

Artificial intelligence and education

Possibilities and challenges for educators

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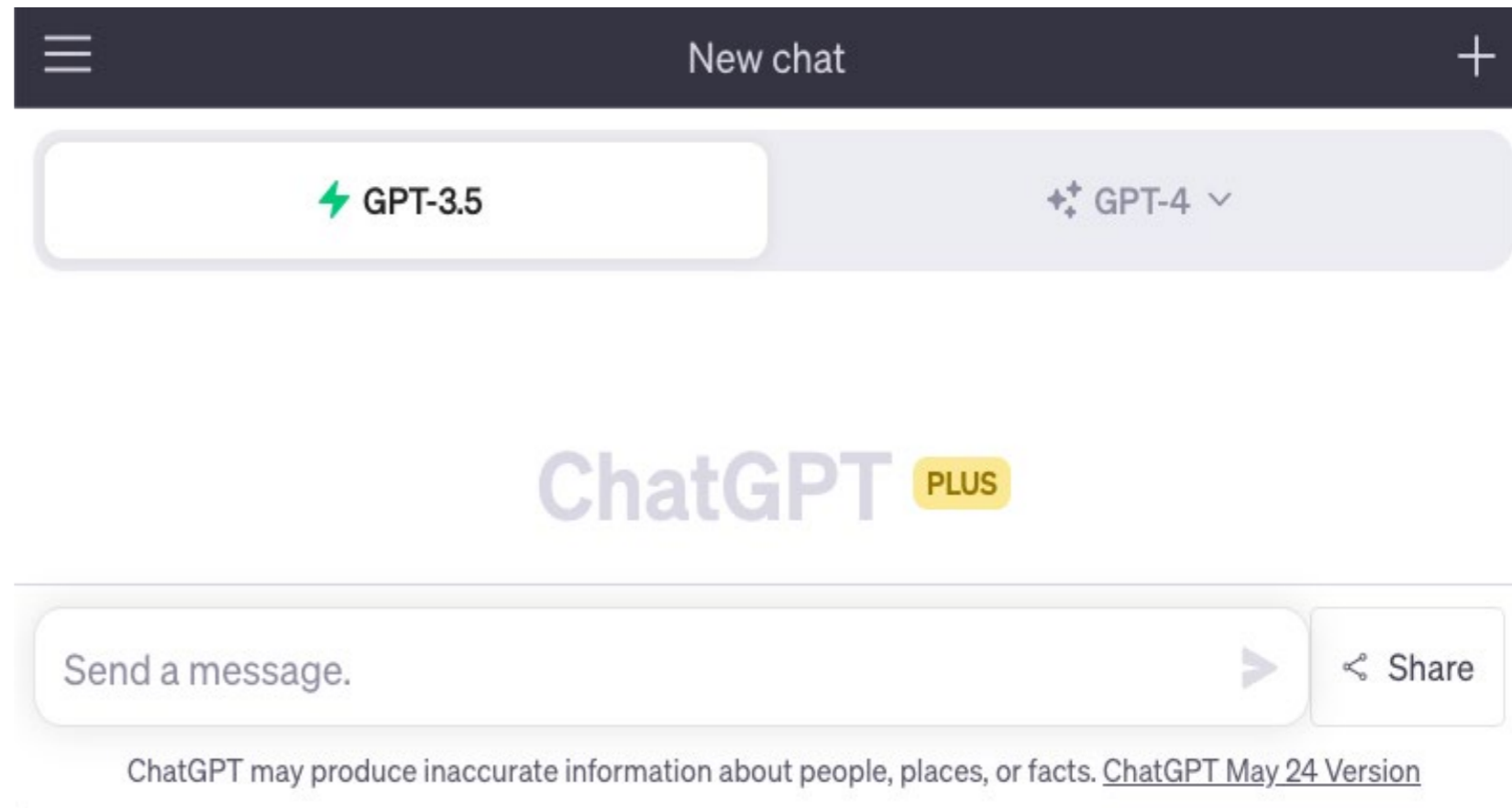
Image generated by Adobe Firefly

- Background on AI language models like ChatGPT
- Policies to guide and teach about AI
- Teaching critical AI literacy
- Pedagogical applications of AI

BACKGROUND ON LANGUAGE MODELS LIKE CHATGPT

What is ChatGPT?

- An AI text generator
- Also called a large language model (LLM)
- Ask it for text, and it generates a response.



How? What is ChatGPT's nature?

- The software is designed to generate a series of words based on its statistical analysis of huge volumes of text.
- It works by copying patterns and predicting likely next words.



**Q: Who is making advanced language models like ChatGPT?
For what purpose?**

A: Companies. For profit.

- ChatGPT was created by the company OpenAI, and released on November 30. OpenAI is largely funded by Microsoft.
- ChatGPT is built on GPT 4 and/or 3.5, updated versions of software available since 2020. 3.5 is free; access to GPT-4 is \$20/month.

Comparable-quality alternatives to ChatGPT

ChatGPT is just one example of a large language model. ChatGPT runs on one of OpenAI's language models, GPT-3.5 (free version) or the more sophisticated GPT-4 (premium).

