Artificial Intelligence and Education Guide

Preamble

The Academic Senate Artificial intelligence (AI) and Education Workgroup has created this guide on the dynamic topic of understanding teaching and learning with AI in higher education in the Spring semester of 2023 to provide faculty with beginning guidance on practices to address the use of AI.

AI will continue to have a significant impact on higher education just as the creation of learning tools in the past also altered education. AI tools developed today have the potential of addressing some needs like directly supporting individualized learning for students. However, there are important concerns connected to AI. Perhaps most central are the identified biases in AI algorithms that may result in inaccurate or false content and delivery of educational materials.

Educators must be wary about employing AI systems because the algorithms that power them lack transparency and students need to be educated to understand imperfections of AI, and certainly, the intersection of AI use and plagiarism.

The information to follow has been written to provide clear and concise definitions, tools, and advice. The field of AI is continually developing, and as such, guidance and practices will continue to evolve. In the spirit of sharing information that can support faculty at this moment, the workgroup has prepared this guide.

Brief Summary of What AI Is

What are the Three Types of Artificial Intelligence?

In basic terms, there are three main types of Artificial Intelligence: *narrow artificial intelligence* (or narrow AI), *artificial general intelligence* (or AGI), and *artificial superintelligence* (or ASI). Narrow Artificial Intelligence is when AI is exceptional at one task or a set of related tasks. For instance, it can solve certain math problems, or it can produce in a manner of seconds an essay on almost any topic—with the necessary guardrails set up against sexual or violent content. One can even have a conversation with an AI chat bot. Artificial General Intelligence (AGI) is when a computational system has a high-level intelligence across a range of cognitive tasks. It will appear to have human-like intelligence and be able to master a larger series of tasks. We do not yet have AGI, but some computer scientists believe we are getting closer. After AGI, the next stage for Artificial Intelligence may be ASI, or a superintelligence which will be far greater than that of any human being and beyond almost anything we can imagine.

What is ChatGPT?

On November 30, 2022, ChatGPT (which stands for Generative Pre-Trained Transformers) was released to the public. This form of Artificial Intelligence is *narrow AI*. ChatGPT can generate human-like text from a massive, curated database. This database is not directly hooked up to the Internet, but rather it was trained on a large body of texts from a variety of sources, including academic journals, books,

articles, and some vetted websites. The data it has trained on only goes up to the year 2021, so it is not pulling from more current information from the years 2022 or 2023. In the first 3 months of its release, it acquired 100 million users and is the fastest growing app in human history. Since the initial release, a more powerful version, ChatGPT 4, has been made available. This latest iteration can also code cogently.

What is the concern for Educators?
The concern for educators is how ChatGPT will impact their classes. With this form of AI, students can type in any prompt and AI can create a copyright free, quasi-original essay in seconds not picked up by most plagiarism detectors. There are a couple of AI detectors available to run text through, but these are not foolproof and currently they will not accurately detect text generated from ChatGPT 4. When using ChatGPT, students can tell it specifics, such as write a 600-word essay, include three sources, include certain terms, write it like a 10th grader, make sure it compares key concepts, etc. Statistics show that students across the world are using it to generate essays and to solve homework problems—whether in math, science, humanities, or any other discipline. Some students are using it to find the answers for exam questions. If a student puts in the multiple-choice question with the varied options into ChatGPT, it can generate the right answer far beyond guessing. Interestingly, while the original ChatGPT was able to score a 1020 on the SAT, ChatGPT 4 scores 1410. This illustrates the advancements being made in AI in a short amount of time.

Here is a 17-minute film introducing [AI and Education](#).

Sample Syllabus Language/Classroom Policies
Faculty should consider their goals for the course when choosing syllabus language. A few options are presented below. Regardless of what statement you choose, consider asking students to explicitly acknowledge the syllabus policies, for instance via a syllabus quiz or signed contract.

The simplest syllabus options add a sentence or clause to your existing academic integrity statement, such as *Collaboration with ChatGPT or other AI composition software is not permitted in this course.* Or alternatively, if you want to check on a case-by-case basis: *Please obtain permission from me before collaborating with peers or AI chatbots (like ChatGPT) on assignments for this course.* (language from the [Poorvu Center for Teaching and Learning](#), Yale University).

Somewhat longer options can give students more context for your policy choices, as with the examples below, from [The Center for Teaching & Assessment of Learning at the University of Delaware](#).

- **Use prohibited**
  Students are not allowed to use advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT or Dall-E 2) on assignments in this course. Each student is expected to complete each assignment without substantive assistance from others, including automated tools.
- **Use only with prior permission**
  Students are allowed to use advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT or Dall-E 2) on assignments in this course if instructor permission is obtained in advance. Unless given permission to use those tools, each student is expected to complete each assignment without substantive assistance from others, including automated tools.

