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March 20th, 2023

Artificial Intelligence as a Tool for Learning

WORKSHOP AGENDA

12:00-12:05	<u>Introduction</u>
12:05-12:25	Potential Uses
12:25-12:40	Breakout Brainstorming
12:40-12:55	Group Discussion
12:55-1:00	Closing

INTRODUCTION

FACILITATORS



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FOUR BROAD APPROACHES TO AI USE IN THE CLASSROOM

- Ignore It.
- Detect It.
- Prevent It.
- Use It.*

^{*}Note that the suggestions we share today are not without risk. We will encourage you to discuss those dangers with your breakout groups.

WORKSHOP GOALS

Participants will be able to ...

- Describe various strategies for using artificial intelligence to support learning.
- Explain why these strategies are aligned with the science of learning.
- Imagine how these strategies could be used within specific courses they teach.
- Identify potential dangers and challenges with implementation.

HAVE YOU USED ARTIFICIAL INTELLIGENCE IN YOUR COURSE? IF SO, HOW?

- Brief conversation about ChatGPT in my FYS last week, launched by having them see how ChatGPT wants them to write their next paper (the step-by-step instructions ChatGPT offered after getting a brief summary of the assignment parameters).
- Not yet but I would like to talk about it/incorporate it in FYS in the near future
- Not yet. But I plan to ask the student to compare Al-generated translation to other machine translation engines' products, and summarize their reflections.
- In a course I teach in (not as the primary instructor), we had the students as an assignment use it as a resource for their review articles and then evaluate the quality of what they got from it, and brainstorm on how they might be able to use it.
- Not yet, but planning to do a lesson on algorithmic bias and how that plays into recommendations, etc. in Al
- Not teaching currently. I've used it for practicing Spanish and French, asking it to create poems, stories, essays, quizzes, assignments, etc.
- I am incorporating it into an assignment where students need to use ChatGPT and critique it.
- I've used AI in LIB290: Information Literacy for engineering. There are new databases/tools utilizing AI to find information resources as well as summarizing

articles, and perform citation analysis and research (scite.ai, elicit.org, inciteful.xyz, Research Rabbit, Summari, Scholarcy, etc.).

POTENTIAL USES

1. USING AI TO LEARN RESPONSIBLE AI USE & DEVELOP AI LITERACY

- **Idea:** Introduce AI activities to help students develop AI literacy and a better understanding of responsible use.
- Why It Works: Whether we like it or not, AI is here to stay. We have an obligation to prepare our students for a future in which AI, and debates about AI, will be central to their lives. They must understand how it works, how it fails, and the implications of those failures for society. They should also be able to think creatively about whether and how the tools might be used responsibly.

Potential Al Learning Activities:

- After reading about the limitations of LLMs, attempt to recreate the errors and/or biases in the tool.
- Socially annotate OpenAI's privacy and service terms
- MCB 723 Class Project: Write a Review Paper. Research in ChatGPT. Develop a slide about what you've learned and present it.

2. USING AI TO DEVELOP NEW IDEAS OR START A RESEARCH PROJECT

- ldea: Encourage students to use AI as a tool for brainstorming new ideas as they begin a research project.
- Why It Works: To the extent artificial intelligence has been trained on a wide range of scholarship, it can serve as a sophisticated (if sometimes erratic) search engine.

Students often learn from other "teachers," whether books, Wikipedia, Google, or Youtube. Artificial Intelligence can function in the same way.

Potential Al Learning Activities:

- I'm interested in writing a research paper on X. What are the most important books?* What journals should I read? Who are the major scholars in the field? [Example]
- I'm interested in writing a research paper on X. What are the fields producing research that is relevant to my topic?
 [Example]

3. USING AI TO DEVELOP READING, ANALYSIS, & FEEDBACK SKILLS

- Idea: Invite students to read, analyze, and provide feedback on AI outputs.
- Why It Works: Students benefit from having many opportunities to read, critique, and provide feedback on imperfect work. Doing so helps students better understand their own strengths and weaknesses.

