Analyzing the Implications of AI in Education

DATE

NAME
TITLE
UNIT
CONTACT
Today’s primary learning objectives

• Describe and discuss risks, policy guidance, and best practices related to AI and:
  • Academic integrity
  • Privacy and security
  • Citation and attribution
  • Copyright and intellectual property
  • AI hallucinations and their causes
  • Bias
  • Inequity
  • Environmental impact
  • Misinformation

• Self-evaluate how compatible with AI your existing course is.
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• Grammarly for spelling, grammar, conciseness, word choice, and so on.
• Smartsheets for automating registration.
• Outlook and Zoom for event coordination.
• Google for web search...
Let’s be flexible
Why should you care about AI?

- Our perspective and expertise is important to the discourse
- The landscape is evolving quickly
- Our students and instructors want guidance
- Using AI could improve how we do our work
We’re ready for deeper waters.
Scenario

Your current course includes several written essay assignments. Currently your syllabus does not include any policy about students using generative AI tools. In a recent meeting, your TA has told you that several students have asked them whether they can use AI tools in the course or not. They suspect that some students are already using AI tools for class assignments.

How might you approach this conversations with your TA?

What factors might you consider when thinking through this issue?
Students, AI, and cheating

Stanford Graduate School of Education colleagues Victor Lee and Denise Pope used existing ongoing research surveys of US high school students to better understand the impacts of AI on cheating.
Gen-AI writing detection tools

Education researchers evaluated AI content detection tools.

Stanford HAI colleagues Weixin Liang, et. al tested AI plagiarism detectors with non-native English writing.


Good news

So far, cheating has not increased since widespread introduction of gen-AI. Cheating stayed at the same rate as before.

Various edtech companies have created AI plagiarism detection tools.

We already know effective pedagogic strategies to reduce cheating.

Bad news

That same rate as before is 60 to 70% of all students.

They tend to incorrectly flag human-writing as AI-generated, especially for non-native English writing, and can be gamed.

It can be lots of work, and we and the system needs to change.
Stanford’s academic integrity policy guidance

**OCS—AI guidance**

Instructors can decide their own AI course policy and should communicate it in their syllabi.

Absent any course policy, AI use is considered same as assistance from another person.

Students, when in doubt ask the instructor and disclose use.

**OCS—Academic integrity**

Promote honorable behavior and support learning. Let OCS handle enforcement.

Consult with OCS for any suspected non-compliance.

In consultation, you decide how to proceed.

Stanford’s academic integrity policy guidance

OCS—AI guidance

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- What specific behaviors do we mean by “assistance”?
- When do you already allow or prohibit assistance from another person?
- What kind of assistance from another person is beneficial? What kind is detrimental?
- How might that inform how we think about AI?

What might you tell a colleague who is concerned about AI and academic integrity are the most important factors to consider?
Data Privacy
You have recently returned from an extended vacation (it was amazing). While you were out, there were many important meetings about an unfortunate incident involving staff and students. You need to catch up on everything that was discussed in the meetings and determine any action items for yourself. You have access to the Zoom transcripts and typed meeting notes. A colleague offers to use their ChatGPT+ account to summarize the transcripts and identify any action items.

What might you consider when using AI for this task?

How might you respond to that colleague?
Privacy and security guidance

Responsible AI at Stanford webpage from UIT

- Inform yourself and students about AI
- Don’t put sensitive or private info into chatbots
- Use private mode when appropriate
- Get informed consent
- Use third-party tools with care
- Be transparent about use
- Promote dialogue and discourse
Privacy terms of service for AI chatbots

- No access for age 13 and under
- Restrictions for ages 13 to 18
- Storing user content
- Ownership of user data

- Using user data for training
- Collection of location data
- Sharing data with third parties

3rd Place
OpenAI ChatGPT
Google Gemini

2nd Place
Microsoft CoPilot

1st Place
Anthropic Claude
What are other situations where you might be extra mindful of how you use AI tools?
Scenario

A graduate student that you mentor has been working on a research article for submission to a journal for publication. They’ve been experimenting with chatbots recently and intend to use one to help them write the article.

