HANOVER RESEARCH

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BENEFITS, CHALLENGES, AND SAMPLE USE CASES OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

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In the following report, Hanover Research presents strategies for managing Artificial Intelligence (AI) in higher education settings. This report discusses the unique challenges that AI presents as well as guidance for management and faculty to effectively engage with artificial intelligence.

INTRODUCTION

As artificial intelligence (AI) continues to become a burgeoning trend within higher education, Hanover provides insight into several use cases, benefits, and challenges of leveraging AI in a postsecondary education setting.

KEY FINDINGS

- **AI integration in higher education is anticipated to have both positive and negative impacts.** Applied with forethought, AI tools can enable personalized learning and foster critical thinking, transform educators from knowledge transmitters to guides, and provide interactive learning environments that can improve student engagement and performance.

- **Despite the likely permanence of AI in the higher education industry, concerns have arisen about the reliability and ethical implications of AI in an education setting, as generative AI systems can lack context and accuracy.** The absence of regulations around AI usage at many institutions potentially encourages misuse, with some students exploiting these tools. Addressing these concerns, ensuring ethical usage, improving accuracy, and establishing clear guidelines are crucial steps toward harnessing the full potential of AI in higher education.

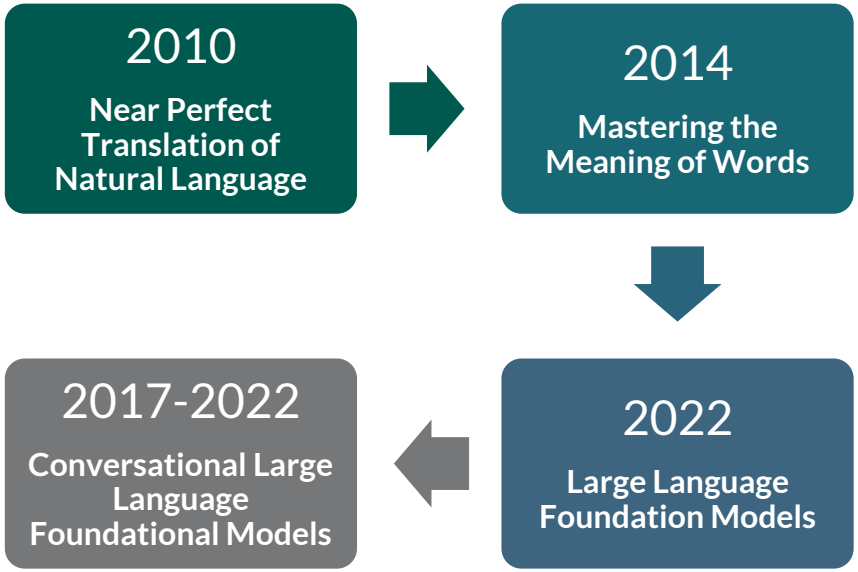
- **Rather than implementing outright AI bans, institutions can offer guidelines and training to faculty and allow them to determine whether and how to integrate AI into their classrooms and assignments.** At some institutions, faculty are assigning in-class writing, handwritten papers, group work, and oral exams to replace take home exams and essays and to ensure that student work is original. Universities like Auburn University and the University of Mississippi are offering training and workshops on AI. Some institutions, like Vanderbilt University, are disabling Turnitin's AI detection tool due to concerns regarding accuracy, sustainability, and privacy concerns. Faculty members are also engaging students proactively in conversations about the ethical use of AI, developing syllabi statements to inform their use, and guiding in-class reflections about key takeaways.

ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

DEFINING "ARTIFICIAL INTELLIGENCE"

One of the most common forms of AI impacting higher education is generative AI. This is defined as AI that can learn from existing content to generate new, realistic content based on supplied data without repeating it. Generative AI can create new media and language, such as images, video, music, speech, text, and software code. Today's generative AI responds to natural language prompts rather than a traditional programming language. One recent example of generative AI is ChatGPT, a conversational model that can answer simple questions as well as craft essays, describe art, and have conversations with the user. Generative AI can augment and create written content; answer questions; manipulate text based on a suggested tone; summarize and simplify text; create, translate, and explain software code; and enhance chatbot performance.

