

Harnessing Generative AI to Support Learner Engagement in Medical Education

Curtis J. Bonk, IST Professor
Indiana University
cjbbonk@indiana.edu; <http://curtbonk.com/>



1

October 31, 2023

Virtual Learning

Visible Body Courseware | Interactive 3D Science Content Meets Course Management
 Robb Kneebone robb.kneebone@visiblebody.com
<https://www.youtube.com/watch?v=INVZUABn-PRk>
 Nick Riley nriley@visiblebody.com
<https://www.visiblebody.com/>



2

July 11, 2023

Immersive Learning

Anatomy and biology courses use the metaverse to immerse students in the subject matter.

Lauren Coffey, Inside Higher Ed

<https://www.insidehighered.com/news/tech-innovation/teaching-learning/2023/07/11/metaverse-face-virtual-learning-financial>



3

June 26, 2024

Holographic Learning

Hologram in this hospital allows doctors to 'teleport' to meet patients

A newly installed holographic display in Gracount Regional Hospital in Lancaster, Texas, is allowing doctors to meet with patients in real-time and helping them reduce travel time. CNN affiliate WFAX has more.

<https://www.cnn.com/2024/06/26/us/video/hologram-visits-doctors-patients-texas-hospital-afri-pkg-c-prog-digid>

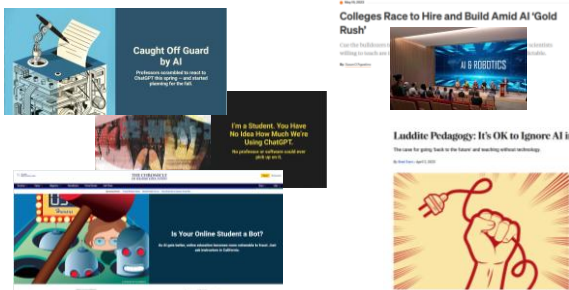


4

November 2022 to May 2025:

AI, AI, AI, AI...

AI in Higher Education News



5

Poll #1. Warm-up questions...

How often do you **use ChatGPT** or other Generative AI tools?

- Many times each day.
- Nearly every day.
- About once a week.
- About once a month.
- Just once or twice to test it out.
- Never. Never. Never.



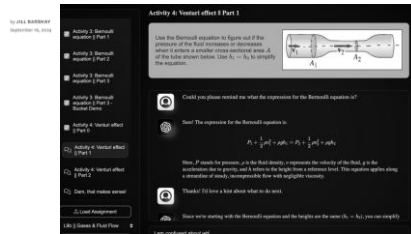
6

September 16, 2024

An AI tutor helped Harvard students learn more physics in less time
<https://hechingerreport.org/proof-points-ai-tutor-harvard-physics/>

An AI tutor helped Harvard students learn more physics in less time

One intriguing experiment suggests the promise of using the new technology



7

July 12, 2024

More college students say AI helps them earn better grades

Laura Ascione, eCampus News

<https://www.ecampusnews.com/teaching-learning/2024/07/12/college-students-ai-better-grades/>

Anthony Gonzalez, a student at Cerritos Community College who used Pearson's AI study tools in his General Chemistry class said, "I felt much more prepared for class, quizzes, and exams all around. Not to mention you could ask the AI study tool any question at any given time."



TEACHING & LEARNING

More college students say AI helps them earn better grades

Laura Ascione
July 12, 2024

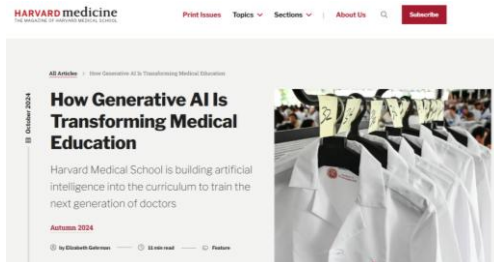
Students say their academic achievement and efficiency have improved after using generative AI tools

8

Autumn 2024

How Generative AI Is Transforming Medical Education,

by Elizabeth Gehrman, Harvard Medicine
<https://magazine.hms.harvard.edu/articles/how-generative-ai-transforming-medical-education>



9

Autumn 2024

How Generative AI Is Transforming Medical Education,

by Elizabeth Gehrman, Harvard Medicine
<https://magazine.hms.harvard.edu/articles/how-generative-ai-transforming-medical-education>

Within a few weeks of its public launch in November 2022, ChatGPT was already beginning to feel ubiquitous, and Bernard Chang, MMSc '05, was thinking about what that meant for the future of medical education. "Maybe once every few decades a true revolution occurs in the way we teach medical students and what we expect them to be able to do when they become doctors," says Chang, HMS dean for medical education. "This is one of those times."



10

November 2023

Artificial Intelligence Revolutionizing the Field of Medical Education,

by Suresh Narayanan, National Library of Medicine
<https://magazine.hms.harvard.edu/articles/how-generative-ai-transforming-medical-education>

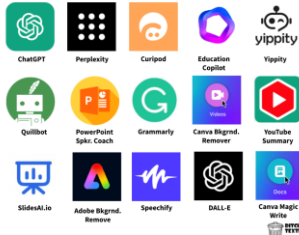
"Medical education has ventured into a new arena of computer-assisted teaching powered by artificial intelligence (AI). In medical institutions, AI can serve as an intelligent tool facilitating the decision-making process effectively. AI can enhance teaching by assisting in developing new strategies for educators. Similarly, students also benefit from intelligent systems playing the role of competent teachers. Thus, AI-integrated medical education paves new opportunities for advanced teaching and learning experiences and improved outcomes."



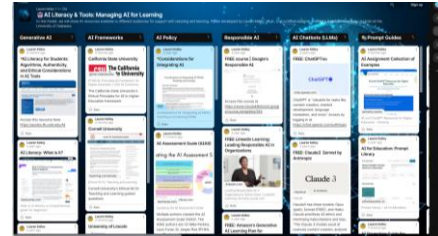
11



12

May 15, 2025**Categorized AI Tools for Teaching and Learning**<https://docs.google.com/document/d/11Ar-wODtmdx0Z8aVuf6CpUdBF2cx6s0lIDbwE40p/edit?tab=t.0>**15 AI tools to use in the classroom**

13

May 7, 2025**AI Literacy & Tools: Managing AI for Learning - Padlet**<https://padlet.com/laurenkelley9523/ai-literacy-tools-managing-ai-for-learning-bjtjxtz3gddg2>**AI Literacy & Tools: Managing AI for Learning - Padlet**

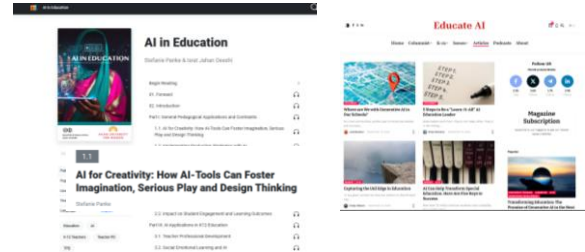
In this Padlet, we will share AI resources available to different audiences for support with teaching and learning, developed by Lauren Kelley, Ph.D., Instructional designer and Maria Barrios, Associate Librarian at the Delaware State University.

