

Authentic Intelligence:

Designing
Performance Tasks in
the Al Age

Dr. Nicholas Kremer



Getting Started...

Original Proposal

Authentic Intelligence: Designing "AI-Proof" Performance Tasks | Landmark 4

The emergence of artificial intelligence writing technology like ChatGPT requires school districts to re-examine critical questions like, "what do we want students to truly be able to know and do?" today and "how will we know if they can independently do those things?" This session will provide strategies for designing rigorous and relevant performance assessments (ones where a computer cannot easily produce an artificial response) that align to the instructional visions set out by local school systems. It will also provide a framework that can be used for curriculum improvement cycles at the site or district level that maximizes community engagement and authentic applications of learning.

Revised Proposal

"Authentic Intelligence: Designing "AI-Proof"
Performance Tasks in an Age of Artificial Intelligence"

The emergence of artificial intelligence writing apps like ChatGPT require school districts to re-examine critical questions like "what do we want students to truly be able to know and do?" in today's society and "how will we know if they can independently do those things?". This session will provide strategies for designing rigorous and relevant performance assessments (ones where a computer can be used to think with you instead of thinking for you) that align to the instructional visions set out by local school systems. It will also provide a framework that can be used for curriculum improvement cycles at the site or district level that maximize community engagement and authentic applications of learning.

Meet Your Presenter: Nicholas Kremer, Ph.D.

- Principal (2020-present)
 - Eden Prairie Online (K-12)
- Director of Curriculum & Learning (2012-2020)
 - Eden Prairie Schools (MN)
 - Columbia Public Schools (MO)
- Adjunct Professor of Education (2008-present)
 - University of Missouri-Columbia (Literacy & Media)
 - Concordia University (Educational Leadership)
- English Language Arts (6-12) Teacher (2005-present)



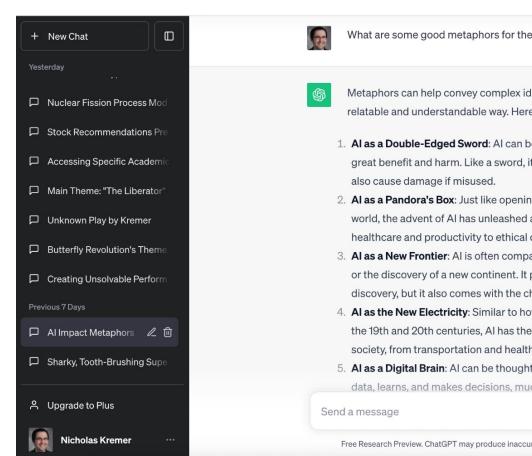
Audience Formative Assessment

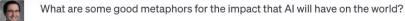
What is your current level of familiarity with artificial intelligence tools (i.e. ChatGPT)?



Understanding Artificial Intelligence

ChatGPT Example



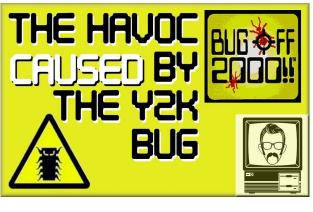


Metaphors can help convey complex ideas about the impact of AI on the world in a more relatable and understandable way. Here are some metaphors to describe the impact of Al: 0 0 7

- 1. Al as a Double-Edged Sword: Al can be likened to a double-edged sword, capable of both great benefit and harm. Like a sword, it can be a powerful tool in the right hands, but it can
- 2. Al as a Pandora's Box: Just like opening Pandora's Box released both good and evil into the world, the advent of AI has unleashed a wide range of possibilities, from improved healthcare and productivity to ethical dilemmas and job displacement.
- 3. Al as a New Frontier: Al is often compared to a new frontier, akin to the exploration of space or the discovery of a new continent. It presents endless opportunities for innovation and discovery, but it also comes with the challenges of navigating uncharted territory.
- 4. Al as the New Electricity: Similar to how electricity transformed industries and daily life in the 19th and 20th centuries, AI has the potential to revolutionize virtually every aspect of society, from transportation and healthcare to entertainment and communication.
- 5. Al as a Digital Brain: Al can be thought of as a digital brain that processes vast amol S Regenerate data, learns, and makes decisions, much like the human brain. This metaphor highlights the







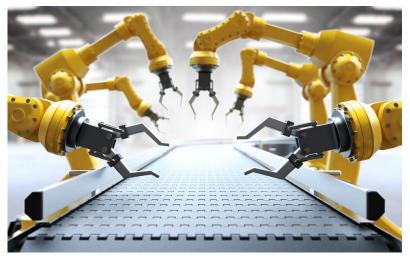
Which image resonates most with your current thinking regarding artificial intelligence in education?











Preparing for the Impact of Artificial Intelligence...

- Like Gutenberg's printing press,
 Al has the capacity to revolutionize and democratize the way that information is not just gained but used to create/compose.
- Like industrialization and automation,
 Al has the capacity to increase
 efficiency and decrease the demands
 of not just physical labor but now
 also cognitive & creative tasks





Author

Andy Weir 🥏

And just because I like it a lot, here's the manga version (not as a sorceress - just as herself)



Carolyn Greener Boo! Boycott Midjourney. Don't steal from artists

13w







30

1000

Joshua Mason

As an author whose ship's come in, what's your position on generative AI and the existential dread lower-tier artist and authors are experiencing over the whole thing?

13w Edited

1000



Author

Andy Weir 🥯

I think it's only a matter of time before Als can write better fiction than humans can. I may be part of the last generation of human authors. A bleak thought but at least I slid in under the line and got a bunch of money before it happened. \odot

(1) 3

Andy

Thanks to a loophole in Western culture morality, I am socially allowed to perv on a woman if she's my wife. So I gave Midjourney a picture of her and said "imagine the woman in this picture as a sorceress in a fantasy settinio". This is the result.