Potential Al Learning Activities:

- Ask Al a complex question related to your course. Ideally, ask it a question you have already been reading about and discussing. Use <u>ShareGPT</u> to upload the response to <u>Hypothesis</u> and ask all students in the class to annotate the response as a group. Where did the Al get it right? Where did it get it wrong? Where was it confused? [Example]
- Ask Al to produce a response to your assignment prompt. Ask students to assess the response according to your criteria.
 [Example] [Rubric]
- Ask ChatGPT to assess its own essay with your rubric, and ask students to compare its assessment to their own.
 [<u>Example</u>]

4. USING AI TO EXPLAIN CONCEPTS/MATERIAL DIRECTLY

- ldea: Encourage students to ask AI to explain unclear ideas to a novice, in multiple ways, or by referencing something they understand deeply (e.g., sports).
- Why It Works: Students typically encounter new concepts and material via texts or lectures. Yet even the best textbooks and lecturers can be unclear at times. And while some lectures use examples that make sense to some students, other students may need different examples to help them better understand. Artificial Intelligence can help provide that additional, varied explanation.

in Potential Al Learning Activities:

- Ask Al to explain a concept to a novice in 5 different ways.
- Ask Al to explain a concept using a sports analogy.
- Ask Al to explain a concept to a 3rd grader.

5. USING AI TO EXPLAIN CONCEPTS/MATERIAL INDIRECTLY

- ldea: Use AI in learning activities that *indirectly* improve students' understanding of concepts/materials.
- Why It Works: We know that students learn material by having to teach it to others; We also know that students learn through comparison of cases. Artificial Intelligence can facilitate these activities.

ia Potential Al Learning Activities:

- Ask Al to pretend to be a student and see if you can effectively teach them the concepts you're learning.
 [a not great example]
- Analyze Al's responses to different prompts to improve understanding of rhetoric (e.g., compare genres, compare styles, etc.)

6. USING AI TO DEVELOP MORE OPPORTUNITIES TO PRACTICE

- **Idea:** Encourage students to ask AI to develop additional problems, prompts, or quizzes to help them practice the skills they are developing.
- Why It Works: Of all the activities a student might do to advance their learning, practice may be the most important. The more students practice the skills they are learning, and the more they practice applying the knowledge they learn, the faster and deeper they will learn. Yet, instructors don't often have the time to create infinite practice problems for students to study.

Potential Al Learning Activities:

- Ask Al to develop sample problems or exam questions to practice.
- Ask Al to create a study guide and/or give you guestions to study
- Ask Al to craft a quiz to test your knowledge. [Example]

7. USING AI TO GET FEEDBACK AND DEVELOP AN IMPROVEMENT PLAN

- ldea: Encourage students to use AI as a self-assessment tool providing regular feedback on their work as they go.
- Why It Works: Next to practice, feedback is the second most important ingredient in the learning equation. Yet students don't often have a means of getting direct and immediate feedback as they are working.

in Potential Al Learning Activities:

- Submit your writing or a portion of your writing and ask for generic feedback.
 [Example] [Note that Microsoft is Previewing Co-Pilot in Word]
- Ask Al to summarize your text. If the summary is not capturing what you hoped to convey, consider rewriting.
- Ask Al to provide feedback according to a rubric you have provided.
 [Adam's example and the <u>example</u> above]

8. USING AI AS SCAFFOLDING FOR MORE CHALLENGING ASSIGNMENTS

- ldea: Ask students to complete tasks that are generally beyond their reach, using Al to complete some of the most challenging steps.
- Why It Works: Learners only have so much working memory. As a result, tasks that require many new steps are difficult (especially if the steps occur simultaneously). We can help students learn how to do parts of a challenging task by helping them with other tasks, so their working memory is not overly taxed (think: training wheels).

Potential Al Learning Activities:

- o Ask Al to edit for grammatical precision so you can focus on the ideas.
- Ask Al to provide an outline to organize your ideas so you can focus on improving your evidence.
- o Ask AI to provide evidence so you can focus on your reasoning skills.