14

May 15, 2025**Categorized AI Tools for Teaching and Learning**<https://docs.google.com/document/d/11Ar-wODtmdx0Z8aVuf6CpUdBF2cx6s0lIDbwE40p/edit?tab=t.0>

Categorized AI Tools for Teaching and Learning			Assessment		
AI Tool	Description	Pricing	AI Tool	Description	Pricing
ChatGPT	AI for lesson planning, syllabus creation	Free (GPT-3.5) Pro plan at \$20/month Pro plan at \$300/month	Quizlet	AI-enhanced assessments	Free for teachers Premium plan available for schools and districts
Canva	Design's AI assistant for lesson plans	Free (Canva Labs access)	Canvas LMS	AI-generated quizzes and assessments	Free basic plan Premium plan available for schools and districts
Canva	AI design and video creation tools	Free plan includes basic AI tools and templates Pro: \$120/year for one person Teams: \$100/person/year Enterprise: Custom pricing	Canvas LMS	Real-time assessment and feedback tool	Free basic plan Enterprise: \$1.99/per seat/monthly
Canva	AI audio-based video creation	Free plan includes 1 video creation Creative: \$15/month or \$150/month Unlimited: \$150/month	Canvas LMS	Real-time AI feedback on student assessments	Free teacher plan Full Teacher plan at \$13/monthly Full Admin plan at \$13/monthly
Canva	AI-generated image generation	Free to use via Bing (limited access) ChatGPT Plus: \$20/month for premium DALL-E access	Canvas LMS	Student Engagement	School & District licenses available upon request
Grading	AI Tool		AI Tool	Description	Pricing
Grading	AI for lesson planning, Create personal and interactive content	Free (GPT-3.5) Pro plan at \$20/month Pro plan at \$200/month	Grading	AI for lesson planning, Create personal and interactive content	Free (GPT-3.5) Pro plan at \$20/month Pro plan at \$200/month
Grading	AI-enhanced notes and homework	Free for individual instructors	Grading	Graded learning and low quizzes	Free basic plan Khan+™: \$3.99/month Unlimited: \$150/month Other plans available

15

July 5, 2024**AI in Education****Stefanie Panke and Israt Jahan Oeshi**https://edtechbooks.org/ai_in_education**Educate AI**<https://edu-ai.org/3d-flip-book/educate-ai-magazine-volume-1-issue-2/>

16

November 30, 2023**Over 1,000 Sun Devils enroll in ASU's generative AI training course**<https://tech.asu.edu/features/ASUFacultyAICourse>

17

April 19, 2024**Professional Certificate in ChatGPT for Educators****Georgia Tech**<https://www.edx.org/certificates/professional-certificate/gtc-chatgpt-for-educators>

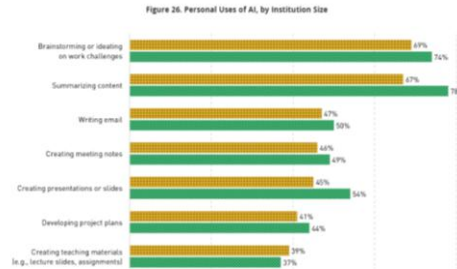
18

May 15, 2025
AI in Medicine PhD Track
Harvard Medical School
<https://dmi.hms.harvard.edu/education/phd-program/ai-medicine-phd-track>



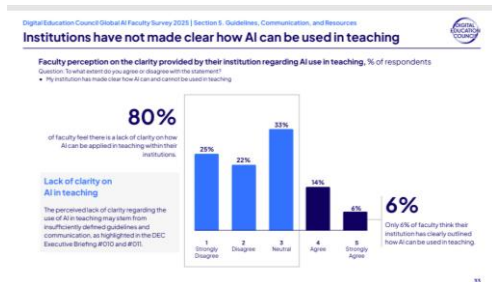
19

February 17, 2025
2025 EDUCAUSE AI Landscape Study: Into the Digital AI Divide
Jenay Robert and Mark McCormack
<https://www.educause.edu/content/2025-educause-ai-landscape-study-special-focus-the-digital-ai-divide-between-institutions>



20

January 30, 2024
Digital Education Council Global AI Faculty Survey
Digital Education Council
<https://www.chroneicle.com/newsletter/teaching/2025-01-30>



21

July 12, 2023
Incorporating AI in Teaching:
Practical Examples for Busy Instructors
Daniel Stanford's Substack
https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?utm_medium=email&utm_campaign=positium_medium-web



Here are the eight categories I've identified so far (in no particular order):

1. Intentional Misuse
2. Text Revision
3. Critiques of AI-Generated Content
4. Creative Writing/Brainstorming
5. Role-Play
6. Presentation Preparation
7. Research and Inspiration
8. Instructional Design

22

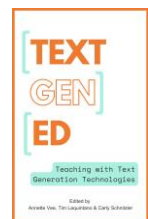
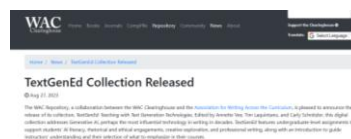
March 2024
Student affordances to using ChatGPT
The Educational Affordances and Challenges of ChatGPT: State of the Field
Helen Crompton and Diane Burke, TechTrends
<https://link.springer.com/article/10.1007/s11528-024-00939-0>

- Student codes
- 24/7 support and accessibility
 - Unlimited access
 - Variety of subjects/platforms
 - Explain difficult concepts
 - Summarize
 - Provide rationale
 - Conversation partner
 - Diverse contexts
 - Customized conversations
 - Argument practice
 - Personalized feedback and materials
 - Feedback
 - Tailored activities
 - Personalized pacing
 - Personalized materials
 - Recommendations
 - Language assistance
 - Writing Support
 - Writing steps
 - Ideas
 - Editing
 - Self-assessment
 - Generate outlines
 - Study guides
 - Questions
 - Diagnostic reasoning
 - Detailed responses
 - Engagement
 - Facilitate discussions
 - Collaboration
 - Interactive learning
 - Facilitate self-determination
 - Sense of control
 - Autonomy over learning
 - Increase efficacy

23

November 23, 2023
TextGenEd: An Introduction to Teaching with Text Generation Technologies
WAC Clearinghouse
<https://wac.colostate.edu/repository/collections/textgened/>

TextGenEd: An Introduction to Teaching with Text Generation Technologies. Co-editor with Annette Vee and Carly Schnitzler. *Writing Across the Curriculum Clearinghouse*, 2023.



24

July 23, 2023

101 creative ideas to use AI in education, A crowdsourced collection

Chrissi Nerantz, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software]. Zenodo. <https://doi.org/10.5281/zenodo.8355454>
<https://www.chronicde.com/article/how-will-artificial-intelligence-change-higher-ed>



25

July 23, 2023

101 creative ideas to use AI in education, A crowdsourced collection

<https://doi.org/10.5281/zenodo.8355454>
<https://www.chronicde.com/article/how-will-artificial-intelligence-change-higher-ed>



Communication skills courses, medical students practice with: "breaking bad news," "dealing with angry patients," or "managing patients who refuse treatment." Empathy role-play class, practice clinical interactions that: demonstrate high levels of verbal and non-verbal empathy or intentionally lack such empathetic behaviors. Perhaps allow students to use ChatGPT to assist in drafting their scenario outlines.

26

July 23, 2023

101 creative ideas to use AI in education...



ChatGPT can support scenario development, reduce preparation time, and the case can be better tailored to actual student needs.

