

# Quick start

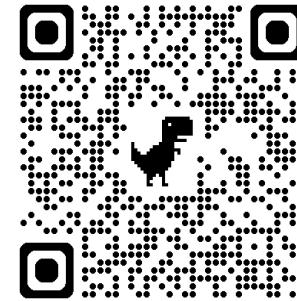
Complete the metaphor

“Being an educator is like ...”



# Teaching with Generative Artificial Intelligence: Guidance for Faculty Developers and Educators

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- Elissa Hall, EdD, MA, Director, Advanced Digital Education, Mayo Clinic
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The Ohio State University



THE OHIO STATE  
UNIVERSITY  
DRAKE INSTITUTE FOR  
TEACHING AND LEARNING

# WHAT BEST MATCHES YOUR EXPERIENCE WITH GENAI

- A. I have not used it yet
- B. I have dabbled
- C. I use it weekly to improve efficiency
- D. I use it daily

# SESSION GOALS

- Understand the basic principles and concepts of Generative AI how it works, and its various applications in teaching and learning.
- Know how to integrate Generative AI into their teaching and learning initiatives (curriculum design) and strategies (assessment and teaching methods).
- Appreciate the ethical, social, and cultural impacts of using Generative AI in education
- Know how to continuously update their knowledge and skills in Generative AI.

# TEACHING AND LEARNING WITH GENAI TOPICS CROSSWALK

Endorsement Goals	Student <sup>1</sup>	Educator <sup>2</sup>	Instructional Designer <sup>3,4</sup>
Understand the basic principles and concepts of Generative AI how it works, and its various applications in teaching and learning.	How GenAI technologies work  What are the affordances and drawbacks of GenAI in T&L	AI Basics  AI Literacy	Articulate the potential benefits and limitations of using generative AI tools for instructional design.  What Other AI Tools or Capabilities are Coming and <a href="#">How Do I Design With Them?</a>
Know how to integrate Generative AI into their teaching and learning initiatives (curriculum design) and strategies (assessment and teaching methods).	How to prompt GenAI  Evaluate the relevance, usefulness, and accuracy of GenAI outputs  Monitor your own learning as you use GenAI tools	AI-Assisted Faculty  Designing to learn about AI and how to use it  Designing Assignments for Human Effort Grading and (Re-) Defining Quality  Writing and AI Feedback and Roleplaying	Generate various elements of courses, including learning objectives, content, assessments, feedback, images, and more.  Identify opportunities to create adaptive and engaging learning experiences, using Generative AI and related AI-infused tools.  Design a workflow that effectively integrates generative AI tools into an existing instructional design process.  Analyze the quality, relevance, and pedagogical alignment of learning materials created by ChatGPT and other AI tools.-
Appreciate the ethical, social, and cultural impacts of using Generative AI in education	Recognize that GenAI is fundamentally different from human communication.  Understand the potential harms of GenAI, both those inherent to the technology and those that arise from misuse	A New Era of Work Reimagining Creativity  AI Cheating and Detection	Stimulate a dialogue about ethical issues in using AI for content development.  <b>References:</b> 1. <a href="#">Student Guide to AI Literacy   MLA Style Center</a> 2. <a href="#">Teaching with AI   Hopkins Press (jhu.edu)</a> 3. Quality Matters: <a href="#">Leveraging Generative AI for Course Design</a> 4. AI for Instructional Design Workshop <a href="https://www.td.org/education-courses/ai-for-instructional-design-workshop">https://www.td.org/education-courses/ai-for-instructional-design-workshop</a> 5. LinkedIn: <a href="#">Artificial Intelligence (AI) Online Training Courses</a>
Know how to continuously update their knowledge and skills in Generative AI.	Policies and frameworks for the ethical use	AI Policies	

# REQUIRED COURSES IN A GENAI PROGRAM

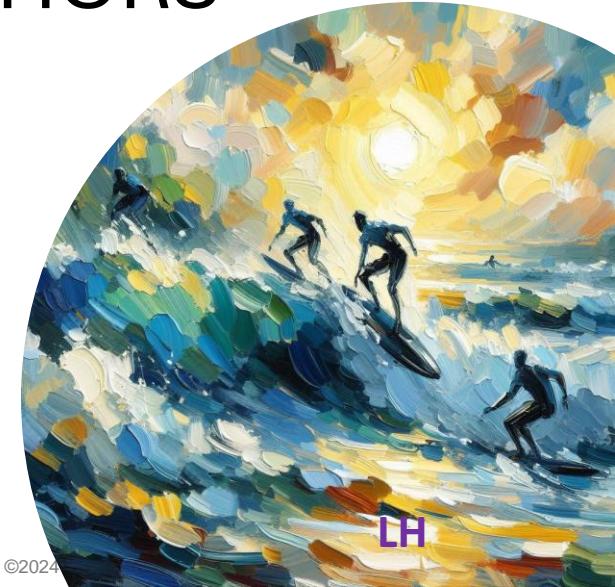
Courses	ELOs - Participants will be able to
A. Overview	<ol style="list-style-type: none"><li>1. explain key components and processes involved in Generative AI.</li><li>2. develop natural language and structured AI prompts</li><li>3. develop academic activities related teaching with to AI</li><li>4. communicate transparently about the use of GenAI in a course</li><li>5. analyze the ethical implications of using Generative AI in educational settings</li><li>6. identify resources for ongoing learning about AI</li></ol>
B. <u>GenAI Literacy</u>	<ol style="list-style-type: none"><li>1. discuss the affordances and shortcomings of common AI platforms and AI integrated into common educational technologies</li><li>2. develop curriculum, courses and curricular elements that incorporate Generative AI.</li><li>3. define common terms associated with GenAI literacy</li><li>4. assess learner AI literacy in your discipline</li><li>5. identify AI Tools or Capabilities are Coming and How to Design With Them</li></ol>
C. <u>Designing instruction in light of GenAI</u>	<ol style="list-style-type: none"><li>1. discuss the affordances and shortcomings of common AI platforms and AI integrated into common educational technologies</li><li>2. describe how students commonly interact with AI in a higher education context. Assess learner AI literacy in your discipline</li><li>3. Describe authentic task for which AI is suitable</li><li>4. design assignments that measure student learning in light of GenAI</li><li>5. reflect on the benefits of new approaches for teaching and learning in light AI</li></ol>



## COMMON EDUCATOR METAPHORS

- gardener/plants:
- sculptor/clay:
- coach/athletes:
- tour guide/tourists:

(Wong et al., 2022)



**HOW DOES YOUR  
CHOICE OF  
METAPHOR ALIGN  
WITH HOW YOU FEEL  
LEARNING OCCURS?**



# **HOW DOES YOUR CHOICE OF METAPHOR ALIGN WITH YOUR ASSESSMENT CHOICES?**

(Wong et al., 2022)