GENERATIVE AI TIMELINE



Source: Gartner

AI IN HIGHER EDUCATION

Generative AI presents solutions and carries limitations for administrators, faculty, and students in the higher education setting. For administrative staff, generative AI can help scale support services and more efficiently evaluate applications from prospective students. Faculty can use AI to assist with simple research tasks, curriculum development, and student assessments. Data show that students already utilize generative AI to help draft essays and complete assignments. However, generative AI also presents limitations and challenges, such as depersonalized student interactions, potentially biased decision-making, and the possibility of inhibiting intellectual growth and deep learning by completing assignments in an automated manner.

SAMPLE OF OPPORTUNITIES AND LIMITATIONS FOR AI IN HIGHER EDUCATION

	Opportunities	Limitations
Faculty	• Assist with research • Help develop curricula • Assist with assessing student work	• Instructors' usage has trailed students' experimentation, which can contribute to lagging instructional changes
Administrative Staff	• Provide academic support and student services via automation • Evaluate applicants more efficiently	• May depersonalize students' interactions with institutional staff • Risk of biased decisions that disadvantage specific groups
Students	• Use as a personal tutor • Help summarize information, begin drafts, generate ideas, and self-test	• Ease of using AI to complete work and generate content for assignments can undermine intellectual growth

BENEFITS OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

BENEFITS

The integration of AI in higher education classrooms presents an opportunity for deeper learning. AI enables personalized learning, catering to individual students' pace and proficiency. By doing so, it encourages deeper understanding rather than rote memorization. The role of educators transforms from knowledge transmitters to guides, fostering critical thinking and problem-solving skills. However, its usage should be carefully managed to ensure equitable access, prevent misuse, and protect data privacy. Top potential benefits of AI include:

Personalized Learning

AI can adapt to individual learning styles and paces, providing personalized resources and feedback for each student.

Interactive Learning

AI-driven tools can create interactive learning environments, such as simulations and virtual reality, enhancing comprehension and engagement.

Feedback and Assessment

AI tools can provide instant feedback on assignments and exams, helping students understand their strengths and areas for improvement.

Educational Accessibility

AI tools can provide support for students with special needs, including translation services, voice recognition, and visual or auditory aids.

Academic Guidance

AI can assist in course selection, degree planning, and career advising based on a student's interests, goals, and academic performance.

Academic Integrity

AI systems can detect instances of plagiarism, promoting fairness and honesty in academia.

Efficient Study Tools

AI-powered study apps can help students manage time effectively, provide study reminders, and help in memorization and comprehension.

Real-Time Query Resolution

AI chatbots can answer routine queries around the clock, ensuring students have help whenever they need it.

Preparing for Future Careers

By using AI tools, students gain exposure to technologies they will encounter in many future professions.

Data-Driven Insights

AI can analyze students' learning patterns, providing insights to educators on how to enhance teaching methodologies.

Sources: UCB, WeForum, OECD, & Inside Higher Education

CONCERNS AND CHALLENGES

CONCERNS

As AI becomes increasingly common in classrooms, concerns have arisen about its reliability and ethical implications. AI systems like ChatGPT rely on vast amounts of data. However, they may lack context, leading to potentially misleading explanations or incorrect citations. These misinterpretations can impede students' learning, which may cause misunderstandings and confusion.

However, industry experts confirm that AI in higher education is here to stay. Therefore, faculty must adjust and familiarize themselves with common AI tools. Despite several shortcomings that AI presents, it will continue to impact the higher education sphere. Faculty must acknowledge students will be leveraging AI as part of their work, and instructors must be able to identify how these tools can be both relevant and limiting to their courses.

