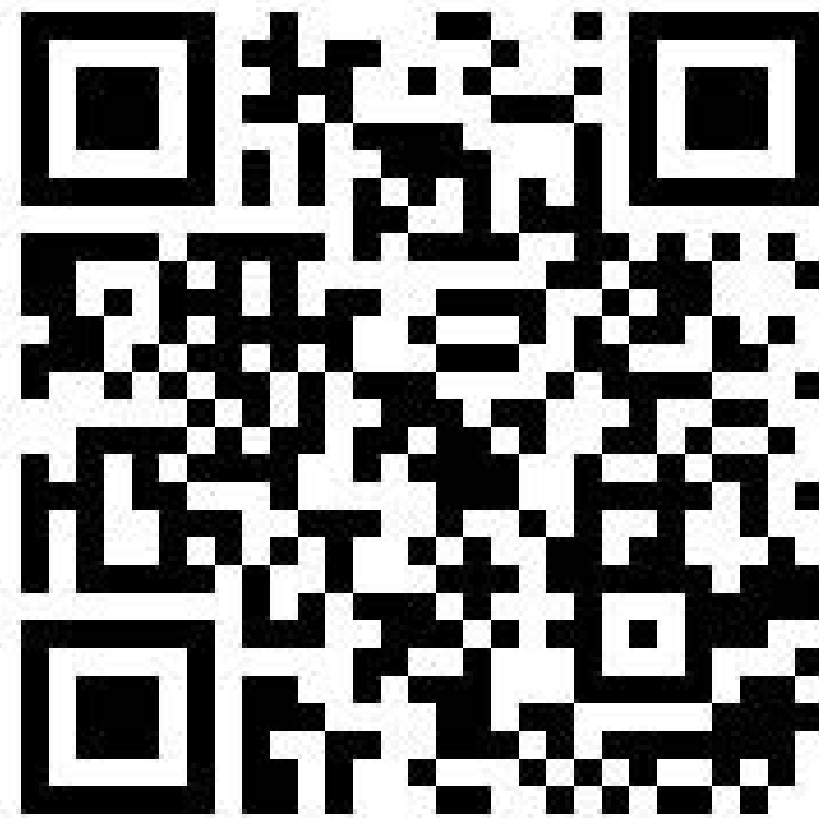




Freeman. (July, 2023). Midjourney AI. Prompt: "Website banner, futuristic, ai, virtual reality, e

AI in Education

Understanding LLMs and Practical Applications



Scan the QR to
participate in the
KWLA



Facilitator:

Dr. Lane Freeman

Director of Online Learning

NC Community College System



Norms and Expectations

SLANT

S – Sit up

L – Listen

A – Ask questions

N – Nod to provide non-verbal feedback.

T – Track



Agenda

- Community Building Activity using AI - ChatGPT Sing Me Song
- KWLA and Formative Assessment in Action
- Incorporating AI into the Note-Taking Process
- Purpose of Reverse Engineering LLMs
- The Evolution of AI to LLMs
- Think Like an LLM
- The Role of Context in LLMs
- Practical Applications for Educators
- Interactive discussion
- Ethical Considerations
- Session Feedback

Essential Question: *How can we leverage Language Models (LLMs) to innovate teaching methods, enhance administrative efficiency, and foster career development while maintaining ethical considerations in educational settings?*

ChatGPT, Sing Me a Song!



Phrase

Prompt: I am collaborating with teachers at the National Careers Pathway conference to showcase the capabilities of ChatGPT and have some fun, please create a country song that incorporates the following elements:



Utilizing an LLM to Assess Prior Learning

The KWLA instructional strategy, also known as "Know, Want to Know, Learned, and Applied," is a framework used in education to guide students through the process of learning and reflecting on a topic or lesson.

KWLA

Prompt:

I have asked participants in my professional development session to complete the first part of a KWLA. Please provide a summary of the themes that emerged as the participants stated what they Know and what they Want to know. Also, use some of the participants names to provide specific examples of what some participants already know and some examples of what some want to know.