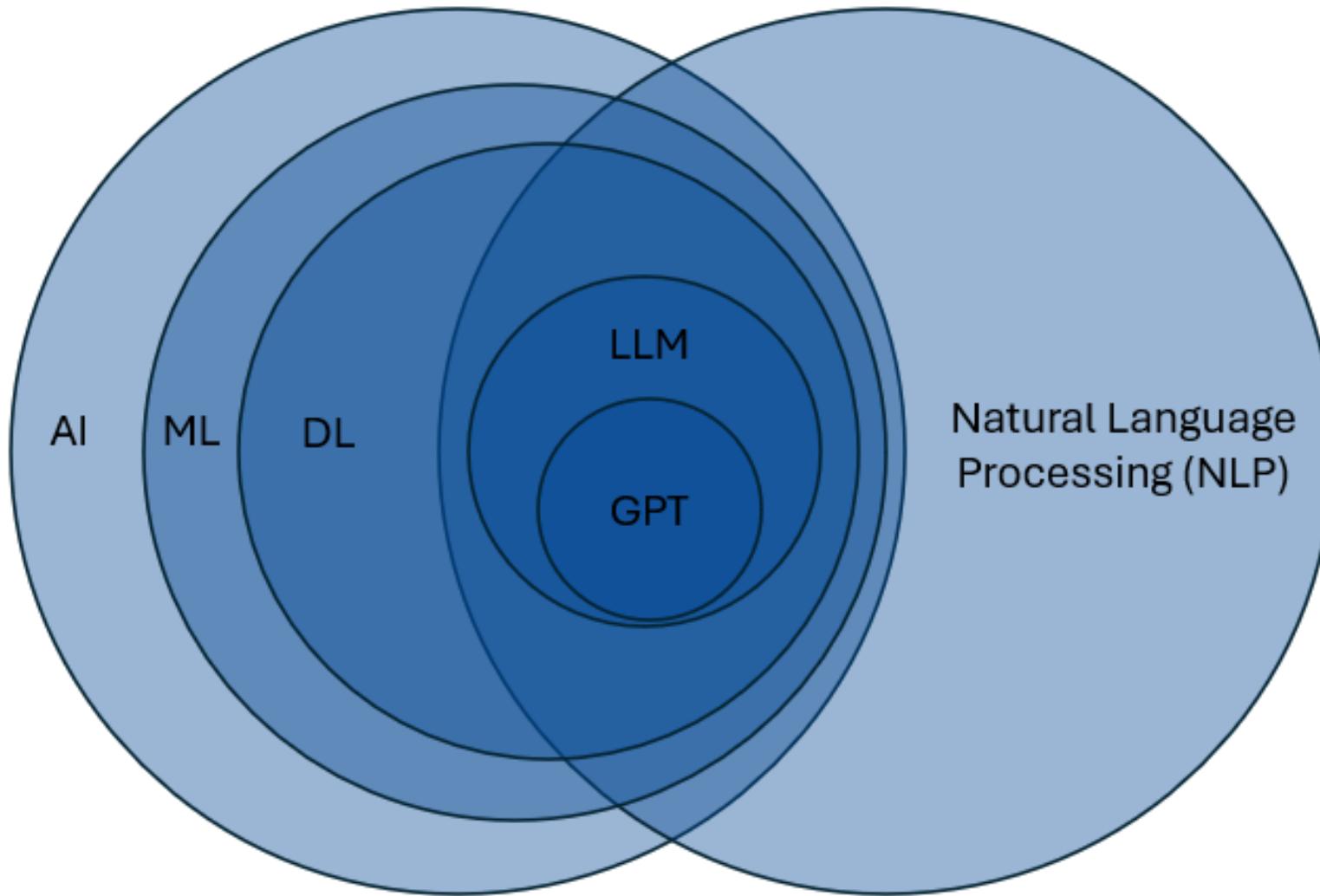


**HOW DOES YOUR CHOICE  
OF METAPHOR  
INFLUENCED HOW YOU  
FEEL ABOUT THE IMPACT  
OF AI ON TEACHING AND  
LEARNING**



Understand the basic principles and concepts of Generative AI how it works, and its various applications in teaching and learning.

# WHAT ARE GPTS?



AI = Artificial Intelligence

ML = Machine Learning

DL = Deep Learning

LLM = Large Language Models

GPT = Generative Pretrained  
Transformers

# WHAT ARE GPTS?

- **G** = Generative
  - refers to the model's ability to create new content
- **P** = Pretrained
  - model has undergone an initial extensive training phase on a vast corpus of text data; equips the model with a broad ‘understanding’ of language and its nuances
- **T** = Transformer
  - aspect of the model architecture
  - attention layer

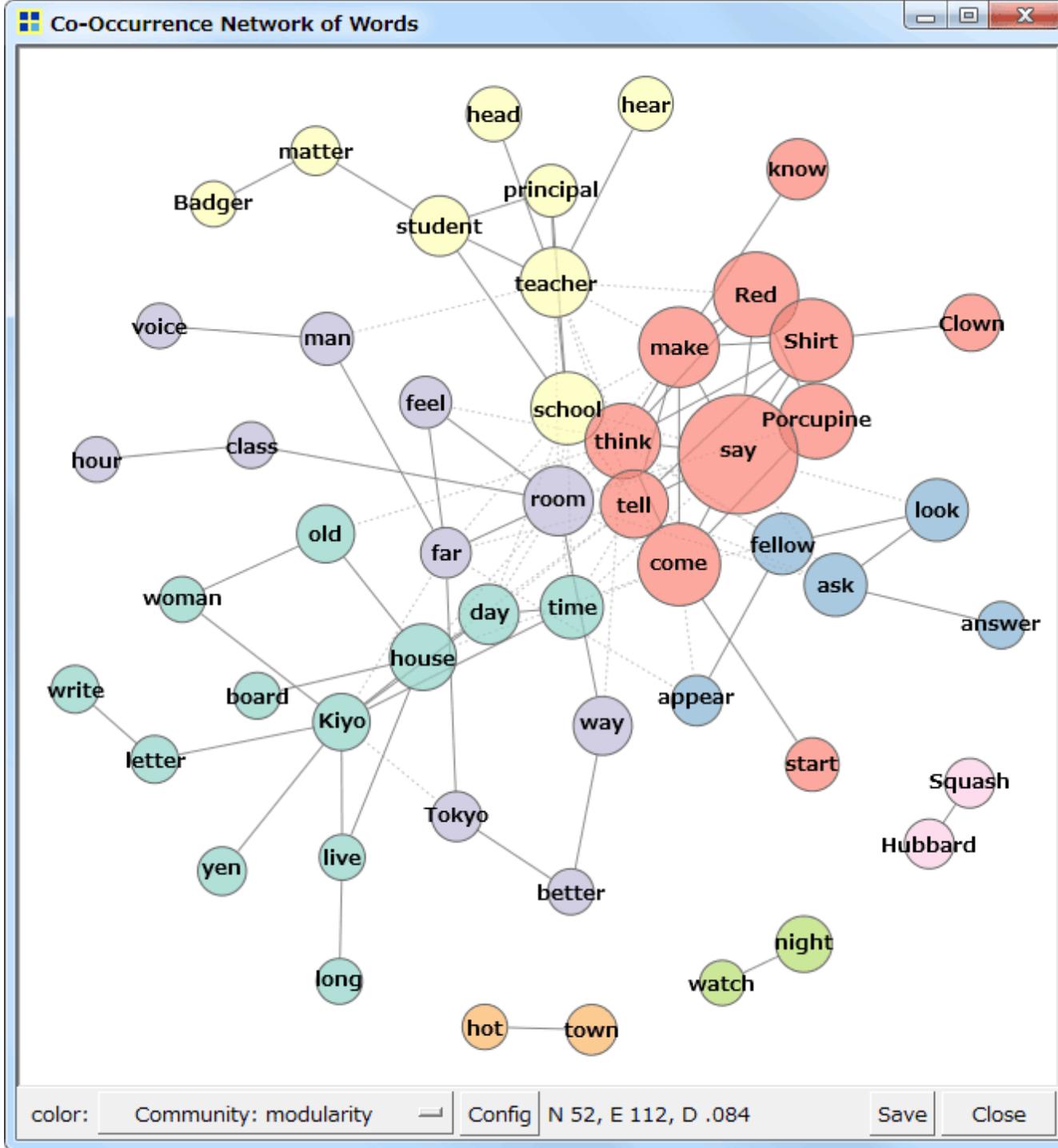
# HELPFUL IDEAS FOR THINKING ABOUT GPTS

- Underlying principle: distributional semantics / co-occurrence
  - Words that occur in the same contexts tend to have similar meanings. (Harris, 1954)