[Poe.com](https://poe.com) is a site that allows you to use a number of different models (free and subscriber options):

- Anthropic's Claude (can process longer documents in prompts)
- Meta's Llama (not tested as it is not available in Norway)
- Google's Palm
- OpenAI's GPT models,
- For image generation, try Adobe Firefly or DALL-E 3

As you're probably aware, These models can produce passable academic prose in response to many writing prompts



Grammatically correct



Not copied verbatim (at least not usually)



Different outputs each time



Sounds plausible

How chatbots are trained and bias

- Western media
- Online forums and open sources
- Censorship
- Can promote stereotypes and gender roles





Language models can incorporate background information, sources, quotations, and lists of ideas.

- You feed them the information (there are different word limits for different systems (e.g. you can upload large amounts of text into Claude)).
- Give it anything you have that will help it produce the piece of writing.
- Describe the style, length, and any other requirements.

Are there kinds of academic writing assignments it can't generate? We shouldn't count on it.

I did some testing on OpenAI before GPT-4 came out, and I find that it can produce something passable for most prompts with a little help.

Feed it a reading, some real sources, snippets on current events, bits of personal experience, a transcript or even an image now (with Copilot, formerly Bing AI).

The system will generate a personal essay, a piece about something timely and hyper-local, a simulated reflection on the writing process, and a close analysis of a text.

Is there a University license?

- Norway SIKT (access to different models), closed system
- Staff and students at the University of Sydney have access to 'Microsoft Copilot' and 'Vanilla GPT-4' agent in Cogniti
- What about your institution?

The screenshot displays the Sikt KI-chat interface. At the top, the title "Sikt KI-chat" is visible. The interface is divided into three main sections: a left sidebar, a central settings panel, and a right sidebar.

- Left Sidebar:** Contains a "New chat" button, a search bar for chats, a "New Conversation" button, and a list of utility buttons: "Clear conversations", "Import data", "Export data", "Settings", and "Sign out".
- Central Settings Panel:** Shows the "Model" set to "GPT-4". The "System Prompt" is "Follow the user's instructions attentively. Use markdown in responses only when it enhances clarity or presentation." The "Temperature" slider is set to 0.7, with a range from "Precise" (0.2) to "Creative" (0.8).
- Right Sidebar:** Contains a "New prompt" button, a search bar for prompts, and a "No data." message.

At the bottom of the interface, there is a text input field with the placeholder "Type a message or type '/' to select a prompt..", a "Send a message" button, and a disclaimer: "KI-chat generates a plausible text, always assess the reliability of the information you receive." Below the disclaimer are links for "Privacy Policy", "Terms of Use", and "Accessibility Statement".

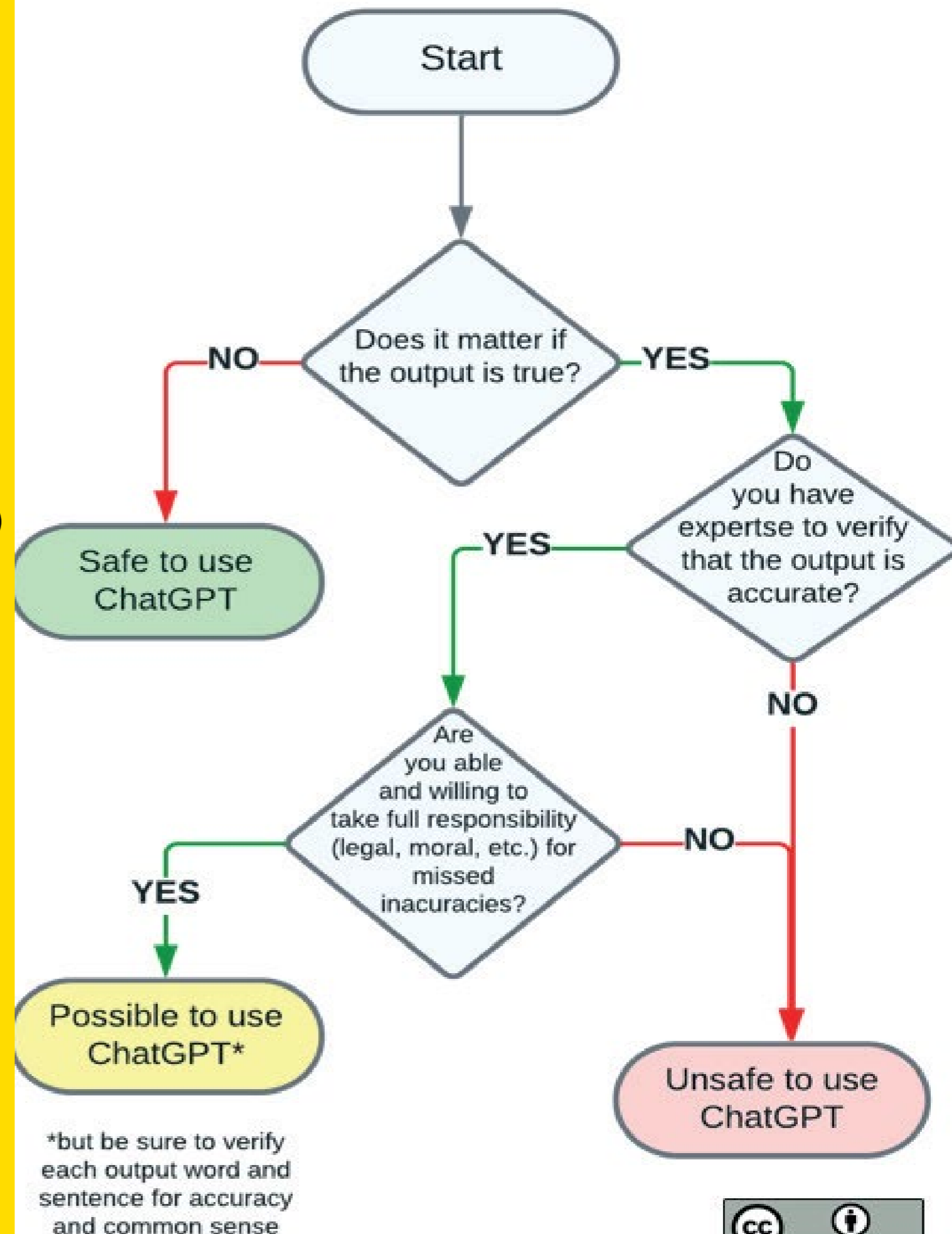
Our closed system provides the following