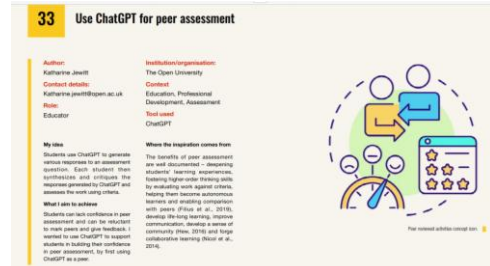


27

July 23, 2023

101 creative ideas to use AI in education, A crowdsourced collection

Chrissi Nerantz, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software]. Zenodo. <https://doi.org/10.5281/zenodo.8355454>
<https://www.chronicde.com/article/how-will-artificial-intelligence-change-higher-ed>



28

July 23, 2023

101 creative ideas to use AI in education, A crowdsourced collection

<https://www.chronicde.com/article/how-will-artificial-intelligence-change-higher-ed>



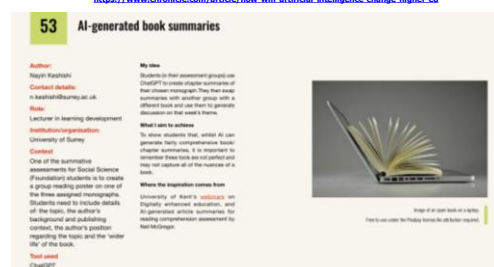
29

July 23, 2023

7. Interactive, Collaborative:

C. Gen AI Assisted Book Summaries and Group Exchanges

101 creative ideas to use AI in education, A crowdsourced collection
Chrissi Nerantz, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software]. Zenodo. <https://doi.org/10.5281/zenodo.8355454>
<https://www.chronicde.com/article/how-will-artificial-intelligence-change-higher-ed>



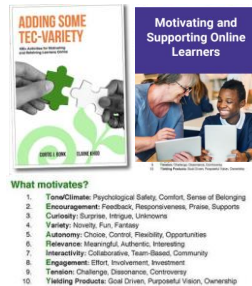
30

Introducing the TEC-VARIETY Framework

<http://tec-variety.com/>
<http://tec-variety.com/TEC-VARIETY-Chinese.pdf>

Tone/Climate
Encouragement, Feedback
Curiosity

Variety
Autonomy
Relevance
Interactive
Engagement
Tension
Yields Products

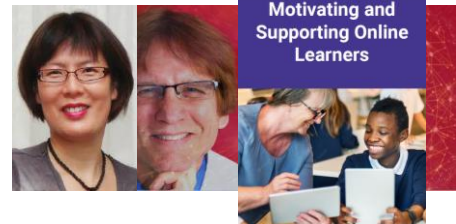


31

September 2022

Commonwealth of Learning

Khoo, E., & Bonk, C. J. (2022). *Motivating and Supporting Online Learners*. Burnaby, BC, Canada: Commonwealth of Learning. **Free** book available: <http://hdl.handle.net/11599/4481> and free course available: <https://colcommons.org/welcome/coursedetails/8>; <https://www.colvee.org/>



32

August 15, 2023

1. Tone/Climate:

A. AI Generated Ice Breakers

25 applications in teaching and assessment
 Seb Dianati & Suman Laudari, Charles Darwin University

<https://www.limeshighereducation.com/campus/chatgpt-and-generative-ai-25-applications-teaching-and-assessment>

1. Tone/Climate: A. Develop Ice-Breaker or Team Building Exercises.

A. Have generative AI act as if it is the first day of class and use proven and effective rapport-building exercises for students to create a sense of community.

B. Develop a series of questions for online students to engage in the class at the same time as I am delivering the class in a physical classroom.



33

May 15, 2025

1. Tone/Climate:

B. Counseling or Social Worker Session Practice

Chat with heyapi; especially good for social/emotional/burnout support

<https://heyapi.com/talk>
<https://pi.ai/discover>



34

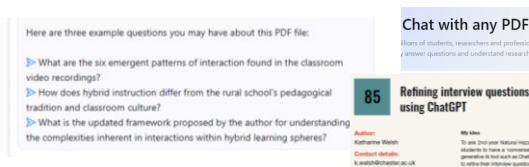
August 21, 2023

1. Tone/Climate:

A. ChatPDF: Generate Questions for Guest Speakers

https://curtbonk.com/R622_online_syllabus_Fall_2023.htm

Option: We are reading... "Exploring Interactions in a Synchronous Hybrid Language" Class (by Dr. Chaoran Wang). Input one or more assigned articles from guest(s) into ChatPDF and have it generate questions. Ask those questions during session.



35

September 8, 2023

2. Encouragement, Feedback:

A. Exam Preparation

<https://cybernews.com/academy/news/chatgpt-your-new-academic-mentor/>

1. The program **can review course material, create a tailored study schedule**, summarize and condense information, provide past exam questions, and even offer helpful tips that might make studying easier.
2. By providing the specific areas of study, ChatGPT can help familiarize you with your chosen topic.
3. ChatGPT can explain concepts, **summarize key points**, generate practical questions, and help you review quizzes and assessments.



36

April 20, 2025

3. Curiosity, Intrigue, Unknowns:

A. Online News as Discussion Starter At 77, she's as fit as a 25-year-old. What her body tells us about aging (Jeannie Rice).

Marlene Cimons, The Washington Post

<https://www.washingtonpost.com/health/fitness/at-77-she-s-as-fit-as-a-25-year-old-what-her-body-tells-us-about-aging/arcAA1DpDZ/>



37

February 6, 2025

3. Curiosity, Intrigue, Unknowns:

A. Research explorations. KAIST team discovers molecular switch to reverse cancer cells, News-Medical Life Sciences

<https://www.news-medical.net/news/20250206/KAIST-team-discovers-molecular-switch-to-reverse-cancer-cells.aspx>



38

February 6, 2025

3. Curiosity, Intrigue, Unknowns:

A. Quotes as Discussion prompts.

KAIST team discovers molecular switch to reverse cancer cells, News-Medical Life Sciences

<https://www.news-medical.net/news/20250206/KAIST-team-discovers-molecular-switch-to-reverse-cancer-cells.aspx>

"We have discovered a molecular switch that can revert the fate of cancer cells back to a normal state by capturing the moment of critical transition right before normal cells are changed into an irreversible cancerous state."

Journal reference: Shin, D., *et al.* (2025). Attractor Landscape Analysis Reveals a Reversion Switch in the Transition of Colorectal Tumorigenesis. *Advanced Science*. doi.org/10.1002/adv.202412503.

39

Key Points of Article Per ChatPDF

The key points of the article are:

- Discovery of a Molecular Switch:** The KAIST research team identified a specific molecular switch within the genetic network that can revert cancer cells back to normal cells without killing them.
- Critical Transition Moment:** The study focused on the critical transition phase where normal cells become cancerous, revealing that this moment contains crucial information for reversing tumorigenesis.
- Use of Systems Biology and Single-Cell RNA Sequencing:** The team employed systems biology methods and analyzed single-cell RNA sequencing data to model the genetic network and identify the molecular switch.
- Application to Colon Cancer Cells:** They confirmed through molecular experiments that applying this approach could recover cancer cells' normal characteristics, specifically in colon cancer.
- Innovative Cancer Reversal Approach:** Unlike traditional therapies that aim to kill cancer cells, this technology seeks to change their characteristics to revert them to normal cells, potentially offering a less invasive treatment option.
- Potential for Future Therapies:** This research provides a foundation for developing reversion therapies for various cancers, moving toward

Potential for Future Therapies: This research provides a foundation for developing reversion therapies for various cancers, moving toward targeted and precise treatments.

