education-Quick-Start-guide_EN_FINAL.pdf
- EDUCAUSE Resources https://library.educause.edu/topics/infrastructure-and-research-technologies/artificial-intelligence-ai
- MIT Sloan Report (2024-06-17) https://sloanreview.mit.edu/mitsmr-connections/enhancing-higher-education-with-generative-ai-a-responsible-approach/
- Benmessaoud, F. & Zhu, L. (2022). FazBoard an AI-Educational hybrid Teaching & Learning System. In E. Langran (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 800-808). San Diego, CA, United States: Association for the Advancement of Computing in Education (AACE). Retrieved November 25, 2024 from https://www.learntechlib.org/primary/p/221130/.

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- ChangeFinder AI Eases Grant Process | Lundquist College of Business (uoregon.edu)
- To bot or not to bot: Using generative AI in grantwriting (candid.org)

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- Pioneering AI Adoption in Healthcare: A Model for Cross-Industry Innovation - The National CIO Review

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- 5 ways AI will impact the workforce-and how higher ed can respond - eCampus News
- Predicts 2024: AI's Impact on the Employee Experience (gartner.com)
- Predictions for the State of AI and Robotics in 2025 | Pew Research Center
- The economic potential of generative AI: The next productivity frontier | McKinsey Live | McKinsey & Company
- Generative AI in Action: Adoption Trends, Emerging Use Cases, and Tips for IT Leaders (snaplogic.com)
- https://assets.appian.com/uploads/ebook-2024-ai-outlook--expert-advice-on-navigating-the-ai-economy.pdf
- 6 Ways Generative AI Will Change Business | Salesforce
- ChatGPT may be coming for our jobs. Here are the 10 roles that AI is most likely to replace. (msn.com)
- Two in five business leaders claim AI has boosted creativity (emergingtechbrew.com)

K12

- Artificial Intelligence and the Future of Teaching and Learning (PDF) (ed.gov)

Laws and Legislation

- DOC-400393A1.pdf (fcc.gov) (Robo calls)
- President Biden Issues Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence | The White House
- AI legislation spikes across U.S. states to combat deepfakes (axios.com)

Marketing

- AI in Higher Education Enrollment Marketing - 3 Enrollment Marketing, Inc.

Policies in Higher Education

- Arizona State University: Digital Trust Guidelines for GenAI Use
- Harvard University
- University of California, Berkeley: Appropriate Use of AI Tools
- University of California, Presidents Office: Working Group on Artificial Intelligence
- University of Michigan
- University Policies on Generative AI - Collection of Polices
- Embracing Artificial Intelligence in the Classroom | Harvard Graduate School of Education
- Policies and Guidelines | AI@ND | University of Notre Dame
- Appropriate Use of IT Resources | University Policy Library (nau.edu)
- AI can't replace teachers, union and state lawmakers say - POLITICO

Prompting and Using GenAI

- 50 ChatGPT Prompts for State and Local Government (govtech.com)
- The Right Way to AI (microsoft.com)
- Generative AI is only as good as the prompt you give it (insidehighered.com)
- How I Prompt: Leaders Share Their Favorite AI Time-Savers (microsoft.com)
- Example prompts to try with Microsoft Copilot with Graph-grounded chat - Microsoft Support
- Prompt Literacy in Academics | U-M GenAI (umich.edu)

Research

- Hochul announces new AI consortium; UB hopes to be its hub (buffalonews.com)
- UK pledges £54m to develop 'secure and trustworthy' AI, next gen of AI managers (rcrwireless.com)
- Canada grants $1.4B to universities for tech, AI research | CTV News
- Germany plans to double AI funding in race with China, U.S. | Reuters
- UF Health and NVIDIA Build World's Largest Clinical Language Generator | NVIDIA Blog
- Large Language Model Predicts Patient Readmission | NVIDIA Blog

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- Here's how AI is supercharging online crime | Watch (msn.com)
- ChatGPT Has a Big Privacy Problem | WIRED
- "JPMorgan Restricts Employee Use of ChatGPT," CNN. www.cnn.com/2023/02/22/tech/jpmorgan-chatgpt-employees (February 2023)
- FPF Releases GenAI Internal Policy Checklist To Guide Development of Policies to Promote Responsible Employee Use of GenAI Tools - Future of Privacy Forum
- **Introduction** to the NIST AI RMF 1.0: An Explainer Video.
- Google's open-access Gemma offers broad conversational tools for developers (emergingtechbrew.com)
- How scammers use celebrity deepfakes to target Facebook users (emergingtechbrew.com)
- Google CEO Sundar Pichai calls AI tool's responses 'completely unacceptable' | Semafor

