Learning in the Age of AI
PSYC 28xx

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Bulletin Description
Every new educational innovation comes with proponents who tout dramatic improvements in efficiency alongside naysayers who claim the end of human thought has arrived. The advent of AI in education is the latest chapter in this old argument, raising the questions: What is the actual impact of AI tools on education? On students and faculty? On modes of thought? Drawing on philosophy, ethics, and educational psychology, students construct a personal framework for evaluating educational strategies and tools. They apply that framework to five essential aspects of the educational experience — self-testing, note-taking, tutoring, study planning, and writing — using hands-on experimentation with analog, digital, and AI-enhanced approaches. The course concludes by examining AI's impact on mental health and psychological well-being. Students leave with a system for evaluating educational tools as they continue to evolve.

Full Course Description:
When writing was invented, Socrates warned it would destroy memory. When calculators arrived, teachers feared students would stop understanding mathematics. Every new educational innovation comes with proponents who tout new vistas of human knowledge and dramatic improvements in efficiency, while the naysayers claim the end of human thought has arrived. The arrival of AI in education is the latest chapter in this old argument and it raises critical questions starting with the most basic – what is the impact of these tools on education?

Your work in this course will enable you to answer this question for yourself. To accomplish this, you will first develop a personal evaluation framework centered on philosophy, ethics and the psychology of education. The philosophical questions focus on education's goals and purpose. The ethical questions concern issues like academic integrity, equity of access, questionable sourcing of training data, and environmental costs. The philosophical and ethical components support the educational psychology component, the most substantive aspect of the course. The focus is on developing your understanding of foundational concepts in education that help explain how and why people learn most effectively. Based on this philosophical, ethical and psychological understanding, you will construct a personalized framework for evaluating educational strategies and tools, with a particular focus on newer, AI enhanced options.

You will apply this framework throughout the course considering five essential aspects of the educational experience - self-testing, note-taking, tutoring, study planning and writing. For each aspect, you will follow the same three-step process: 1. Examine the research, 2. Predict the effectiveness of available tools, 3. Evaluate using your framework. An important part of the learning will be through hands-on experimentation with the tools. For example, you will try taking

notes with pen and paper, taking notes on a laptop, and having an AI take the notes for you; and then you will evaluate the pros and cons of each approach based on your understanding of the relevant literature, your experience and your evaluative framework. By the end of the course, you will have a system you can use to evaluate educational tools as they continue to evolve.

Ideally, education fosters the development of individuals who are not just intellectually capable, but also mentally and emotionally flourishing. The final course unit concerns this goal as we turn to consider the impact of AI on mental health. The question is whether, when and how AI can support our psychological well-being. Can AI help students counteract feelings of anxiety and depression? Or serve as a low-cost therapist? How much of a risk is there of dangerous dependence? You will examine the emerging psychological evidence and reach your own conclusions.

Learning objectives:

By the end of this course, students will be able to:

1. Articulate a personal philosophy of education, including a reasoned position on the purpose of education and the role of technology in achieving that purpose.
2. Understand foundational concepts in educational psychology including memory, metacognition, cognitive development, and self-regulated learning.
3. Apply educational psychology concepts to predict the effectiveness of a range of educational tools.
4. Develop a personal framework to assess the value of educational tools (incorporating philosophical, ethical and psychological concepts). This framework will be applicable in the context of academic life and ultimately to questions of mental health and well-being.

Prerequisite: PSYC 1001, COGS 1001, or permission of the instructor.

Role in the Curriculum:

PSYC UN2800 is an intermediate-level lecture course. It fulfills the following degree requirements:

- For the Psychology Major and the Postbac Certificate Program in Psychology, this course fulfills the special elective requirement.

Course Structure:

This is an interactive and experiential course. You will be evaluated as follows:

Class Participation – 10%
Learning Investigation Reflections – 25%
Teaching Project – 25%
Midterm and Final – 40%

Class Participation (10%): Class time will include lecture, discussion, and hands-on activities. You are expected to attend and participate. We will use Poll Everywhere for interactive quizzing and assessment of participation.