Significance of the Findings: This is the first study to capture the critical genetic transition in detail and identify a molecular switch capable of reversing cancer at this moment.

These points underscore a novel, mechanism-based approach to cancer treatment centered on molecular and systems biology insights.

What role does the critical transition state play in reversing cancer cells?

The critical transition state plays a pivotal role in reversing cancer cells by representing a transient and unstable phase where normal cells and cancer cells coexist just before the irreversible change into a cancerous state. The research team discovered that during tumorigenesis, normal cells pass through this critical transition state due to accumulated genetic and epigenetic changes. By capturing this specific moment, they could identify the molecular switch that controls the transition, targeting the unstable processes at the critical point allows for the possibility of reversing the genetic, restoring cancer cells to a normal state before they become irreversibly malignant. Essentially, the critical transition state acts as a window of opportunity where precise interventions can effectively revert cancer cells back to normal, preventing the progression of tumor development.

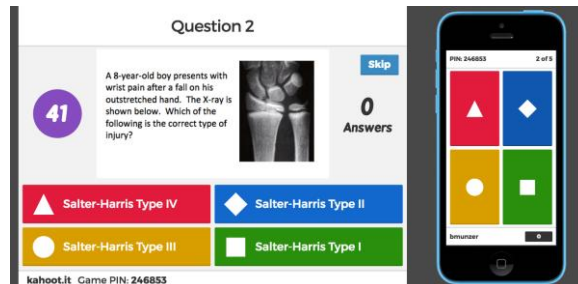
40

May 14, 2025

4. Variety, Novelty, Fun, Fantasy:

A. Kahoot! Review Quiz

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2024.2314198#abstract>



41

February 29, 2024

A scoping review of artificial intelligence in medical education: BEME Guide No. 84

Morris Gordon et al., Medical Teacher

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2024.2314198#abstract>



42

February 29, 2024

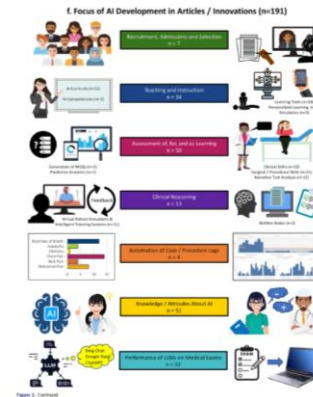
A scoping review of artificial intelligence in medical education:
BEME Guide No. 84

Morris Gordon et al., Medical Teacher

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2024.2314198#abstract>



43

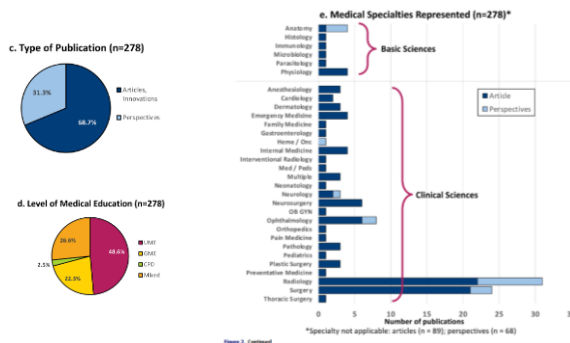


44

February 29, 2024

A scoping review of artificial intelligence in medical education: BEME Guide No. 84
Morris Gordon et al., Medical Teacher

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2024.2314198#abstract>



45

August 21, 2023

5. Autonomy, Choice:

A. Brave People Option:
Book Review

https://curtbonk.com/R511_online_syllabus_fall_2023.htm

Brave People Option: Put a PDF of the chosen book or books or special journal issue into ChatPDF, ChatGPT, or other generative AI tool or platform and have it do a **critique or a book review** on it. Next, write a reflection paper, review, or critique of what generative AI produced. Add a mini-glossary of personal definitions for 20-25 key terms and concepts found in this book.



46

October 5, 2023

6. Relevance, Meaningfulness:

A. Support for Job Applications and Resumes

Grace Heneks, a lecturer in the English department at Texas A&M University
<https://www.chronicle.com/newsletter/teaching/2023-10-05>

Students were asked to work with ChatGPT in a technical professional-writing course and a writing about literature course. In both courses, she says, students were underwhelmed by the product. In the technical writing course, students used ChatGPT to write job-application materials, such as cover letters and resumes. Most of them, she wrote, found that the chatbot actually created work because, even with multiple prompts, the writing did not have much personality and was repetitive. The same held true in her writing course when she used ChatGPT in class and also when students reviewed a ChatGPT-generated essay.



47

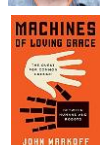
October 5, 2023

7. Interactive, Collaborative:

A. Book Summary Comparison

Kevin McCullen, an associate professor of computer science at the State University of New York at Plattsburgh
Machines of Loving Grace: The Quest for Common Ground Between Humans and Robots, by John Markoff
<https://www.chronicle.com/newsletter/teaching/2023-10-05>

- A freshman seminar about AI and robotics. **Students work in groups to outline and summarize the first three chapters.** Then he showed them what ChatGPT had produced in an outline.
- "Their version and ChatGPT's version seemed to be from two different books," McCullen wrote. "ChatGPT's version was essentially a 'laundry list' of events. Their version was narratives of what they found interesting. The students had focused on what the story was telling them, while ChatGPT focused on who did what in what year." The chatbot also introduced false information, such as wrong chapter names.
- Found it "soulless."



48

July 12, 2023

7. Interactive, Collaborative: B. Text Revision

Daniel Stanford's Substack

https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?r=bejrw&utm_campaign=post&utm_medium=web

Text Revision: For activities where students revise or critique AI-generated text, consider how students will annotate their work. For example, your instructions might include one or more of the following guidelines:

- **Highlight text in yellow** if at least 50% of the sentence was AI-generated without major revisions on your part.
- **Use track changes when revising AI-generated text** so that the AI text is crossed out and your revised version is shown in a different color.
- **Identify at least one place where the AI-generated text is problematic.** Highlight this text and use the comment feature to briefly explain why it's problematic and how you would change the text to fix the issue.

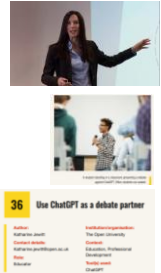
49

August 31, 2023

7. Interactive, Collaborative: C. Role Playing Challenging Conversations

<https://openai.com/blog/teaching-with-ai>

Dr. Helen Crompton, Professor of Instructional Technology at Old Dominion University, encourages her education graduate students to use ChatGPT as a stand-in for a particular persona—like a **debate partner who will point out weaknesses in their arguments, a recruiter who's interviewing them for a job, or a new boss who might deliver feedback in a specific way.**



50

April 19, 2025

7. Interactive, Collaborative:

C. Role Play and Data Analysis: Twelve Tips to Guide the Use of Data with Generative AI for Accreditation and Continuous Quality Improvement AAMC, ICI Medical School

<https://www.aamc.org/media/82576/download?attachment>
<https://www.aamc.org/media/82576/download?attachment>


Fig 15.10: AI in data governance: twelve tips to guide the use of data with generative AI for accreditation, algorithmic analysis and risk control in these ways may also include: identifying, assessing and addressing risks to the data; identifying, assessing and addressing risks to the data; identifying, assessing and addressing risks to the data.