Teaching and Learning with Generative AI

- institutions can successfully incorporate generative AI into their curricula and prepare students for an AI-infused future
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- The AI Epidemic: How ChatGPT Has Changed English Classrooms Forever – The Wildcat Roar
- Teaching: Are you drowning in an ocean of AI? (chronicle.com)

Technology Futures

- 20 Emerging Technologies That Will Change The World - YouTube (2024)

- OpenAI's impressive new Sora videos show it has serious sci-fi potential (msn.com) (2024)
- Artificial Intelligence | 60 Minutes Full Episodes (youtube.com) (2019)
- Michio Kaku: Quantum computing is the next revolution - YouTube (2023)
- Google Gemini https://youtu.be/jV1vkHv4zq8
- Figure AI robot gets OpenAI's ChatGPT-brain to train at lightning speed (msn.com)
- Human AI clones will be 'pivotal moment of evolution' (msn.com)

Video

- OpenAI Made Me Crazy Videos—Then the CTO Answered (Most of) My Questions | Watch (msn.com)

Select University Sites with Policies and Resources

- Arizona State University o https://ai.asu.edu/policy-and-resources
- Austin Community College o https://offices.austincc.edu/institutional-effectiveness-and-grant-development/master-syllabi/artificial-intelligence-draft-policies/
- Columbia University (Office of Provost) o https://provost.columbia.edu/content/office-senior-vice-provost/ai-policy
- Duke (Guidance to Faculty) o https://learninginnovation.duke.edu/ai-and-teaching-at-duke-2/artificial-intelligence-policies-in-syllabi-guidelines-and-considerations/
- Stanford University o https://uit.stanford.edu/security/responsibleai
- Collection of Higher Education AI Policies From Chapman University o https://libguides.chapman.edu/AI/policies

Accessibility:

- OpenAI – Be My Eyes Accessibility with GPT-4o (0:16-0:34) - https://youtu.be/KwNUJ69RbwY?si=OhpRJw_Vbz8VAFHK&t=16
- Microsoft – Harnessing the power of AI to make art accessible for all (1:11-1:44, 2:57-3:21) - https://youtu.be/_wUhAfjJ73g?si=O8pFy2QubJHC_uVX&t=71
- GitHub – Coding Accessibility: Anton | Realizing Potential with AI (8:03-8:35, 10:01-10:33) - https://youtu.be/Me2Kc75UiWs?si=0vMm_b-j3Skm0xyK&t=483

Agriculture/Construction:

- Freethink – These robot excavators are making workers more money (0:30-1:04, 5:26-6:01) - https://youtu.be/QluG5HHy7t4?si=3IvooCJkQUSh50Za&t=30
- Freethink – Laser "death ray" kills weeds 80x faster than humans (1:02-1:16, 1:45-1:54, 4:05-4:23) - https://youtu.be/72ol-5SOGqY?si=k87BO3W_uI5vgzzW&t=62

Art:

- MoMA – How artists are using and confronting machine learning (2:57-4:08, 4:37-5:07) - AI Art: How artists are using and confronting machine learning | HOW TO SEE LIKE A MACHINE (youtube.com)
- Freethink – AI is changing music forever (1:16-1:46) - https://youtu.be/qPW_rdUgV_8?si=SLU-MIcT_Xfm1Qey&t=76

Education:

- OpenAI – Introducing GPT-4 (1:30-2:06) - https://youtu.be/--khbXchTeE?si=1pTk1mmurb3QlkjE&t=90
- Microsoft – An AI tutor for every student (0:57-1:30) - https://youtu.be/Yg50CBpw8tM?si=O7djd6ITaYNz7mea&t=57
- **Environment**:

- The Economist – Can AI help weather forecasting save lives? (5:41-7:30) - https://youtu.be/V_v3P3eRF7k?si=YVGN1eIzifkwZ3z-&t=341
- Vox – Can AI help us predict extreme weather? (0:27-0:56, 4:24-5:30) - https://youtu.be/hU4viZzTaRc?si=_7LWQ2tkiZpAfOF-&t=27
- BBC News – How artificial intelligence is helping scientists talk to animals (2:13-2:40) - https://youtu.be/NqnBT4-jp54?si=QOE2UXn-MECUikuC&t=133

Everyday Life:

- Vox – We're already using AI more than we realize (0:35-1:16, 4:24-4:56) **-** https://youtu.be/YsZ-lx_3eoM?si=dsUVZgptTyYxg1Wd&t=35
- Freethink – What is Generative AI? It's going to alter everything about how we use the internet (3:41-4:55) - https://youtu.be/AGsafi_8iqo?si=u_6itvhxlOUd1nUy&t=221