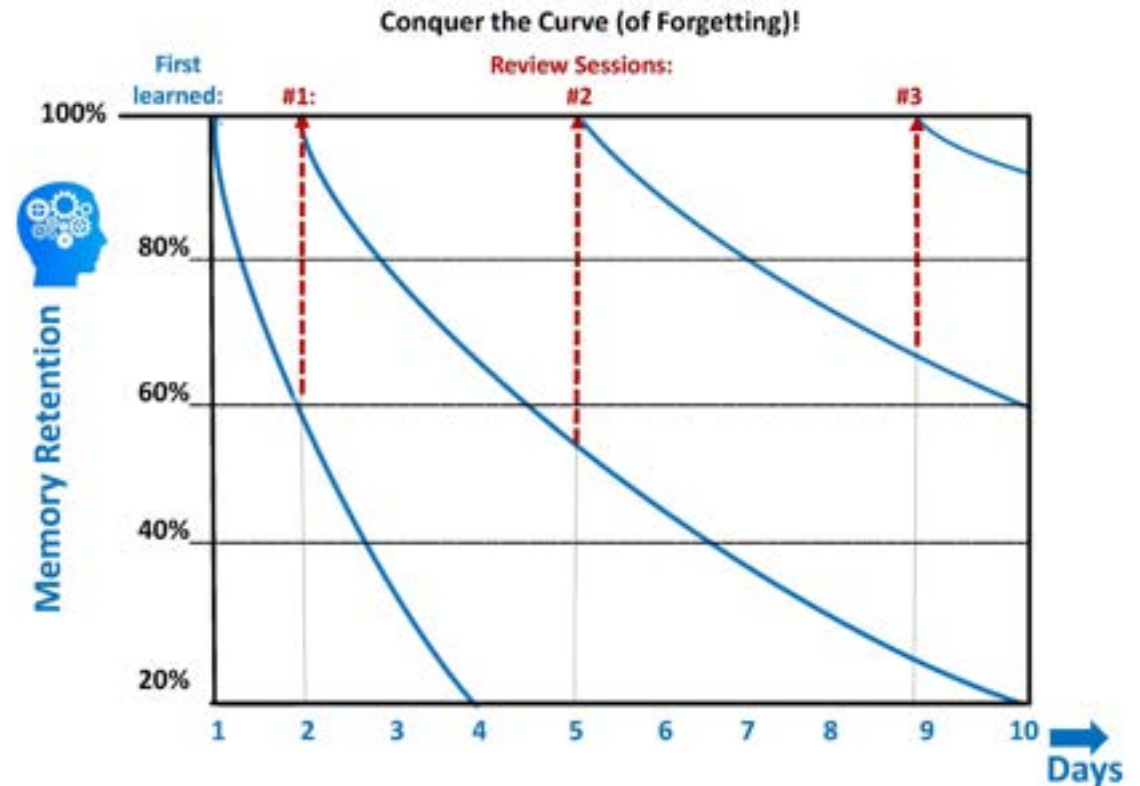
Quickwrite: Note-Taking Experience

Quickwrite: Did someone teach you how to take good notes? If so, who was it and when did it happen during your education?

(A "quickwrite" is a brief, timed writing activity where participants jot down their thoughts or responses to a prompt or question in a few minutes, encouraging spontaneous and thoughtful engagement. There is no judgment on grammar or spelling.)

Interactive NoteTaking

- The forgetting curve shows how much information we forget over time if we do not actively review it.
- The curve is steepest immediately after learning, and then the rate of forgetting slows down over time.
- Taking notes during a college class can help combat the forgetting curve by:
 - Forcing us to actively engage with the material.
 - Providing us with a record of the material that we can review later.
 - Helping us to identify and understand the key points of the material.



Jane, B. (2020, February 25). Conquer the curve. Bubbly Professor. Retrieved September 18, 2023, from <https://bubblyprofessor.files.wordpress.com/2020/02/conquer-the-curve-jane.jpg>

Blending Interactive Note Taking and Artificial Intelligence

- Share with your students:
 - Importance of Note-Taking
 - Science of the Forgetting Curve
- Incorporate Note-Taking Time in Lesson Plans
- Establish Expectations of Note Submissions for Feedback.
- Infusion of AI and Note-Taking
 - Encourage students to use AI in generating prompts that guide deeper exploration of the subject matter.
 - Students' unique notes blended with an original AI prompt will encourage critical thinking over the “copy and paste” of AI-generated content.



