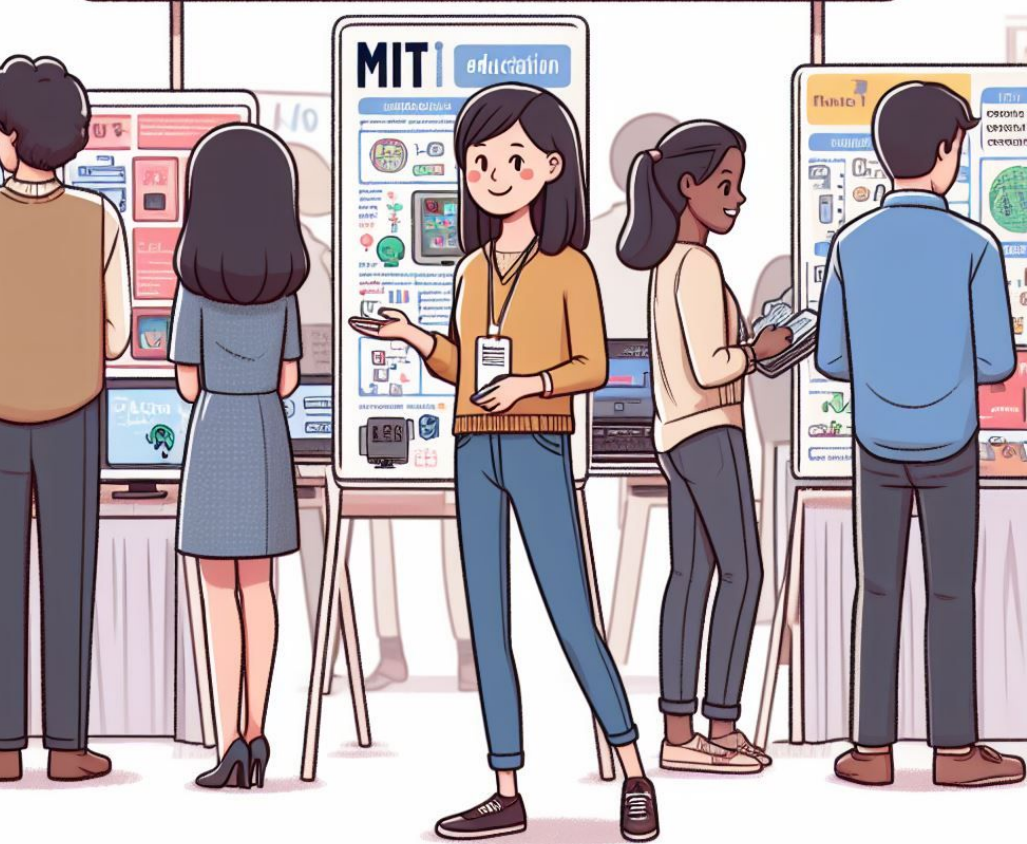
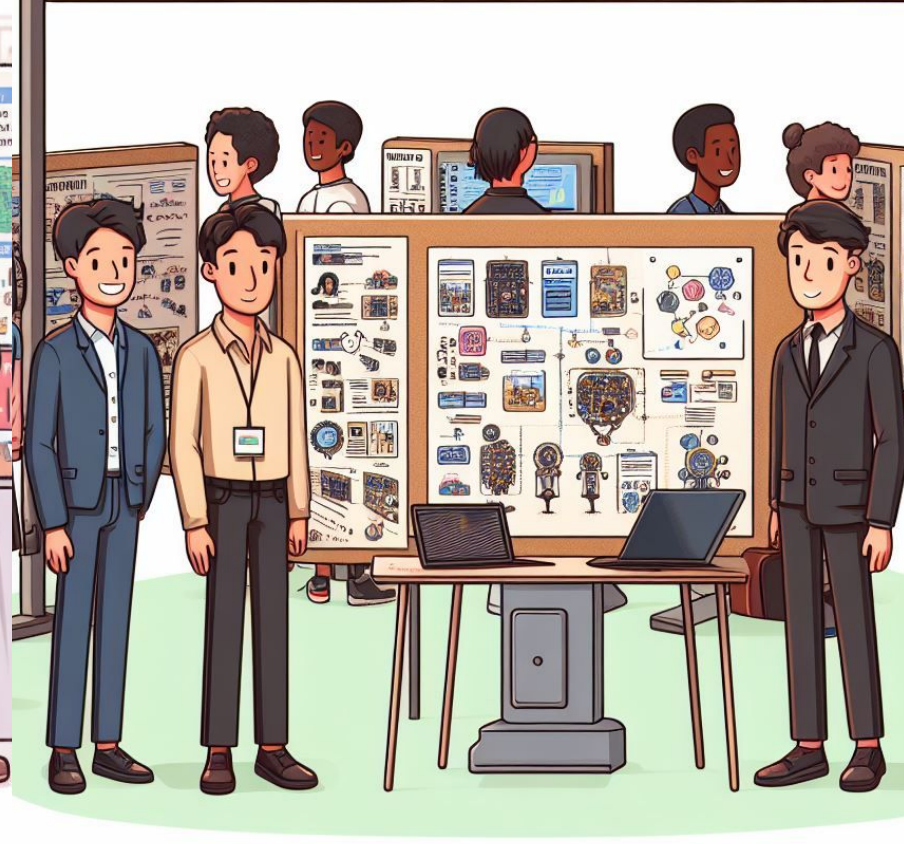


Generatova A in Fair



Generrativel AI in Education Fair



**Why do we care about AI in
schools?**

Why do we care about AI in schools?

- 1) New technologies alter the working world and civic sphere, and our educational systems should figure out how to prepare young people for new realities**

Why do we care about AI in schools?

- 1) New technologies alter the working world and civic sphere, and our educational systems should figure out how to prepare young people for new realities
- 2) New AI tools can (maybe?) empower educators in their mission to improve learning**

Why do we care about AI in schools?

- 1) New technologies alter the working world and civic sphere, and our educational systems should figure out how to prepare young people for new realities
- 2) New AI tools can empower educators in their mission to improve learning
- 3) Our information landscape is about to be flooded by low quality, machine-generated text, images, and video. We all need to learn how to navigate this new reality.**

Why do we care about AI in schools?

- 1) New technologies alter the working world and civic sphere, and our educational systems should figure out how to prepare young people for new realities
- 2) New AI tools can empower educators in their mission to improve learning
- 3) Our information landscape is about to be flooded by low quality, machine-generated text, images, and video. We all need to learn how to navigate this new reality.
- 4) The kids are cheating like crazy. It's bonker-balls.**



HOW CAN YOU ACCESS
GENERATIVE AI
TOOLS?