Healthcare:

- UC Davis Health - BCI Interface Allows Man with ALS to Speak Again (3:15-3:46) - https://youtu.be/thPhBDVSxz0?si=_wbw08_nE1LHVcR1&t=194
- BBC News – How AI is finding cancer treatments with fewer side-effects (2:30-3:06) - https://youtu.be/FtdXAZ048hA?si=jRkOGQr9s08R4qxB&t=150
- BBC StoryWorks – How AI is accelerating drug discovery (1:19-1:51) - https://youtu.be/8VuLZdqxOOo?si=tkM6Ew6eCqDh3Bqc&t=79
- TIME – How AI Could Change the Future of Medicine (0:48-2:04) - https://youtu.be/YSQRWOy2Om4?si=DupPv5eyJ0E_iuR6

Misc

- (25) Post | LinkedIn – Rose Lukin on Rethinking Education in the AI Era
- (25) The One About Engagement | LinkedIn
- (3) #4: Utilizing Technology Wisely - by Breana Bayraktar (substack.com)
- (3) 勞 State of AI in Education - by Lily Lee and Aditya Syam (substack.com)
- A Global Framework for Enabling Transitions to the Jobs of Tomorrow | World Economic Forum(weforum.org)
- About - The A11Y Project
- AI in the classroom: Equity, creativity, and teaching | Stanford GSE
- AI Observatory | HESA (higheredstrategy.com) – AI Policies & Guidelines both Canadian and Internationally (US, etc)
- AI's Impact on Instructional Design and Podcasting (Google's NotebookLM) — Dr. Luke Hobson(drlukehobson.com)
- ChatGPT energy emergency — here's how much electricity OpenAI and others are sucking up perweek | Tom's Guide (tomsguide.com)
- ChatGPT is rolling out Advanced Voice Mode— here's what you need to know | Tom's Guide(tomsguide.com)
- Coping with the Curse of Knowledge (and Yes, You May Have It Too) - Faculty Focus | Higher EdTeaching & Learning – Free subscription needed to read
- Cross-Campus Approaches to Building a Generative AI Policy | EDUCAUSE Review
- Developing Institutional Level AI Policies and Practices: A Framework - WCET (wiche.edu)
- Ecampus survey probes student feelings about AI | OSU Today | Oregon State University
- How I Used Gen AI to Create a Highly Engaging Assignment | Harvard Business PublishingEducation
- How to Use AI to Create Role-Play Scenarios for Your Students | Harvard Business PublishingEducation

- IHE_2024_Booklet_Pearson_Final.pdf
- Navigating the future: Authors Gary Armstrong and Sridhar Balasubramanian's Insights on AI in theWorkforce, Society, and Education | Pearson plc
- Organizing teaching: Developing the power of the profession (licdn.com)
- Pearson ED.tech Symposium: AI Insights for Educators
- STORM (stanford.edu) - Get a Wikipedia-like report on your topic - STORM is a research prototype for automating the knowledge curation process.
- The AI Cultural Hallucination Bias | Reflecting Allowed (mahabali.me)
- the FAFSA investigation (insidehighered.com). Log in is required to access the article, but the first five articles are free with a free account.
- The Impact of AI in Advancing Accessibility for Learners with Disabilities | EDUCAUSE Review
- The Intelligence Age (samaltman.com)
- The Skinny on AI for Education | Professor Rose Luckin's EDUCATE Ventures Research | AI forEducation
- The Use of AI for Accessibility and Inclusion | Taylor Institute for Teaching and Learning | Universityof Calgary (ucalgary.ca)
- Validating the outputs of generative AI tools .pdf - Google Drive
- Webinar | From Hype to Reality: AI-Driven Innovations for Student Success in Higher Education |EDUCAUSE Events
- Webinar | Operationalizing AI in Higher Education: Strategies for Data-Driven Success | EDUCAUSEEvents



Resource: Stages of Artificial Intelligence Capabilities

Stage 1: Rules-based AI systems.

Algorithm based with clear cut rules. Lacks the ability to learn or understand context. Cannot handle scenarios that are not pre-programmed. (Wordly)

Stage 2: Context Awareness and Retention

Capability of understanding context and previous interactions (Siri).

Stage 3: Domain Specific Expertise

AI ability to comprehend info and become highly skilled within a field. Examples include IBM's Watson (answering questions for Jeopardy) Google DeepMind Alpha Go.