The people who are involved in data management can take on different types of roles. The Data Management Association International (DAMA-I) outlines several of these roles (DAMA International 2017), which are differentiated based on the role's position in the organization and/or its functions:

- **Chief Data Stewards:** Lead data governance efforts.
- **Executive Data Stewards:** Active in data governance efforts in senior management positions.
- **Enterprise Data Stewards:** Provide oversight of a data domain across business units.
- **Business Data Stewards:** Provide subject matter expertise for a data domain to define and control data.
- **Data Owners:** Serve as a business data steward with approval authority within their data domain.
- **Technical Data Stewards:** Operate with use of the data management knowledge areas like data integration, database administration, business intelligence, data quality, and metadata management.
- **Coordinating Data Stewards:** Lead and represent teams of business and technical data stewards in interactions with Executive Data Steward and in discussions across business units.

51

8. Engagement, Involvement:

A. Voice AI in Medical Simulations



52

8. Engagement, Involvement:

A. AI in Medical Simulations

<https://www.youtube.com/watch?v=SWvRnxMh0yY>


53

July 12, 2023

8. Engagement, Involvement: A. Analyze AI Bias

Daniel Stanford's Substack

https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?r=bejrw&utm_campaign=post&utm_medium=web

Example Activity: Analyze examples of bias in AI output.

- **Example prompt:** Write a scene in a movie script where people in specific professions interact (e.g., a doctor/nurse, pilot and flight attendant).
- **Student reflection question:** What gender did AI assign to each role? How did this reinforce or contradict common stereotypes?
- **Additional example assignment:** Analyze how AI handles racial or gender representation depending on prompt wording. See examples at bit.ly/bias-in-ai-images.

54

July 12, 2023

8. Engagement, Involvement:

B. Analyze AI Bias

Daniel Stanford's Substack

https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?tr=bejwktum_campaign=post&utm_medium=web

DALL-E 2 Examples

The following images were generated by Daniel Stanford via DALL-E 2:



Examples of Bias in AI Image Generation



55

April 30, 2025

9. Tension, Challenge, Controversy, etc.:

A. What is smileUP & How to use it?

SMILE, Stanford

<https://always.seedsofempowerment.org/>

Ask SMILE: <https://ask.smile.seedsofempowerment.org/>

SMILE.ASK: <https://always.seedsofempowerment.org/>

<https://www.youtube.com/watch?v=pblU8sSALWo>

Specifically, SMILE will be used to assess student's critical thinking and GPT 3.5 to provide constructive feedback to the questions. Students ask 50 or more questions and write a reflection report on the breadth and depth of the response of ChatGPT. With the help of GPT, your question will be evaluated on a rubric from Level 1 to Level 5 aligned to Bloom's Taxonomy



56

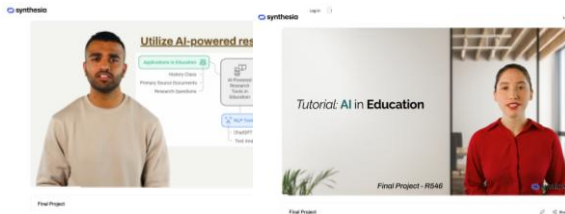
November 5, 2024

10. Yields Products, Goals:

A. Final Projects R546 Fall of 2024

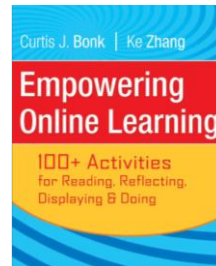
#1 AI video platform. Create professional looking videos in 140+ languages. Pick a template, choose between 230+ diverse avatars, and type your text.
Synthesia is a [synthetic media](https://www.synthesia.io/) generation company that develops software used to create AI generated video content. It is based in [London, England](https://www.synthesia.io/).

AI Video Generator (Topic: AI in Education): Claudio Eduardo Pinto, ceduardo@ku.edu
<https://share.synthesia.io/45637421-90a3-4180-b855-8b8565763201> (Synthesia) <https://www.synthesia.io/>



57

The R2D2 Model: Read, Reflect, Display, Do...



58

The R2D2 Model

1. Read (Auditory and Verbal Learners)
2. Reflect (Reflective Learners)
3. Display (Visual Learners)
4. Do (Tactile, Kinesthetic, Exploratory Learners)



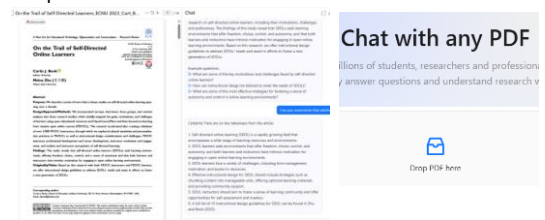
59

August 21, 2023

Read 1a. ChatPDF: Summarize assigned articles and Generate Starter questions

https://curtbonk.com/R622_online_syllabus_Fall_2023.htm

Option: Input one or more of the assigned articles and have ChatPDF generate questions on it or key points or both.



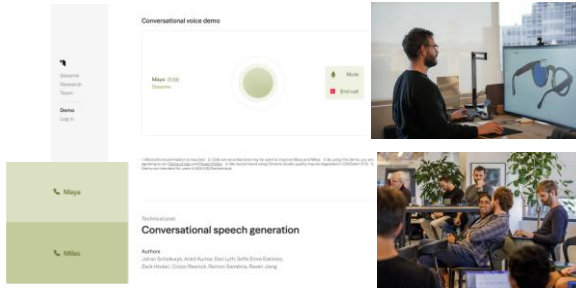
60

February 27, 2025

Read 1b. Conversational Speech Model

Crossing the uncanny valley of conversational voice

Brendan Iribe, Ankit Kumar, and the Sesame team

https://www.sesame.com/research/crossing_the_uncanny_valley_of_voice#demo

61

November 23, 2023

Reflect 2a. Translating Policy Document into Plain English (TextGenEd)

Timothy Laquintano, Lafayette College

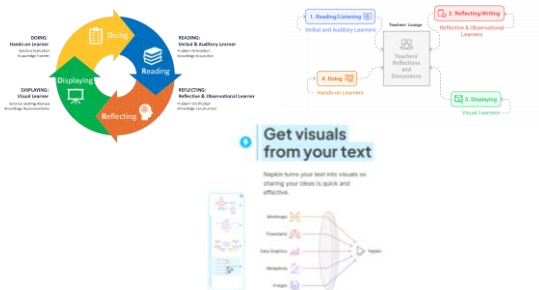
<https://wac.colostate.edu/repository/collections/textgened/professional-writing/translating-a-policy-document-into-plain-english/>

This assignment asks **undergraduate students to translate a complex policy document into plain English and then compare their output to the output of a large language model asked to do the same task.** Students critically compare the semantic choices and sacrifices they made during the translation with the meaning lost during the machine translation, which attunes them to the risks and benefits of LLM output.