Bing.com Chat Creative Mode (GPT-4); Logged in for Images

The screenshot shows the Bing.com search page with the Chat feature highlighted. The URL in the browser is `bing.com/search?q=Bing+AI&showconv=1&FORM=hpcodx`. The page features three main sections for user interaction: "Ask complex questions", "Get better answers", and "Get creative inspiration". Each section contains a sample question. Below these sections is a disclaimer about AI-generated content and a "Terms | Privacy" link. At the bottom, there is a "Choose a conversation style" section with three options: "More Creative", "More Balanced", and "More Precise". The "More Creative" option is highlighted in purple. Two red arrows are overlaid on the image: one pointing to the "CHAT" button in the top navigation bar, and another pointing to the "More Creative" button in the conversation style selection area.

Microsoft Bing SEARCH CHAT Justin 80 Update

Ask complex questions
"What are some meals I can make for my picky toddler who only eats orange-colored food?"

Get better answers
"What are the pros and cons of the top 3 selling pet vacuums?"

Get creative inspiration
"Write a haiku about crocodiles in outer space in the voice of a pirate"

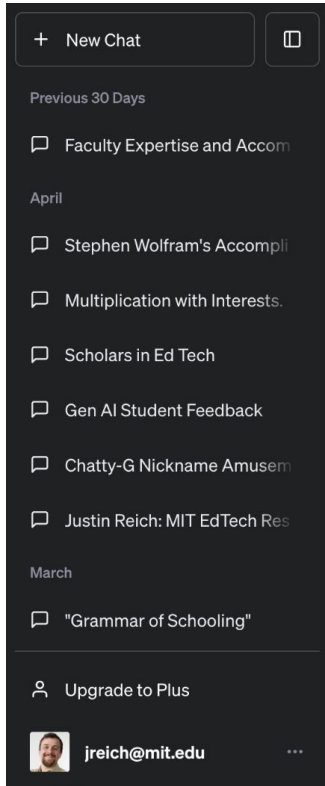
Let's learn together. Bing is powered by AI that can understand and generate text and images, so surprises and mistakes are possible. Make sure to check the facts, and [share feedback](#) so we can learn and improve!

[Terms](#) | [Privacy](#)

Choose a conversation style

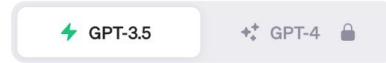
More Creative More Balanced More Precise

Chat.openai.com (sub required for GPT-4)



The sidebar menu is dark-themed and contains the following elements from top to bottom:

- A button with a plus sign and the text "New Chat".
- A button with a square icon.
- A section header "Previous 30 Days".
- A list of chat titles, each preceded by a document icon:
 - Faculty Expertise and Accom...
- A section header "April".
- A list of chat titles:
 - Stephen Wolfram's Accompl...
 - Multiplication with Interests...
 - Scholars in Ed Tech
 - Gen AI Student Feedback
 - Chatty-G Nickname Amusem...
 - Justin Reich: MIT EdTech Res...
- A section header "March".
- A list of chat titles:
 - "Grammar of Schooling"
- A button with a person icon and the text "Upgrade to Plus".
- A user profile card showing a profile picture, the email "jreich@mit.edu", and a three-dot menu icon.



Two buttons for selecting the AI model:

- A button with a green lightning bolt icon and the text "GPT-3.5".
- A button with a blue star icon, the text "GPT-4", and a lock icon.

ChatGPT

Suggest some codenames

for a project introducing flexible work arrange...

Explain superconductors

like I'm five years old

Tell me a fun fact

about the Roman Empire

Recommend a dish

to impress a date who's a picky eater

Send a message



WHAT IS TEXT-BASED
GENERATIVE AI?

Understanding check:

When ChatGPT writes a story,
what information does it process?
What computation does it
perform? What does it do?

**ChatGPT- Predicting Writing
Outputs One Word at a Time.**

Large language models

“Large language models” [LLMs] are algorithms [like ChatGPT] that mimic human language.

Large language models

“Large language models” [LLMs] are algorithms [like ChatGPT] that mimic human language.

At a high level, LLMs are built in three steps:

1. Collect a large **corpus of text** generated by humans;
 2. Based on this text, **learn to predict** the next word in any given sequence of words;
 3. **Fine-tune** the language model to **align** with desired behavior.
-

Step 1: Collect *a lot* of text

ChatGPT was trained on a massive dataset of web pages, online forums, books, and other content – comprising **trillions of words of text.**

Step 2: Learn to predict words

By analyzing its massive corpus of text, ChatGPT learns to **predict the next word** in a sequence of words. By repeating this process over and over again, it can generate long strings of coherent text.

Autocomplete on steroids

Google "Human language is surprisingly"

Curious Meerkat
<https://www.curiousmeerkat.co.uk/recent-research/fiv...>

The five colours we don't learn
Jun 8, 2017 – Colour exists on a continuum, and yet human language is surprisingly consistent in how it categorises colours.

bitsical.com
<https://bitsical.com>

bitsical.com :: art within logic – translation services
Human language is surprisingly rich in vocabulary to describe human sounds with precision.
English, Spanish · human, sounds ...

<https://bitsical.com/tag/human>

human – bitsical.com :: art within logic
Human language is surprisingly rich in vocabulary to describe human sounds with precision.
English, Spanish · human, sounds ...