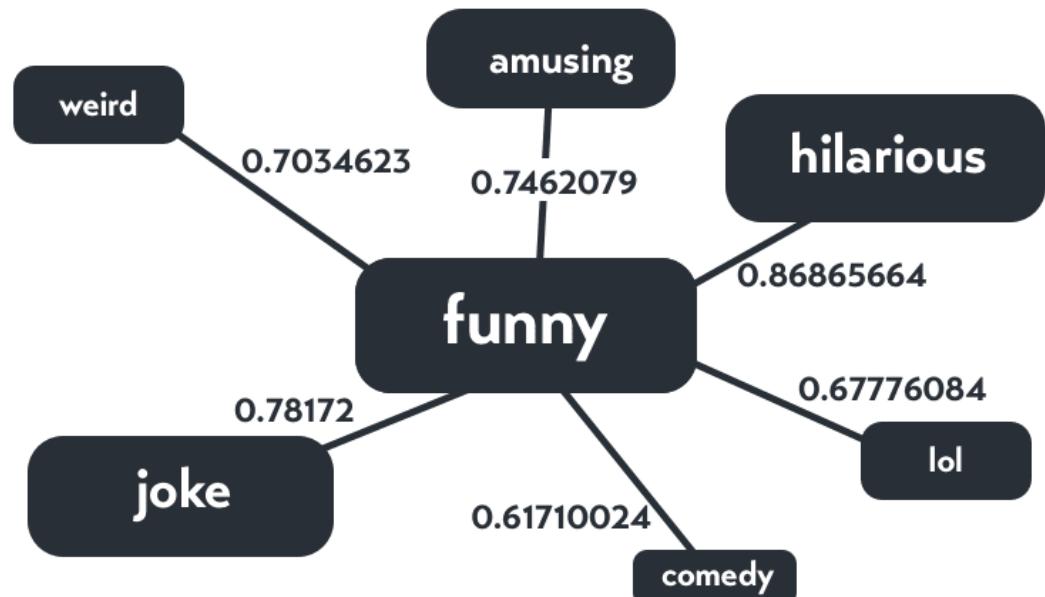
“We found a little, hairy [REDACTED] sleeping behind the tree.”

- Generative model: **always** provides an answer
  - No guarantee the response is correct; “hallucinations”
- A very, *very* fancy text calculator

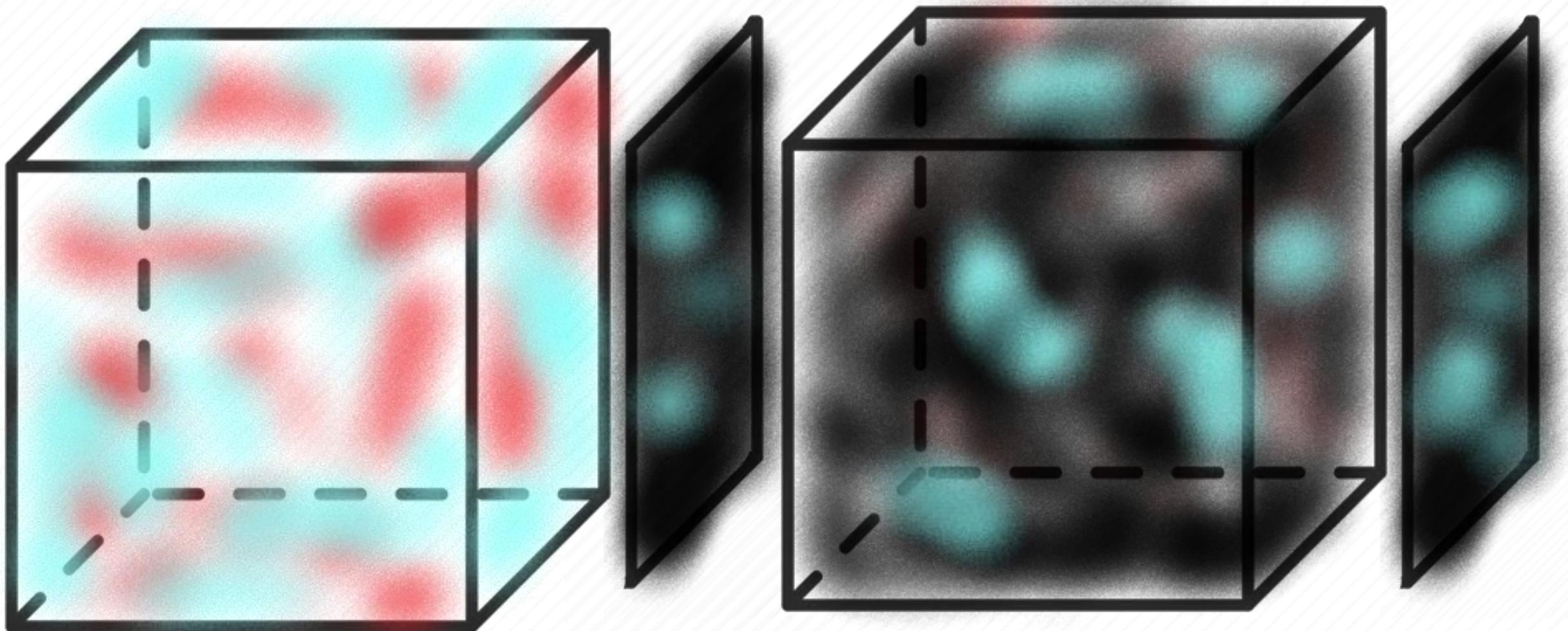




GPT 4 (not 4o):  
1.76 Trillion Parameters

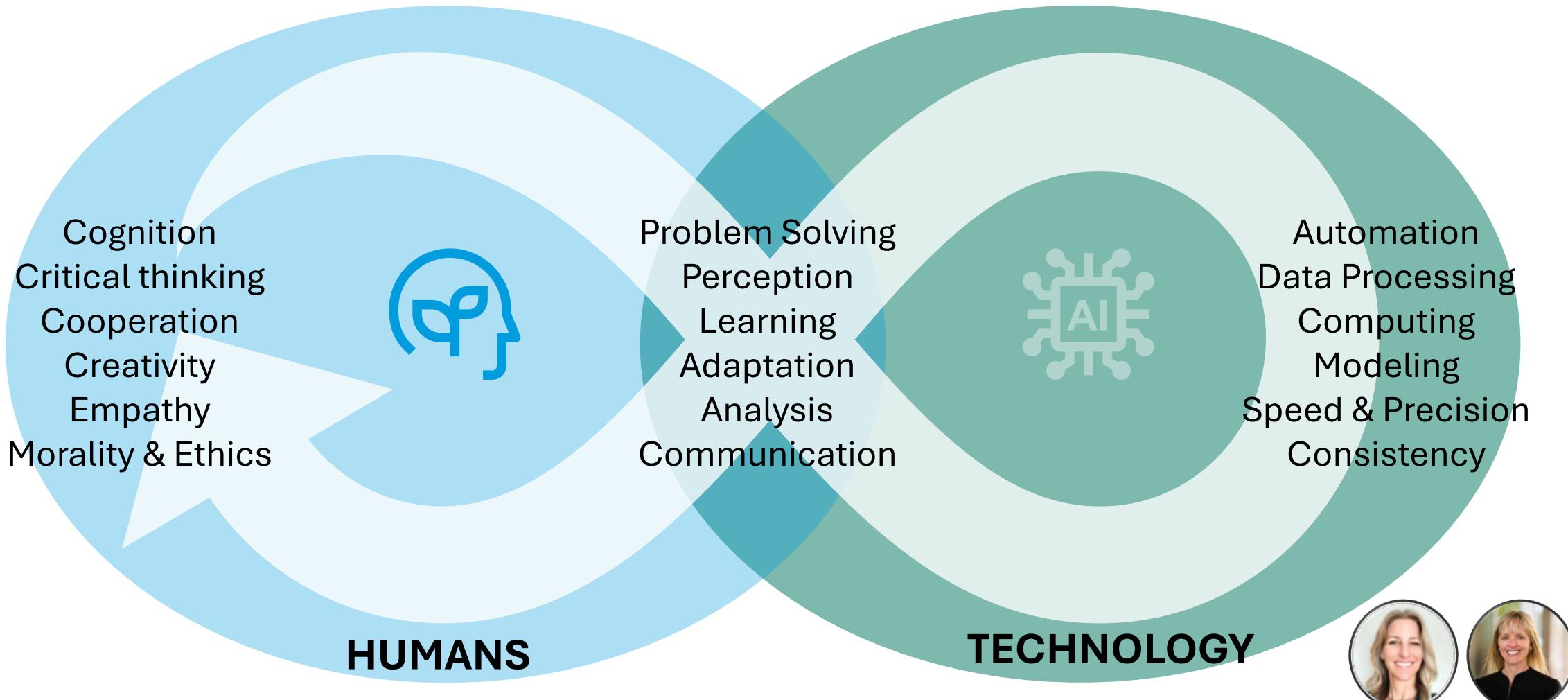


Pre-trained parameters → Prompt → Updated parameters → Output



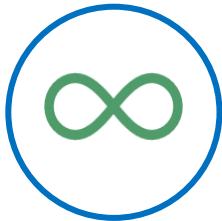
# COMBINING OUR STRENGTHS

With a “human in the loop” we can realize significant benefits of AI, automation and other advanced digital technologies