- **Use only with acknowledgement**
  Students are allowed to use advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT or Dall-E 2) on assignments in this course if that use is properly documented and credited. For example, text generated using ChatGPT-3 should include a citation such as: "Chat-GPT-3. (YYYY, Month DD of query). "Text of your query." Generated using OpenAI. https://chat.openai.com/" Material generated using other tools should follow a similar citation convention.
- **Use is freely permitted with no acknowledgement**
  Students are allowed to use advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT or Dall-E 2) on assignments in this course; no special documentation or citation is required.

Meaningful policies may refer to standards within your academic discipline. For instance, multiple scientific journals have issued guidelines around AI use for authors.
- **Artificial intelligence (AI).** Text generated from AI, machine learning, or similar algorithmic tools cannot be used in papers published in *Science* journals, nor can the accompanying figures, images, or graphics be the products of such tools, without explicit permission from the editors. In addition, an AI program cannot be an author of a *Science* journal paper. A violation of this policy constitutes scientific misconduct. ([*Science* journals](#))
- Large Language Models (LLMs), such as [ChatGPT](#), do not currently satisfy our [authorship criteria](#). Notably an attribution of authorship carries with it accountability for the work, which cannot be effectively applied to LLMs. Use of an LLM should be properly documented in the Methods section (and if a Methods section is not available, in a suitable alternative part) of the manuscript. ([*Nature*](#))

A more extensive discussion may be appropriate. See, for instance, the example of [Juan David Gutiérrez (Universidad del Rosario)](#), which includes extensive discussion of informed, transparent, ethical, and responsible use of AI within an academic course.

As always, the most successful syllabus policies will be those that are clearly explained and well-integrated with the other course materials. Consider updating or changing your assignments to help students understand the drawbacks and challenges of Large Language Models and other AI-generated materials. In particular, helping students develop a sense of ownership for their writing may help to minimize the temptation to use AI in prohibited ways.

Teaching Practices Around AI/How to Monitor
It's suggested that faculty teaching both online and face-to-face employ best practices in establishing expectations for their students when completing assignments. These expectations should be made explicit in instructions for all assignments whether they are turned in in-person or online. It's suggested that policies be stated in **multiple places** in a course (online) and on a syllabus.

Instructions on parameters may include the following:
- Statement(s) on what materials may or may not be used when completing an assessment.
- Referencing the College's policy on Academic Integrity.

- Establishing the consequences for students if they violate these policies (such as requiring a meeting in-person or on Zoom with cameras on, a "0" on the assignment, report to Student Life, etc.)
- State which (if any) AI tools may be used including complex translation tools like *DeepL*, and state how they may be used.

Faculty may also consider designing new assignments that challenge students to critique and analyze ChatGPT and similar AI tools. For instance, students could read primary sources and then compare their understanding with ChatGPT's understanding. Other faculty might consider asking students to explicitly critique the output of AI (e.g., for writing style, factual accuracy, complexity of argument, and so on).

How to Incorporate AI for Faculty
Despite the many challenges AI presents on issues related to academic integrity, there are many ways in which it can be used by faculty to enhance their pedagogy. For example, faculty might use ChatGPT to aid in the lesson planning process. Importantly, ChatGPT does not replace the instructor's planning process but instead helps the instructor by engaging in a collaborative process with the generative technology. For instance, faculty might prompt ChatGPT to assist them with developing a lesson on [insert topic] that meets certain SLOs. Faculty might also prompt ChatGPT to create a list of resources that students can refer to given a specific lesson plan that the instructor has developed. Likewise, faculty can ask ChatGPT to role play as a professor in any given discipline, then prompt it to provide feedback to the lesson plan that the instructor has created. On prompt development for faculty, many more resources are provided at Leon Furze's, "[Practical Strategies for ChatGPT in Education](#)":

Faculty might also consider using ChatGPT to update their existing lesson plans with more contemporary resources or literature. In this way, faculty are prompting ChatGPT using their own self-created lesson plans and getting feedback in return. Within the classroom, instructors might also use ChatGPT to break moments of cognitive stagnation. For example, if students are having difficulties understanding [topic/concept] after several tries using different examples, it might be worthwhile to ask ChatGPT or another generative technology to explain [topic/concept] in different ways, specifically for college students. The results of the prompt may help students to understand the topic or concept better.

Generative technologies can also be used for equity. For example, instructors can prompt ChatGPT to use the principles of UDL to update an existing lesson plan, particularly for students with disabilities. Instructors can then use the updated lesson to supplement or revise what is typically offered to students to strengthen inclusivity.

Importantly, the strategies described in this section aim not to replace an instructor or their expertise. Instead, these strategies aim to assist instructors with their everyday work via a process of collaboration with AI. As mentioned previously, Leon Furze's "[Practice Strategies for ChatGPT in Education](#)" offers invaluable tools for generative AI prompt development.