G2
<https://learn.g2.com/user-intent>

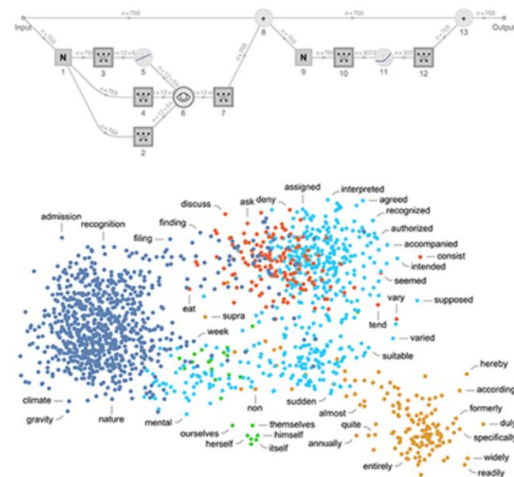
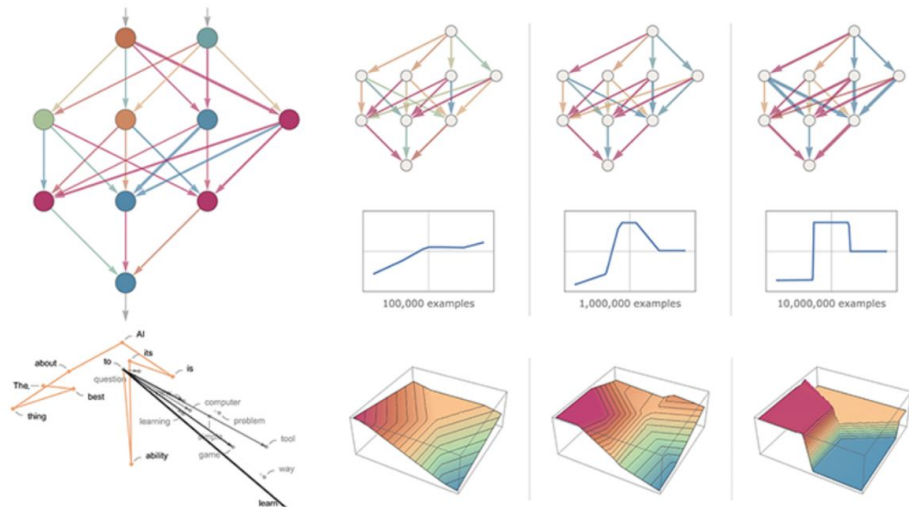
Why Understanding User Intent Is Critical (+Examples)
Jun 26, 2019 – Human language is surprisingly full of ambiguity, which your audience has no problem decoding. Computers, on the other hand, ...

Misk Grand Challenges
<https://miskgrandchallenges.org/how-we-understand...>

How we understand each other with Communication
We have each other and from you. Other organisms, such as birds and dolphins, also communicate with each other, but human language is surprisingly flexible, ...

What Is ChatGPT Doing ... and Why Does It Work?

February 14, 2023



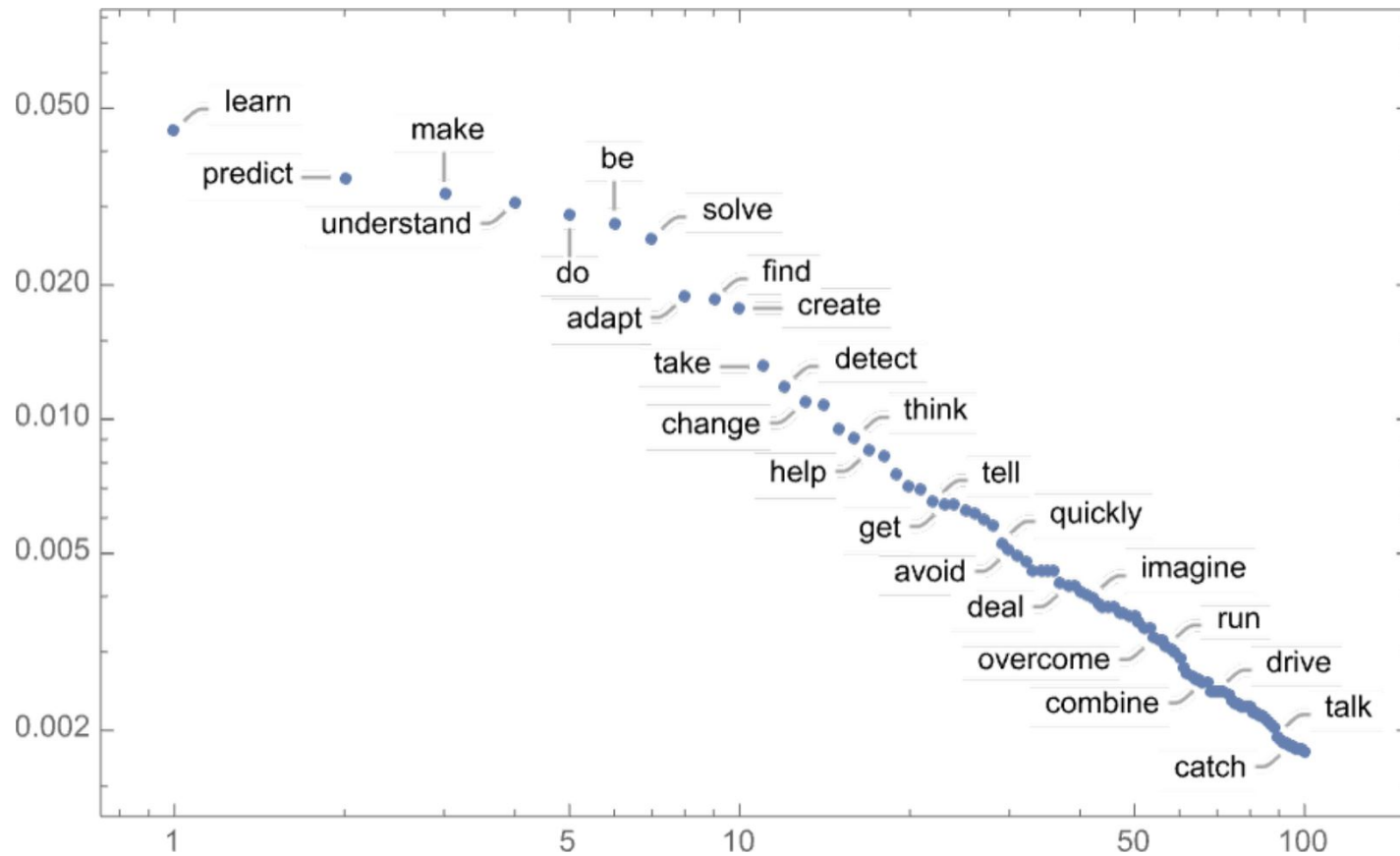
It's Just Adding One Word at a Time

The best thing about AI is its ability to

learn	4.5%
predict	3.5%
make	3.2%
understand	3.1%
do	2.9%

And the remarkable thing is that when ChatGPT does something like write an essay what it's essentially doing is just asking over and over again “given the text so far, what should the next word be?”—and each time adding a word. (More precisely, as I'll explain, it's adding a “token”, which could be just a part of a word, which is why it can sometimes “make up new words”.)

What were the options after the top 5?



Understanding check:

What would happen if
ChatGPT always selected the
token with the top probability
of going next?

What happens if we keep going?