I also had it make her as a manga girl, an Imperial Officer from Star Wars, a medieval queen, and a Federation officer from Star Trek. But the sorceress was her favorite pic so I'm posting that here.



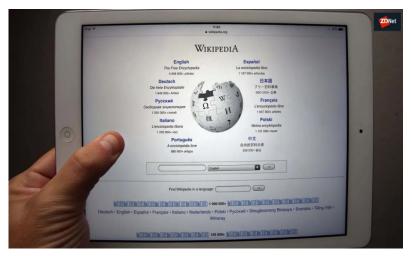
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13w





Preparing for the Impact of Artificial Intelligence...

Technological advancements have led to new tools over the past century (the calculator, the Internet search engine, handheld computers, etc.) that have made low of depth knowledge tasks easy to complete. Al technology now offers similar tools for expediently completing high depth of knowledge tasks, too.

Extended Thinking (Depth of Knowledge 4)

4

lgor

DOK-4: Extended Thinking: Synthesize and extend strategic thinking across multiple texts, investigations, inquiries, or disciplines in a manner that requires planning, extended time, and the transfer of knowledge to solve problems in a new context or domain, allowing for the personal adaptation of learning to different contexts. (**Augmentation**)

DOK-3: Strategic Thinking: Think strategically and abstractly about how and why concepts work or how to effectively utilize particular skills, using evidence to justify or evaluate answers/conclusions/decisions/outcomes/reasons/results in response to complex questions or tasks. (Analysis)

DOK-2: <u>Basic Thinking (Skills & Concepts)</u>: Engage in basic mental processing beyond a rote response (i.e. classify, organize, estimate, compare/contrast, describe, explain, summarize), using a developing understanding of academic concepts and skills to answer open-ended questions or accomplish straightforward multi-step tasks. (**Application**)

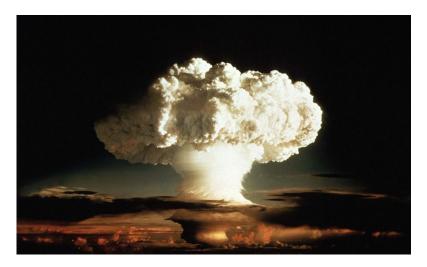
DOK-1: Recall and Reproduction: Identify, recall or reproduce data, definitions, details, facts, information; apply simple procedures, algorithms, formulas, or measurements. (**Acquisition**)

Strategic Thinking (Depth of Knowledge 3)

Basic Thinking (Depth of Knowledge 2)

Recall/Reproduction (Depth of Knowledge 1)



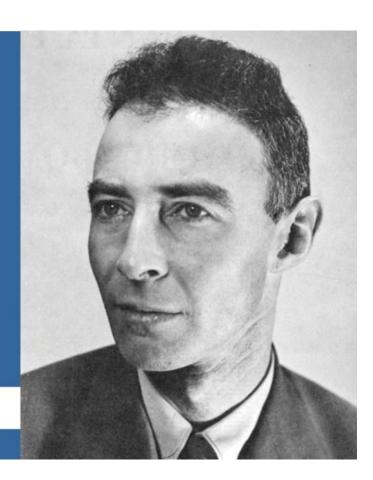


Preparing for the Impact of Artificial Intelligence...

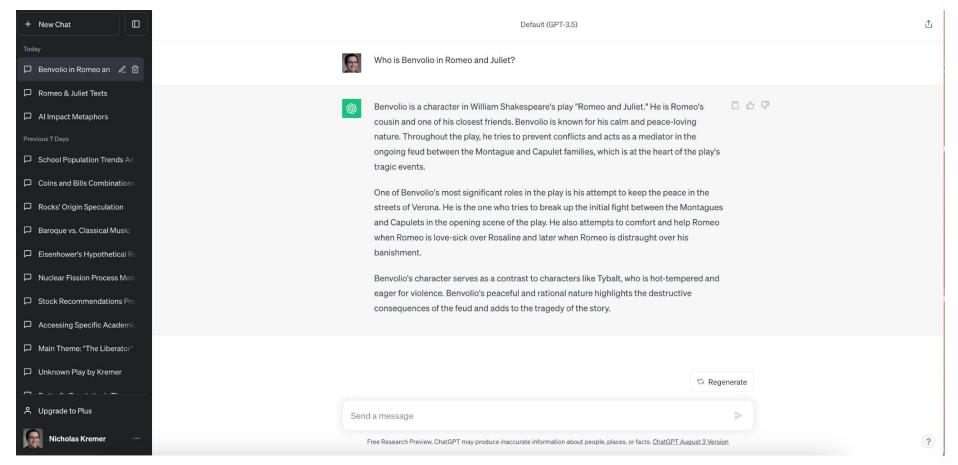
- While the emergence of AI is not going to be a non-issue like Y2K, it also isn't going to immediately upend education systems (that are especially resilient to change)
- However, like the creation of the nuclear bomb, it is now impossible to return to a world where AI doesn't exist and futile (detrimental?) to ignore it moving forward

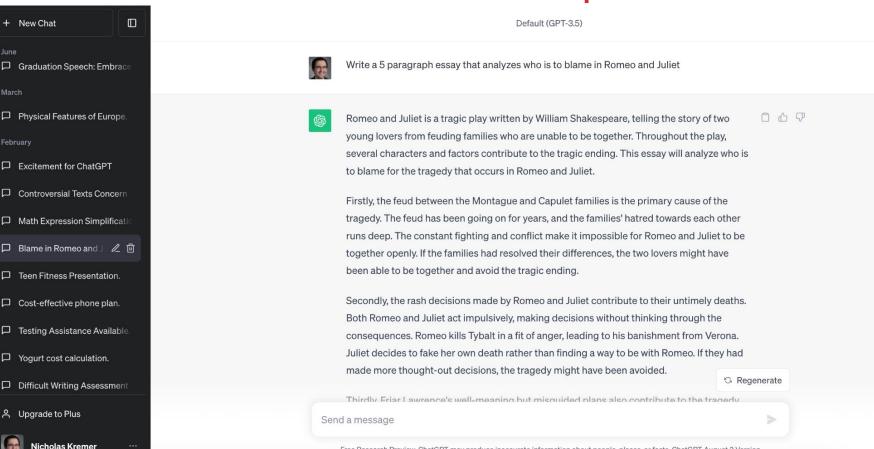
"We knew the world would not be the same. A few people laughed, a few people cried. Most people were silent."