Many universities have yet to institute any regulations about the use of AI tools in education. This regulatory vacuum leaves room for misuse and uncertainty, as some students might be tempted to use these tools to gain an unfair advantage.

There are ethical implications of AI in higher education, underscoring the necessity of contemplating questions surrounding privacy, fairness, transparency, and potential bias. While AI tools like ChatGPT can undoubtedly facilitate learning, it is crucial to ensure they are used responsibly without compromising on these ethical values.

While AI holds significant promise for enhancing learning experiences, it is imperative to address these concerns. Establishing clear guidelines on AI use, improving the accuracy of AI tools, and instilling a robust ethical framework can help mitigate these issues.

Source: NYT

POTENTIAL CHALLENGES

Generative AI is associated with inherent risks, including accuracy, bias, fraud, and sustainability. For example, ChatGPT and similar tools lack compliance with data protection and copyright laws (e.g., GDPR). Institutions should monitor these potential challenges with implementation and use.

Lack of Transparency

- Generative AI and ChatGPT models are unpredictable, and AI companies do not always understand everything about how they work.

Accuracy

- Generative AI systems can fabricate answers. Institutions should determine accuracy, appropriateness, and usefulness before relying on or publicly distributing information.

Bias

- Institutions should implement policies or controls to detect and regular biased outputs in a manner consistent with organizational policy and relevant legal requirements.

Intellectual Property and Copyright

- There is a lack of data governance and protection assurances regarding confidential information, so all data or queries entered may become public information.

Cybersecurity and Fraud

- Institutions must prepare for malicious actors' use of generative AI systems for cyber and fraud attacks and ensure mitigating controls are put in place.

Sustainability

- Institutions should select vendors that reduce electricity use and leverage high-quality renewable energy to mitigate the impact on their sustainability goals.

Source: Gartner (adapted at times verbatim)

USING AI IN THE CLASSROOM

TRAINING AND GUIDELINES

Institutions are taking varying approaches in their guidance to faculty members. Some are offering workshops on using AI in the classroom; others have implemented broader policies, sometimes leaving faculty to determine the extent to which they wish to integrate AI into their teaching.

"It's unclear how widespread…training is, or will become, in the coming year. Nor is it yet clear where professors are going to land in terms of embracing AI, allowing it under some circumstances, or banning it. Colleges seem to be deferring to faculty members to set their own classroom policies on appropriate use, while offering guidance on different models." – *The Chronicle of Higher Education*

AI-DETECTION TOOLS

In a 2023 *New York Times* article, professors interviewed said that they would be employing the use of AI detection tools. Turnitin, the plagiarism detection software, has announced that it will be introducing more AI-specific features in 2023. A Princeton University-developed AI detection software that claims to be able to identify AI generated text, GPTZero, has received great interest from faculty, with more than 6,000 signing up for the service. Boston College has provided a list of tools in its guidance to instructors including openai-detector, Gltr.io, GPTZero, and CrossPlag.

There are concerns with these types of tools regarding accuracy, sustainability, and whether there are FERPA violations from submitting student work in this way. Multiple sources indicate that these tools are in their infancy and there are risks of relying upon them. For these reasons, Vanderbilt University decided to disable Turnitin's AI detection tool.

AI-RESISTANT ASSIGNMENTS

Some faculty are already employing strategies to subvert the impact of artificial intelligence on their assessment of students, including:

Sources: NYT, *Appalachian* Online, Medium

FACULTY CONSIDERATIONS & RESOURCES

CONSIDERATIONS FOR FACULTY

Faculty should pursue education and training around AI to help prepare them for likely inevitable student usage in the classroom. NASPA urges administrators (and by extension faculty) to create free ChatGPT accounts to experience the capabilities and shortcomings of the tool themselves. Some institutions are providing training on AI-related topics and are collecting information from experts or through focus groups or surveys on potential use cases. Faculty can even choose to be trendsetters and innovators by using AI in their teaching and research and by becoming experts on AI use in the higher education setting.