# Generative AI in Teaching & Learning

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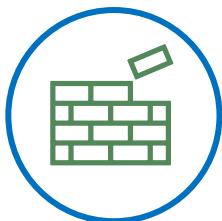
## CREATE TEACHING MATERIALS

- Create learning objectives & rubrics.
- Generate presentations, images, learning activities, and gamification.
- Generate case scenarios.



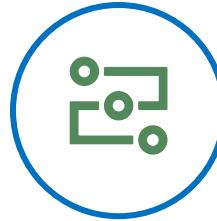
## PERSONALIZE OWN LEARNING

- Analyze and synthesize information.
- Solidifying complex concepts.
- Create learning materials (flashcards, questions, virtual patients).



## SUPPORT ADMINISTRATIVE TASKS

- Create letters of recommendation.
- Facilitate learner feedback.
- Analyze information (admissions, performance data, etc.).



## DX MENTOR & RECONNECT

- Capturing clinical experiences and recommending just in time resources.
- Custom nudges connect with a digital catalog of resources.



## COACHING

- Reach time coaching (simulation and/or encounters).
- Feedback on writing and clinical notes.
- Trainee, Attributable & Automated Care Evaluations in Real-Time (TRACERs).



## PRECISION EDUCATION

- Connect workplace workflow with learning to prioritize learner agency.
- Supports adaptive expertise and fit-for-purpose assessment.