9. USING AI TO ADDRESS WRITING ANXIETY

- ldea: Encourage students to ask ChatGPT for feedback or support when they get stuck with a blank screen, or perseverating over the wording of a sentence or the structure of a paragraph.
- Why It Works: When anxiety strikes, students can waste hours "working" on their assignments. A quick brainstorm or "good job, that's clear" might be able to shake them out of that unproductive cycle.

in Potential Al Learning Activities:

- Ask AI to brainstorm ideas, examples, and counterarguments for an essay.
- Ask Al to answer questions as you write (should I use a comma?)
- Share your work and ask AI to disconfirm your negative beliefs about it.

10. USING AI TO INTERPRET UNCLEAR EXPECTATIONS, RUBRICS, OR PROMPTS

- **Idea:** Encourage students to use AI to help them better understand any directions you or other professors have provided (in syllabi, prompts, or rubrics).
- Why It Works: We know that the more instructors are transparent about their expectations, and the better students fully understand them, the more likely they are to learn (this transparency also reduces achievement gaps). Often, student under-performance results from misunderstanding the expectations for the course or assignment.

Potential Al Learning Activities:

- Give AI a prompt and ask it to explain it in various ways (to a third grader, using analogies I understand, by giving multiple reformulations, etc.)
- Give AI a prompt (and, ideally, rubric) and ask it to draft an ideal version of the assignment (not to use, but to study!)

11. USING AI TO DEVELOP STUDY, TIME, OR PROJECT MANAGEMENT SKILLS

- ldea: Encourage students to use AI to help them create plans for studying, spending their time, and managing projects.
- Why It Works: As with transparency, student under-performance is often the result of inability to plan their time, study strategies, and project tasks. The students who have developed these skills are often those who learn the most efficiently. All is remarkably good at preparing plans of this sort.

Potential Al Learning Activities:

- Give AI all of your deadlines from each course and ask it to prepare a master schedule for the semester, indicating which weeks will be challenging (similar to the "master syllabus" CLASS helps students develop)
- Explain a large, multi-step project to AI, and the time you have to complete it.
 Ask it to list the steps of the project, how much time you spend on each, and when they should be completed.
- Share the prompt/task for a group project, along with how many members are in the group. Ask AI how the work should be divided among the group members to maximize efficiency and (importantly!) learning.

12. USING AI TO PROVIDE GUIDANCE ON INTERACTING WITH PROFESSORS

- ldea: Encourage students to use AI to help them build strategies and self-efficacy in communicating their needs to professors.
- Why It Works: We know that students benefit from frequent, 1:1 communication with instructors. Yet many students avoid this interaction because it is new and they are anxious they will fail. Still others engage with instructors, but in ways that are not productive (or perhaps even counter productive).

Potential Al Learning Activities:

- Ask Al to provide examples of how to write emails to professors on various topics (note that the more detail you provide about the situation, the better the examples will be).
- Ask Al to provide feedback on emails before they are sent for both structure and tone.
- Ask AI to provide advice about how you might build a mentoring relationship with one of your instructors.

13. USING AI AS AN ADVISOR

- **Idea:** Encourage students to use AI as a backup advisor to give them ideas about majors, courses, and future careers.
- Why It Works: Students often make decisions that have dramatic consequences for their future on the basis of very little advice. Their decisions are likely to be more aligned with their goals if they add more advice to the mix.

in Potential Al Learning Activities:

- Share your interests and skills with AI, and ask it for advice about potential courses, majors, and careers.
- Share courses you're considering taking, along with the days and times offered. Ask AI to build you a schedule with various constraints (no classes before this time, prepares me for this major, not too much reading, etc.)

- Ask AI how the job market is likely to shift, and which skills will be most valued in the future.
- o Ask Al about possible career paths related to Al.

BREAKOUT BRAINSTORMING

BREAKOUT GROUP 1: PROFESSIONAL & GRADUATE EDUCATION

- Group Leadership Roles:
 - Member to Take Notes: Ryan
 - Member to Report-Out:
- Notes:
 - o good job with abstract and intro, but struggled with examples
 - good at generating code ... flawless
 - debugging and conversion between different languages
 - o undergraduate: learning vs. graduate: creating
 - o summarize professional texts

BREAKOUT GROUP 2: STEM

- Group Leadership Roles:
 - Member to Take Notes: J. Denice Lewis
 - Member to Report-Out: J. Denice Lewis
- Notes:
 - There are way better AI tools that can be used than ChatGPT for specific purposes e.g. you can ask a research question using elicit.org and it will return 8 scholarly articles to answer the question. Scholarcy and Summari summarize articles online via browser extensions.