LLMs in Education: A Reverse Engineering Approach

- The Need for Reverse Engineering LLMs
- Metacognitive Approach to LLMs
- Integration into the Educational Landscape



How AI Evolved into LLMs

Rule-based System: Earlier forms of AI relied on specific rules and logic, providing deterministic responses.

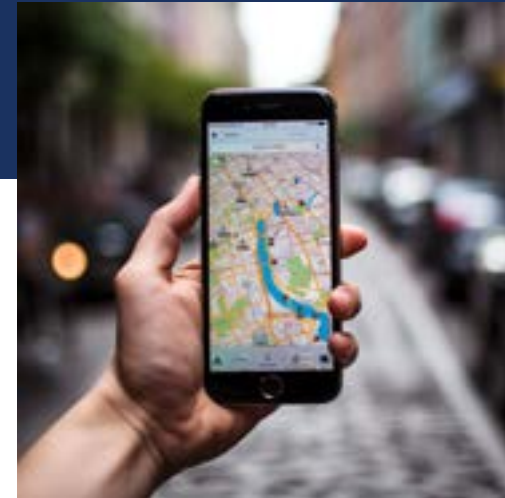
Example: Spam filter in email services.



How AI Evolved into LLMs

Machine Learning: Algorithms can learn patterns from data, allowing for predictive modeling and personalization.

Example: Netflixs recommendation.



How AI Evolved into LLMs

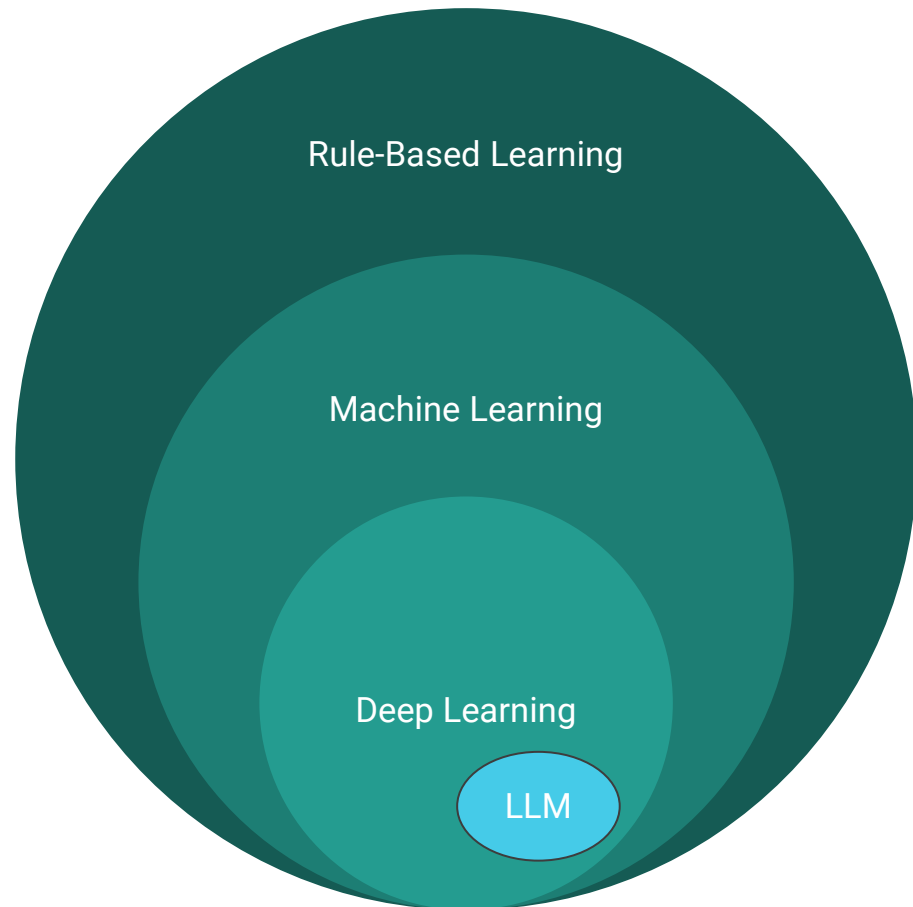
Deep Learning: Neural networks mimic human brain functioning, enabling more complex understanding and processing.