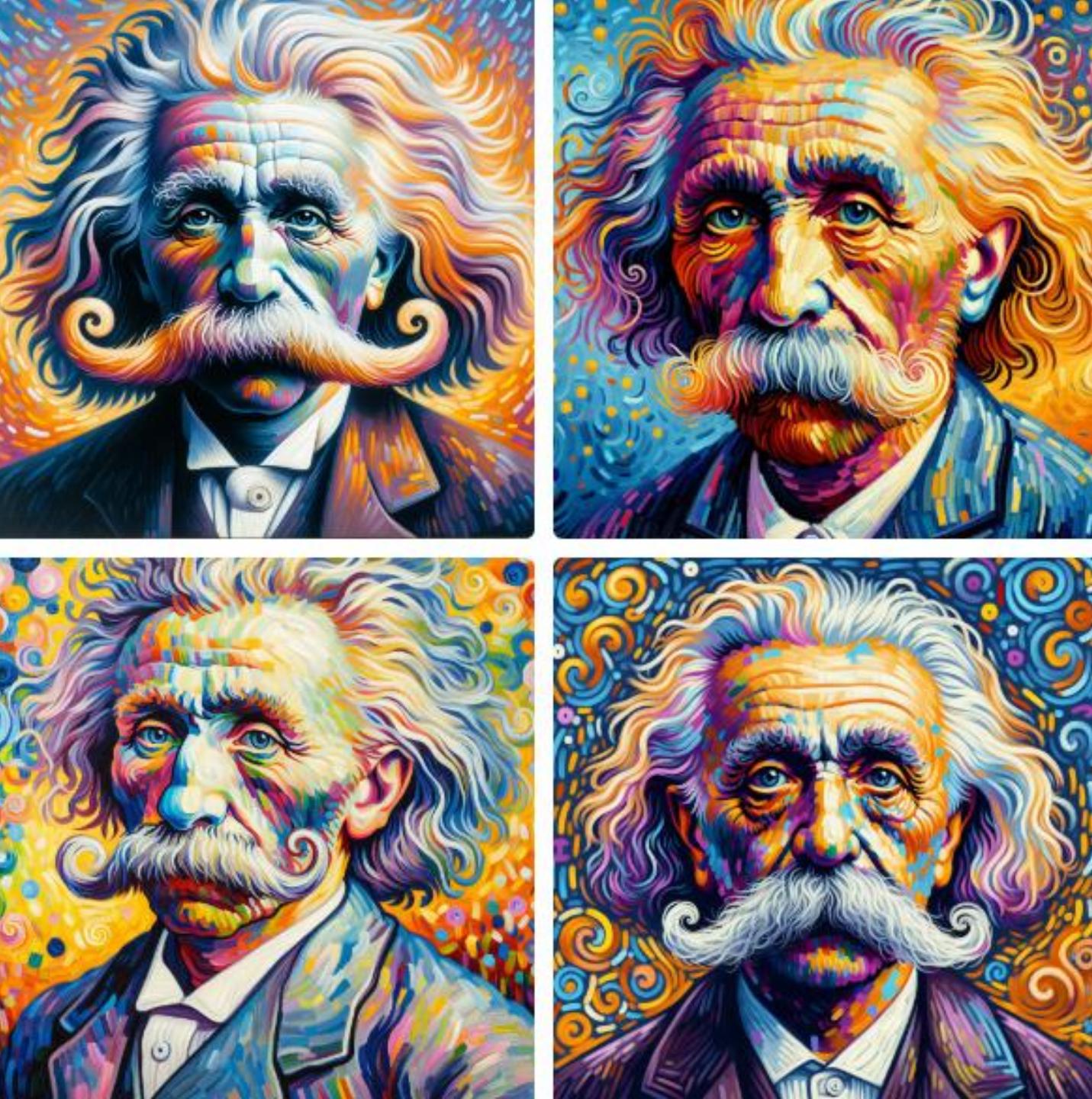
# PROMPTING

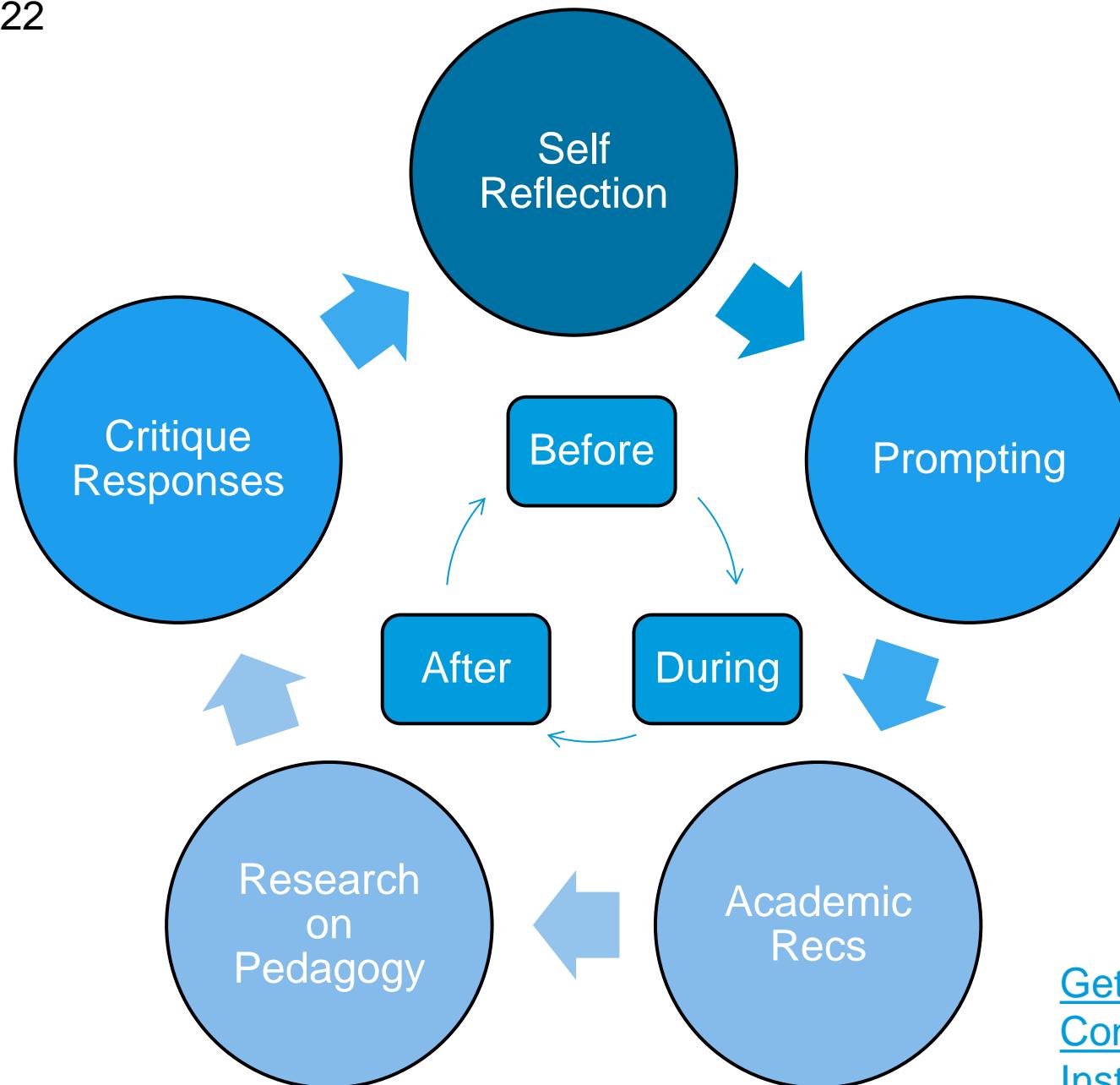
# PROMPTING

“If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it,” - Albert Einstein

Prompts

1. Create an abstract painting of an older man with long frizzy hair and a big handlebar mustache in the style of van Gogh
2. I am sorry to lead you astray. The style of the painting should be like a van Gogh but the subject should look more like Einstein



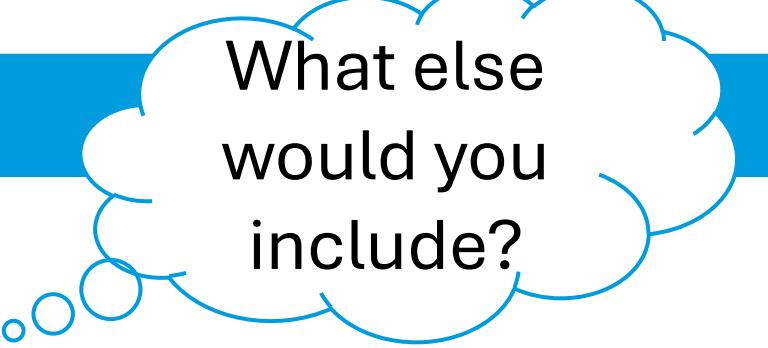


# SPARC: PROMPTING

- Before
  - Self Reflection
- During
  - Prompting model
  - Academic requirements
  - Research on pedagogy
- After
  - Critique Response

[Getting Started with Generative Artificial Intelligence:  
Considerations and Strategies | Michael V. Drake  
Institute for Teaching and Learning](#)

# THE SPARC OF COURSE DESIGN

SPARC	Sample Sources	What else would you include?
S	<ul style="list-style-type: none"><li>• Design Questions</li><li>• Big Rocks</li></ul>	 A blue thought bubble icon with a wavy border and three smaller circles inside, positioned to the right of the sample sources column.
P	<ul style="list-style-type: none"><li>• TRACI model</li></ul>	
A	<ul style="list-style-type: none"><li>• Accreditation Standards</li><li>• Academic Standards of your discipline</li></ul>	
R	<ul style="list-style-type: none"><li>• Backward Design</li><li>• Bloom's Taxonomy</li><li>• Fink's Significant Learning</li></ul>	
C	<ul style="list-style-type: none"><li>• What did you anticipate?</li><li>• How did the response align with your S, A, &amp; R?</li><li>• What part of the prompt will you change?</li></ul>	

# ARTIFICIAL INTELLIGENCE (AI)

A machine acting ‘intelligent.’ most often defined as ‘human-like’ in its ability to make decisions (predicting)

(Gordon, et al., 2024)

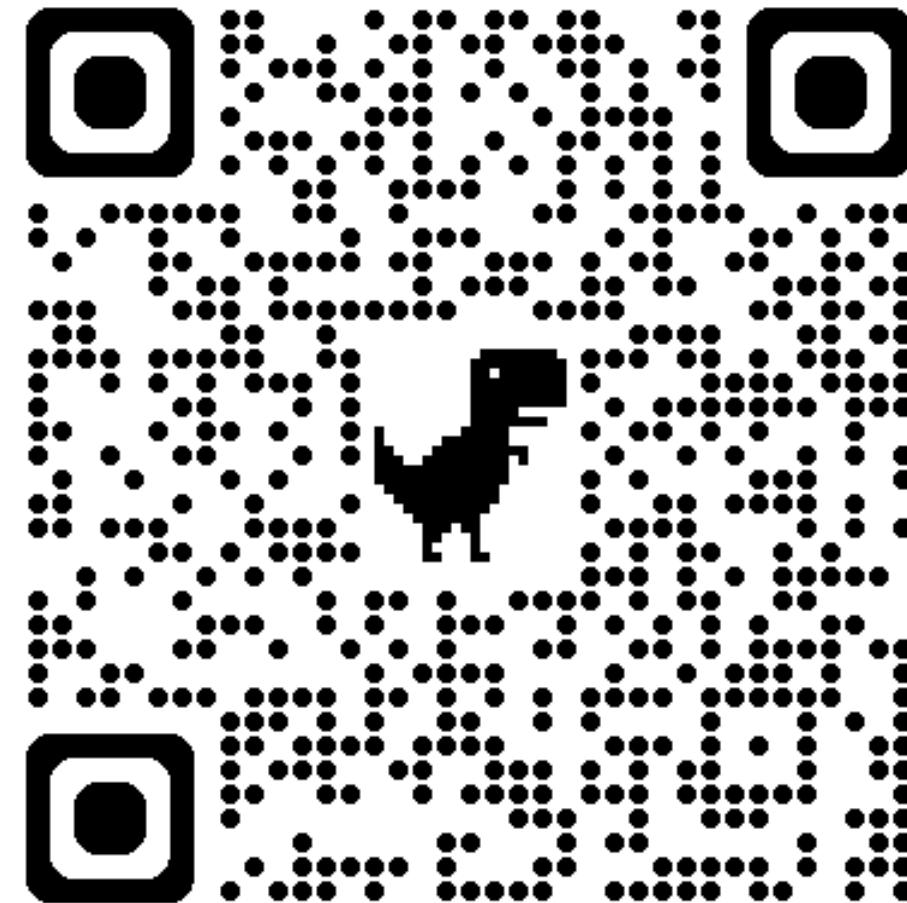
Prompt:

O-H

Copilot:

I-O!  How can I assist you today?

# CHATGPT



# PROMPTING FRAMEWORK | TRACI

- **T** {TASK} refers to general type of output that the prompt should achieve.
- **R** {ROLE} refers to the ‘person’ who will present the response.
- **A** {AUDIENCE} refers to the ‘person’ who the response is designed to reach.
- **C** {CREATE} provides clear instructions about desired format of the response.
- **I** {INTENT} indicates the overall intention or purpose of the prompt

# PROMPTING FRAMEWORK | TRACI

You are a graduate medical education program director and need to create a rubric to assess learners teaming to solve a problem. Please create a rubric to assess graduate medical education residents on teaming. Create a table with no more than 5 domains and 4 competency levels based aligned with the ACGME framework.