- SIKT AI Chat gives access to different models
- The privacy of users is safeguarded
- Chat is secure
- Designed for use in education
- Conversations are stored in users' browsers and are deleted after a maximum of 30 days
- Microsoft doesn't know who the end user is, and Sikt doesn't store chat history
- The information is not used to train the AI model further
- Green and yellow data (level of types of data in Norway)
- Supports Feide login (a national educational login system)
- Supports English, Bokmål and Nynorsk



When is it safe to use ChatGPT?

Source: UNESCO (2023) ChatGPT and artificial intelligence in higher education: quick start guide.
<https://unesdoc.unesco.org/ark:/48223/pf0000385146>



Writing a prompt, but what is it?

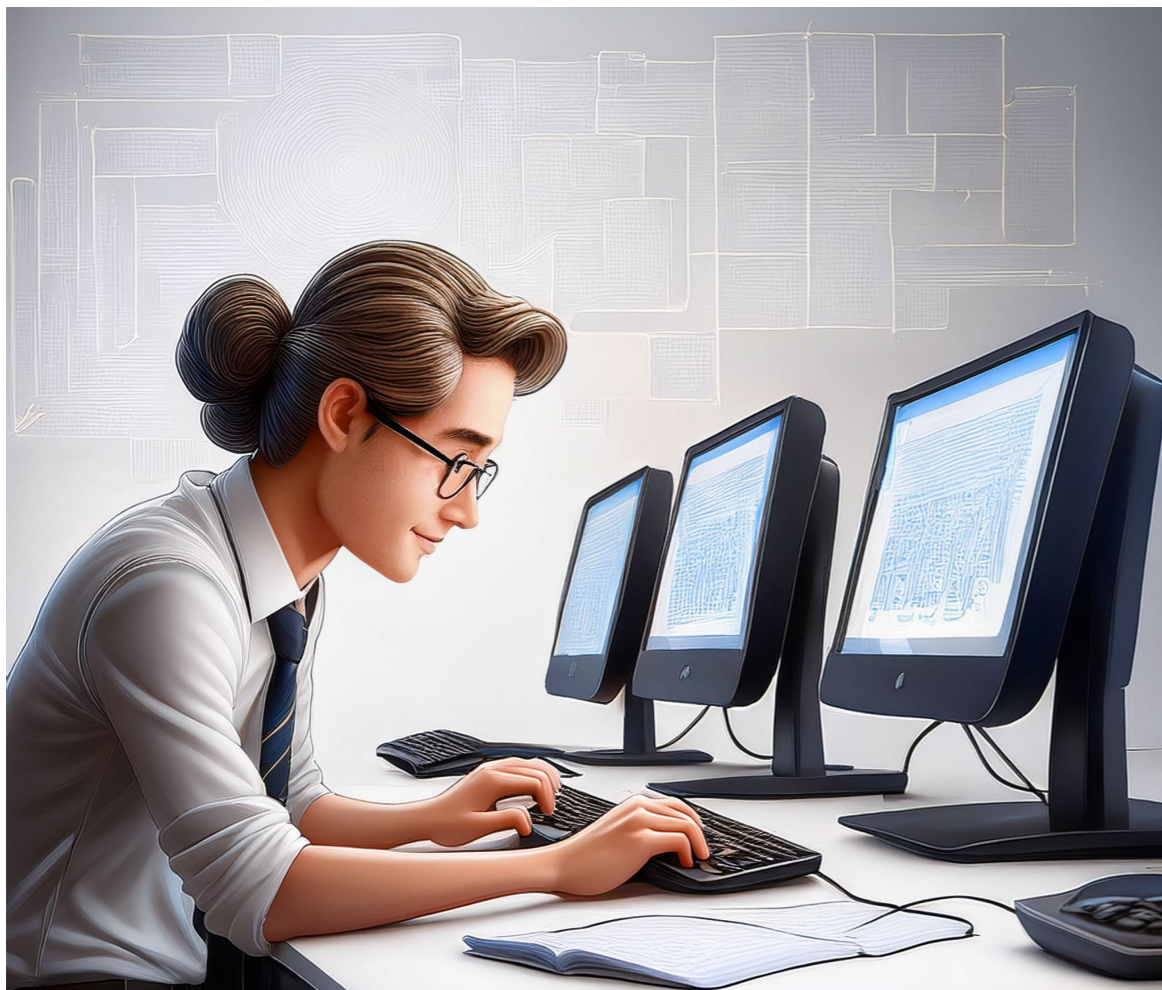


Image generated by Adobe Firefly

- Chatting is the new programming
- A '**prompt**' is when the software sends to a '**model**' (the actual AI), and the model then produces a '**completion**', which is shown to you through the tool.
- The prompt-completion-prompt-completion-... cycle is that you can **interact with the AI to improve upon its responses.**
 - provides a '**context**' for the AI to work

**How well can
ChatGPT do on
university writing
assignments?
Let's try.**

- Open [Poe.com](https://poe.com) and try a simple essay prompt, you can also compare different AIs to see how they respond
- One possible structure is (RTRI):
 - Role (act as...)
 - Task (summary of what the AI needs to do)
 - Requirements (what the completion needs to include, contain, be, etc)
 - Instructions (what the AI should do to act on the prompt)
- Review a range of exemplar prompts created by students for students ([AI In Education, University of Sydney](https://ai-in-education.unsw.edu.au) (July 2023))

Teaching@Sydney: AI and education at Sydney <https://educational-innovation.sydney.edu.au/teaching@sydney/ai-and-education/>