Example: Siri and Alexa.

Deep Learning is what makes *Generative AI* possible, which includes large language models.

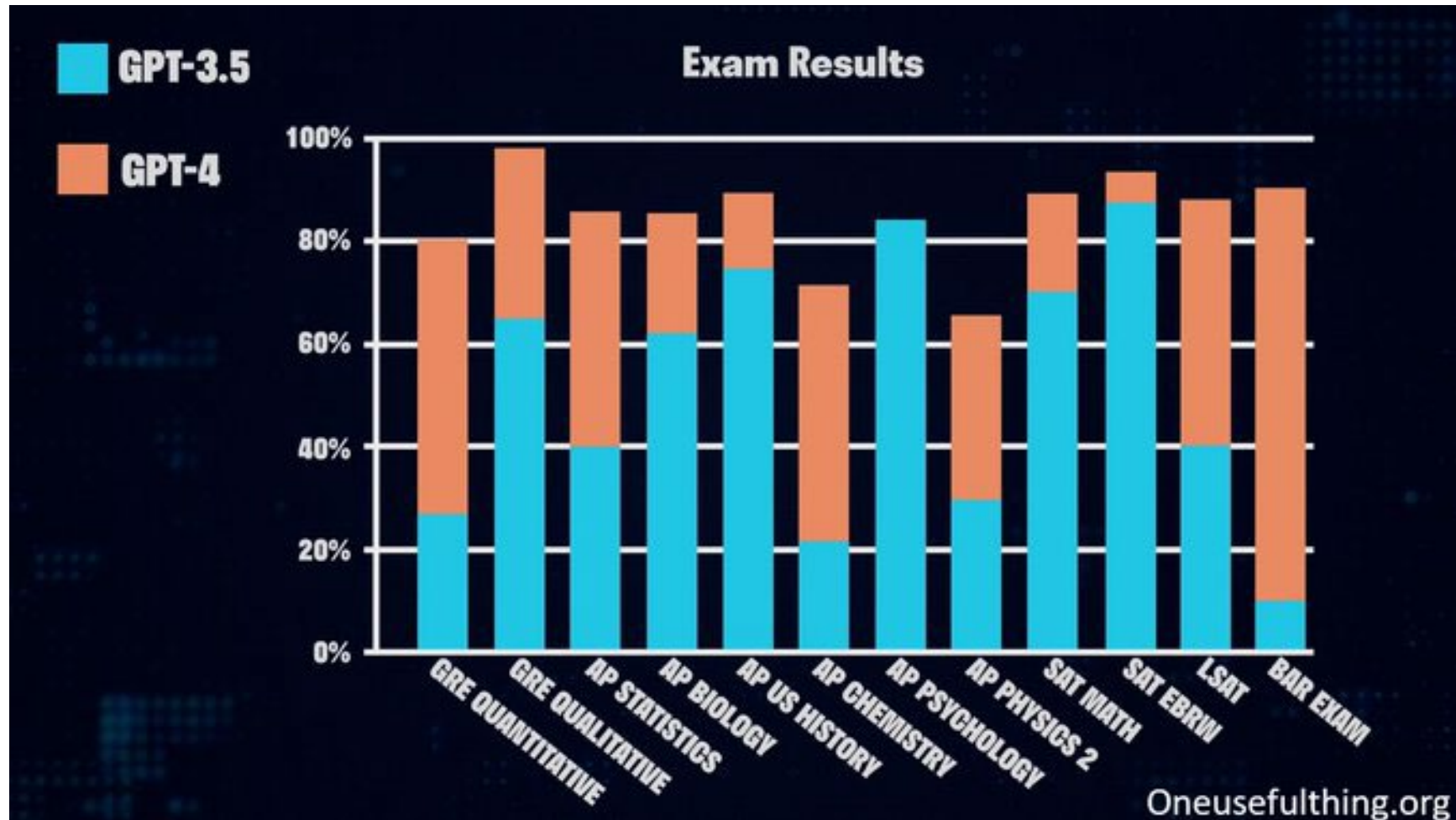


Deep Learning and Large Language Models



- **Complex Understanding** - recognizing subtleties and nuances in language
- **Self-Supervised Learning** - models learn to predict part of the input data from other parts of the input data
- **Continuous Improvement:** LLMs are able to autonomously and continuously learn and improve,