AI Apps that are Useful for Faculty

[Bing AI - Search](#)
Bing's AI generative technology

Google Bard
Google's AI generative technology

ChatGPT
OpenAI's generative technology

OpenArt
OpenArt's image generation technology

Wolfram|Alpha: Computational Intelligence (wolframalpha.com)
Wolfram Research's computational technology

Home - Packback
AI detection

Elicit
Brainstorming/Research assistant

Conclusion

The strategies and resources presented in this guide aim to help instructors better understand generative technologies and how they can be used in the classroom. This report correctly leaves the decision of whether to use AI in the classroom firmly at the instructor's discretion. The hope is that this guide can be used by faculty by offering sample syllabus language, various teaching practices, and advice on how to cope with AI in education, as well as resources on how faculty can ethically use AI to streamline their own instructional practices. Ultimately, faculty are responsible for developing their own pedagogy – this guide serves simply as an aid.

Resources

Introduction to AI

Articles

- "What is artificial intelligence?" (Brookings Institute)

Books

- *Artificial Intelligence: A Very Short Introduction*
- *Artificial Intelligence for Dummies*

Open Courses

- Elements of AI
- Intro to Artificial Intelligence (Udacity)
- Introduction to Artificial Intelligence (Coursera and IBM)

Websites

- Center for Humane Technology
- US Department of Education: Artificial Intelligence

Videos

- Crash Course: Artificial Intelligence
- The Cyborgian Revolution: A.I. and Education

Select AI Tools

Art/Images
- [Dall-E](#)
- [Open Art](#)

Computational
- [Wolfram Alpha](#)

Text
- [Bard by Google](#)
- [Bing by Microsoft](#)
- [ChatGPT](#)
- [QuillBot](#)

Videos
- [Elai](#)
- [Synthesia](#)

Citations
- [APA Citation Guidelines](#)

Select AI Detection Tools
- [GPTZero](#)
- [Open AI Classifier](#)
- [Packback](#)
- [Turnitin](#)

For a more complete list, go to the [AI Tools Directory](#). See also [University of Central Florida's List of Artificial Intelligence Tools](#) and [The Practical Guide to Using AI to do Stuff](#)

Academic Honesty (Classroom Policies & Syllabus Statements)
- [Classroom Policies for AI Generative Tools](#)
- [Communicating your ChatGPT/AI Policies (Champlain College)](#)
- [Guidance on AI/ChatGPT (Princeton)](#)
- [Policy on the Use of AI Text Generation (Boston University)](#)
- [Policy and Practice Guidance around Acceptable Responsible Use of AI Technologies (Monash University)inco](#)
- [Sentient Syllabus: Charting a Course for the Academy in the Era of Synthesized Thought](#)

Teaching and Assessment Strategies
News and Commentary
- [“Academic Integrity in the Era of Artificial Intelligence: The Onus is on Faculty” (ASCCC)](#)
- [“ChatGPT Is Everywhere” (Chronicle of Higher Education)](#)
- [“Is AI the New Homework Machine? Understanding AI and its Impact on Education” (WCET)](#)
- [“Teaching: What You Can Learn from Students about ChatGPT” (Chronicle of Higher Education)](#)
- [“There is No A.I.” (New Yorker)](#)
- [“Will ChatGPT Change How Professors Assess Learning?” (Chronicle of Higher Education)](#)

General Guidance
- [AI in Higher Education Resource Hub](#)
- [AI for Teachers](#) (edX course)
- [AI Text Generators: Sources to Stimulate Discussion among Teachers](#)

- [aiEDU: The AI Education Project](#)
- [Artificial Intelligence (University of Maryland: Teaching & Learning Transformation Center)](#)
- [ChatGPT and AI Composition Tools](#)
- [ChatGPT and other AI-based tools (University of Washington)](#)
- [ChatGPT Resources (Texas Tech)](#)
- [ChatGPT Resources for Teaching (University of Pittsburgh)](#)
- [*How Community Colleges are Adapting to Generative AI: How Education Institutions are Navigating the Rise of ChatGPT and Generative AI* (The League for Innovation in the Community College in partnership with Packback)](#)
- [Instructor Guidelines for Student Use of Generative Artificial Intelligence for Academic Work](#)
- [Practical Responses to ChatGPT and Other Generative AI](#)
- [*Robot-Proof: Higher Education in the Age of Artificial Intelligence*](#)
- [Strategies for Teaching Well When Students Have Access to Artificial Intelligence (AI) Text Composition Tools](#)
- [Teaching and AI Systems](#)
- [Understanding AI Writing Tools and their Uses for Teaching and Learning at UC Berkeley](#)

Ideas and Examples
- [100+ Creative ideas to use AI in education](#)
- [Leveraging ChatGPT: Practical Ideas for Educators](#)