- J. Robert Oppenheimer

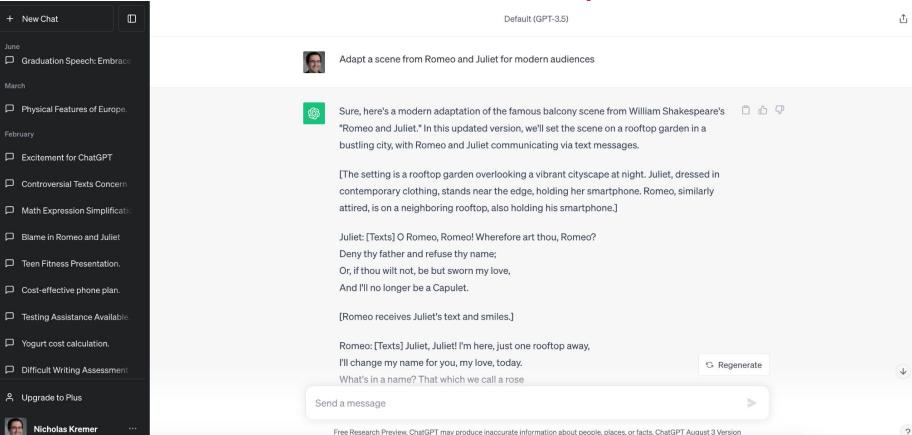


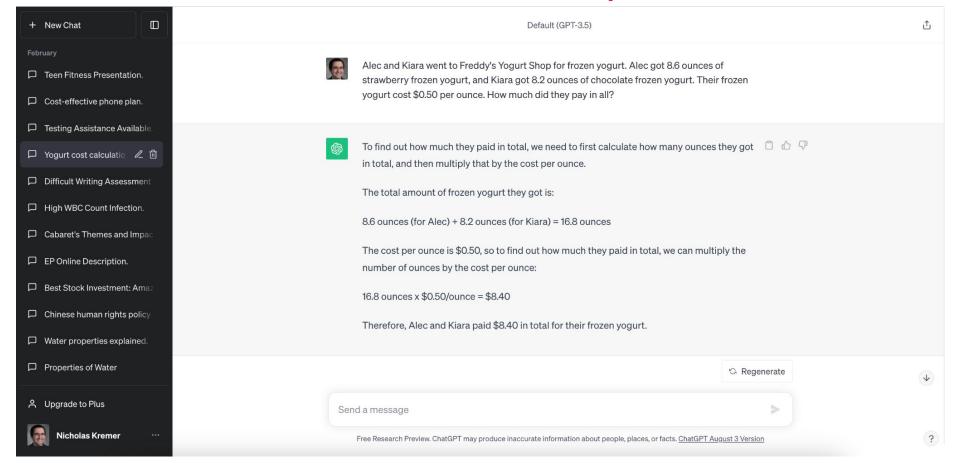
Al-Assisted Assessment Examples

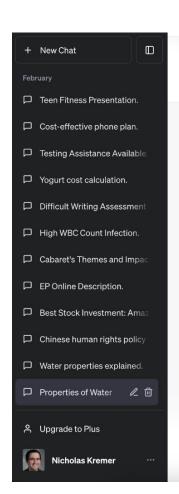




Free Research Preview. ChatGPT may produce inaccurate information about people, places, or facts. ChatGPT August 3 Version









Describe some of the properties of water, and explain how the structure of water is responsible for these properties



Water is a unique substance with many properties that make it essential for life. Some of the properties of water include:





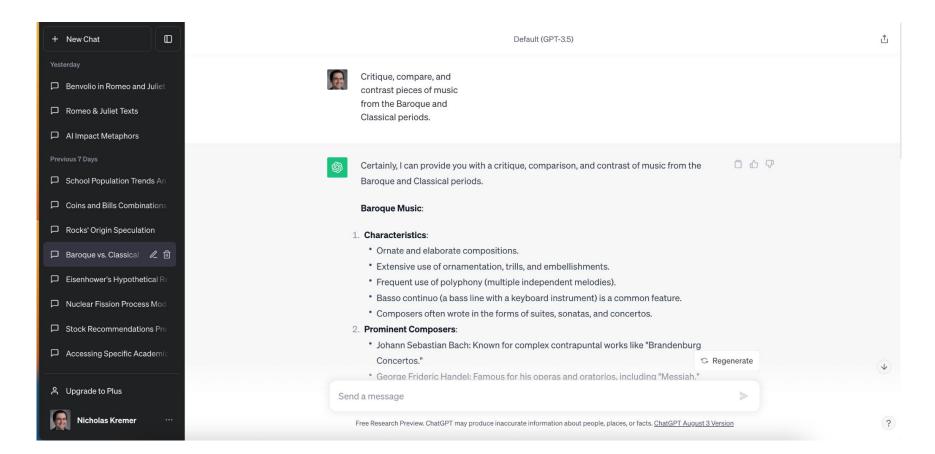
- 1. High specific heat capacity: Water has a high specific heat capacity, which means that it can absorb a lot of heat energy before its temperature increases. This property is important for regulating body temperature in animals and for moderating the temperature of the environment.
- 2. High boiling point: Water has a high boiling point, which means that it requires a lot of energy to vaporize. This property makes water an excellent solvent and allows it to exist in all three states of matter (solid, liquid, and gas) at temperatures that are suitable for life.
- 3. High surface tension: Water has a high surface tension, which allows it to form droplets and hold together in a column. This property is important for many biological processes, such as transpiration in plants and the movement of blood in animals.
- 4. Cohesion and adhesion: Water molecules are cohesive, meaning they stick to each other, and adhesive, meaning they stick to other substances. This property is essential for water transport in plants and for the movement of blood in animals.