62

May 12, 2025

Display 3a. R2D2 Model<https://www.napkin.ai/>

63

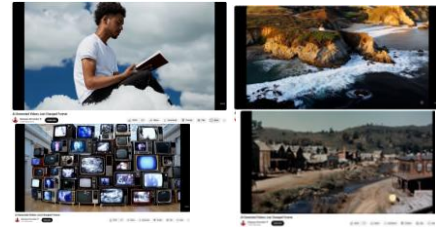
February 15, 2024

Learning is More Visual

AI Generated Videos Just Changed Forever

Video (12:01): <https://youtu.be/NXpdyAWLDas>Video (3:34): <https://youtu.be/lBx3xW1ua-E>

Sora



64

February 16, 2024

Display 3c. OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying

Tony Ho Tron, The Daily Beast

<https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying>

Prompt: Photorealistic closeup video of two pirate ships battling each other as they sail inside a cup of coffee.

OpenAI

65

February 16, 2024

OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying

Tony Ho Tron, The Daily Beast

<https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying>

Prompt: A stylish woman walks down a Tokyo street filled with warm glowing neon and animated city signage. She wears a black leather jacket, a long red dress, and carries a black purse. She wears sunglasses and red lipstick. She walks confidently and casually. The street is damp and reflective, creating a mirror effect of the colorful lights. Many pedestrians walk about.

OpenAI

66

February 16, 2024
OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying
 Tony Ho Tron, The Daily Beast
<https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying>



67

February 16, 2024
OpenAI's Video Generator Sora Is Stunning and Utterly Terrifying
 Tony Ho Tron, The Daily Beast
<https://www.thedailybeast.com/openais-video-generator-sora-is-stunning-and-utterly-terrifying>



Prompt: Animated scene features a close-up of a short fluffy monster kneeling beside a melting red candle. The art style is 3D and realistic, with a focus on lighting and texture. The mood of the painting is one of wonder and curiosity, as the monster gazes at the flame with wide eyes and open mouth. Its pose and expression convey a sense of innocence and playfulness, as if it is exploring the world around it for the first time. The use of warm colors and dramatic lighting further enhances the cozy atmosphere of the image.

OpenAI

68

February 19, 2025
Do 4a. Podcasts and Webinars:
How to Use AI in Creative Writing: The Creative Process
https://www.youtube.com/watch?v=4UySua_xbo&list=PL0mPh-h3eackn1TQW5WugzWZkpa_NBI

94 views Feb 19, 2025 [LUSIDE](#)
 This video describes the four cognitive phases in the creative process — finding opportunity, brainstorming possibilities, selecting the best option, and integrating it into a larger whole — and then delineates where AI can help us and where it can't, especially as it applies to creative writing and fiction. It was delivered in WB 204 at Oregon State University as part of the research mechanism in "A New Muse: How Guided AI Use Impacts Creativity in Online Creative Writing Courses," along with other lessons in the following sequence:



69

November 4, 2024
Do 1b. NotebookLM
Mark Brown, 'My Leukemia Story'
 Insights into Mark's experience of responding to treatment for Acute Myeloid Leukemia
<https://on.soundcloud.com/ajokdJ6PXUnoC2xB8>

...we shouldn't dismiss how AI might in the future help to amplify our joy, success, failure, and disappointment, too, during these moments through new and improved ways of analysing, interpreting, and celebrating human performance. I'm sure AI is already playing a big role in helping the science behind leukemia better analyse, predict, and suggest new and improved treatment plans. The segue to AI is deliberate. I want to finish this update by sharing the conversation I generated using Google's new NotebookLM tool. As a bit of an experiment, I uploaded my 350,000-word journal to this tool to see what type of conversation it would automatically generate. The resulting discussion is a bit cringeworthy in places, but overall, it shows what's possible now and in the future through new generative AI tools—albeit opening a can of worms.



70

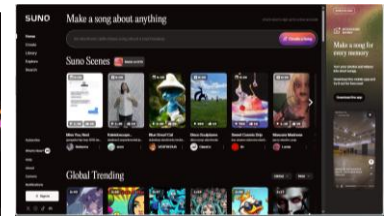
December 6, 2024
How Faculty Can Harness Generative AI for Enhanced Learning: Part 1: TEC-VARIETY and R2D2
 Curt Bonk, Student Learning Outcomes (SLO), COACHes Hub
 Video (104:25): <https://www.youtube.com/watch?v=MQJC7be0iY>
 **NotebookLM Podcast (17:44): <https://rss.com/podcasts/friday-slo-talks/1790741/>
 SLO: <https://www.youtube.com/@studentlearningoutcomes-slos>
 NotebookLM Podcast (20:45): <https://www.youtube.com/watch?v=13lu5F5dsQ>
 NotebookLM podcast (12:57): <https://youtu.be/hPr-p2Co-6I>



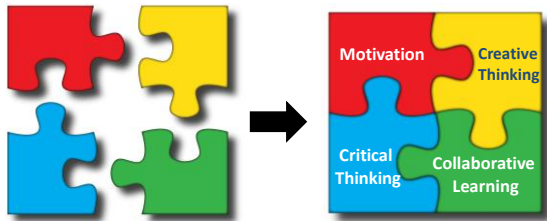
71

May 15, 2025
Do 1c. Suno: Makes a Song About Anything
How About: The medical educators and AI song, indie rock
<https://suno.com/>

The Future We Create: <https://suno.com/song/5343dd7d-8bcd-4d01-88ab-0a41c4469f5c>
 Teaching in Code: <https://suno.com/song/8704ddfc-5d25-4488-95e9-37863b06e3cd>
https://suno.com/create/signup_source=splashpage&referrer=%2Fhome&redirected_from=signup&wid=default



72



73

July 18, 2023

Center for Teaching Innovation, Cornell University CU Committee Report: Generative Artificial Intelligence for Education and Pedagogy

<https://teaching.cornell.edu/generative-artificial-intelligence/cu-committee-report-generative-artificial-intelligence-education>
https://teaching.cornell.edu/sites/default/files/2023-08/Cornell-Generative-AI-for-Education-Report_2.pdf

Activity #2. GAI as a Peer Editor.

- A. Ask GAI to offer constructive feedback on their writing, with specific suggestions for where and how to make improvements in grammar, logic, and flow (tailor this prompt to your desired outcomes).
 B. Students review the GAI feedback and make edits.
 C. Students respond to several reflection prompts including:
 A. Which suggestions find effective? Not effective? Why?
 B. As you review the feedback, did GAI help you notice patterns in the kinds of suggestions that you received? If so, identify and reflect on these patterns? Did it miss some?

75

July 23, 2023

101 creative ideas to use AI in education, Activity #4. Generating Feedback Poetry

Chrissi Nerantz, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023.1.2) [Computer software]. Zenodo. <https://doi.org/10.5281/zenodo.8355454>
 (University of Leeds, Univ. of Calgary, and Univ. of Macedonia)

01 Generating feedback poetry

Author: Chrissi Nerantz
Contact details: c.nerantz@leeds.ac.uk
Institution/organization: School of Education, University of Leeds

Rule: Educator
Context: Education, Professional Development
Tool(s) used: ChatGPT

My idea
 Exploring the use of AI feedback poetry to engage students with the feedback they receive and give in new ways. Evidence suggests that students often don't engage with the feedback they receive. Feedback that

Write a quatrain about ChatGPT

ChatGPT, a marvel of AI design,
 With knowledge vast and endlessly refined
 It can converse on any topic you choose
 And its responses are sure to amuse

Write a limerick about ChatGPT

There once was a chatbot named GPT
 Whose language skills were quite a sight to see
 It could chat about anything at all
 From sports to music, and even basketball
 ChatGPT, a conversational prodigy!