Stage 4: Reasoning Machines

Begin to mimic human thinking – attempt to simulate the human process. Solve unfamiliar topics, offer solutions. Could read a book, understand the plot, and provide suggestions for the motivations of the characters. (ChatGPT4)

Stage 5: Self Aware Systems / Artificial General Intelligence (AGI)

Theoretical that equals human intelligence. Perform any intellectual activity a human could – such as learning a new language. Understand human emotions and possess self-awareness and consciousness as a human would.

Stage 6: Artificial Superintelligence (ASI)

AI has cognitive skills well beyond human capability. Faster, better, and more efficient. Could solve problems that humans can't - global climate change. Host of ethical and safety concerns – unintended consequences. Power, control.

Stage 7: Singularity and Transcendence

Hypothetical tech growth becomes uncontrollable and unreversible. Leading to unforeseen changes in human civilization. A point where rules as we know them seem to break down. AI is not only smarter than humans but can improve. The ability to upload human consciousness onto a computer. [13]

[13] https://technologymagazine.com/ai-and-machine-learning/evolution-ai-seven-stages-leading-smarter-world

Resource: AI Principles

Our work with GenAI technologies is aligned with larger principles about the role of higher education in preparing for the continued expansion of artificial intelligence capabilities. These principles are captured in the *Higher education's essential role in preparing humanity for the artificial intelligence revolution* statement issued during the 18th annual United Nations Internet Governance, held in October 2023 in Kyoto, Japan:

- People, not technology, must be at the center of our work;
- We should promote digital inclusion within and beyond our institutions;
- Digital and information literacy is an essential part of a core education;
- AI tools should enhance teaching and learning;
- Learning about technologies is an experiential, lifelong process; and
- AI research and development must be done responsibly.

The five core tenets of AI aligned with Northern Arizona University's "Elevating Excellence" strategic roadmap and the University's vision and mission:

1. **Enhancing Human Capabilities**: AI at NAU is designed to support and augment human intelligence and capabilities, rather than replace them. Our goal is to promote equal access to creativity and amplify the potential of individuals from diverse backgrounds.
2. **AI as a Catalyst for Innovation**: At Northern Arizona University, we recognize AI as a powerful and enduring technology that will shape the innovation landscape for the foreseeable future. Our commitment is to harness AI's potential to drive transformative advancements across various fields.
3. **Principled Innovation**: We are dedicated to innovating with AI in a principled manner, aligning with our charter and values of inclusion and access. This means developing AI solutions that are equitable, ethical, and accessible to all members of our community.
4. **Community Responsibility**: We acknowledge our responsibility to keep pace with the rapid progression of AI. This involves continuous learning, adaptation, and proactive engagement with emerging AI technologies to benefit our community.
5. **Bridging Accessibility Gaps for Education and Job Readiness**: At Northern Arizona University, we are committed to ensuring that AI technology is easily accessible to people from diverse backgrounds. Our goal is to bridge accessibility gaps and provide equitable access to education and job readiness opportunities. By leveraging AI, we aim to empower individuals with the skills and knowledge needed to succeed in their careers and contribute meaningfully to society.

Resource: The AI Technology Landscape

Today's AI research boom has been fueled by neural networks, which saw a big breakthrough in the 1980s and work by simulating the patterns of the human brain. Back then, technology hit a wall because the computers of the day weren't powerful enough to run the software. Today we extremely powerful computers, and yottabytes of data in fast storage devices which makes the technique viable.



AI Generated Influencers and Deep Fakes
An AI-created influencer generates $11,000 and 200,000 followers a month.
An increase in faked videos by State adversaries or politically motivated individuals might release falsified videos. Such actions could erode public trust, negatively impact discourse, or even sway elections. See Text to Video below.



Real Time Text to Speech
AI can generate a conversation in real-time using 3 seconds of a voice sample. Is it a family member calling? How do you know? ***What is your family's pass phrase? Google Demo***



Assistive Robotics
Neo is one of many emerging robots that are based on a bipedal type of humanoid robot. Using embodied artificial intelligence, NEO will understand its environment using AI "senses" and their physical body. NEO continuously learns and improves, becoming smarter and more capable over time.