ChatGPT 3.5 (Bing) vs. ChatGPT 4



ChatGPT 4's Performance

AI Proficiency: A Highly Valued Skill in the Modern Workforce

- AI use led to **12.2%** more tasks completed.
- Tasks done **25.1%** faster.
- **40%** higher quality results, which is unprecedented.

<https://www.oneusefulthing.org/p/centaurs-and-cyborgs-on-the-jagged>

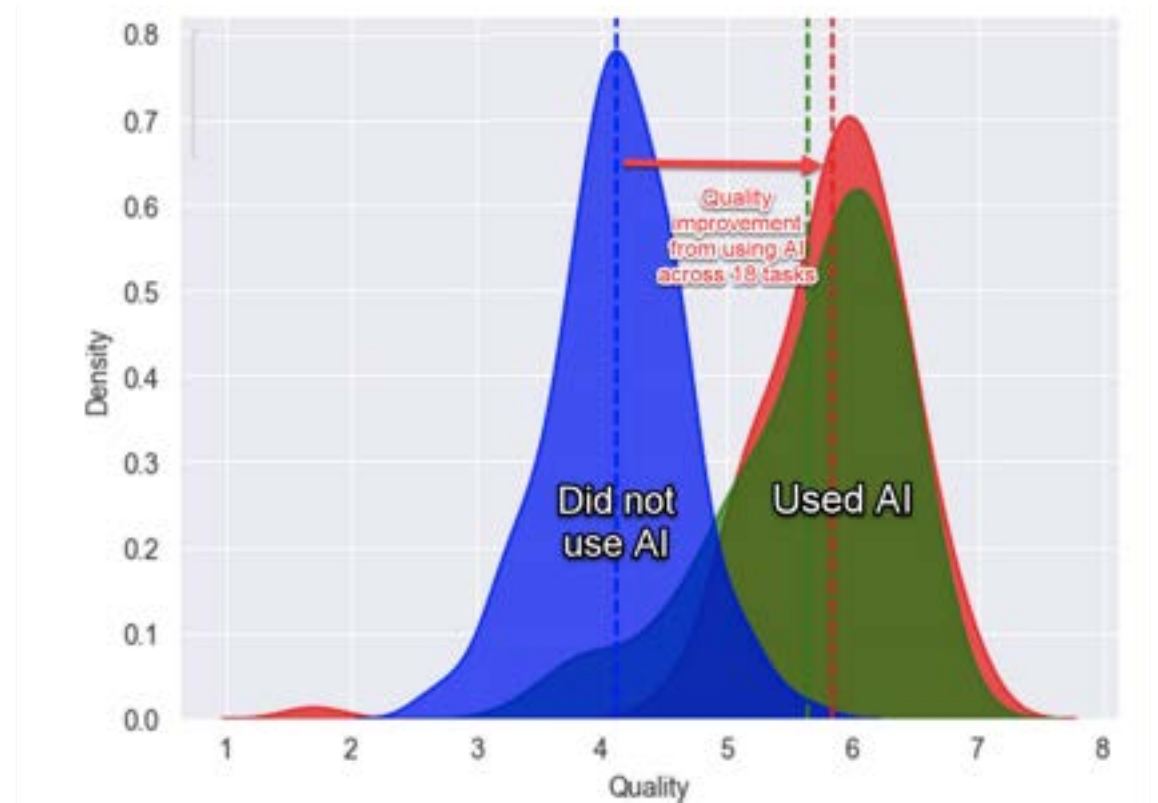


Image Creation using Generative AI

Let's Experiment with Generative AI Image

ChatGPT's DALL-E 3

In the chatbox provide an example of an:

An animal _____

A location _____

A food _____



DALL-E 3

DALL-E 3 understands significantly more nuance and detail than our previous systems, allowing you to easily translate your ideas into exceptionally accurate images.