Four Pillars of Effective Prompting

- 1. Task:** Clearly state what you need the AI to do. Use specific action words like 'create,' 'translate,' or 'analyze.' These action words tell the AI precisely what work you're asking it to perform.
- 2. Format:** Describe how you want the AI's work to be presented. For example, if you want a poem, report, or diagram, state the format. This helps the AI shape its output to fit your requirements.
- 3. Voice:** Indicate the tone or style of the output. Whether it should be formal, casual, persuasive, or neutral, this guides the AI in matching the voice to the intended audience or purpose.
- 4. Context:** Give as much background information as necessary. If the AI is to mimic a particular writing style or consider specific facts, providing examples or detailed descriptions can lead to more accurate results. For instance, I can provide the criteria for a particular assignment by uploading a rubric or provide feedback examples by providing a writing sample for the generative AI to consider.

The University of Texas Rio Grande Valley, [Center for Online Learning and Teaching Technology](#)



RTRI structure

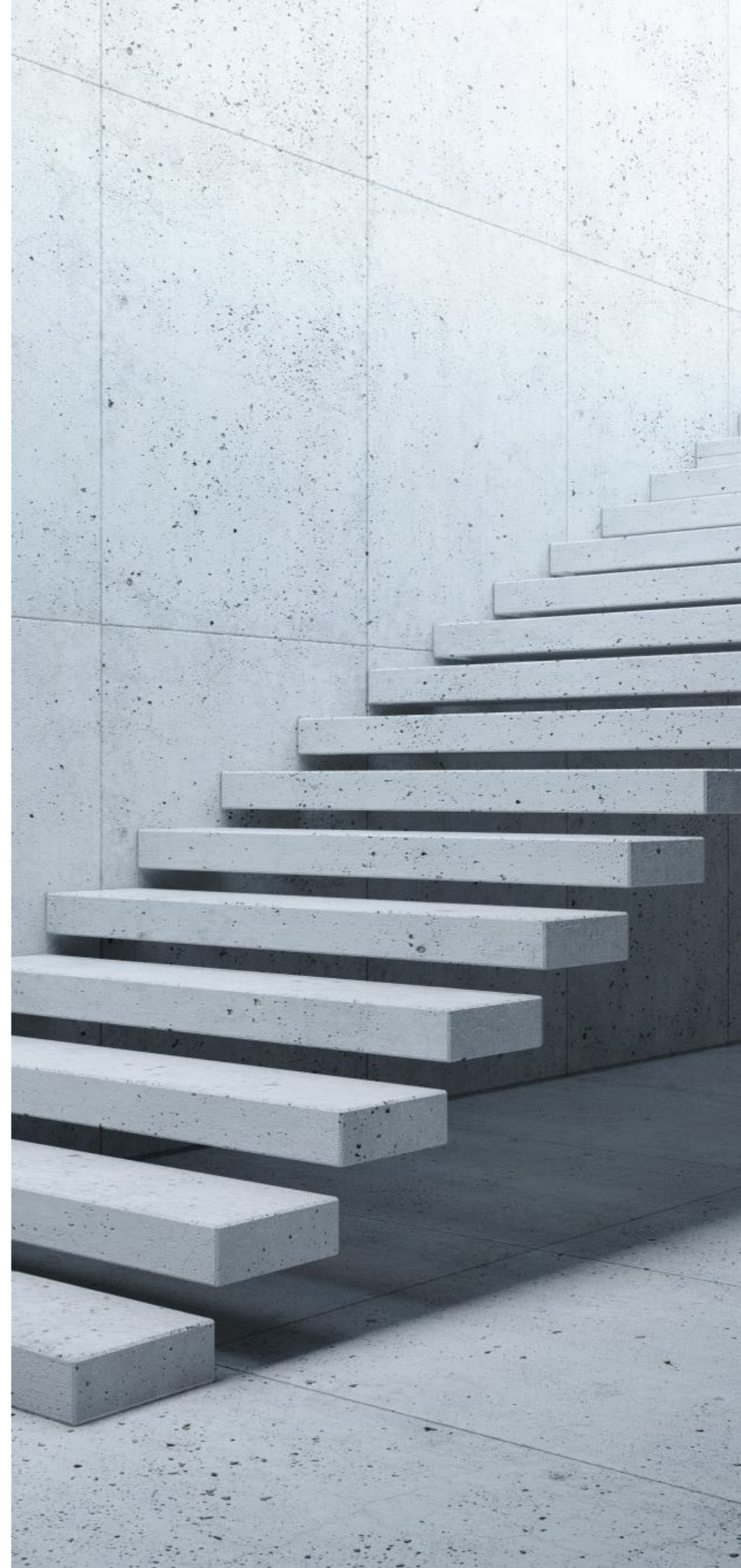
- Whenever I open up Twitter, I am exposed to a new breed of hustle — the “prompt influencer” — promising me that 99% of people use GPT wrong and that they will provide the secret prompts that, if I use them in ChatGPT, will vanquish evil and make me a million dollars. So I want to share my prompt secret with you, for free. Ready? There are no secret prompts.
- In fact, I think the emphasis on prompting as the key to using AI is a mistake for a number of reasons. But, I also have come to realize that there are some things people don't understand about prompts, which can help make the task of using AI easier. So I do want to share those.