Autonomous Agents
Autonomous AI agents are intelligent entities that analyze data, draw insights, and execute tasks autonomously using advanced algorithms and machine learning models



Text to Video
Text-to-video AI has the capability to create videos from text content in two ways: generating new videos based on text prompts and converting existing text documents (such as scripts) into corresponding videos. Sora (openai.com)



OpenAI GPT-5
GPT-5 is expected to produce more coherent and contextually accurate text. It will likely surpass **GPT-4** in generating longer passages with improved fluency. GPT-5 might offer multimodal features, combining text with other modalities like images or audio



OpenAI Q-Star
Q-Star amazed some AI professionals. It taught itself discrete math and exhibited complex reasoning and ability to plan. This breakthrough might contribute to OpenAI's quest for artificial general intelligence (AGI)—an AI system smarter than humans, bringing us one step closer to "Sky Net."

Resource: Tips for Adopting Generative AI Into Your Work

1. Commit to continuous learning

It is important to step back and recognize that learning is no longer a once-in-a-lifetime phenomenon, but a continuous process. Technological advancements like GenAI can significantly impact our professional lives, particularly those in the IT ecosystem. The requisite skills for today's evolving job market are changing rapidly, and require adaptation.

2. Revamp the business mindset

The advent of GenAI provides a new well of untapped creativity. Businesses should harness this resource and rethink their strategies to be more inclined toward performance, creativity, and growth. This shift requires a robust foundation of collaboration, composability, and a culture of open discussion about AI.

3. Think of it like "ideas as a service"

Many generative AI tools can be catalysts for jumpstarting ideas and turning them into workflows that users can then refine and improve. The omnipresence of AI tools in today's fast-paced corporate world can be daunting, but they can serve as valuable thought-starters or a helping hand to overcome potential creative hindrances in various business processes.

4. Stay human

It will always be vital to put trust in human ingenuity, even — and perhaps especially — with the introduction of powerful technological advances. Keep the lines of communication open and make sure to provide your teams with adequate training and documentation for all AI advancements.

Resource: How I Prompt: Leaders Share Favorite AI Time-Savers

The question is the most powerful technology available to us today. – Jamie McKenzie

Researching Topics

Once a week, to keep myself informed and prepare for meetings with global HR partners, I ask Copilot:

- *What are the top challenges facing global HR organizations this week in September 2023?*
- *What about in Australia, 2023?* (note the contextual awareness)
- *Are HR trends in the US different than the HR trends in Germany for September 2023?*
- *Show me HR research across all of our global offices from the past three months, 2023.*
- *Who are the top voices talking about these challenges?*

This type of inquiry opens the door to new questions rather than simply coming to a conclusion.

Summarizing and Generate Questions about an Article

When I'm reading an article, I get better summaries when I say, *summarize this article for a Microsoft executive with a particular interest in research* than when I just ask for a summary. Or if I'm trying to think critically about the article, I might follow up by telling it what I want the reply to look like: *What questions should that exec ask of the article? Please include answers to the questions, quoting the article when possible*. Basically, I get better replies by including details and directions.

Making Lists and Evaluating Responses

Prompts like, *write a list of…* or *compare…* or *give me examples of…* give me interesting options and possibilities, and help me to explore creative ideas and build new work habits. Communication and iteration are key at work, and that includes communication with AI. I observe how Copilot responds to my prompts, then I ask it to evaluate its own response, then I ask it to iterate again. It's like an ongoing dialogue, continually testing and learning.

Summarizing the inbox in CoPilot for M365 Outlook

When I get in to work in the morning, I'm already behind. There are unread emails and chat messages to catch up on while I'm simultaneously jumping into my first meeting. With Copilot in Outlook, I can type summarize, and boom—I have a pretty accurate rundown of the highlights of a long thread. Or let's say I have to generate a presentation deck based on documents, emails, previous presentations, what have you. I can go into PowerPoint and say, generate a deck based on these things, and I get an outline or a draft of a deck. Just that one thing saves me an enormous amount of time.

Modern Work & Business Applications

What makes Copilot feel almost magical is the fact that it has a deep understanding of me, my job, my priorities, and my organization. It knows my entire universe of data at work. I can write:

- *Quickly summarize the meeting I had at 11 a.m. yesterday.*
- *Who attended and What decisions were made?*
- *Give me a sense of what you think the next steps should be.*
- *Put that summary into an email to Jun and propose a time when we're both free next weeks to discuss.*
- *Write it in Japanese.*

For these and more ideas about how to use CoPilot visit
https://www.microsoft.com/en-us/worklab/how-i-prompt-leaders-share-their-favorite-ai-time-savers

Resource: Higher Ed's Role in Preparing Society for the AI Revolution

At the **18th annual United Nations Internet Governance Forum (IGF) in Kyoto, Japan**, a significant statement was released on **higher education's essential role in preparing society for the AI revolution**. This statement, co-authored by Elon University President Connie Ledoux Book, scholar-in-residence Lee Rainie, and Professor Divina Frau-Meigs of Sorbonne Nouvelle University in Paris, outlines six foundational principles that guide higher education institutions as they navigate the impact of rapidly evolving artificial intelligence (AI) technology[1].