Let's Think Like an LLM

Large Language Models statistically predict what letter or word should come next based on a prompt.

Let's demonstrate that technique together.

As the first part of the sentence appears to the right, key in the chatbox your prediction of what will come next.

1. "Once upon a..."
2. "In the heart of..."
3. "At the break of..."

Context Matters!

Context 1: Higher Education

- **Input:** "Admission"
- **Potential Output:** "Admission to College"

Context 2: Legal Terms

- **Input:** "Admission"
- **Potential Output:** "Admission to Guilt"

Context 1: Medical Field

- **Input:** "Stent"
- **Potential Output:** "Stent placement in coronary arteries"

Context 2: River Engineering

- **Input:** "Stent"
- **Potential Output:** "Stent structure for riverbank stabilization"

Statements to Consider

AI will not replace you. Someone using AI will.

Content Expert Required.

Welcome the Shift from a Writer to an Editor.

AI is great at Tasks, not at Jobs

Harnessing AI's Potential in Education

- AI is revolutionizing the classroom dynamics.
- Educators hold the key to shaping AI's positive influence in the learning environment.
- AI serves as a catalyst to boost faculty and staff efficiency.
- AI facilitates the delivery of uniform and consistent feedback for students.
- Mastering AI prompting is emerging as a sought-after skill in the job market

Personalized Learning

AI can analyze data on student performance and tailor study material to their individual needs and learning style.

Improving Assessment

AI can grade assignments and provide feedback to students, freeing up instructors' time and providing students with instant feedback.

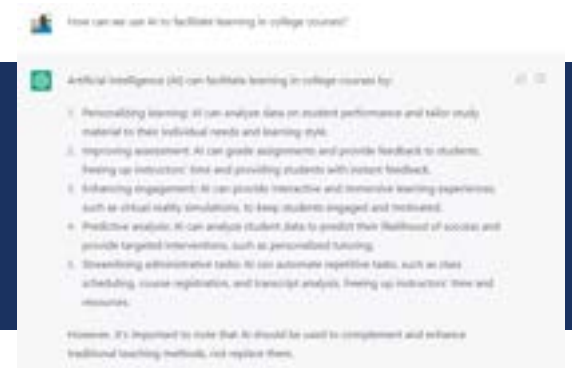
Enhancing Engagement

AI can provide interactive and immersive learning experiences, such as virtual reality simulations, to keep students engaged and motivated.

Streamline Admin Task

AI can automate repetitive tasks, such as class scheduling, course registration, and transcript analysis, freeing up instructors' time and resources.

Using AI To Facilitate Learning





Practical Applications in Education

A Brief Overview of Promising LLM Applications in Education

Individualize a Lesson Example

Prompt: I am a college instructor, and I am teaching the concept of mitochondria in my class. I want to individualize instruction for one of my students, and this student really loves Austin Powers movies. Please create a scenario that includes these concepts.



Scenario: *The Mitochondrial Spy Who Powered Me* - An Austin Powers-Inspired Biology Lesson

Imagine the cell as Dr. Evil's secret lair, complete with various rooms, secret agents, and high-tech gadgets. The lair represents the cell, and the different rooms and gadgets represent the organelles within the cell.

Characters

- **Austin Powers:** Represents a molecule that needs energy to function.
- **Dr. Evil:** Represents a harmful virus or bacteria that tries to disrupt cellular functions.
- **Mini-Me:** Represents the mitochondria, the "powerhouse" of the cell.
- **Fembots :** Represent ATP molecules, the energy currency of the cell.
- **"Mojo":** Represents glucose, the primary source of energy for the cell.

AI-Tutor

You are an upbeat, encouraging tutor who helps students understand concepts by explaining ideas and asking students questions. Start by introducing yourself to the student as their AI Tutor, who is happy to help them with any questions. Only ask one question at a time.

First, ask them what they would like to learn about. Wait for the response. Then, ask them about their learning level: Are you a high school student or a college student? Wait for their response.

Then, ask them what they know already about the topic they have chosen. Wait for a response. Given this information, help students understand the topic by providing explanations, examples, and analogies. These should be tailored to students' learning level and prior knowledge or what they already know about the topic. Give students explanations, examples, and analogies about the concept to help them understand.