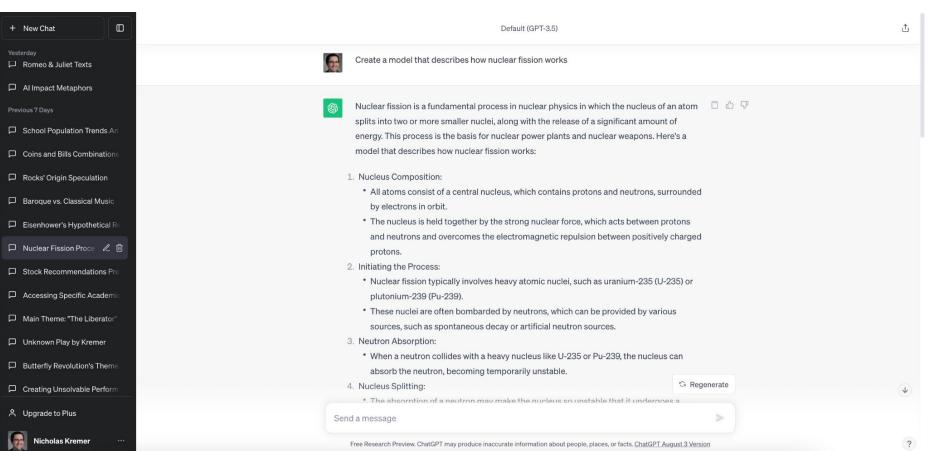
The unique properties of water are due to its molecular structure, which consists of to