Higher education AI experts recommend that faculty have proactive discussions with their students about the use of AI, which includes an emphasis on the importance of learning, ethical use of AI, and how assignments that use AI will be graded. Further, in an effort to help students iterate their writing or other academic assignments, faculty can lead reflections to help students develop their metacognitive skills and to educate them on how to integrate AI into their learning. Reflection can also lead students to embrace transparency when having used AI for academic work.

Faculty can help guide student use of AI by evaluating AI-generated results and framing the iterative learning process. Students may wish to utilize AI tools for idea generation, to get suggestions for an assignment outline, or to evaluate existing literature on the topic by reading AI-generated article summaries. In this regard, AI can become a partner in the writing process. AI can also provide a counterargument to a position, help strengthen an argument, or identify logic flaws. As with online searches or traditional media results, faculty should be equipped to help students evaluate AI-generated outputs.

FACULTY RESOURCES

How to Talk to Students About AI

- This resource outlines ways to address AI language models in writing classes: how to introduce them, how to recognize AI writing, and how to talk to students when they have likely used AI.

Stress Testing Writing Assignments

- Stress testing helps faculty assess the extent to which an assignment is "exposed" to AI and large language models. This resource presents the process to stress-test assignments and provides an example assignment revision from a writing course.

Sample AI Policies to Add to Syllabi

- Students in composition courses are aware of ChatGPT and other free AI writing tools, and some are already using them in their courses. Clear policies on AI use in writing classes may help avoid misunderstandings. This resource offers two suggested syllabus policies that might augment institutional Academic Integrity Codes.

Sources: University of Pittsburgh

TEACHING AND ASSESSMENT STRATEGIES

STUDENT-CENTERED TEACHING

Faculty can rededicate time saved by AI tools to engage more meaningfully with students. AI tools have the capability to ease administrative and teaching-related burdens for faculty, such as record-keeping, notes and reminders, student-specific feedback on assignments, and analyzing classroom discussions. By automating these routine tasks using AI tools and systems, faculty can regain time to customize and personalize materials for each class, thereby leveraging the faculty member's understanding of student needs and strengths. Faculty may also wish to explore how AI chatbots can help them design additional customized resources for their students.

WAYS IN WHICH AI CAN ENHANCE TEACHING

Handling low-level details to ease teaching burdens and increase focus on students

- AI can support organizational tasks such as record-keeping, starting and stopping activities, controlling displays, speakers, and other technologies in the classroom, and providing reminders.

Extending beyond faculty availability but continuing to deliver on the pedagogical intent

- AI can ensure that students have that support when they complete homework assignments or practice skills on their own. AI can generate feedback that faculty can quickly edit before sending along to the student.

Making faculty professional development more productive and fruitful

- AI can enable faculty to record the classroom and allow an AI algorithm to suggest highlights of classroom discussion worth reviewing with a professional development coach.

FORMATIVE ASSESSMENT

AI models and AI-enabled systems may strengthen formative assessments by detecting patterns and recommending a course of action that adapts to student strengths and needs. AI tools can provide students with immediate feedback on complex skills, such as learning American Sign Language in situations where no faculty member is available to provide feedback. Further, AI may be able to make feedback more accessible, particularly for neurodiverse students by interacting verbally with a student about an assignment and asking questions that help the student think through their responses without having to read a screen or type at a keyboard. Embedding formative assessment by using AI technology can make higher education more effective in achieving student learning outcomes. AI-enhanced formative assessment can also reduce faculty-student conflict and reduce the faculty member's burden of grading.

DIMENSIONS OF FORMATIVE ASSESSMENT

Enable Enhanced Question Types
Measure Complex Competencies
Provide Real-Time Feedback
Increase Accessibility
Adapt to Learner Ability and Knowledge
Embed Assessment in the Learning Process
Assess for Ongoing Learning

Source: US Department of Education

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