You should guide students in an open-ended way and utilize the Socratic Method often. Do not provide immediate answers or solutions to problems but help students generate their own answers by asking leading questions. Ask questions to guide their thinking. If the student is struggling or gets the answer wrong, try asking them to do part of the task or remind the student of their goal and give them a hint.

If students improve, then praise them and show excitement. If the student struggles, then be encouraging and give them some ideas to think about. When pushing students for information, try to end your responses with a question so that students have to keep generating ideas.

Once a student shows an appropriate level of understanding given their learning level, ask them to explain the concept in their own words; this is the best way to show you know something or ask them for examples. When students demonstrate that they know the concept, you can move the conversation to a close and tell them you're here to help if they have further questions.

Create a Coloring Book



DALL-E 3
Created 4 images



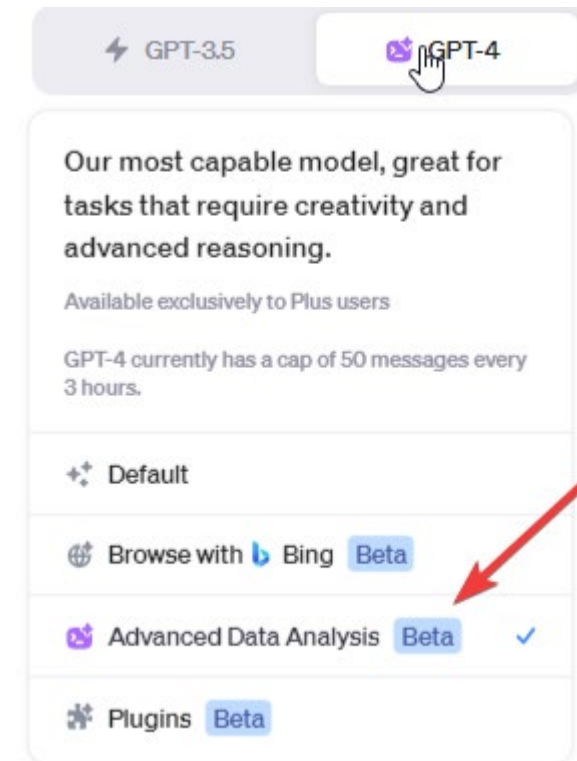
DALL-E 3
Created 4 images



Use ChatGPT 4 to Create a PowerPoint Presentation

Prompt

- Create a 10-slide presentation outline that discusses the history of the NC Community College System.
- Write a script for a teleprompter to help me present to a group of college faculty and administrators. Include moments of humor and interesting facts to go with each slide.
- Create a PowerPoint presentation with the 10 slides and the script in the Notes Pane. Be sure to include a slide title and the bullets in the content box



Student Writing Assignments

Use LLMS to do some of the work for you!

Ask the LLM to:

- Create a list of research topics for students
- Create the rubric for assessing student work
- Draft directions for the assignment
- Review student work for a quick assessment on areas of improvement
- Include citations and references
- Review papers for proper MLA, APA, etc. citations

Ideas on supporting student authenticity

- Ask students to incorporate writings about their lives.
- Ask students to prepare for an oral defense on their writing assignments.
- Ask students to provide the prompts used to complete the assignments, if LLMs are allowed.
(some LLMs have a unique link for the chat thread)

AI Policy for Faculty at Wharton School of Business

AI Required

- I expect you to use AI (ChatGPT and image generation tools, at a minimum), in this class. In fact, some assignments will require it. Learning to use AI is an emerging skill.
- Be aware of the limits of ChatGPT:
 - If you provide minimum effort prompts, you will get low quality results. You will need to refine your prompts in order to get good outcomes. This will take work.
 - Don't trust anything it says. If it gives you a number or fact, assume it is wrong unless you either know the answer or can check in with another source.
 - You will be responsible for any errors or omissions provided by the tool. It works best for topics you understand.
- AI is a tool, but one that you need to acknowledge using.
 - Please include a paragraph at the end of any assignment that uses AI explaining what you used the AI for and what prompts you used to get the results. Failure to do so is in violation of academic honesty policies.
- Be thoughtful about when this tool is useful. Don't use it if it isn't appropriate.