Here are the key principles from the statement:

1. **People, Not Technology**: The focus should be on people, placing them at the center of AI-related work.
2. **Digital Inclusion**: Higher education institutions should promote digital inclusion both within and beyond their campuses.
3. **Information Literacy**: Digital and information literacy is an essential part of core education.
4. **Enhancing Teaching and Learning**: AI tools should enhance teaching and learning experiences.
5. **Lifelong Learning**: Learning about technologies, including AI, is an experiential, lifelong process.
6. **Responsible Research and Development**: AI research and development must be conducted responsibly.

The statement emphasizes that educators across all fields are well-suited to provide intellectual and ethical guidance, conduct research, serve as trustworthy watchdogs, and advocate for learners, teachers, and society. It calls for the active involvement of the higher education community in shaping AI governance mechanisms, involving multiple stakeholders[12].

In this age of AI, higher education institutions play a crucial role in preparing humanity for the transformative impact of artificial intelligence. The statement encourages collaboration among educators, policymakers, businesses, and civil society to support educational efforts that align with society's best interests[23].

Resource: General Curriculum for Generative AI Integration

(Generated by ChatGPT)

Year 1:

Introduction to AI: An overview of artificial intelligence concepts, including machine learning, neural networks, and natural language processing. Students learn about the history of AI, its applications across various industries, and ethical considerations. Specifically, focus on understanding how AI systems work and their impact on society.

Programming Fundamentals: Introduction to programming languages commonly used in AI development, such as Python and R. Students learn basic syntax, data structures, and algorithms, laying the foundation for more advanced AI coursework. Emphasis on writing code to manipulate data and implement basic machine learning algorithms.

Mathematics for AI: A study of mathematical concepts essential for understanding AI algorithms, including linear algebra, calculus, and probability theory. Students learn how these mathematical principles underpin machine learning algorithms and data analysis techniques. Focus on applying mathematical concepts to solve AI-related problems.

Data Science Essentials: An introduction to data science tools and techniques, including data manipulation, visualization, and analysis using libraries such as pandas, matplotlib, and scikit-learn. Students gain hands-on experience working with real-world datasets to extract insights and build predictive models. Emphasis on developing skills to preprocess data and evaluate model performance.

Year 2:

Machine Learning: A deeper dive into machine learning algorithms and methodologies, covering supervised learning, unsupervised learning, and reinforcement learning. Students learn how to train and evaluate machine learning models using techniques such as cross-validation and hyperparameter tuning. Specific focus on understanding how to select appropriate algorithms for different types of data and tasks.

Deep Learning: An exploration of deep learning techniques, including artificial neural networks, convolutional neural networks (CNNs), and recurrent neural networks (RNNs). Students learn how to design and train deep learning models for tasks such as image recognition, natural language processing, and sequence prediction. Emphasis on writing code to implement and optimize deep learning architectures.

AI Ethics and Responsible AI: A discussion of ethical considerations and societal implications of AI technologies, including bias, fairness, transparency, and accountability. Students examine case studies and engage in debates to understand the ethical dilemmas inherent in AI development and deployment. Specific focus on developing critical thinking skills to evaluate the ethical implications of AI systems.

AI Applications in Specific Domains: An examination of how AI is applied in various domains, such as healthcare, finance, transportation, and education. Students explore case studies and industry examples to understand how AI is transforming traditional sectors and driving innovation. Emphasis on developing domain-specific knowledge and identifying opportunities for AI applications.

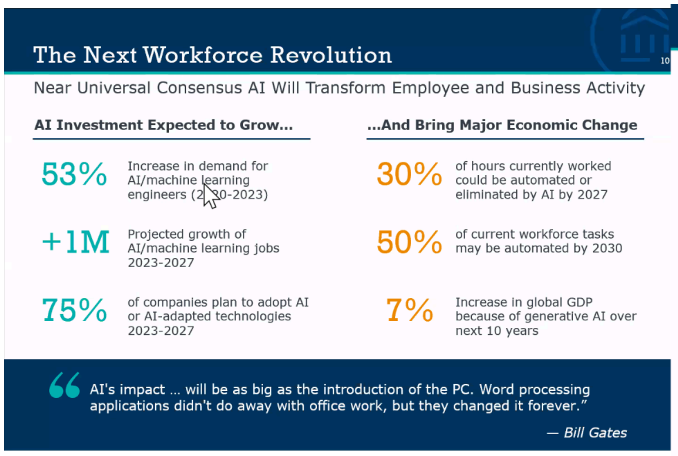
Year 3:

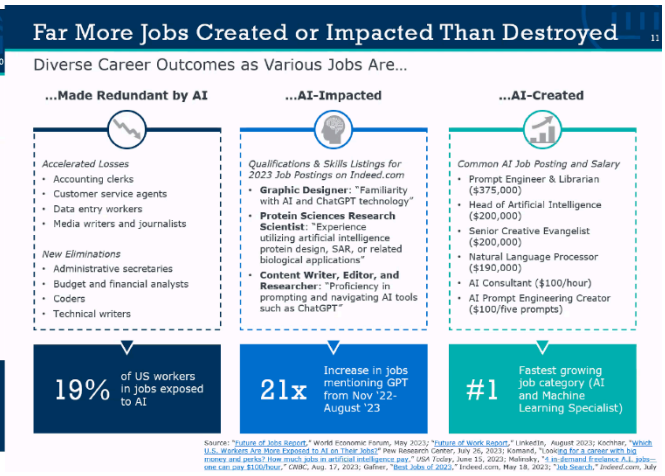
Advanced Topics in AI: An exploration of advanced AI topics, such as generative adversarial networks (GANs), reinforcement learning, and transfer learning. Students delve into cutting-edge research papers and participate in research projects to deepen their understanding of emerging AI techniques. Specific focus on developing skills to read and understand academic papers and contribute to AI research.

Natural Language Processing (NLP) and Text Mining: An in-depth study of NLP algorithms and techniques for processing and analyzing human language data. Students learn how to build NLP applications for tasks such as sentiment analysis, named entity recognition, and machine translation. Emphasis on developing skills to write effective GenAI prompts and design AI-powered text generation systems.

AI Capstone Project: A culminating project where students apply their AI knowledge and skills to solve a real-world problem or conduct original research. Working in interdisciplinary teams, students identify a project topic, collect, and analyze data, develop AI models, and present their findings to faculty and peers. Focus on developing project management and communication skills and applying AI techniques to solve complex problems.

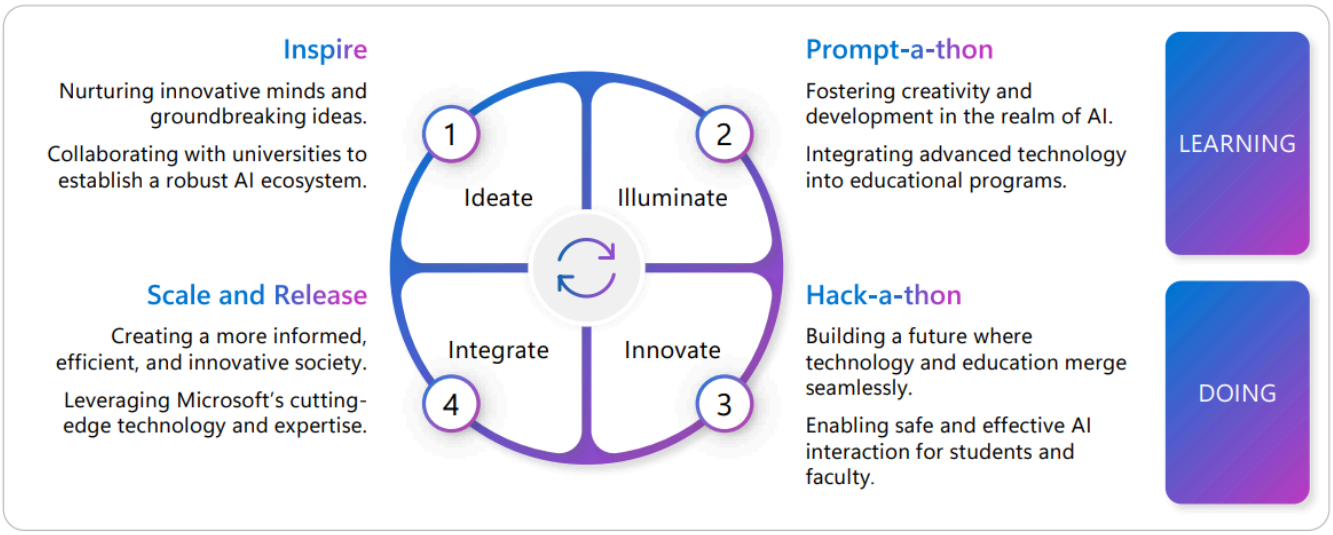
Professional Development in AI: Preparation for careers in AI-related fields, including resume writing, job search strategies, and interview preparation. Students also learn about lifelong learning and professional development opportunities in the rapidly evolving field of AI. Emphasis on developing networking skills and staying updated on the latest advancements in AI technology and industry trends.