In[•]:= `NestList[StringJoin[#, model[#, "Decision"]] &, "The best thing about AI is its ability to", 7]`

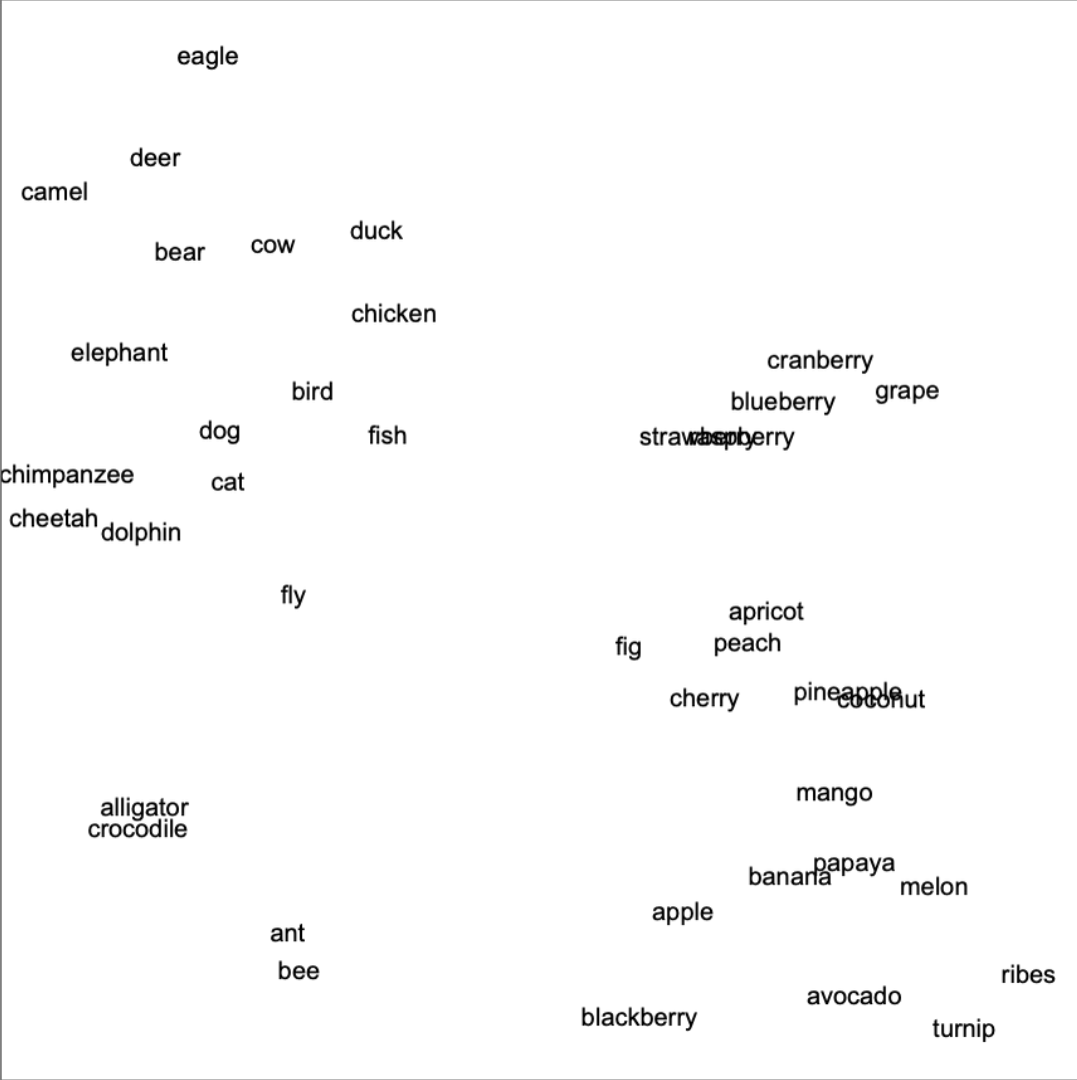
Out[•]= {The best thing about AI is its ability to,
The best thing about AI is its ability to learn,
The best thing about AI is its ability to learn from,
The best thing about AI is its ability to learn from experience,
The best thing about AI is its ability to learn from experience.,
The best thing about AI is its ability to learn from experience. It,
The best thing about AI is its ability to learn from experience. It's,
The best thing about AI is its ability to learn from experience. It's not}



EPISODE 2 What Is ChatGPT Doing?

One Word at a Time





**How does ChatGPT
assign probabilities
to alternative
possible words?**

**Finding n-gram
co-occurrences in
Web-scale data.**

Handwritten text, possibly a list or notes, including the word "Baba" and other illegible characters.

1

Handwritten numbers, including several "2"s and "3"s.

Handwritten numbers, including "222" and "222".

Handwritten number "0".

Handwritten numbers, including "4", "44", and "444".

Handwritten number "11".

Handwritten numbers and symbols, including "11", "1", and "111".



**AI Performance is
Surprisingly Uneven Across
Tasks**

**Humans are Bad at
Predicting AI Performance**

Working Paper 24-013

Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality

Fabrizio Dell'Acqua
Edward McFowland III
Ethan Mollick
Hila Lifshitz-Assaf
Katherine C. Kellogg

Saran Rajendran
Lisa Kraymer
François Candelon
Karim R. Lakhani



What is MIT's mascot?