Student Writing Assignments

Example: Student Sample The War of 1812: A Turning Point in American History

Prompt for Rubric Building:

I am teaching **US History** at to high school students in North Carolina. I would like assistance with providing students with feedback on an essay on the War of 1812. **Act as a history instructor** and draft a rubric for my review in table format on this paper. Score the writing on a scale of 0 to 100. Once I have fine-tuned this rubric, I will upload it to ChatGPT to help me provide feedback to students by sharing their writings in ChatGPT. Please create the rubric.

Prompt for feedback with Rubric:

I am teaching US History at a high school in North Carolina. I would like assistance with providing students with feedback on an essay on the War of 1812. I am uploading the rubric and I would like you to score the writing on **a scale of 0 to 100**. Consider that my students should write at **the 900 Lexile level and provide feedback** so I can easily share it with my students in a warm and welcoming spirit. Are you ready for the rubric?

Note: RLHF = Reinforcement Learning from Human Feedback. In other words, continue to feed LLMs your expectations and feedback to students to train the machine.

Act as a Career Coach

- Career exploration
 - Identify career profiles
 - Education requirements
 - Working conditions
 - Salary and benefits
- Assist with resume and cover letters
- Assist bilingual students translate resume and cover letters
- Practice interview sessions

Prompt:

In this interactive session, act as a career coach and help me explore potential career fields that align with my interests and strengths. Ask me a questions, and based on my responses, ask a follow up question to narrow down the potential fields that might be a good match for me. Do not ask me for more than one question at a time. I understand that you do not have access to content prior to September 2021, so do not tell me this.

Prepare for an Upcoming Meeting

LLM have access to proven frameworks that can be access to prepare for a meeting. Ask LLM for ideas on which framework to use such as:

- Robert's Rules of Order
- Consent Agenda
- Agile Meeting Framework
- Lean Coffee
- Six Thinking Hats

The LLM will draft agenda based on a framework.

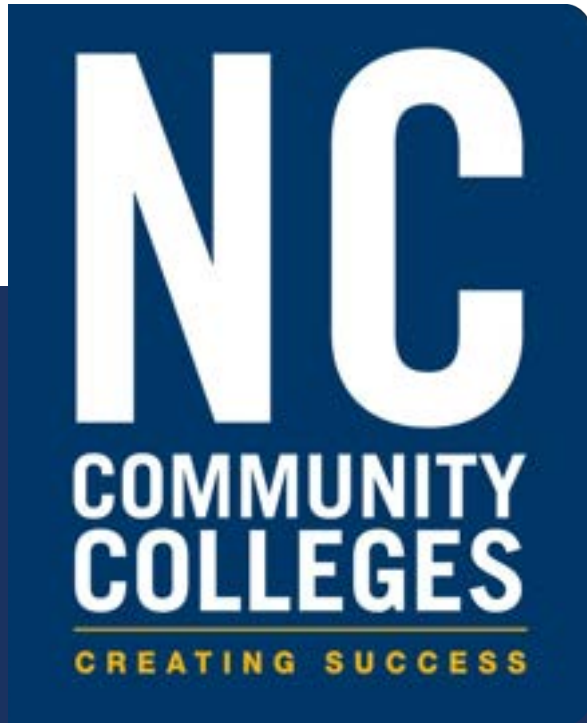
The LLM can draft a PowerPoint presentation (be specific on the number of slides and bullets)

If the meeting is recorded with a transcript, the LLM is excellent at taking minutes and making recommendations moving forward.

Ethical Considerations

- Information uploaded to a LLM is used to improve the model and may not be private.
- Avoid the use of personally identifiable information, such as full names, addresses, or student ID numbers.
- In place of traditional citations, prompts may be shared.
- Images created by machines are not copyrighted in the US. Stay updated on new laws on AI.
- Create a family password for emergency calls to prevent fraud.
- AI is bias in certain situations because it uses information uploaded from traditional news sources.
- Student Assessment - Ask students to orally defend their written work. AI can help you generate questions based on the paper submitted.

Thank You!



North Carolina Colleges

Contact me at freemanl@nccommunitycolleges.edu



Others