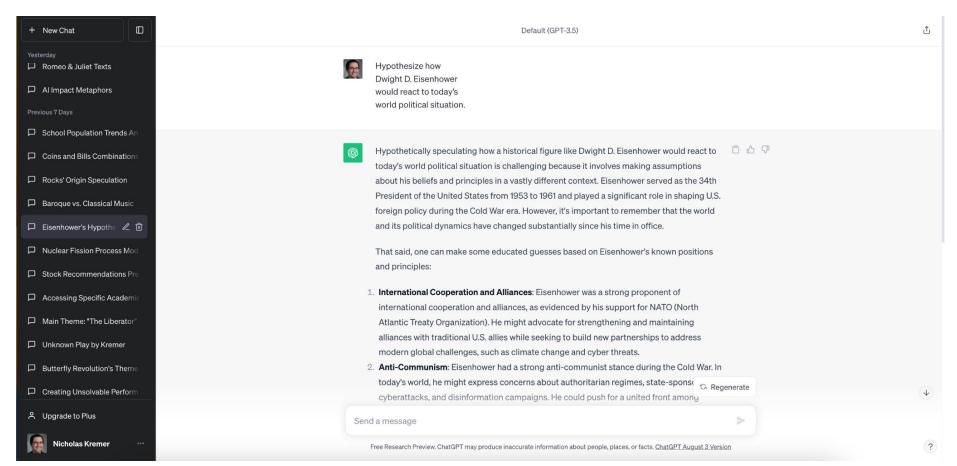
G Regenerate

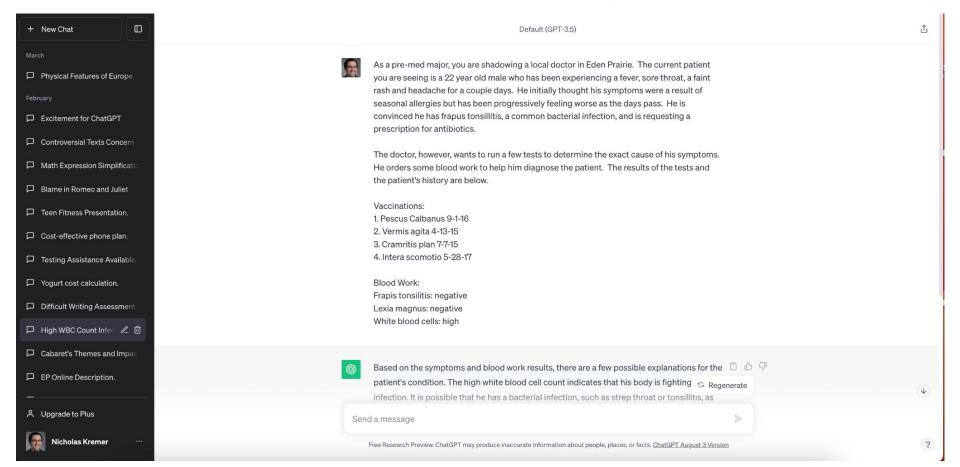


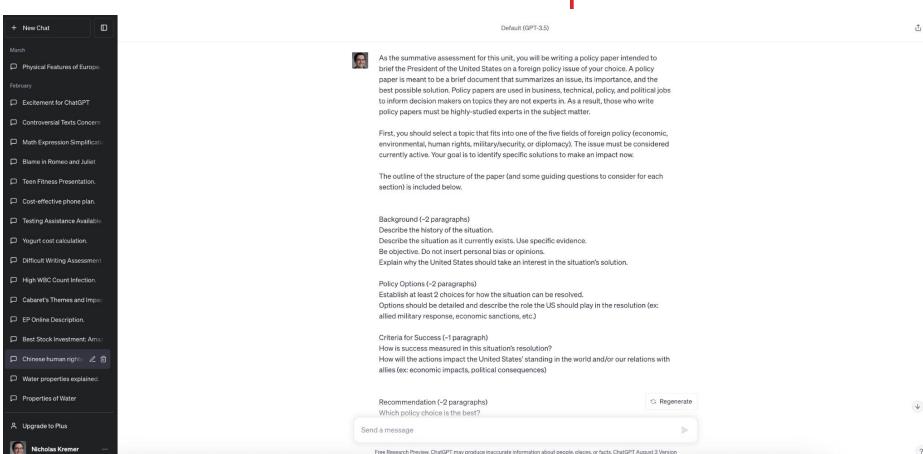
Send a message

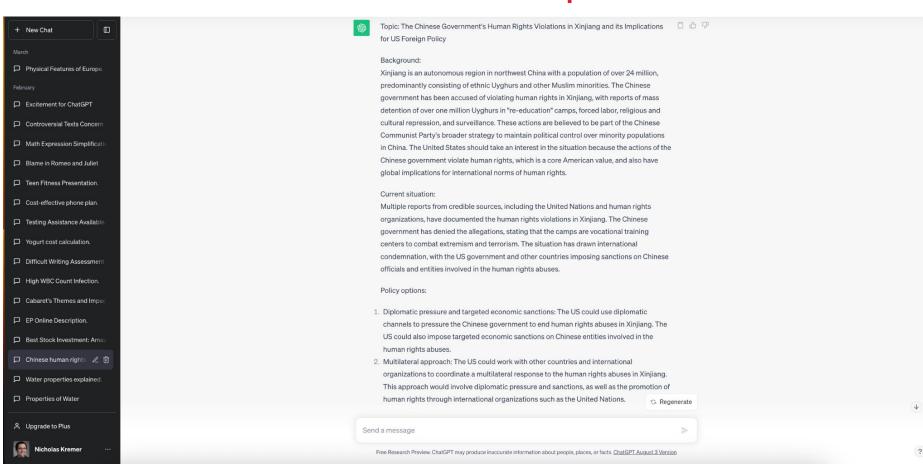






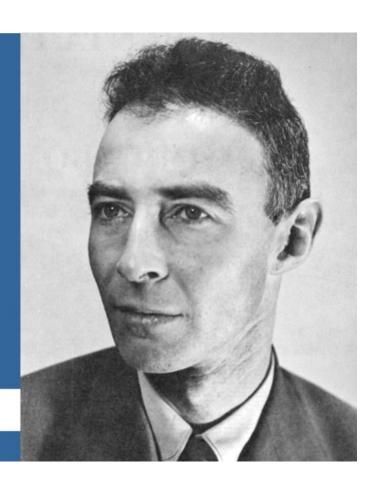






"We knew the world would not be the same. A few people laughed, a few people cried. Most people were silent."

- J. Robert Oppenheimer



Al Implications for Education



PROFICIENCY SCALES

How will we know what mastery looks like?

ESSENTIAL LEARNING TARGETS

What does each student need to know and be able to do?

CIC Loop

GRADING

How will we report progress towards mastery to students?

DELIVER

How will we adjust our instruction to respond to the emerging needs of EACH student? What is needed by all, some, or individual students?

ASSESS

How will we know if students have achieved mastery?

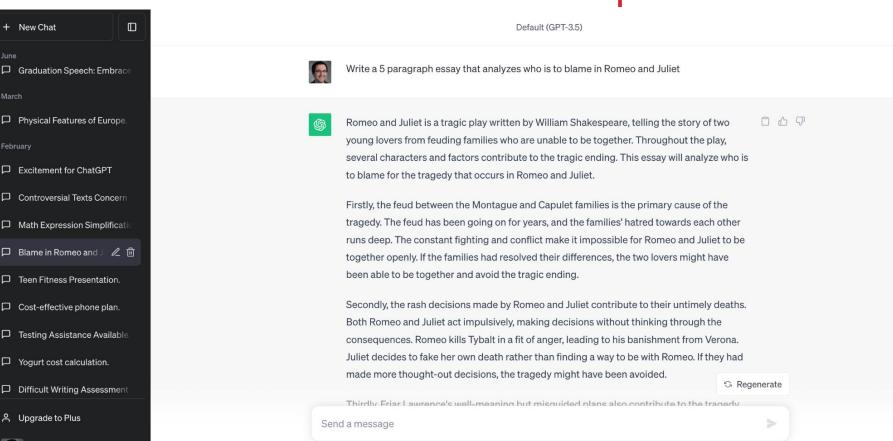


DESIGN

How will we plan for students with varying levels of mastery in a tiered system of supports?

DIAGNOSE

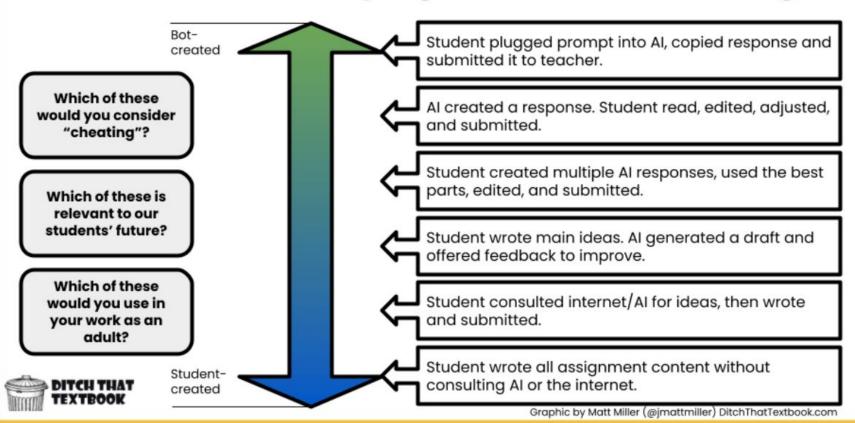
How will we use data to identify problems of performance/practice?