77

January 8, 2024

Activity #1. Brave People Option: Human-to-Human vs. AI Augmented Discussions

https://curtbonk.com/R678_online_syllabus_spring_2024.htm

Brave People Option: Task #1. Discussion

Moderation and Interaction in Canvas. There will be two discussion forums for you to choose from: **(1) one for interaction among humans only**, and **(2) one for augmented use of ChatGPT and other Generative AI tools or platforms**; in the latter, you are to rely on an AI tool for wording or a comment, quote, critique, comparison, or other means that you deem relevant. Please contribute to one or both of the discussions each week.

Week 4: Human-to-Human Discussion		
All Sections	Last post at Feb 6, 6:39 PM	Available until May 6, 11:59 PM
Week 3: AI-Augmented Discussion		
All Sections	Last post at Feb 6, 9:46 AM	Available until May 6, 11:59 PM



74

July 18, 2023

Center for Teaching Innovation, Cornell University CU Committee Report: Generative Artificial Intelligence for Education and Pedagogy

<https://teaching.cornell.edu/generative-artificial-intelligence/cu-committee-report-generative-artificial-intelligence-education>
https://teaching.cornell.edu/sites/default/files/2023-08/Cornell-Generative-AI-for-Education-Report_2.pdf

Activity #3. Brainstorm Ideas for Assignment.

- A. Use GAI to brainstorm ideas for an assignment that is relevant to the course (e.g., topics for a research paper, research study ideas, new business ideas, marketing taglines, etc.).
 B. Students evaluate the ideas based on the established criteria for the assignment.
 C. Students further develop their preferred idea and complete the assignment.
 D. In-class discussion or written reflection: Students critically analyze the usefulness of AI in the brainstorming process.

76

July 23, 2023

101 creative ideas to use AI in education, Activity #5. AI Generated Art-Based Feedback

Zenodo. <https://doi.org/10.5281/zenodo.8355454>

97 AI to generate art-based feedback

Author: Daniela Castagli, Paola Corti, Bianca Santolini
Institution/organization: Politecnico di Milano
Contact details: daniela.castagli@polimi.it, paola.corti@polimi.it, bianca.santolini@polimi.it
Rule: Educators

Our idea
 Provide peer-to-peer feedback using AI-generated art-based content to stimulate peer-group discussion and reflection.

What we are aiming to achieve
 As they are our discussion on the results achieved by individual groups, and on the path followed during a learning experience, enriching the feedback with AI-based images. Providing peer-to-peer feedback can be challenging and emotionally demanding. Let our support this activity, modeling it through tasks that focus on the message in a creative way.

48 Using DALL-E 2 to enhance student understanding of terms and concepts

Author: John Paves
Contact details: john.paves@leeds.ac.uk
Institution/organization: Anglia Ruskin University

Context: Design
Tool(s) used: ChatGPT, DALL-E 2, iPhoto

as a tool at the beginning of the lesson activity (a course, a lesson...)
 • Each sub-group of participants assigned/chose an output created another sub-group of participants
 • They carefully look at the output and note:
 • They formulate their version of feedback for the selected output.
 • Then, they use ChatGPT to generate the text to be used with DALL-E 2 to generate the image to accompany the text version.
 • The first feedback will include the text, the prompt (as a description of the image) and the generated image.
 • Open discussion in groups on the task.

Using DALL-E 2 to generate a high-level output that does not need any change, "night flying in a clear blue mountain sky with open wings"
 High-level output with something that can be improved, "Dragon in a fantasy world, dark background"

78

July 23, 2023

101 creative ideas to use AI in education,

Activity #6. Rewriting with AI Image Generators

Chrissi Nerantzi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software]. Zenodo. <https://doi.org/10.5281/zenodo.8355454>

(University of Leeds, Univ. of Calgary, and Univ. of Macedonia)



79

July 23, 2023

101 creative ideas to use AI in education,

Activity #7. Chat with Anyone in Past

Chrissi Nerantzi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection (2023 1.2) [Computer software]. Zenodo. <https://doi.org/10.5281/zenodo.8355454>

<https://www.chronicle.com/article/how-will-artificial-intelligence-change-higher-ed>



80

August 15, 2023

ChatGPT and generative AI:

25 applications in teaching and assessment

Seb Dianati & Suman Laudari, Charles Darwin University

<https://www.timeshighereducation.com/campus/chatgpt-and-generative-ai-25-applications-teaching-and-assessment>

Activity #8. Provide Explanations and Reflection Questions.

A. Provide the 10 most common misconceptions and explanations of Carl Jung's work in psychology and how it differs from Sigmund Freud's.

B. Include a Q&A list of prompts for my first-year unit in educational psychology to evaluate their knowledge after class on the topic above.



81

November 23, 2023

Activity #9. Using AI Text as Prompts for Critical Analysis (TextGenEd)

Juan Pablo Pardo-Guerra, UC San Diego

<https://wac.colostate.edu/repository/collections/textgened/rhetorical-engagements/using-ai-text-as-prompts-for-critical-analysis/>

In this assignment, students are provided with an AI-generated text relevant to a course's topics and focus and then asked to comment, review, and expand on it using a feature such as "track changes." In engaging with the AI-generated text, students review their knowledge, offer critiques, modify theoretical and empirical claims, and provide concrete examples that illustrate or disprove the provided answer.



82

November 23, 2023

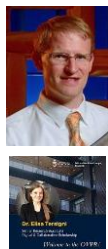
Activity #10. Critical Assessment and Analysis Exercise (TextGenEd)

Nathan Murray, University of Mississippi

Elisa Tersigni, University of Toronto Mississauga

<https://wac.colostate.edu/repository/collections/textgened/ai-literacy/>

This assignment asks first-year critical writing students to evaluate the reliability, factuality, and internal reasoning of three anonymized texts, one written by AI, that present conflicting opinions or information. By considering the strengths and weaknesses of these texts independent of contextual information, students are encouraged to develop critical reading skills as well as an awareness of the prevalence of misinformation from both human-generated and AI-generated sources online today.



83

November 23, 2023

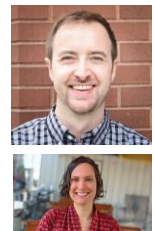
Activity #11. Promoting Ethical AI Literacy in an Undergraduate Course (TextGenEd)

Mike Frazier, Michigan State University, Lauren

Hensley, Ohio Wesleyan University

<https://wac.colostate.edu/repository/collections/textgened/ethical-considerations/>

This assignment proposes the integration of generative AI tools, such as ChatGPT, into a college learning and motivation strategies course, with the dual focus of enhancing metacognition and promoting ethical AI use. Students engage with AI-generated artifacts, compare outputs with their own work, and reflect on the implications of AI in their academic and professional lives. The approach can be adapted for various courses, encouraging a critical examination of AI's role in learning and its potential impact on future careers.