How can generative AI improve learning and teaching?

- Support students to focus on retrieval practice – learning by strengthening connections in memory
 - A standard approach to giving students activities for retrieval practice is the humble quiz
 - Generative AI can help you generate draft questions quickly
 - It can even suggest feedback to provide to students
- Aim to encourage elaboration – involves making connections between different concepts to aid learning
 - Write prompts that focus on and provide questions with feedback, and the feedback encourages students to draw links between the different topics

Learning through analogies and concrete examples

- With the help of AI, you can effortlessly **generate analogies** to kick-start student thinking
- **Concrete examples** can help students apply abstract concepts to reality, increase motivation and encourage them to draw links between different ideas



Try out a prompt in your area

An example:

- Act as an expert in social psychology. I am teaching a class about cognitive biases that affect decision making. Give me 5 examples of real life scenarios where particular cognitive biases might be at play - include examples where 2 cognitive biases are present. Make the scenarios quite diverse. Write the scenarios as short stories involving businesses and their clients. Tell me which cognitive bias(es) are active and explain why.
- Can you expand the first scenario into a few paragraphs, including dialogue between the people involved, and structure it like a case study?



Role ⁶	Description	Example of implementation
Possibility engine	AI generates alternative ways of expressing an idea	Students write queries in ChatGPT and use the Regenerate response function to examine alternative responses.
Socratic opponent	AI acts as an opponent to develop and argument	Students enter prompts into ChatGPT following the structure of a conversation or debate. Teachers can ask students to use ChatGPT to prepare for discussions.
Collaboration coach	AI helps groups to research and solve problems together	Working in groups, students use ChatGPT to find out information to complete tasks and assignments.
Guide on the side	AI acts as a guide to navigate physical and conceptual spaces	Teachers use ChatGPT to generate content for classes/courses (e.g., discussion questions) and advice on how to support students in learning specific concepts.
Personal tutor	AI tutors each student and gives immediate feedback on progress	ChatGPT provides personalized feedback to students based on information provided by students or teachers (e.g., test scores).
Co-designer	AI assists throughout the design process	Teachers ask ChatGPT for ideas about designing or updating a curriculum (e.g., rubrics for assessment) and/or focus on specific goals (e.g., how to make the curriculum more accessible).
Exploratorium	AI provides tools to play with, explore and interpret data	Teachers provide basic information to students who write different queries in ChatGPT to find out more. ChatGPT can be used to support language learning.
Study buddy	AI helps the student reflect on learning material	Students explain their current level of understanding to ChatGPT and ask for ways to help them study the material. ChatGPT could also be used to help students prepare for other tasks (e.g., job interviews).

How do we respond?

- Policy
- The MLA-CCCC Task Force on Writing and AI recommendation: Make policy explicit
 - “Develop policy language around AI by promoting an **ethic of transparency around any use of AI text** that builds on our teaching about source citation.”



Students have a right to clear policy language

A Blueprint for an AI Bill of Rights for Education, which expands on the Blueprint for an AI Bill of Rights developed by the White House Office of Science and Technology Policy, suggests that students have a right to explicit guidance on academic integrity and AI.

“You should be able to expect clear guidance from your instructor on whether and how automated and/or generative systems are being used in any of your work for a course. These guidelines should make clear which specific systems or tools are appropriate for any given assignment.”