You are allowed two free missed classes for any reason. Beyond that, please contact me and the TA with explanation for approval of any excused absence (e.g., illness, personal emergency or religious observance). Your participation grade will be the proportion of days that you are present and participate (or have excused absences) and will be based on your use of Poll Everywhere. We will begin keeping track of participation on the first day of classes. Lecture slides will be available on canvas. Virtual participation will not be an option. If you miss a class, be sure to review the slides and connect with a classmate to find out what you missed. Then please come meet with me or the TA with your questions.

Learning Tool Investigation – Reflections: (25%): Throughout the semester, you will try out various analog and AI enhanced tools (Field Trials) and report on your experiences (Reflections) incorporating your own evaluative structure (Framework). Field trials and related reflections will cover five learning-related topics: self-quizzing, note-taking, tutoring, study planning, and writing. Fuller details of the assignments for each topic will be in a separate handout. Here is an overview.

Field Trials – You will actively engage with different educational tools, both analog and AI enhanced. This will sometimes be done during class and sometimes be done outside of class. For the most part, the field trials will involve trying out analog and AI tools in the context of the work you are doing for this course (e.g., developing your teaching plan). So they are not expected to increase your workload substantially.

Reflections – This is your thoughtful evaluation of your field trial in the context of your evaluative framework. The reflection has three parts. All must be included.

1. Briefly summarize your experience in the field trial.

2. Briefly explain the psychological foundations of the tools. Why would psychologists predict these tools would be effective (or not)?

3. Evaluate, using your framework. How well does each tool meet the criteria of the framework? Include at least one philosophical, one ethical and at least one psychological aspect (e.g., the psychological foundation you described). What are your conclusions about which tool(s) you would use and why? This evaluation is not just your opinion. Your thoughtful analysis should be grounded in ideas taken from philosophy, ethics and psychology.

Note there is no single correct conclusion. What works for you depends on your personal framework and your current goals. If you find that the conclusions of your analysis contradict your own behavior, consider adjusting your behavior or re-evaluating your framework in light of your real-world goals.

Written assignments are expected to be fairly brief and informal (approx. 400-500 words). You are free to write longer. This will not impact the assessment of your work. Grading of each will be on a 2 point scale (0 – not submitted, 1 – poor/incomplete, 2 – good/complete). These reflections are intended as learning exercises to help you think

through your framework and its application. Because the writing is an important part of the learning process (as we will discuss), do not use AI to generate your reflections. The writing should be yours alone.

Rubric for a "good/complete" assignment

- summarize the field trial
- connect to psychology concepts
- apply the framework thoughtfully

Assignments do not need to be perfect to receive full credit. Reflections are expected to be learning exercises. If you do not receive full credit for Reflection 1, you may revise it within one week for full credit. Late submissions will lose 1 point. At the end of the term, I will review the reflections of students with borderline grades. If your entries are strong (they are complete plus they demonstrate careful thought on all three required aspects), you will earn the higher grade.

Framework Development – This will be your personal assessment tool incorporating philosophical, ethical and psychological standards. You will work on this during class. It will evolve throughout the semester and will be submitted along with your final reflection. It will be worth 2 points and graded on a pass/fail basis (submitted/not submitted)

Teaching Project: (25%): Your final project will be to develop a lesson on a topic of interest to you. You will be working on this project throughout the semester as you complete the Field Trials. You will get peer feedback on your plan during class. Your lesson will use at least three different teaching elements of your choice – one must be analog and one must be AI enhanced. More details of this assignment will be provided in a separate handout. (Unfortunately, we will not have time for everyone to actually teach their lessons as part of the course.)

Project Schedule:

1. Topic Proposal (1 paragraph) – Due Oct 28
2. Teach yourself about your topic (Field Trial 3 activity)
3. Outline your strategy (Field Trial 4 activity)
4. Draft activities and obtain peer feedback (Field Trial 5 activity)
5. Final Lesson Description (Due Dec 14)

Your final lesson plan will be 3-5 pages written plus supporting materials/activities. It will include a brief summary of which tools you plan to use and why. Optional for extra credit – submit a 5-10 minute video of you teaching (a part of) your lesson.

Exams: (40%): There will be two exams in this course, a midterm and a final. Questions will be a combination of multiple choice, short answer and (for the final) paragraph responses. The emphasis will be on understanding psychological principles and applying them in educational contexts. Study materials will be provided at least one week prior to the exams. Your overall exam grade will be weighted with the better of the two exams being worth 25% of the final course grade and the lesser being worth 15%. The final exam will be cumulative.