**T** = TASK | **R** = ROLE | **A** = AUDIENCE | **C** = CREATE | **I** = INTENT

# PROMPTING FRAMEWORK | TRACI

Domain	Level 1 (Novice)	Level 2 (Advanced Beginner)	Level 3 (Competent)	Level 4 (Proficient)
Communication	Limited contribution to discussions; shares information minimally.	Begins to share information but lacks clarity or context.	Communicates clearly with team members, providing relevant information.	Consistently communicates effectively, ensuring all team members are informed and engaged.
Collaboration	Struggles to collaborate; shows limited responsiveness to others' input.	Occasionally collaborates but tends to work independently.	Actively collaborates, seeks input, and contributes meaningfully to group efforts.	Demonstrates full engagement and encourages others to collaborate, fostering a team-centered approach.

T = TASK | R = ROLE | A = AUDIENCE | C = CREATE | I = INTENT

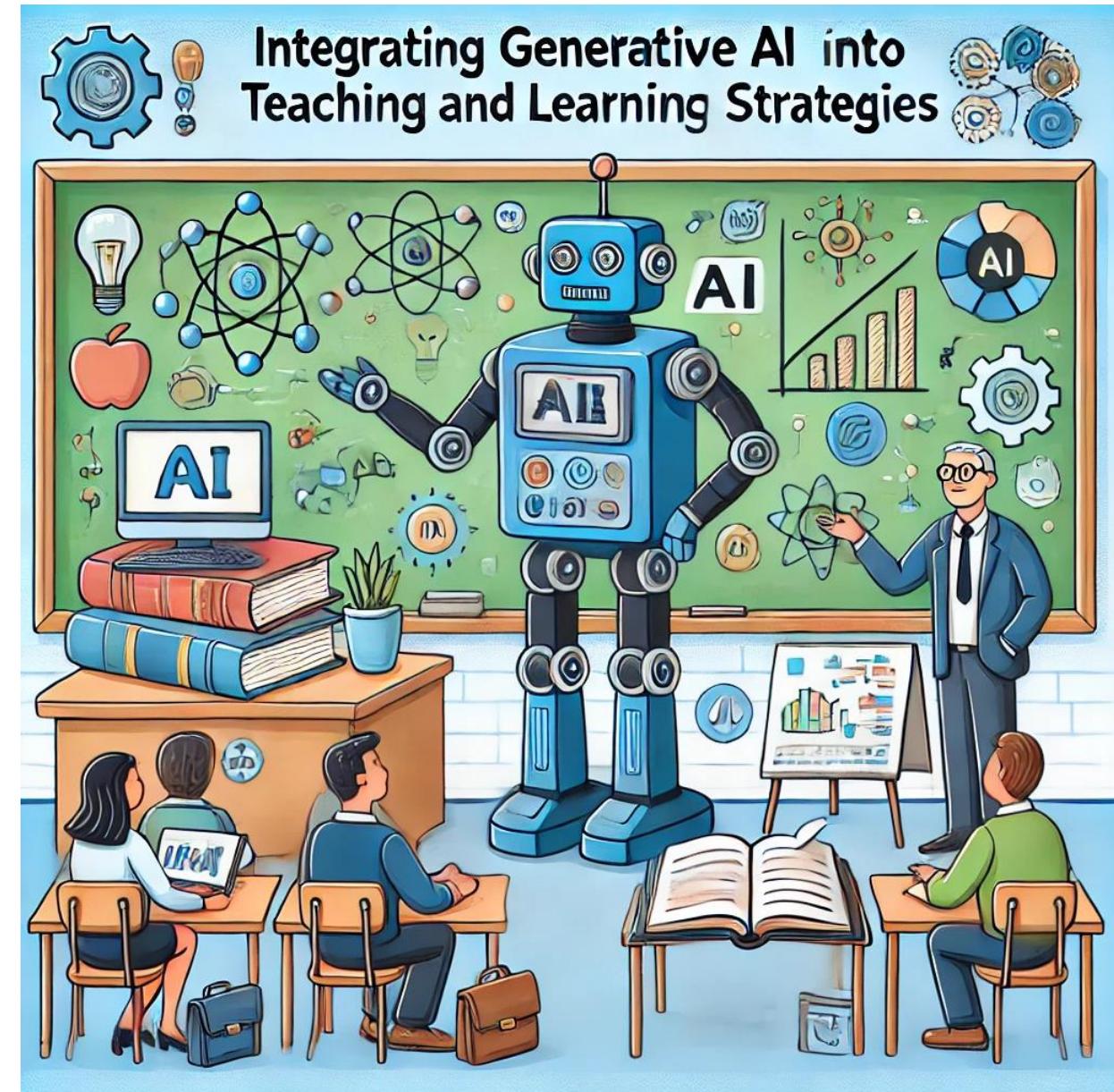
Resolution	manages conflict, leading to team	manages conflict, though with	addresses and resolves conflicts	conflicts, ensuring positive outcomes
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# ADVANCED PROMPTING -

- The TRACI model is an example of a "prompt formula"
  - Useful for ensuring that important contextual information is included.
  - Help shape the context, style, and content of the output
- GPTs have limitations to their attention; may fail with complex tasks.
  - Several prompting methods identified to mitigate this
    - <https://www.promptingguide.ai/>
  - One example is "prompt chaining"
    - GPT breaks down the prompt (chain-of-thought)
      - "Think through this step-by-step"
    - User breaks down the task into smaller parts

# INTEGRATING GENERATIVE AI INTO TEACHING AND LEARNING INITIATIVES AND STRATEGIES

Chris



The term "O-H" can refer to several concepts across different fields:

1. **Hydroxyl Group in Chemistry:** In organic chemistry, "O-H" denotes the hydroxyl group, consisting of an oxygen atom bonded to a hydrogen atom. This functional group is fundamental in alcohols and phenols, influencing properties like solubility and boiling points. The O-H bond is polar, enabling hydrogen bonding, which significantly affects a compound's physical and chemical characteristics. FIVEABLE LIBRARY
  2. **Hydroxide Ion ( $\text{OH}^-$ ):** In inorganic chemistry, " $\text{OH}^-$ " represents the hydroxide ion, comprising an oxygen and hydrogen atom carrying a negative charge. This ion is a common base in aqueous solutions and plays a crucial role in acid-base chemistry. Hydroxide ions are present in various compounds, such as sodium hydroxide ( $\text{NaOH}$ ) and potassium hydroxide ( $\text{KOH}$ ), and are essential in numerous industrial processes. BYJU'S
  3. **Abbreviation for Overhead:** In business and accounting, "O/H" is an abbreviation for "overhead," referring to the ongoing operational expenses of running a business, excluding direct costs associated with creating a product or service. Overhead costs can include rent, utilities, and administrative expenses. ACRONYM FINDER
  4. **O&H Danish Bakery:** "O&H" refers to O&H Danish Bakery, a renowned bakery based in Racine, Wisconsin, famous for its Danish Kringle pastries. The bakery has been operating since 1949 and offers a variety of scratch-made bakery products. OHDANISH BAKERY
  5. **Occupational Outlook Handbook:** "O.O.H." stands for the Occupational Outlook Handbook, a publication by the U.S. Bureau of Labor Statistics that provides career guidance, including information on job outlooks, salaries, and required qualifications for various occupations. BUREAU OF LABOR STATISTICS
  6. **Hydroxyl Radical ( $\cdot\text{OH}$ ):** In chemistry, " $\cdot\text{OH}$ " denotes the hydroxyl radical, a highly reactive species formed by the removal of a hydrogen atom from water. It plays a significant role in atmospheric chemistry and various biological processes. WIKIPEDIA

The specific meaning of "O-H" depends on the context in which it is used.