Resource: Microsoft's AI Adoption Framework

This framework has been used to help early-adopter institutions make progress on AI. The program framework for your institution may vary – what's important is to have a multi-faceted approach.



Resource: Accelerating generative AI strategy development and platform deployment at the University of Michigan

In spring 2023, U-M leadership recognized that the fast-paced emergence of generative AI required swift attention. The leadership team saw an opportunity to be one of the first institutions to adopt generative AI campus-wide and to set a standard of providing equitable, responsible access across the U-M community.

One of the committee's key recommendations was a comprehensive, university-wide initiative aimed at integrating generative AI into education and research, bolstered by robust, best-practice standards for privacy, data use, and research integrity. To support this endeavor, the committee called for the immediate expansion of existing IT infrastructure, ensuring secure and equitable access to generative AI platforms for the entire campus community. The committee's full report is available here.

Based on the committee's recommendations, the University of Michigan decided to invest in a dedicated generative AI offering for their community. The U-M offering consists of three main tools: (1) U-M GPT, (2) U-M Maizey, and (3) U-M GPT Toolkit. These tools were created to provide equitable access to generative AI for needs ranging from basic usage to advanced research and experimentation.

To guide their generative AI strategy, U-M formed a multi-disciplinary advisory committee composed of faculty, staff, and students

1. Create recommendations on how the university should approach the evaluation, use, and development of generative AI tools, including guidance for handling the impact of these tools.
2. Solicit faculty, staff, and student input (the committee deployed a survey that garnered over 6000 responses).
3. Explore the ethical, legal, and long-term implications of generative AI use for U-M.
4. Provide guidance and mechanisms for evaluating the committee's recommendations.
5. Recommend sustainable management and infrastructure for generative AI efforts at U-M.

A small development team with support from Microsoft, used a variety of services to build the platform, including Microsoft Azure AI services, Azure API Management, Azure OpenAI Service, Azure App Service, and PostgreSQL and vector databases. The University of Michigan launched the platform on time and at scale, giving access to all faculty, staff, students, and researchers on day one of the new academic year. As of November 2023, there have been over 500 projects launched on U-M Maizey, and the overall platform sees 12,000 – 14,000 users per day.

The project illuminated some Insights that other institutions should consider:

1. Make generative AI a top leadership priority.
2. **Evaluate existing technical infrastructure and capabilities.**
3. **Take a thoughtful approach to anticipating usage and costs.**
4. **Define a funding and access model that aligns with your philosophy.**

Resource: 7 Questions College Leaders Should Ask About AI

1. How do we provide the skills and build the critical thinking competencies that students need to be prepared to enter a workplace that will use AI in key processes and tools?

2. How can AI enhance our students' experience?

3. How can AI improve the effectiveness and efficiencies of our processes and support our strategic success?

4. What will be the impact of AI on the required skills, roles, and organizational structures of our workforce?

5. What AI-related academic, research, ethical, data, privacy, acceptable use, intellectual property, and other policy issues should our institution explore and develop?

6. How does AI and its use align with our institutional philosophy, approach, and core values?

7. What opportunities, drawbacks and potential threats does AI present for the fundamental missions of teaching, learning and research at our institution?

Weil, D. (2024, February 1). *Inside Higher Education*. 7 Questions College Leaders Should Ask About AI Available at https://www.insidehighered.com/opinion/career-advice/advancing-administrator/2024/02/01/key-questions-top-higher-ed-leaders-should

David Weil is vice president of information technology and analytics at Ithaca College and frequently works with Educause and other organizations to explore the strategic use of information technology to support the mission of higher education.

Resource: Copilot Wave 2

Moving forward, we envision AI-first organizations will comprise people, Copilot, and agents. Copilot is your AI assistant, designed to work for you. With Microsoft Copilot Studio, you can create, manage, and connect agents to Copilot. Organizations will have a network of agents, ranging from simple prompt-and-response systems to fully autonomous entities, which will operate on behalf of individuals, teams, or functions to execute and orchestrate business processes. Copilot serves as the interface for interacting with these agents, which can handle tasks such as accelerating lead generation, processing sales orders, and automating supply chains.

Resource: Questions for University Leaders Across Strategic Priorities



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Source: EAB interviews and analysis.