Using AI for Learning Activities

Out-of-class activities: Using AI to study

- Work with class notes: Use AI to create visual diagrams and organize your class notes.
- Summary: Summarize key concepts of supply and demand, including definitions of equilibrium price and quantity, and market forces as described in xxx.
- Question generation: Generate 10 multiple choice questions and 5 short answer questions based on the topic of the Pavlovian response in humans as explained in xxx
- Elaboration: Elaborate on the theme of disillusionment in “The Great Gatsby”. Explain how this theme is developed through the characters providing specific examples from chapter 7.
- Practice problems: Generate five practice problems that require the use of the power rule, product rule, and quotient rule to find the derivative of function. Show all steps clearly.
- Use notebook LM study guide to develop quiz questions on materials you provide (offers hints in quizzes as well).
- Get Feedback from different perspectives, for example
    - You are a kind but sensitive average reader/student/parent/administrator from culture/group/background. You often get confused. Read X and help me simplify things to make everything in this writing clear.
    - You are a scrupulous and experienced editor with no tolerance for lack of evidence. Focus on making this writing more persuasive and powerful.
    - You are a disagreeable skeptic from group Z. List all of the counterarguments and flaws in my position and respond as if you were a critic on social media.
    - You are an innovative writer. Offer critical feedback to help me improve this writing. Look for new connections, arguments, and observations I may have missed. Your tone is warm, and you are also wildly speculative, creative, and fun.
    - Here is what I am trying to do... You are an experienced editor/screen writer/critic. What feels good/bad/uneven about this scene/article/report? Do not write this for me. Just provide feedback and give me ideas to improve.
    - You are a typical reader of X type of reports/writing. Offer me helpful and direct suggestions to make this work more agreeable to you.

Sources

https://studentguidetoai.org/

https://weteachwithai.com/resources/ (see complete slides with citations)

Brunow. B. & Logan Harvey, 2025, For Students: Considerations for Using Generative AI for Learning, Schreyer Institute for Teaching Excellence, Penn State.

Learning activities: In-class Activities

- **Interacting with AI-developed personas**: Platforms like ChatGPT can create personas based on specific instructions you provide or material you reference. Students can interact with these personas to propose an argument, query for possible opinions, and analyze how well the persona represents the intended simulation.
    - Supply students with a set of opinions written by a previous Supreme Court judge. Ask students to read those opinions and then supply the class with a proposed legal challenge. Have the students predict how the judge would rule based on past verdicts rendered. Finally, have the students give the same opinions to Claude / ChatGPT and ask the LLM to adopt the persona of the judge who authored those opinions. Once the persona is created, students will pose the legal challenge to the LLM and ask for a verdict. Have students report on whether the verdict matched their prediction and what confounding cultural or legal activity has happened since those opinions were written which might impact that verdict.

- **AI personas:** Have students create several AI personas to explain a difficult concept. They can report the prompt / persona, reflect on how this helped them learn, and evaluate the responses in relation to the explanation they received. For example, ask the AI to explain a concept to three different audiences.
    - explain statistical P values to me like I'm a professor of engineering
    - explain statistical P values to me like I'm a high school track athlete
    - explain statistical P values to me like I'm a 5th grader

- **Illustrating Abstract Ideas:** AI can generate images or scenarios that visually represent abstract ideas (e.g., justice) or complex scientific concepts, and students can then discuss the visuals.

- **Prompting Discussion and New Insights:** Instructors can have students use AI tools (like DALL-E) to generate images of metaphors from course readings or their own writing. Discussing the resulting images can prompt critical thinking and new insights into the material.

- **Generate examples**: Generate discipline-specific examples for different student levels
    - Contextualize theory in applied, professional, or real-world settings

    - Offer multiple examples for a single concept to support universal design
        - Prompt Example: “Give three examples of diffusion in real-life contexts that a first-year biology student would understand.”

- **Generate metaphors:** Translate complex processes into familiar scenarios
    - Develop analogies or metaphors across domains (e.g., social science concepts compared to physical systems)
    - Adjust tone (e.g., humorous, academic, student-friendly)
    - Encourage student-generated metaphors and ask students to evaluate the usefulness of the generated metaphors.
        - Prompt Example: “Explain how federalism works using a metaphor” Provide 3 different metaphors.

- **AI-Assisted Peer Review Simulation:** Create custom GPTs trained on discipline-specific writing standards to simulate the peer review process for student writing. Students submit drafts to these AI reviewers, which provide structured feedback. This helps students internalize field-specific writing expectations while providing more revision opportunities and perspectives than traditional peer review alone might support.

- **Policy Dilemma Simulations:** Political science or ethics instructors can organize policy simulation exercises where student teams analyze social dilemmas in different national or cultural contexts. Students create custom GPTs representing the perspectives of the separate, relevant groups and then prompt those discussants into a debate. In addition to revealing the salient issues and beliefs at stake, this can help students generate potential policy frameworks and then draft persuasive presentations advocating their proposed solutions.

- **AI-Enhanced Syllabus Reflection:** At the end of a course, instructors can have students revisit their syllabi to explore what they have done and the connections between the weeks and array of subtopics. The students annotate physical printouts of the syllabus with their reflections, memories, and questions. These annotations, different for each student, are then photographed and analyzed by AI vision tools to identify patterns, themes, and insights across the class. The LLM can order and hierarchize the connections it identifies, inductively reasoning to reveal those foci students found most salient, most difficult, most interconnected. This approach combines tangible engagement with the material syllabus with rapid AI-powered synthesis, producing an overall picture that allows for enhanced

meta-reflection on the course's content and structure as a whole. It takes the students' notes and essentially enables a bird's-eye view, giving the students a chance to see — visually mapped out and categorized orderly — the most common and complex threads. Here AI is providing immediate and empirically grounded feedback that would otherwise exceed the temporal (and methodological) limitations of the course, which can be used to guide the final discussions about course's learning outcomes, its deepest components, and the students' experiences.

- The risks of LLMs present valid concerns. While popular debates often focus on "big picture" concerns like algorithmic biases, digital divides, and fake content, some faculty explore the risks **at a micro scale**, within our classrooms, such as hallucinations, **failed reasoning**, or superficial thinking, **pushing students** to understand these issues more deeply.

Sources:

Introduction to Active Learning: Four Ways AI can serve as a Teaching Tool: https://www.uttyler.edu/offices/academic-affairs/resource-hub/ai-for-active-learning/

Examples and Ideas for Using AI in your Teaching: https://bokcenter.harvard.edu/examples-and-ideas-for-using-AI-for-your-teaching

Merced College: Demystifying AI: https://socialsci.libretexts.org/Courses/Merced_College

Faculty voices: Harvard GenAI Library for Teaching and Learning https://www.harvard.edu/ai/category/faculty-voices/