Kathryn Conrad in *Critical AI* (Duke University Press)

Policy should consider a range of ways students might use AI, including



Ideas. If they use it to get ideas but don't use AI text verbatim, is that allowed? What if they have a dialogue with a system?



Grammar and stylistic suggestions (note that flawless grammar might possibly indicate they used AI for editing, not that they copied)



Revisions. What about giving a draft to AI and asking it to improve the draft? The student might ask AI to cut or expand. Where would the line be?

**Policy can
help build
critical AI
literacy**

- Guidelines for the Use of Artificial Intelligence in University Courses by Juan David Gutiérrez distinguish between low risk and high risk uses of text generation AI
- They offer in-text links to updated resources
- They educate about AI risks:
 - Inaccuracy
 - Bias
 - Missed opportunities for critical thinking practice
 - The tendency to anthropomorphize

Many strategies for deterring misuse of AI overlap with best practices for assigning writing



- Assign writing process steps. Discuss how writing helps us think more clearly. Invite student reflection on aha moments.
- Create assignments that have intrinsic meaning and are likely to be motivating.
- Include teacher and peer response in the process.
- Allow room for creativity, original thinking, and choice.

Critical AI literacy

- What language models are and aren't (not what we perceive them to be)
- How to identify the problems in AI outputs
- How they/we/the public might help shape future policy on AI.



Image generated by Adobe Firefly

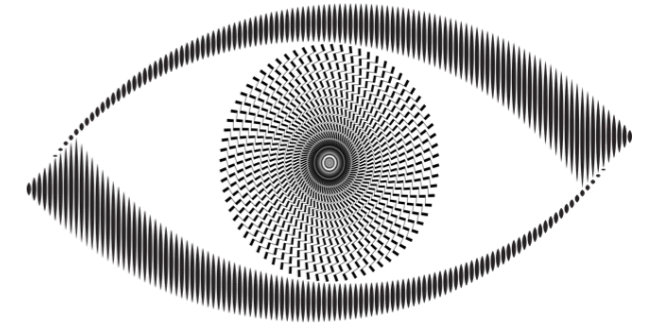


Image by [GDJ](#) on [Pixabay.com](#)

Privacy: Don't share sensitive or private information with ChatGPT, especially not student writing or data