- Right now, testing the functionality of ChatGPT against other AI tools helps students to understand the various tools available for different purposes.
- o I've used ChatGPT to develop a syllabus, summarize an article, write learning objectives, and translate a sentence.
- When you've taught a course for a long time, integrating technology can be difficult to assess if, when, and where.
- Learning new technology is also key in order to teach my children.

BREAKOUT GROUP 3: SOCIAL SCIENCES

- Group Leadership Roles:
 - Member to Take Notes: Karen Singer-Freeman
 - Member to Report-Out:
- Notes:
 - Questions and answers Does CHAT GPT work better with older sources like shakespeare than more contemporary events?
 - Seems like it is more accurate with older sources, especially poor for very recent events
 - Could we use CHAT GPT to generate difficult distractors for multiple choice questions
 - This might be dangerous because many difficult multiple choice questions are difficult because of non-content related issues such as complex syntax, CHATGPT might be more useful at revising confusing multiple choice questions to be more clear for certain types of students such as English Language learnings or non-majors
 - It is very challenging because it seems like CHATGPT could handle many of our current questions and assignments

- Maybe ask students to generate an answer to a prompt using CHATGPT and then check sources and comment on language style and make suggestions for improvement
 - BUT, CHATGPT might be able to do this too...

BREAKOUT GROUP 4: LANGUAGES & LITERATURE

Group Leadership Roles:

Member to Take Notes: Melissa

Member to Report-Out: Suzanne

Notes:

- Write a poem in a specific form to practice that form Chat GPT could write the poem and have students analyze it. Or Chat GPT could assess a student's poem.
- Can Chat GPT write well in languages? Can Chat GPT translate?
- Have Chat GPT as a conversation partner to practice a language (typing back and forth). Analyze the conversational choices made by Chat GPT (formal or informal terms of address, for instance).
- Language proficiency levels: Have Chat GPT respond to a prompt then write this as the beginning level, advanced level. Can help students analyze levels of sophistication in written French, Spanish, etc. What are the markers of "beginning" writing, for instance.
- Have students read analyses from the business world about pros and cons of using AI in "real life" (cover letters, professional memos, etc).
- Chat GPT needs work with analyzing primary texts, especially less familiar primary texts.

CLOSING

JOIN US TOMORROW FOR BREAKFAST!

Work session for those who want dedicated time to rework their assignments.

9:00 AM - 10:00 AM ZSR 665 or Virtual

Register

Zoom Session

WHAT WAS YOUR BIGGEST TAKEAWAY FROM TODAY?

- We as instructors should find ways to use it! It can be helpful for student learning even if we have hesitation about it.
- Every day there seems to be more uses for these LLM's; the planning abilities I learned about today and need to check out.Can
- Chat GPT can be a great help to our students who need to work on organization: steps to complete a complex assignment, advising, "master syllabus." Chat GPT can also help professors be more clear and transparent: reviewing rubrics, defining terms, making sure assignment instructions use sufficient relatable examples.
- New ideas and concrete examples
- There are so many different uses for AI tools and ideas to try that I had never thought of. I can't wait to fire up ChatGPT and try out some of these new ideas. I also like the strategy of learning how AI can help in the academic world rather than being afraid of it and fighting against it.

WHAT QUESTIONS DO YOU STILL HAVE?/

- Can we have a web resource of concrete examples? The plethora of uses seem a bit overwhelming.
- Which to use, costs, what if students don't feel comfortable using it / don't want to give their cell number or email etc.
- I'd like a WFU list of AI waivers / caveats we give our students so we cover all the risks...but this would need to be constantly updated....

RESOURCES/IDEAS YOU'D LIKE TO SHARE WITH OTHERS

• www.perplexity.ai I just learned about this morning. It's a GPT-3 based search engine and from my very limited experience it does a better job with facts and actually in one answer correctly extracted info from a paper published just last month, and suggested follow-up questions.