They have some concerns about using AI for this. They asked you for advice before getting started and asked if you would give them feedback before they submit the article.

What advice would you give them?

What might you look for when giving them feedback?
Guidance for using gen-AI in scholarship

- MLA-CCCC Join Task Force suggests:
  - Transparency
  - Accuracy
  - Responsibility
  - Source Attribution
  - Originality
  - Quality

Citation formats for gen-AI

**APA Example**


See APA Style blog “How to Cite ChatGPT” for more.

**MLA Example**


See MLA Style Center’s “How do I cite generative AI in MLA style?” for more.


Copyright & Intellectual Property
Do you think AI generated work should be copyrightable?

- Human authorship is needed to copyright something
- Non-humans have never been granted copyright
- Copyright may apply to AI-aided human authors (details TBD)

Do you think AI infringes on copyrighted works?

• Is using copyrighted data for AI training Fair Use?
  • Purpose
  • Amount
  • Nature
  • Effect
• Is generative-AI a transformative use?
• Are AI’s capable of plagiarizing?
• Do AI actually recreate copyrighted content?

https://crsreports.congress.gov/product/pdf/LSB/LSB10922
What remaining questions do you have about the legality of generative AI?
AI hallucinations

- Gen-AI chatbots can “hallucinate” and produce outputs that are:
  - Factually inaccurate or fabricated
  - Contextually incorrect
  - Contradictory
  - Non-sensical
- This can be caused by:
  - Inherent nature of LLMs
  - Training and training data quality
  - Large language model settings
  - Input context and prompting

Digital Data Design Institute at Harvard (Director). (2023, July 12). What causes generative AI to hallucinate? https://www.youtube.com/watch?v=Q_ffKB2HUIjk
Bias

- Research on bias in AI predates chatbots and has shown them to be racist, sexist, and ableist.
  - Buolamwini, J. (2017). Gender shades: Intersectional phenotypic and demographic evaluation of face datasets and gender classifiers. DSpace@MIT. [https://dspace.mit.edu/handle/1721.1/114068](https://dspace.mit.edu/handle/1721.1/114068)

- Many types of biases can manifest or be exacerbated by chatbots.

- Non-English cultures and languages are excluded in many ways.

This slide was adapted from Torrey Trust. (2024). GenAI & Ethics: Investigating ChatGPT, Gemini, & Copilot. [https://docs.google.com/presentation/d/1x3G2zHUNz0LuCP8WjhoPWbXBRWLaRV0NernZ05SAulc](https://docs.google.com/presentation/d/1x3G2zHUNz0LuCP8WjhoPWbXBRWLaRV0NernZ05SAulc)

(Photo by Luis E. Ramírez)
Pedagogic strategies

- Be selective in what tasks you use chatbots for.
- Critically evaluate all AI outputs.
- Savvy prompting
  - Be precise in how you prompt.
- Address bias with students.
- Model good use for students.

Digital Inequity  Environmental Impact  Misinformation
Digital inequity (aka “Digital Divide”)

<table>
<thead>
<tr>
<th>Access</th>
<th>Use</th>
<th>Quality of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Skill</td>
<td>Digital literacy</td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
<td>Relevance</td>
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<td>Education</td>
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</tbody>
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“[The] gap between people who can access and use digital technology and those who can’t.”