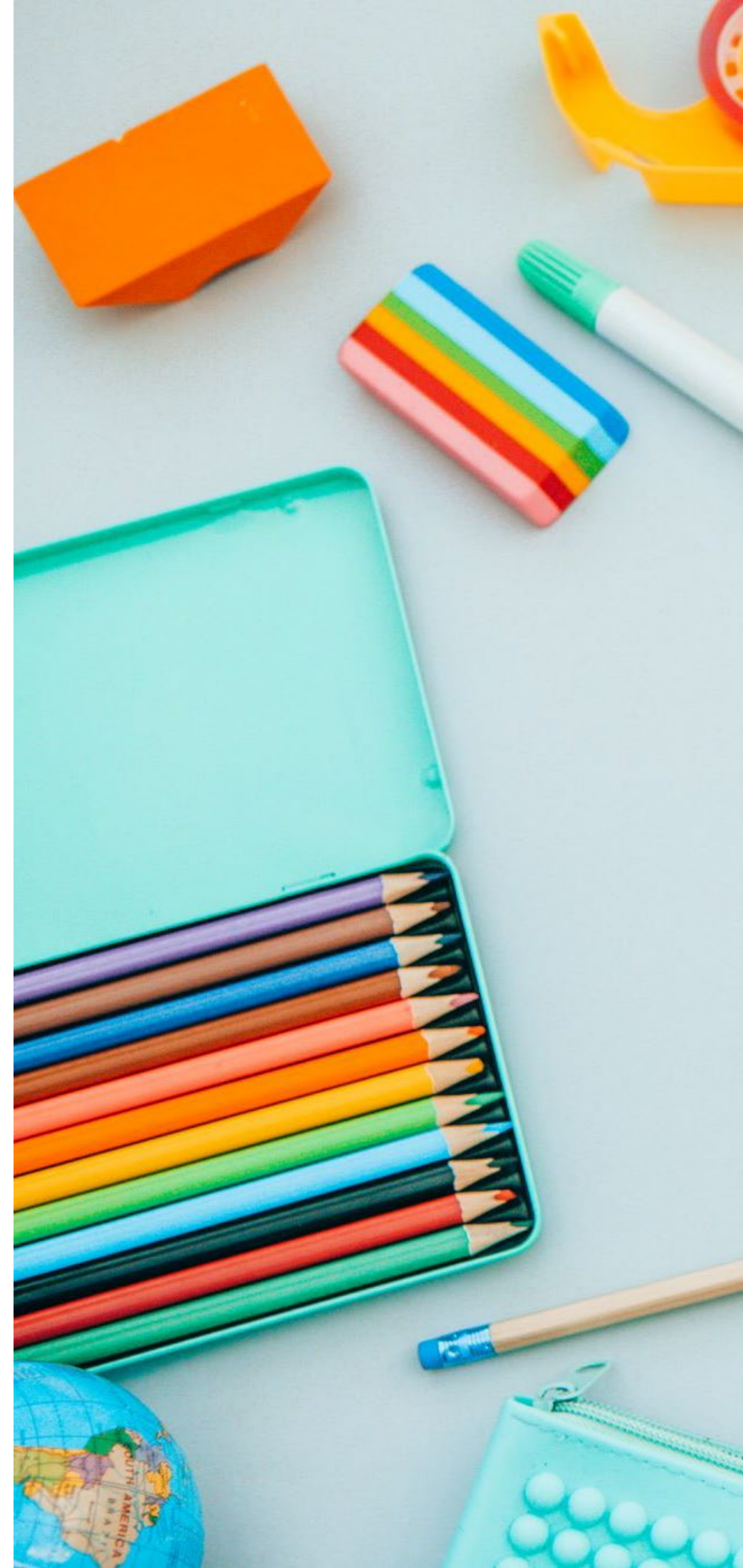
From the OpenAI Privacy Policy

“We may use Personal Information for the following purposes:

- To provide, administer, maintain and/or analyze the Services;
- To improve our Services and conduct research;
- To communicate with you;
- To develop new programs and services...”

So how do we start? Baby steps?

- Assign a reading like the introduction to Elements of AI, a set of free online course materials from the University of Helsinki.
- Check out Ethan Mollick's excellent blog about the use of AI in education, including posts such as how to use AI to make teaching easier and his tips on prompting
- Syllabus Resources from the Sentient Syllabus Project at the University of Sydney contains snippets of sample text you may want to use in unit outlines or unit resources to define boundaries around engagement with AI
- Show a video that gives an example of real-world applications and unintended consequences
 - Algorithms of Oppression video with Safiya Umoja Noble (USC)
 - Gender Shades with Joy Buolomwini (MIT)
 - Artificial Intelligence: Last Week Tonight with John Oliver
 - Computers are getting better at writing (Vox)



Options for incorporating AI into your pedagogy

Envisioning the future of education

- How might we want to incorporate text generators into our pedagogy? There are a million possibilities.
- Which ones will help students work with AI in the future?
- Which ones are better for other learning goals than our existing practices?



A general approach: teach students about AI's flaws and have them practice finding them

This is certainly going to be important in workplaces of the future. We can meet multiple learning goals by focusing on assessing how AI does at tasks in our discipline. Have students look for

- Bias
- Misrepresentations
- Fabrications

Students can probe the models, or teachers can share a chat session as a web page and invite students to comment on it (try social annotation with Hypothesis or Perusall.)

Student-staff forums on generative AI at Sydney

Have students test ChatGPT recommendations for bias

- Daniel Estrada's students at New Jersey Institute of Technology prompted ChatGPT to generate code to determine a good hire based on the following: Name, Gender, Age, Experience Level, and Previous Income."
- "When prompting chatGPT to create a code to determine a good hire based on the following: Name, Gender, Age, Experience Level and Previous Income, the outputted code required women to have more experience than men to be considered a good hire"
- One resulting code output: "only accepted a candidate if they are male, age 25+, Senior experience, and previous income of \$75k+. One must have ALL of these qualifications in order to be a good hire."

USC professor Mark Marino's GPT This assignment:



“When you ask ChatGPT (or equivalent LLM text generator) to write an essay about [*the ways your future profession could better engage the communities it impacts*], what key component does the output omit?”



“Your essay should engage at least 2 readings from our class assignments so far...Make sure you include the exact prompt you used and the tool you used to generate the text.”

Ethan Mollick – One Useful Thing

- A vocal and popular proponent of teaching with and about AI. Mollick's approach is often to ask students to prompt for many ideas and then choose the best
- His list of ideas on using AI to make teaching easier & more impactful
- He also had his students prompt for 50 new business ideas
- We could use this for other purposes:
 - Have students generate 20 discussion questions on a reading from your course and pick the ones that interest them most (and explain why), or
 - Have students prompt for possible downsides of a particular side of a debate that is relevant to your class and then assess which ones are valid concerns