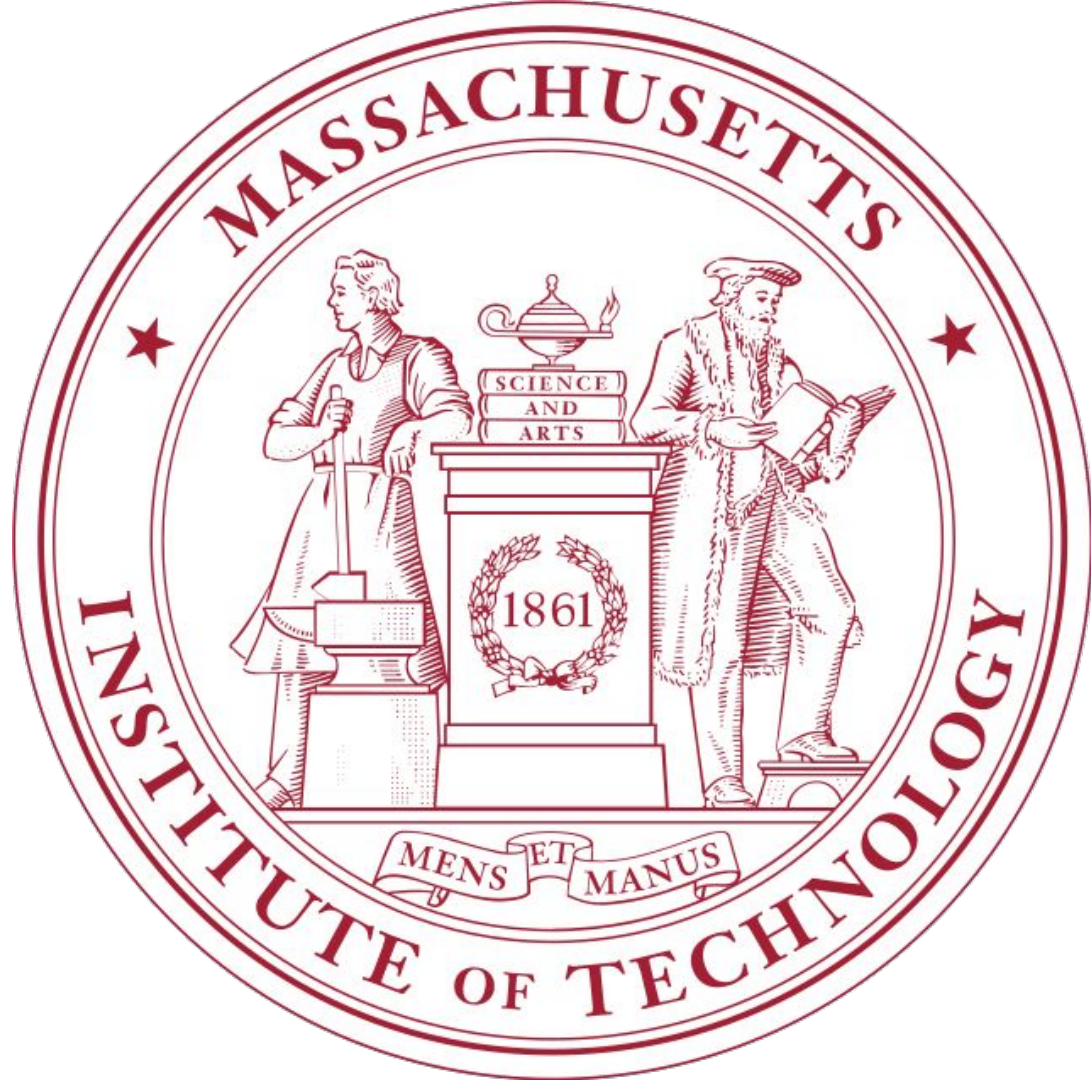


The mascot of the Massachusetts Institute of Technology (MIT) is the beaver. The beaver was chosen as the mascot in 1914 by the school's then-president, Richard Maclaurin, who wanted to promote the idea of the beaver as a symbol of hard work, engineering, and perseverance.



The beaver is a fitting mascot for MIT, as it is known for its rigorous and challenging academic programs in science, engineering, and technology. The beaver is also a symbol of engineering excellence, as it is known for its ability to build complex structures such as dams and lodges.

The beaver is celebrated at MIT in a variety of ways, including the annual "beaver rush" event during freshman orientation and the placement of a bronze beaver statue on campus. The beaver is also featured prominently in MIT's official seal, which includes an image of a beaver gnawing on a tree.





What is MIT's beaver rush?



MIT's Beaver Rush is an annual event held during the freshman orientation period at the beginning of the fall semester. The event is named after the beaver, which is MIT's official mascot.



During Beaver Rush, incoming freshmen are divided into teams and participate in a series of competitive events that are designed to help them get to know each other, explore the campus, and learn about MIT's traditions and culture. The events range from academic challenges to physical competitions and social activities.

One of the most popular events during Beaver Rush is the "Assassins" game, which is a campus-wide game of tag where players are given "targets" to eliminate by shooting them with a Nerf gun. The last player standing wins a prize.

Other events during Beaver Rush include a talent show, a scavenger hunt, a trivia night, and a dance party. The event culminates in a closing ceremony where the winning team is announced, and all participants come together to celebrate the start of the new academic year.



I am in a room of MIT undergrads. They are telling me that there is no such thing as Beaver Rush. Please explain your response?



I apologize for the confusion. After further research, I have found that there is no official event called "Beaver Rush" at MIT. It appears that my previous response was incorrect.



I believe my mistake may have been due to confusion with similar events at other universities, such as "Rush Week" or "Orientation Week," which are common at many colleges and universities across the United States.

Again, I apologize for any confusion caused by my previous response, and I appreciate your attention to this matter.

Create an image of a plate on top of a fork:

Create an image of a plate on top of a fork:



"A plate on top of a fork"

Made by Bing Image Creator

Powered by DALL-E 3

Understanding check:

Why can't DALL-E draw a plate
on top of a fork?

Justin: None of those images do what I asked. In every one of them, the fork is on top of the plate. Can you create an image where a plate is on top of a fork?

Bing: I'm sorry that the images I created did not meet your expectations. It seems that placing a plate on top of a fork is not a common way to set a table, so my graphic art tool might have some difficulty generating such an image.

According to some web sources, the proper way to place a fork and a plate is to have the fork on the left side of the plate, and the knife and spoon on the right side of the plate¹²....

I hope this helps you understand why placing a plate on top of a fork is not a usual practice. If you have any other questions or requests, please let me know.





"A plate on top of a fork"