84

July 12, 2023

Activity #12. Generate Plans, Guides, Checklists, and Instructional Design Materials
Daniel Stanford's Substack

https://danielstanford.substack.com/p/incorporating-ai-in-teaching-practical?r=bejw&utm_campaign=post&utm_medium=web

Example Activity: Generate guides, checklists, plans, or instructional materials.

They could be used by students as part of an assignment where they develop similar materials to demonstrate their mastery of the subject matter.

Example prompts:

- Create a nutrition plan for a diabetic patient that incorporates the following foods. [Insert foods here.] Provide recipes for breakfast, lunch and dinner for each day of the week.
- Write 20 quiz questions that test past-tense verb conjugation for ESL learners with moderate fluency.
- Create a checklist of dos and don'ts for an entrepreneur documenting business expenses for tax purposes.

85

August 15, 2023

ChatGPT and generative AI:

25 applications in teaching and assessment

Seb Dianati & Suman Laudari, Charles Darwin University

<https://www.timeshighereducation.com/campus/chatgpt-and-generative-ai-25-applications-teaching-and-assessment>

Activity #14. Generate Case Studies

A. Design a series of real-world case studies on human anatomy class.

B. Include a lesson plan associated with the case studies for an online class. Include case studies that students can connect to in their real life.



87

April 4, 2024

Teaching with AI: A Practical Guide to a New Era of Human Learning (2024)

Activity #16. Blogging and Journaling

Jose Antonio Bowen and C. Edward Watson

<https://www.press.jhu.edu/books/title/53869/teaching-ai>

Record weekly course reflections in a blog or a journal. Then have students get feedback from both a peer and ChatGPT. Have students write one or more reflections on the difference on feedback offered. Or ChatGPT could create weekly blog posts to compare to.



89

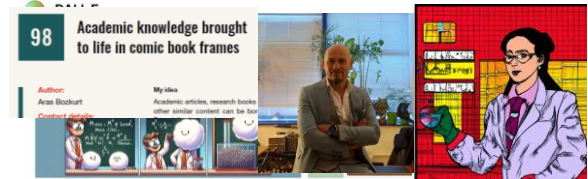
November 15, 2023

Activity #13. DALL-E Created Cartoon Strips and Idea #98: Comic Books (Aras Bozkurt)

Even though DALL-E created great cartoon strips, it could not verbally explain the meaning of density in a friendly way without using the formula. Heejung An, William Paterson University

1. Create a cartoon strip that explains density.
2. Create a cartoon strip that demonstrates an understanding of density.

<https://www.nature.com/articles/041586-023-03007-3>



Here's a cartoon strip that explains the concept of density. Each panel illustrates a key aspect of density in an engaging and educational way.

86

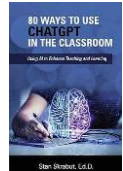
February 10, 2023

80 Ways to Use ChatGPT in the Classroom
Stan Skrabut, Ed.D.

Activity #15. Think, Pair, Share

<https://www.amazon.com/80-Ways-Use-ChatGPT-Classroom/dp/B0BYC8MXJY>

Students reflect on a topic and share with a partner. Then they could query ChatGPT and discuss their findings before sharing with the class.



88

April 4, 2024

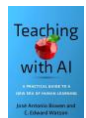
Teaching with AI: A Practical Guide to a New Era of Human Learning (2024)

Activity #17. Summary Comparisons

Jose Antonio Bowen and C. Edward Watson

<https://www.press.jhu.edu/books/title/53869/teaching-ai>

Ask teams of 3 students to use different AI tools to make summaries of one or more readings. Have them meet FTF or in a synchronous setting and defend their AI tool summary as the best summary. Next have them attempt to improve or refine one of the summaries, pool the respective summaries into a list of key points, or create a new best of summary. Perhaps pool all the team summaries across all the articles.



90

April 4, 2024**Teaching with AI: A Practical Guide to a New Era of Human Learning (2024)****Activity #18. Human vs. AI**

Jose Antonio Bowen and C. Edward Watson
<https://www.press.jhu.edu/books/title/53869/teaching-ai>

Ask students to write a paragraph, article abstract, short paper, poem, lecture summary of key points, etc. both with and without AI. Next share the artifact with a partner. Each person attempts to identify the human and AI elements. Finally, they discuss how either draft document could be improved.



91

August 31, 2024**Brave People Option:****Activity #19. Research Dig**

<https://curtbnk.com/Instructional-Strats-R546-2024.htm>

Brave People Option: Research Dig. You are to canvass the research literature on a topic related to this class. Perhaps this will lead to a dissertation, master's theses, or research project. You must find at least 15 articles on a topic and read at least half of them. In your paper, you should describe how you found your articles and essentially describe the state of the research? What are the general findings? Where are the open issues, questions, or gaps on this topic and how might you research this area? You should turn in a 2-4 page single-spaced review.

• **AI Option:** Adventurous students might ask ChatGPT or ChatPDF to also generate a summary of those 15 articles and compare the two summaries as well as a set of discussion questions on each article in the review.



92

August 28, 2024**Creative Explorations, WAC Clearinghouse Activity #20. Professional Writing for Healthcare**

Heidi McKee, Miami University

<https://wac.colostate.edu/repository/collections/textused/professional-writing/professional-writing-for-healthcare/>

Original Assignment Context: mid-level undergraduate professional writing for healthcare course

In this project, via a series of scaffolded assignments, students selected and read medical journal articles and then drafted and revised research summaries for lay audiences, exploring, analyzing, and integrating the use of AI writing systems (e.g., ChatGPT, QuillBot Summarizer, etc.) throughout the process. This assignment is adaptable to a variety of undergraduate and graduate courses.

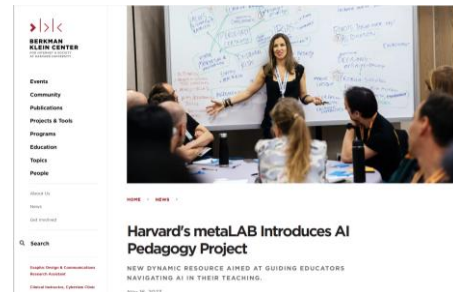
- You will first read and write (on your own, no AI) a summary (350-550 words) of the article in a press release or blog/newsletter format for a lay audience that you identify (e.g., pregnant women reading Pregnancy magazine; parents who subscribe to blog about asthma). We will have a peer respond on that draft in class.



93

November 16, 2023**AI Pedagogy Project: Harvard's metaLAB Introduces****AI Pedagogy Project, Sarah Newman, Director of Art & Education at metaLAB, Harvard University**

<https://cyber.harvard.edu/story/2023-11/harvards-metabolab-introduces-ai-pedagogy-project>



94

Poll #2. Closing questions...

How many **ideas** did you get from this session for using ChatGPT or other Generative AI tools in your **teaching**, training, or tutoring?

- None
- 1 or 2
- 3 to 5
- 6 to 10
- More than 10



95

Closing questions...in the chat window

96

Remember...
"I cannot do this alone."

"I cannot do this alone."
 "I cannot do this alone."
 "I cannot do this alone."



97

Any Questions or Comments?

Slides at: TrainingShare.com (go to "Archived Talks")

Papers: PublicationShare.com

Free book: <http://tec-variety.com/>

Free Course: <https://colcommons.org/welcome/coursedetails/8>

Curtis J. Bonk, IST Professor, Indiana University

Email: cjbonk@indiana.edu; <http://curtbonk.com/>



98