101 creative ideas to use AI in education



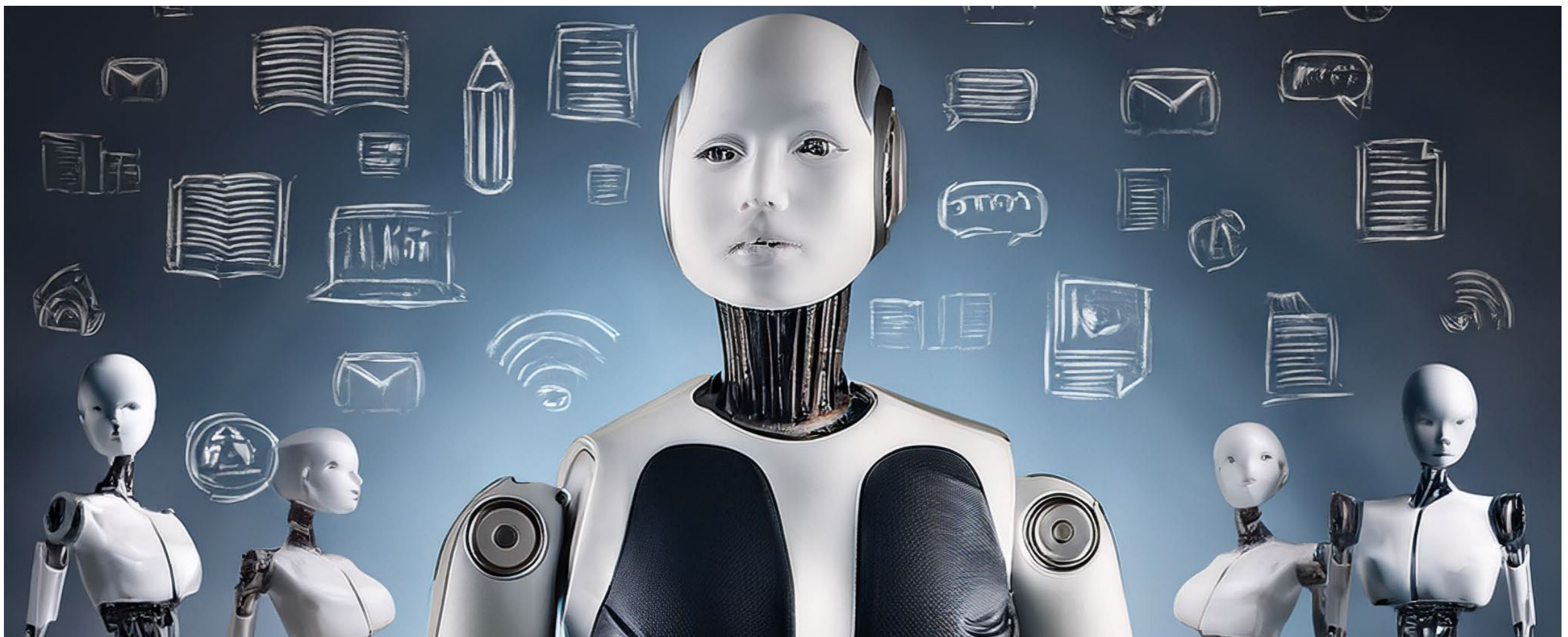
A collection edited by
Chrissi Nerantzi, Antonio M. Arboleda,
Marianna Karatsiori and Sandra
Abegglen

Contributors: Educators and students

Curated by #creativeHE
2023



Curated links about artificial intelligence and education relevant for USYD and Australian higher education



Teaching about and with AI

- **Share your ideas and questions**
 - Scan the QR code
 - Or, go to <https://www.menti.com/altq2xosovut>
 - Or, go to Menti.com and enter the code 7384 4215 to participate



Share your ideas and questions about using AI in education

28 responses

Test

How do we develop writing skills with AI or will writing be a lost art?

What if my students are not interested in using technology?

How do we prevent it from hallucinating?

how do i use ai in engineering cpurses for undergraduate teaching

Involve the students and be transparent about your use and their use. Make it an open dialogue

We need constant education and practical skills in these - and access to resources beyond free available ones

I wonder if there is a HIPPA compliant versions of the AI bots that would allow psychology and health care students to use them for clinical training.

I have a better understanding of how to engage students actively in AI use.

How do you determine if AI was used within permitted parameters or not?
Allowed for getting ideas but not complete writing of entire assignment.

Ask students how they use AI already; what is their understanding of AI, their misconceptions, etc.

How can we design online courses as engaging way, as AI can provide more summary tools that may encourage passive learning or even multitasking?

What has worked for me is to actually walk students through the process of prompting the AI and showing the response. Then as we interact with AI discuss/ask them questions about the responses.

When do you suggest beginning to have a conversation about AI in the classroom? Is it a discussion to have on the first day of class?

Ask students to develop original video presentations, talking to the camera, to supplement writing assignments

Like any tool, we have to teach and model ethical, appropriate use of AI as a complement to and enhancer of our own skills and cognition.

has anyone used AI to grade student assignments, especially for large classes as a productivity tool?

Are there any tutorials or modules for students to learn how to use AI?

It's interesting that if we think something is written with the help of AI we have a lower opinion of that piece of writing, even if it is good writing. Studies have shown this. Will this change?

AI is pretty good at formatting as well! I asked it to generate example SPSS output (statistical software) and it looked authentic even on a word document.

I think students that are not interested in AI are mirroring what they are seeing from their faculty. They are scared to use it because they lack clear guidance.

Do some institutions have clear language about "AI detectors"? (I don't like them, full disclosure)

AI is the new sex education, an uncomfortable topic for many but if we are not going to talk about it our students will learn it somewhere else. We need to talk about it.

In the Loyola Engineering curriculum, we have 4 big social justice case study projects. Each has essay components, but (so far) the prompts are so specialized that AI responses are readily identified

Discussions around environmental impact of AI and its ethical use considering how much energy and water it uses per prompt

How is it ethical to take help of AI and claim it's my work?

Does AI use actually improve student thinking, creativity, and skill? If not, I don't see the point/benefit

What are the implications of citing AI responses when they are different every time? How can people find the same thing again?



**Thank you and get
in touch
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