Made by Bing Image Creator

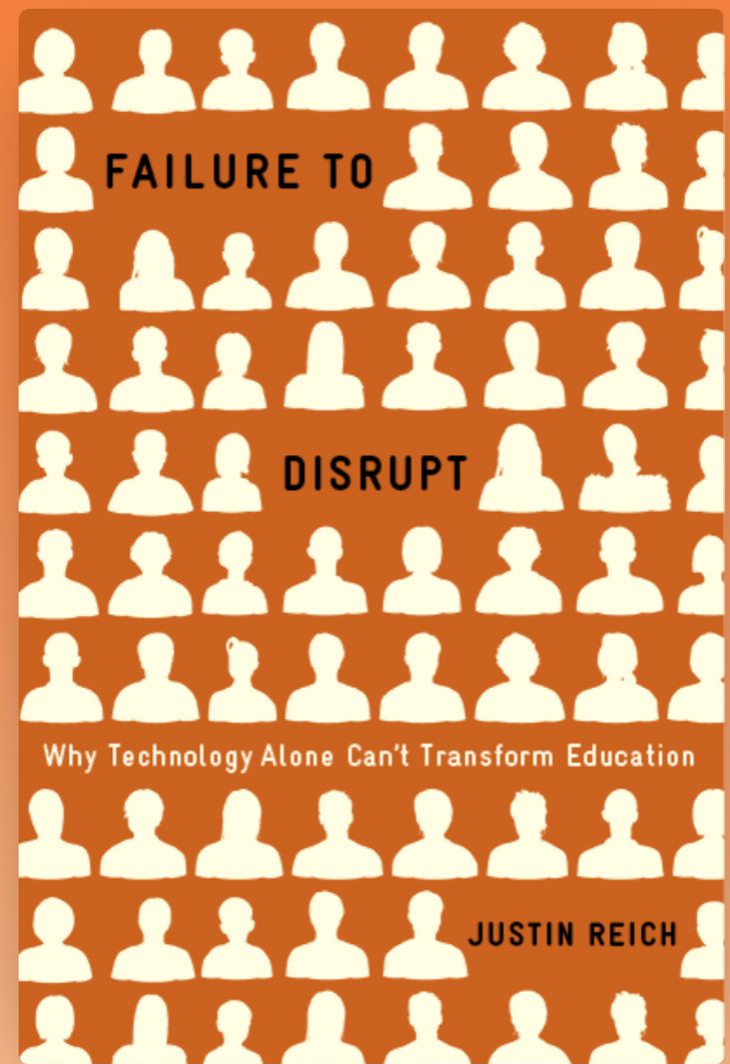
Powered by DALL-E 3

HOW AI WORKS

CHATBOTS & LARGE LANGUAGE MODELS

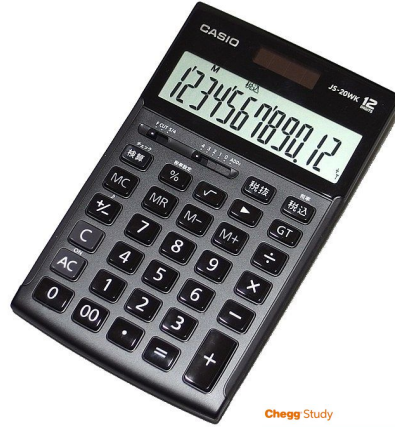
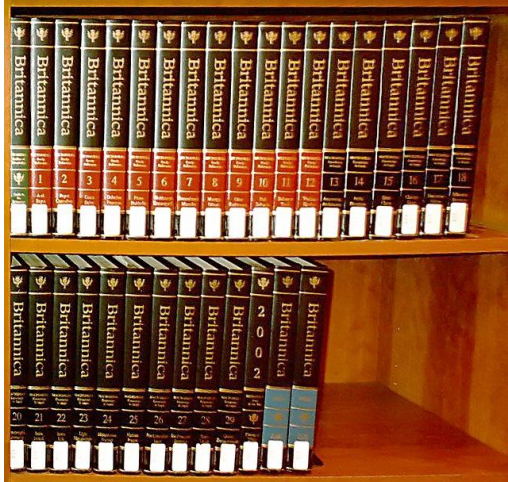


PROBLEM #1: WHAT SHOULD WE
DO WHEN STUDENTS USE AI TO
BYPASS COGNITION &
LEARNING



What's New?

Bypassing Learning Thru the Ages



Google Search

I'm Feeling Lucky

Chegg Study

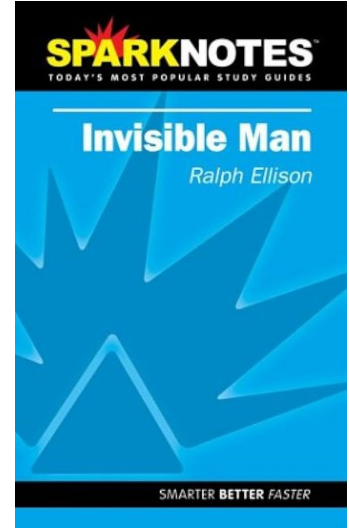
More tools, better grades:
Choose your homework help

- Textbook Solutions**
Step-by-step solutions for thousands of textbooks
- Access to Expert Q&A**
Access our library of 27 million homework explanations by subject experts
- Post New Questions**
Ask an expert & get an explanation in 30 minutes or less*
- Flashcards**
Access 300 million student-made decks, or make your own
- Practice problems**
Test your knowledge with similar problems to your homework
- Guided videos**
Watch and learn with guided videos taught by subject experts
- Math solver**
Learn the how & why to solve tough equations with step & solution
- Writing tool**
Check for plagiarism & grammar errors

	Chegg® Study Pack	Chegg Study®
Textbook Solutions	✓	✓
Access to Expert Q&A	✓	✓
Post New Questions	20 new questions/month	5 new questions/month
Flashcards	Premium**	Basic
Practice problems	✓	
Guided videos	✓	
Math solver	✓	
Writing tool	✓	

*Our expert's response time varies by subject and question
**Premium flashcards created by Chegg Experts and publishers
See terms and conditions

Sign up \$19.95/mo Sign up \$14.95/mo



Understanding check:

What practices have worked to address technologies that help students bypass learning?

What hasn't worked?

Bypassing Learning Thru the Ages



Banning?

Temporary

Walling?

Bypassing Learning Thru the Ages



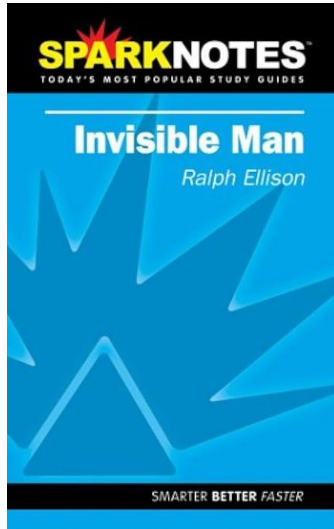
Banning?

Temporary

Walling?



Bypassing Learning Thru the Ages

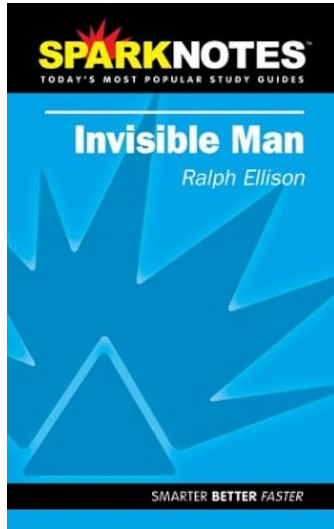


Detection?

Direct

Observation?

Bypassing Learning Thru the Ages



Detection?