Readings:

Readings will be available on canvas.

We will be using two textbooks:

Woolfolk, A., & Usher, E. (2023). *Educational psychology* (15th ed.). Pearson. (referred to as EP below)

Brown, P. C., Roediger, H. L., III, & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Harvard University Press. (referred to as MIS below)

Schedule:

Date	Readings	Assignments
Unit 1 — Introduction		
Sep 9	Cronon, W. (1998). "Only connect...": The goals of a liberal education. *The American Scholar*, 67(4), 73–80. ***Suggested:*** *Phaedrus* 274c–275b [The Thamus-Theuth passage on writing and memory] (excerpt). ***Suggested:*** Biesta, G. (2009). Good education in an age of measurement: On the need to reconnect with the question of purpose in education. *Educational Assessment, Evaluation and Accountability*, 21(1), 33–46.	
Sep 14	Kasneci, E., et al. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, 102274. ***Suggested:*** Crawford, K. (2021). *Atlas of AI: Power, politics, and the planetary costs of artificial intelligence.* Yale University Press. https://doi.org/10.12987/9780300252392	**Assignment**: Framework Draft
Unit 2 — Cognitive Foundations		
Sep 16	EP Ch. 8 — sections on Cognitive Views of Memory and Long-Term Memory	
Sep 21	EP Ch. 8 — sections on Teaching for Long-Lasting Knowledge	Field Trial 1 Prep (make flashcards)
Sep 23	EP Ch. 9 — sections on Complex Cognitive Processes: Metacognition and Learning Strategies	Field Trial 1 Prep (make quizlet)
Unit 3 — Strategy 1: Retrieval Practice		
Sep 28	*MIS*, Ch. 2 — To Learn, Retrieve	Field Trial 1 (Retrieval Practice)
Sep 30	Karpicke, J. D., & Roediger, H. L. (2008). The critical importance of retrieval for learning. *Science*, 319(5865), 966–968.	

Date	Readings	Assignments
	Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 11(6), 671–684.	
Oct 5	*MIS*, Ch. 3 — Mix Up Practice ***Suggested:*** Cutler, D. (2025, September 11). The great lie of GenAI in schools: Efficiency isn't education. *Age of Awareness*. Medium.	Submit Reflection 1 (on Field Trial 1)
Unit 4 — Strategy 2: Effective Note-Taking		
Oct 7	Peper, R. J., & Mayer, R. E. (1978). Note taking as a generative activity. *Journal of Educational Psychology*, 70(4), 514–522. *MIS*, Ch. 4 — Embrace Difficulty	Field Trial 2 (Note-taking)
Oct 12	Mueller, P. A., & Oppenheimer, D. M. (2014). The pen is mightier than the keyboard: Advantages of longhand over laptop note taking. *Psychological Science*, 25(6), 1159–1168.	
Oct 14	Midterm Review	Submit Reflection 2 (on Field Trial 2)
Oct 19 Midterm		
Unit 5 — Foundations 2: Cognitive Development		
Oct 21	EP Ch. 3 — section on Piaget's Theory of Cognitive Development	
Oct 26	EP Ch. 3 — section on Vygotsky's Sociocultural Perspective	
Oct 28	EP Ch. 3 — section on Implications of Piaget's and Vygotsky's Theories	Submit Teaching Proposal Project Topic Description
Nov 2 Election Holiday — No Class		
Unit 6 — Strategy 3: Tutoring		
Nov 4	Vygotsky, L. S. (1978). Interaction between learning and development. In M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.), *Mind in society: The development of higher psychological processes* (pp. 79–91). Harvard University Press.	Field Trial 3 – Tutoring on your project topic
Nov 9	*MIS*, Ch. 5 — Avoid Illusions of Knowing	
Nov 11	Kestin, G., Miller, K., Klales, A., Milbourne, T., & Ponti, G. (2025). AI tutoring outperforms in-class active learning: An RCT introducing a novel research-based design in an authentic educational setting. *Scientific Reports*, 15, Article 17458. https://doi.org/10.1038/s41598-025-97652-6 (10 pages)	Submit Reflection 3 (on your project topic learning in Field Trial 3)