I am a huge college football fan! O-H-



## Memory updated

I-01



# EXAMPLES OF GENAI USE

- Generating content for assessments
  - Assessment materials (questions, patient charts, etc)
  - Self-assessments
- Scoring constructed responses
  - OSCE PNs, SP transcripts
- Acting as Standardized Patient Encounters
- "First-pass" TA
- Feedback (formative settings)
- Precision Education

# USING GPT TO SCORE POST-ENCOUNTER NOTES

- OSCEs (and related performance tasks) are great measures of a student's clinical skills and knowledge.
- Grading OSCE PNs can be laborious.
  - Analytic rubric:
    - If "x" is included in the note, student gets # points.
    - Tedium to grade, not representative of the full "clinical reasoning" construct, students may focus on writing as much as possible.
  - Holistic rubric:
    - "minimal", "partial", "complete"
    - Quicker to grade, may not allow for specific feedback, some subjectivity in rubric application

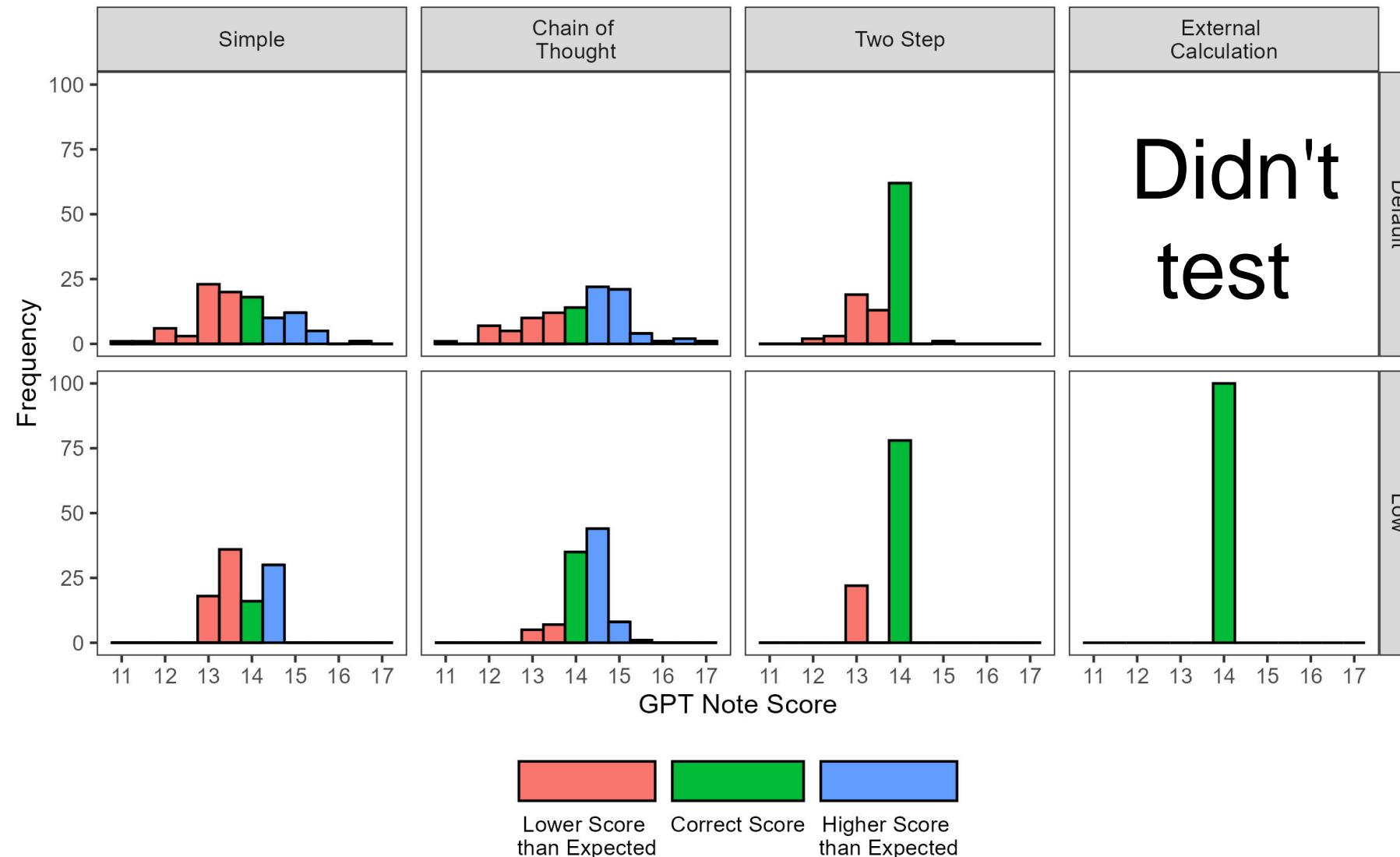
# USING GPT TO SCORE POST-ENCOUNTER NOTES

- Wanted to see how well GPTs could apply an analytic rubric to score a PN.
- Wrote PNs to that included different parts of the analytic rubric.
- Submitted each PN to a GPT 100 times.
  - ChatGPT 4o, 4o-mini
  - Anthropic Claude Sonnet, Haiku
  - Google Gemini Pro, Flash
- Used two temperature settings: default (50%), low (5%)
- Iteratively worked on prompt engineering to improve performance

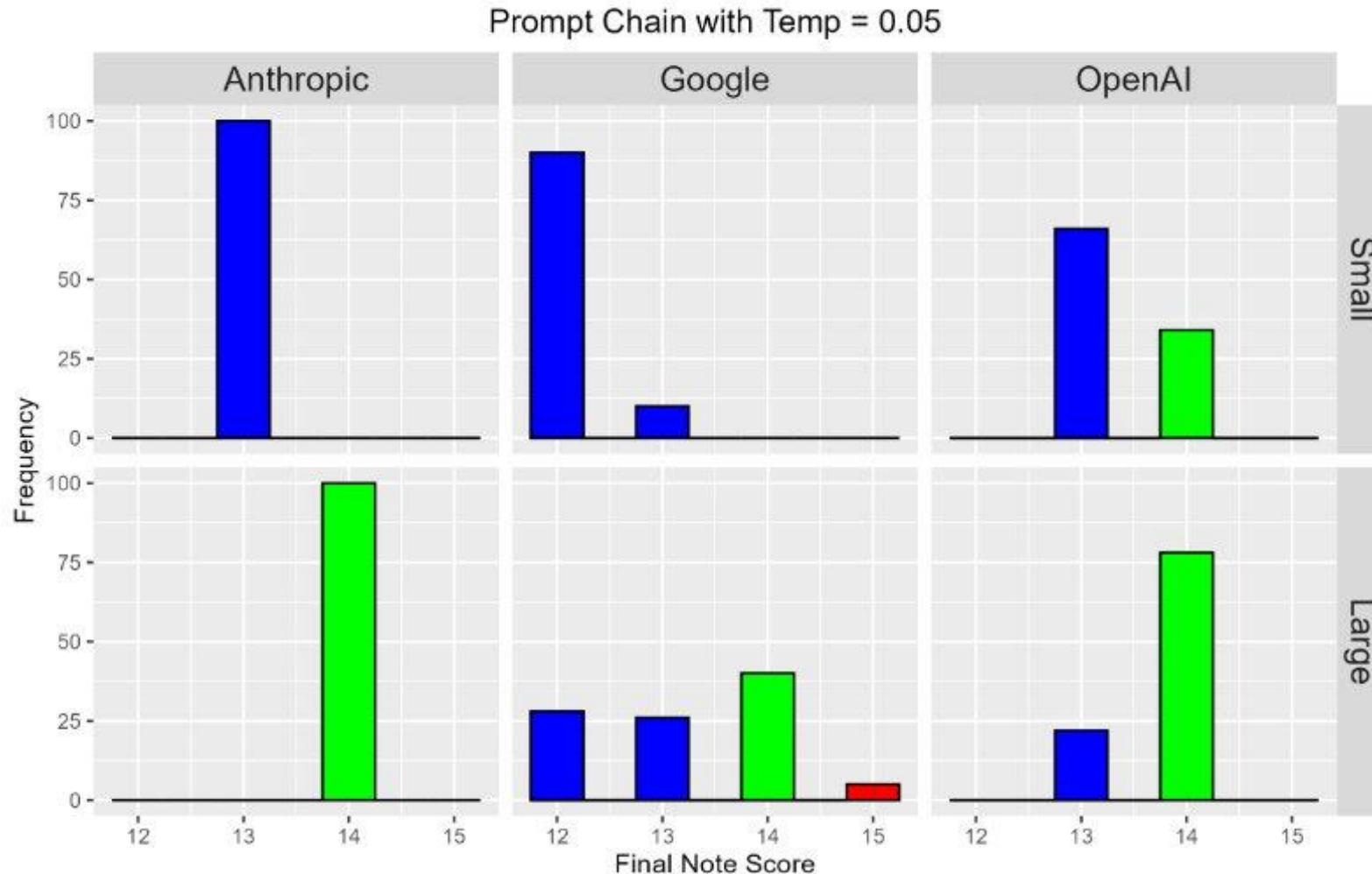
# USING GPT TO SCORE POST-ENCOUNTER NOTES