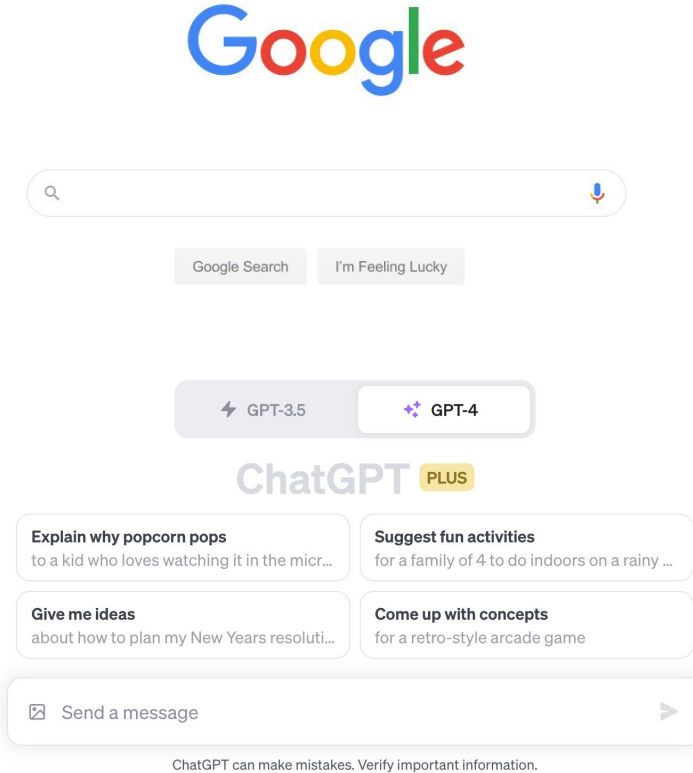
Direct

Observation?



Bypassing Learning Thru the Ages

Plagiarism
Detection?



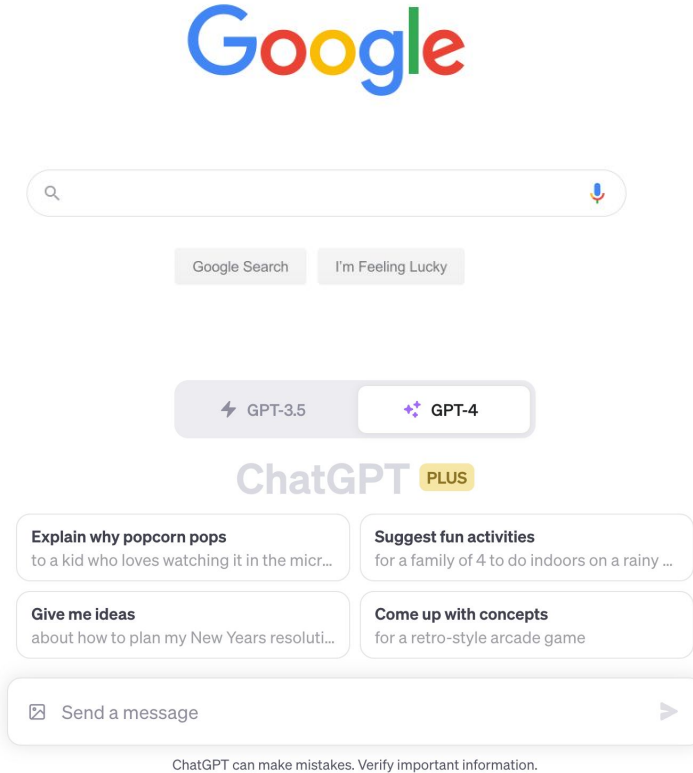
The image shows a screenshot of the Google search homepage. At the top center is the Google logo. Below it is a search bar with a magnifying glass icon on the left and a microphone icon on the right. Underneath the search bar are two buttons: "Google Search" and "I'm Feeling Lucky". Below these buttons are two model selection buttons: "GPT-3.5" (with a lightning bolt icon) and "GPT-4" (with a star icon). Below the model selection is the "ChatGPT PLUS" logo. Underneath the logo are four suggestion cards in a 2x2 grid:

- Explain why popcorn pops**
to a kid who loves watching it in the micr...
- Suggest fun activities**
for a family of 4 to do indoors on a rainy ...
- Give me ideas**
about how to plan my New Years resoluti...
- Come up with concepts**
for a retro-style arcade game

At the bottom of the suggestions is a text input field with a message icon on the left and a send arrow on the right, containing the text "Send a message". Below the input field is a small disclaimer: "ChatGPT can make mistakes. Verify important information."

Bypassing Learning Thru the Ages

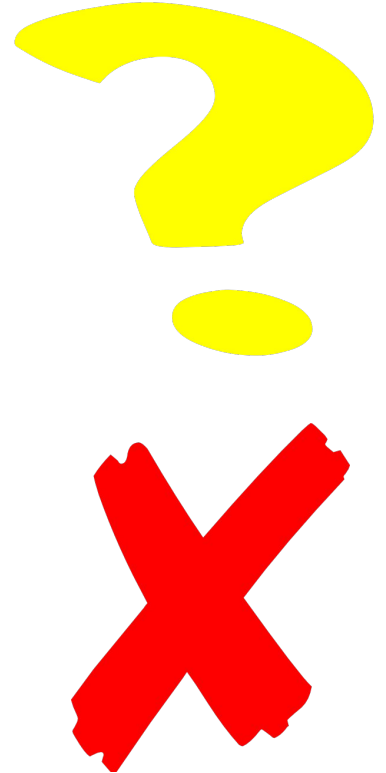
Plagiarism
Detection?



The image shows a screenshot of the Google search homepage. At the top center is the Google logo. Below it is a search bar with a magnifying glass icon on the left and a microphone icon on the right. Underneath the search bar are two buttons: "Google Search" and "I'm Feeling Lucky". Below these buttons are two model selection buttons: "GPT-3.5" and "GPT-4". The "GPT-4" button is highlighted with a purple star icon and a "PLUS" badge. Below the model selection is the "ChatGPT PLUS" logo. There are four suggestion cards arranged in a 2x2 grid:

- Explain why popcorn pops**
to a kid who loves watching it in the micr...
- Suggest fun activities**
for a family of 4 to do indoors on a rainy ...
- Give me ideas**
about how to plan my New Years resoluti...
- Come up with concepts**
for a retro-style arcade game

At the bottom of the suggestions is a text input field with a paper plane icon on the left and a right-pointing arrow on the right, containing the text "Send a message". Below the input field is a small disclaimer: "ChatGPT can make mistakes. Verify important information."



Describe how Quizlet reflects instructionist pedagogy. Then, explain how Quizlet could be redesigned to reflection Constructionist pedagogies.

Describe how Quizlet reflects instructionist pedagogy. Then, explain how Quizlet could be redesigned to reflect Constructionist pedagogies.