Date	Readings	Assignments
Unit 7 — Strategy 4: Planning		
Nov 16	EP Ch. 11 — sections on Agency and Self-Efficacy; Self-Regulated Learning: Skill and Will; Teaching Toward Self-Efficacy	Field Trial 4 – Teaching Project Planning
Nov 18	Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64–70.	
Nov 23	Kornell, N., & Bjork, R. A. (2007). The promise and perils of self-regulated study. *Psychonomic Bulletin & Review*, 14(2), 219–224.	Submit Reflection 4 (on your teaching project plan developed in Field Trial 4)
Nov 25	Thanksgiving Holiday — No Class	
Unit 8 — Strategy 5: Writing to Learn		
Nov 30	Emig, J. (1977). Writing as a mode of learning. *College Composition and Communication*, 28(2), 122–128. Flower, L., & Hayes, J. R. (1981). A cognitive process theory of writing. *College Composition and Communication*, 32(4), 365–387. (Read pages 365–376)	Field Trial 5 – Creating your teaching materials
Dec 2	Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112. (Read pages 81–89)	Bring in (at least) one planned activity for your teaching project for peer review.
Dec 7	Madsen Hardy, S., Fassihi, P., Geng, S., McVey, C., & Parfitt, M. (2026). Generative AI use in college writing classes: An analysis of student chat logs and writing projects. *Journal of Writing Research*, 17(3), 483–500. https://doi.org/10.17239/jowr-2026.17.03.05 (Note: focus on the introduction and the discussion)	Submit Reflection 5 (on the materials you created in Field Trial 5)
Unit 9 — AI and Mental Health		
Dec 9	Nyakhar, S., & Wang, H. (2025). Effectiveness of artificial intelligence chatbots on mental health & well-being in college students: A rapid systematic review. *Frontiers in Psychiatry*, 16, 1621768. https://doi.org/10.3389/fpsyt.2025.1621768 (9 pages)	
Dec 14	Laestadius, L., Bishop, A., Gonzalez, M., Illenčík, D., & Campos-Castillo, C. (2024). Too human and not human enough: A grounded theory analysis of mental health harms from emotional dependence on the social chatbot Replika. *New Media & Society*, 26(10), 5923–5941. https://doi.org/10.1177/14614448221142007 Psychiatry Podcast (March 2026): Episode 253: AI Psychosis — Emerging Cases of Delusion Amplification. https://www.psychiatrypodcast.com/...	Submit Full Teaching Project

Date	Readings	Assignments
TBD	Final Exam	

Academic Integrity

Academic honesty includes presenting only your own work in exams and assignments, and correctly attributing others' ideas where appropriate. Taking credit for work that is not your own is a serious violation within the academic community, and anyone found to be cheating or plagiarizing in this class will be reported to the university. Detailed definitions and examples of academic dishonesty (and a rundown of the consequences) are available in Columbia's Guide to Academic Integrity (http://www.college.columbia.edu/academics/integrity).

Regarding the use of AI. Please write your Reflections on your own. They are meant to be informal writing pieces that help you to codify your ideas. As we will discuss, in this context using AI is unlikely to be helpful for your learning. It is entirely reasonable, actually necessary, to use AI in developing your Teaching Plan. You will be asked to document how you used it.

Disability accommodations:
If you require special accommodations through the Office of Disability Services (ODS) or the Center for Accessibility Resources and Disability Services (CARDS), please let me know as close to the beginning of the semester as possible. More information about registering with ODS can be found here: https://www.health.columbia.edu/content/disability-services

Wellness
All of us at some point experience challenges to our mental health and well-being. This is true at any time, and has been even more so in the past couple of years. I urge you to take care of yourselves—and of each other. Please prioritize your mental health and wellbeing and know that there are many resources available to you both within our classroom community and throughout the university:
https://health.columbia.edu/content/counseling-and-psychological-services
http://blogs.cuit.columbia.edu/nightline/
https://universitylife.columbia.edu/student-resources-directory#health
https://columbiavirtualcampus.com/
Please reach out for help if you need it, and if you see others who are struggling, please point them toward these or other sources of help, or encourage them to talk to me or one of the other Directors of Undergraduate Studies in the Psychology Department.