This slide was adapted from Torrey Trust. (2024). GenAI & Ethics: Investigating ChatGPT, Gemini, & Copilot. https://docs.google.com/presentation/d/1x3G2zHUJ2Nz0_luCP8WjhoPWBXRWLaRVtNernZOSAuic
Digital inequity (aka “Digital Divide”)

- LLMs not equitable for those who don’t speak English or other major languages

- UK-based survey finds emerging gaps in AI-usage among students by income, gender, ethnicity
  - Freeman, J. (2024, February 1). Provide or punish? Students’ views on generative AI in higher education. HEPI. https://www.hepi.ac.uk/2024/02/01/provide-or-punish-students-views-on-generative-ai-in-higher-education/

This slide was adapted from Torrey Trust. (2024). GenAI & Ethics: Investigating ChatGPT, Gemini, & Copilot. https://docs.google.com/presentation/d/1x3G2zHUNz0_luCP8WjhoPWBxXBRWLaRv0NernZD5AuLc
Environmental impact

• AI uses a lot of energy and resources; better policy is needed

• AI energy footprint likely to increase dramatically

• AI has data centers using more water for cooling

• How impact is measured is not good enough

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This slide was adapted from Torrey Trust. (2024). *GenAI & Ethics: Investigating ChatGPT, Gemini, & Copilot*. [https://docs.google.com/presentation/d/1x3G2zHUNz0_luCP8WjhoPWhbXBRWLaRv0Nern2D5Autc](https://docs.google.com/presentation/d/1x3G2zHUNz0_luCP8WjhoPWhbXBRWLaRv0Nern2D5Autc).
Misinformation

• Media watchdog tracks hundreds of unreliable AI-generated news sources and trends

• AI-driven misinformation is biggest short-term threat says World Economic Forum

• Health disinformation study calls for AI vigilance

This slide was adapted from Torrey Trust. (2024). GenAI & Ethics: Investigating ChatGPT, Gemini, & Copilot. https://docs.google.com/presentation/d/1x3GzHZUNz0_IuCP8WjhoPwWXBRWLaRV0nern2DSAutc
Pedagogic Strategies

Digital inequity

- Advocate for AI access and support on your campus
- Consider access and affordability when selecting tools
- Connect students to campus resources
- Integrate technology skill development into courses where possible

Environmental impact*

- Discuss these issues with students and colleagues
- Acknowledge climate anxiety and take a trauma-informed approach
- Focus on solutions for a positive future; counterbalance negativity bias
- Find and emphasize efficacy in a collective

Misinformation

- Model and teach how to identify and mitigate misinformation
- Model and teach digital media literacy

*Adapted from Sarah Jaquette Ray, (2023, October 18). *Sarah Ray Keynote on Climate Anxiety.* "How to Keep Your Cool on a Warming Planet: An Emotional Toolkit for the Climate Generation." [https://www.youtube.com/watch?v=e_xA-syd1ho](https://www.youtube.com/watch?v=e_xA-syd1ho)
How might you find additional helpful resources on these topics?
Scenario

You are preparing for a new quarter of teaching. In addition to a mid-term and final exam, you typically have a group assignment where students complete a project based on a real-world issue in your discipline.

Students then submit a written report to describe their project goals, background research, proposed solution, reflection, and so on. Last quarter, many students requested that they be allowed to use generative AI tools for this project and report.

What factors might you consider when thinking about students using AI in your course?
How AI-compatible is the current version of your course?
AI compatibility self-evaluation

• Go to TeachingCommons.stanford.edu and navigate to Teaching Guides > Artificial Intelligence > Analyzing the implications of AI
  • Scroll down to section ”Self-evaluation of your course”
  • Or refer to the handout provided

• Reflect on those questions
  • If you answer “Yes”, ”A lot”, or “Very much” to many questions, your course may be more AI compatible
What parts of your course might you improve to make it more AI compatible?
Summarizing major implications of AI in education

• Academic integrity
• Data privacy
• Citation & Attribution
• Copyright & Intellectual Property
• Environmental impact
• Digital inequity
• Misinformation
Continue to engage

• Use AI chatbots for your work tasks
• Read the AI Teaching Guide on the Teaching Commons website
• Attend upcoming CTL workshops on AI
• Talk about AI with colleagues and students
Wrap-up activity

Insert link or QR code to your survey here