Free Research Preview. ChatGPT may produce inaccurate information about people, places, or facts. ChatGPT August 3 Version

licholas Kremer

It's time to rethink "plagiarism" and "cheating"







Can you re-write that essay to argue that the blame solely lies on Friar Lawrence?



While there are various factors that contributed to the tragic ending in Romeo and Juliet, it can be argued that the blame lies solely on Friar Lawrence. Friar Lawrence's well-meaning but misguided plans led to a chain of events that ultimately led to the death of the two young lovers.







This essay uses words that are fancier than I would normally use. Can you re-write it using simpler language?

The tragic ending in Romeo and Juliet was caused by various factors, but it can be argued that the blame rests solely on Friar Lawrence. His plans, which were well-meaning but misguided, led to a chain of events that ultimately resulted in the deaths of the two young



play into the essay?

lovers. My teacher wants me to include textual evidence. Can you go back and add quotes from the

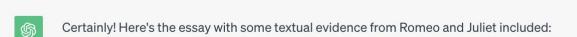










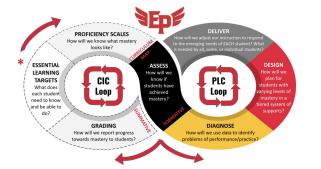


Backwards-Designed Instruction

Instructional Vision =

College / Career / Civic Readiness





Feedback

How will we report progress towards mastery to students and stakeholders?





Responsiveness

What will we do if students are struggling? Succeeding?





Essential Learning Targets

What do we want students to know and be able to do?



Assessment Practices

How will we know if students have mastered those concepts/skills?



Instructional Practices

How will we design instruction to ensure each student achieves mastery?

Eden Prairie Schools Math Instructional Vision

Excellent mathematics instruction will lead each EPS learner to...

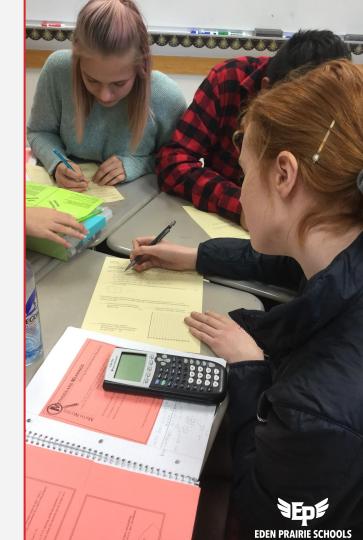
Form a positive math identity

Collaborate within a math community

Understand how and why math concepts work

Use math procedures fluently

Apply math to real-world situations



Vision-Guided Assessment



EPS Math Instructional Vision

Excellent mathematics instruction will lead each Eden Prairie Schools learner to....

· Form a positive math identity

Mathematical identities are the deeply-held beliefs students form about their ability to meaningfully and successfully participate in mathematical processes. Students with strong math identities embrace beneficial habits of mind, such as persistence, flexible thinking, curiosity, and belief in their personal ability to grow and succeed.

Collaborate within a math community

An effective math community values all members as partners in learning. It provides a safe place for students to take risks and learn from mistakes. It promotes multiple perspectives and values diverse thinking. It is grounded in student leadership and rich mathematical discussion framed by questioning, explaining mathematical thinking, contributing math ideas, and taking responsibility for learning.

Understand how and why math concepts work

Rote memorization of mathematical procedures is insufficient for the demands of the 21st century. Students need to achieve a conceptual understanding of why and how mathematical principles work so they are able to explain their reasoning, defend their problem-solving approaches, create or describe visual models of mathematics, and retain their learning over time.

Use math procedures fluently

After reaching a conceptual level of understanding math, students need to be able to determine effective and efficient ways to express or perform mathematical processes and find solutions. As students become familiar with various mathematical procedures and algorithms, they are able to use them more easily and accurately.

Apply math to real-world situations

A mathematical concept or procedure is not useful unless students recognize when and where to use it (as well as when and where it does not apply). In school, students are given specific problems to solve, but outside of school they encounter situations in which part of the difficulty is figuring out exactly what the problem is. Therefore, students need to be able to identify problems, devise solution strategies, and choose the most useful strategy for solving problems. They also need to be able to distinguish what is known and relevant from what is unknown.



A structured assessment response to generative AI





Red - no generative AI is permissible

Yellow - some generative AI is encouraged

Green - generative AI is expected



(Adrian Cotterel. Teacher-Directed AI Blog. 2023.)