- Simple Prompt
  - Followed a prompt formula
  - Prompt + Rubric + Note = GPT input
- Chain-of-Thought Prompt
  - "Think through this step-by-step"
- Prompt Chaining
  - Prompt 1 : Apply Rubric, get GPT output
  - Prompt 2 : Submit GPT output, ask for final score

# USING GPT TO SCORE POST-ENCOUNTER NOTES



# CAUTIONARY TIP – NOT ALL GPTs ARE THE SAME



# USING GPT TO SCORE POST-ENCOUNTER NOTES

- What were sources of score variability?

Content	Points
Tenderness to deep palpation of the right medial heel	1

**“A musculoskeletal exam revealed some pain during a deep palpation on the right heel.”**

- “Didn’t say medial, so does not get credit.”
- “Didn’t say medial, so only received partial credit (1/2 point).”
- “Full credit.”

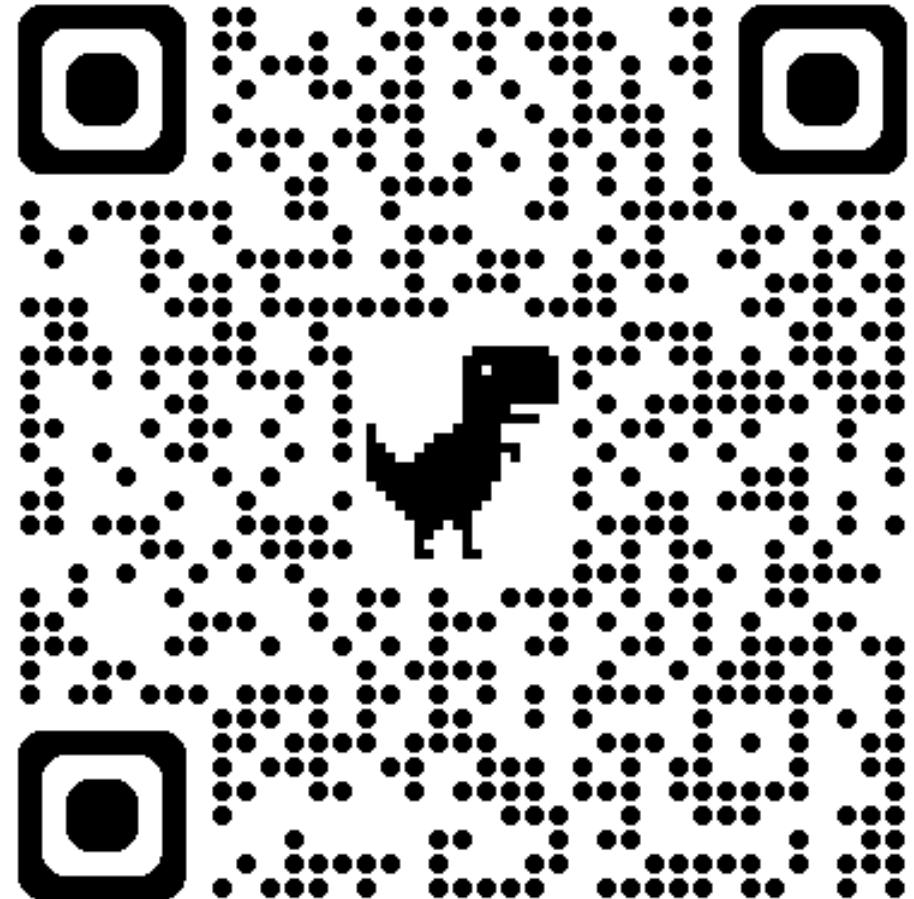
# USING GPT TO SCORE POST-ENCOUNTER NOTES

- What were sources of score variability?
- Addition! Remember, these are *language* models.

$$1 + 2 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 3 = 13?$$

# WHAT USE CASES CAN YOU THINK OF?

- In what ways can GPTs help you in your work?
- In what ways can GPTs help you in other aspects of your life, allowing you to focus more on your work?
- Use ChatGPT as a jumping off point, don't feel restricted by this use case!



# **Q&A AND DISCUSSION**

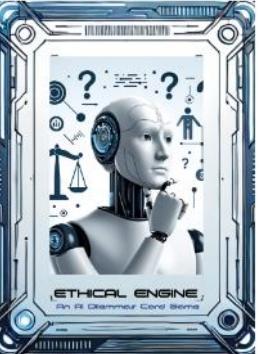
# **APPRECIATE THE ETHICAL, SOCIAL, AND CULTURAL IMPACTS OF USING GENERATIVE AI IN EDUCATION**

Elissa

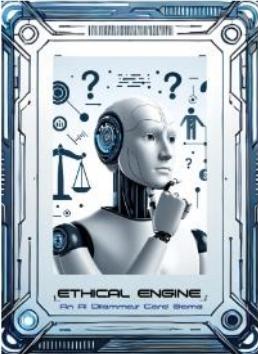
## Ethical Engine Card Deck



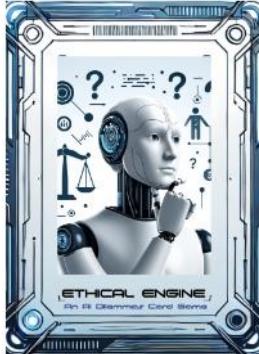
Card 1



Card 2



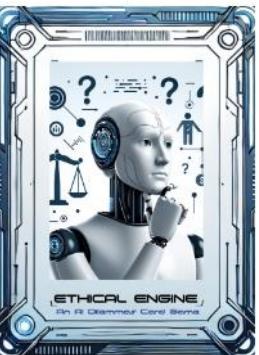
Card 3



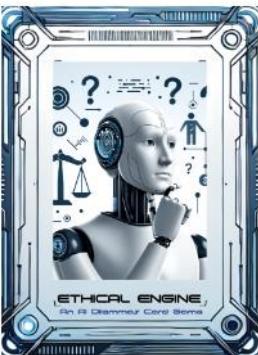
Card 4



Card 5



Card 6



Card 7



Card 8

Reference: [Ethical Engine - Ethical Engine Card Deck](#)



## Card 23



AI in Education

Data Privacy Concerns

AI in Society

# Thank You for steering into Teaching Learning with GenAI!

Quantitative futurist Amy Webb shares three technologies, **artificial intelligence**, **wearable devices**, and **biotechnology** that make up the “super cycle” and why, despite the unnerving change, we still need to do some serious future planning

Dare to lead Podcast: [What's Coming \(and What's Here\) - Brené Brown](#)



## Resources



### WEBMIX OF AI

<https://sites.google.com/view/aimeddedconnect>



### MOLICK'S BLOG

<https://www.oneusefulthing.org/>



### RESOURCES 4 EDUCATORS

<https://college.mayo.edu/academy/resources-for-educators/>



### AAMC AI RESOURCES

<https://www.aamc.org/about-us/mission-areas/medical-education/artificial-intelligence-and-academic-medicine>



### EDUCATOR'S CENTRAL

<https://mayocliniceducatorscentral.blubrry.net/>



### AAMC AI COMMUNITY

<https://communities.aamc.org/home>