GREEN



Generative AI is expected

- The <u>assessment construct</u> focuses on the ability to use Al technologies to enhance creative productivity
- Our expectation for what high level success looks like needs to significantly increase (quality and productivity)
- Assessments could be focused on:
 - Quality of Product
 - Research Project (with thesis defence)
 - Collaborative Projects

YELLOW



Some generative AI is encouraged

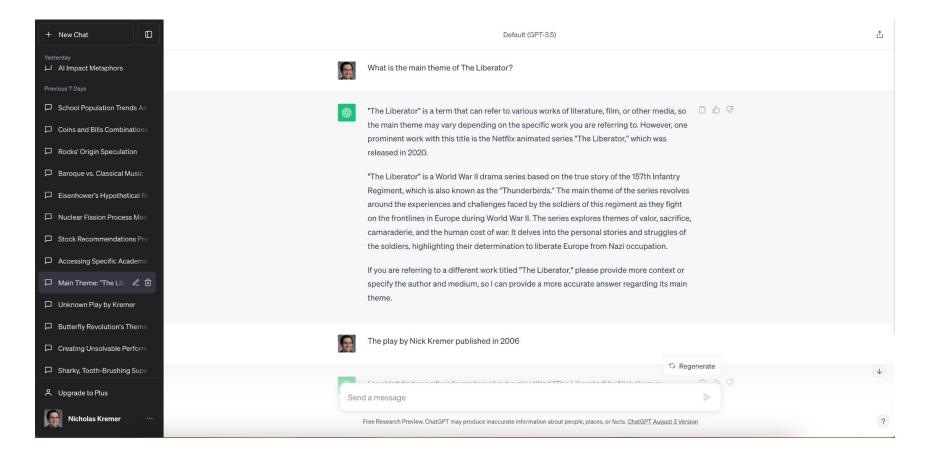
- Tasks where the <u>assessment construct</u> being measured will not be significantly compromised or made invalid by some Al assistance.
- Suitably acknowledge the use of Al
- Examples of what this could look like:
 - Spelling and grammar
 - Condensing word count
 - Research
 - Inspiration

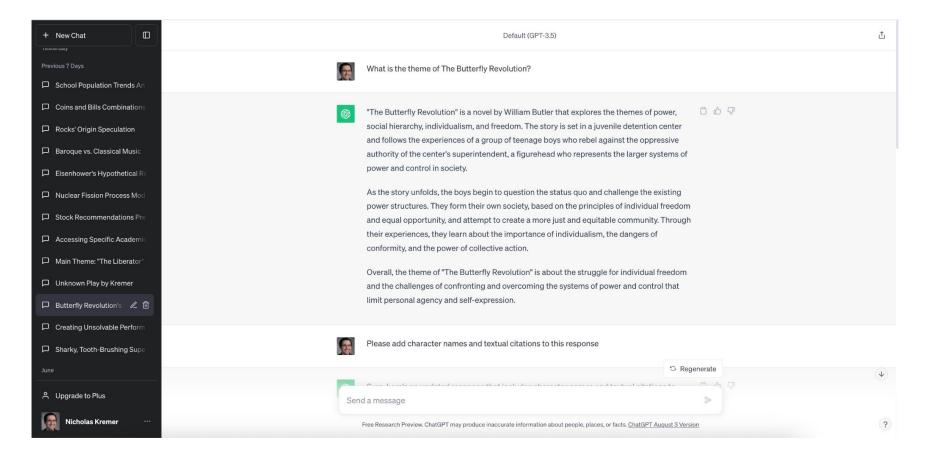
RED

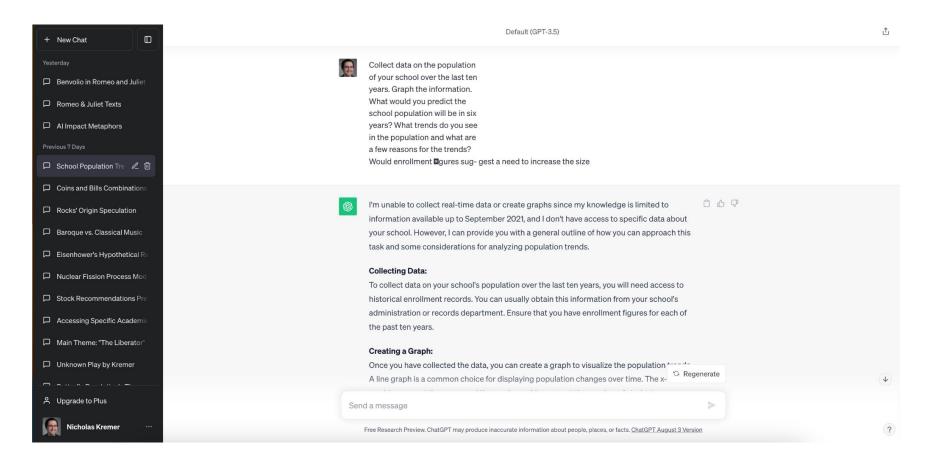


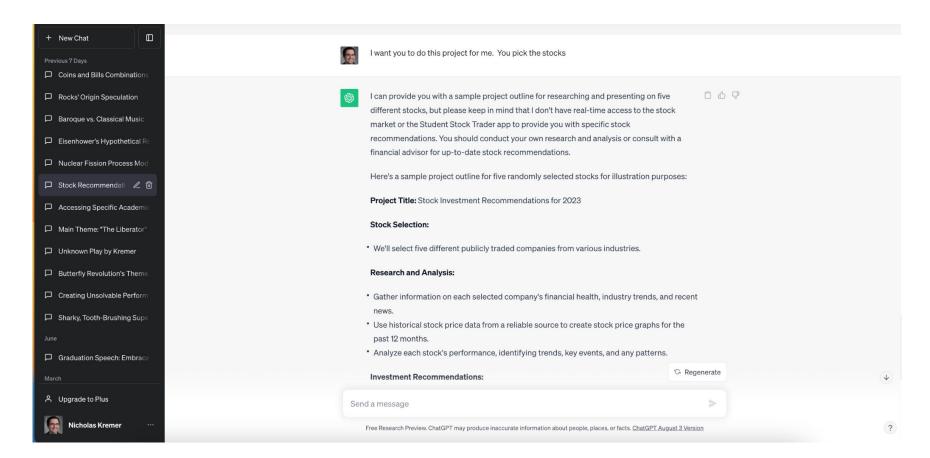
No generative AI is permissible

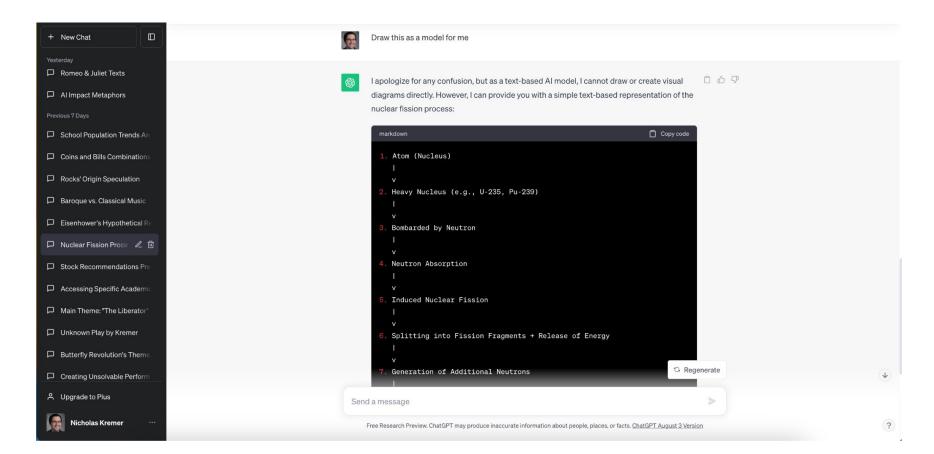
- The purpose of this task type is usually to assess foundational knowledge and skill development
- Generative AI would significantly reduce the <u>construct validity</u> of the assessment
- Assessment is completed in-class, under supervised or interview conditions.











Strategies for Designing Al-Resistant Assessments

- Use data, texts, and topics that are uncommon, local, or invented
- Require multimodal composition, evaluator interaction, and/or physical performance components (i.e. DBAs)
- Observe and grade students in-process (drafts, conferences, etc.)
- Solicit personalized reflection from students about their design choices (i.e. artist's statement)
- ☐ Makes tasks that require improvisation or adapting to unpredictable outcomes

Authenticity Continuum

	Less Authentic		More Authentic	
	1	2	3	4
Purpose	Students have a limited understanding of the purpose behind the learning.	Students have a general understanding of the purpose behind the learning and how it connects to culture and the world outside of school.	Students have a clear understanding of the purpose behind the learning and how it connects to their own culture and college, career, or civic readiness.	Students have a clear understanding of and a personal commitment to the purpose behind the learning and how it connects to their cultural identity and personalized future goals.
Process	Instruction provides only one way to engage in learning and privileges a dominant cultural perspective.	Instruction provides more than one way to engage in learning and incorporates diverse perspectives without cultural dominance.	Instruction is responsive to diverse learning styles and inclusive of all cultures & multiple perspectives through empowering learning opportunities.	Instruction is individualized, allowing each student to engage in personally-relevant and personally-adapted ways for agency development across academic, social, cultural, and career pathways.
Task & Resources	The learning features tasks and resources that are artificial in nature and disconnected from culture and real-world context.	The learning features tasks and resources that remain somewhat artificial in nature but provide a real-world context from a singular cultural perspective.	The learning requires students to use resources and engage in tasks that simulate or mirror real-world problems by integrating multicultural perspectives and navigating intercultural situations.	The learning requires students to engage in actual tasks from diverse real-world environments using genuine resources, ethical decision making, and innovative solutions for social change.
Audience	Students share their learning exclusively with their teacher to satisfy a singular perspective.	Students share their learning with their teacher and their classmates in a binary manner.	Students share their learning with diverse audiences within and outside of their class community representing intercultural perspectives.	Students share their learning with diverse real-world audiences who value what is shared due to its relevance to multicultural backgrounds and environments.

EPS Authenticity Continuum



Wrapping Up...

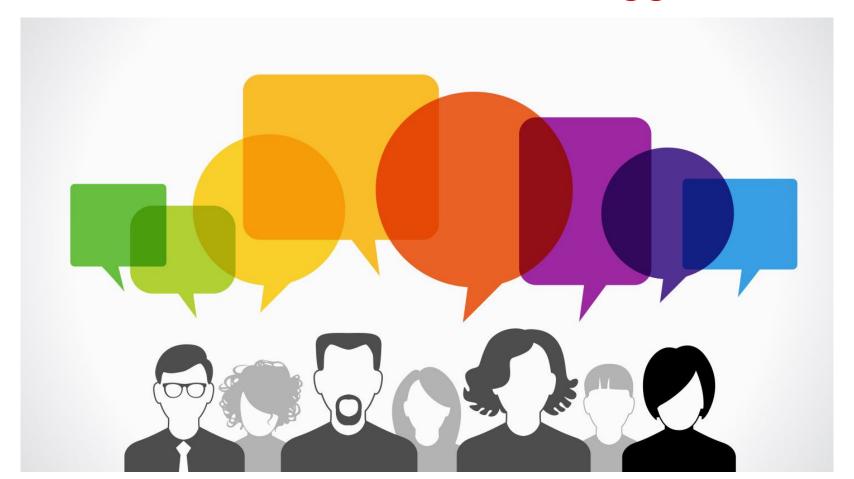
"CLIFFNOTES" Version

One Slide Summary of the Entire Session

- Artificial assessment only requires artificial intelligence (which is no longer a commodity in today's world due to emergent AI technology)
- Authentic assessment will solicit authentic intelligence (the skills that will be needed to succeed in tomorrow's AI-prevalent world)



Questions? Comments? Suggestions?



THANKYOU!



EDEN PRAIRIE SCHOOLS

Inspiring each student every day