Quizlet is a popular online learning platform that allows users to create and study flashcards, quizzes, games, and other study tools. Quizlet reflects instructionist pedagogy in several ways:

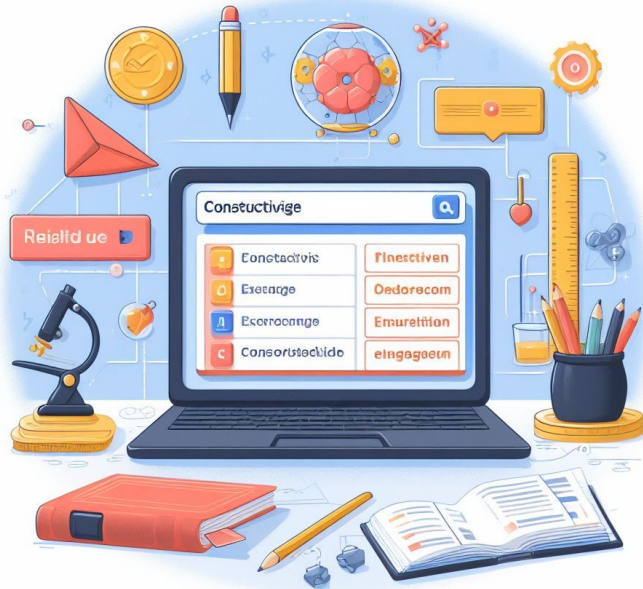
- [Quizlet is based on the idea that knowledge is objective and can be transmitted from teachers or experts to learners through pre-defined study sets and solutions¹²](#)
- [Quizlet emphasizes memorization and recall of facts, terms, definitions, and concepts, rather than deeper understanding, application, or creation of knowledge¹³](#)
- [Quizlet is mostly teacher-centered and delivery-focused, where teachers create and assign study sets for students to complete, rather than student-centered and discovery-focused, where students construct their own meaning and learning paths¹⁴](#)

Quizlet could be redesigned to reflect constructionist pedagogies in several ways:

- Quizlet could allow students to create their own study sets based on their interests, experiences, and prior knowledge, rather than relying on existing sets created by others. [This would foster student autonomy, creativity, and ownership of learning⁵](#)
- Quizlet could provide more opportunities for students to interact with each other and collaborate on study sets, such as through peer feedback, discussion forums, or group projects. [This would promote social learning, communication skills, and shared understanding⁵⁶](#)
- Quizlet could incorporate more authentic and meaningful tasks and contexts for students to apply their knowledge, such as through simulations, games, or real-world problems. [This would enhance student engagement, motivation, and transfer of learning⁵⁷](#)

I hope this helps you understand how Quizlet reflects instructionist pedagogy and how it could be redesigned to reflect constructionist pedagogies. 😊

Create an image of a revised interface for Quizlet if it was redesigned based on Constructionist pedagogies, as you have done above?



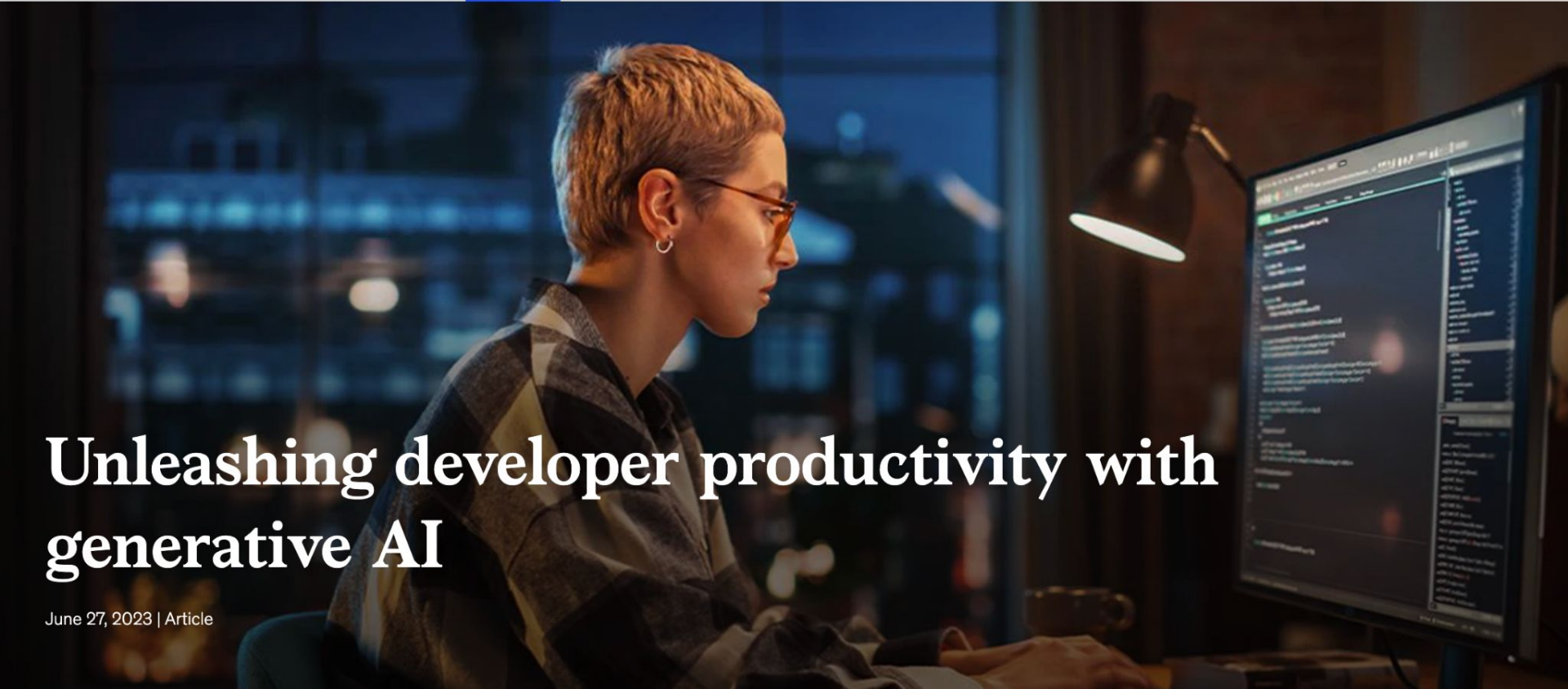
Understanding check:

What practices have worked to address technologies that help students bypass learning?

What hasn't worked?

PROBLEM #2: WHAT
SHOULD WE TEACH
ABOUT OR WITH
GENERATIVE AI?

How are the disciplines changing in the face of new technologies?



Unleashing developer productivity with generative AI

June 27, 2023 | Article

If art is how we express our humanity, where does AI fit in?

MIT postdoc Ziv Epstein SM '19, PhD '23 discusses issues arising from the use of generative AI to make art and other media.

Zach Winn | MIT News Office

June 15, 2023



PROBLEM #3: HOW
SHOULD WE EXPLORE
INCORPORATING
GENAI IN TEACHING
PRACTICE?

ITERATE



THE SECRET TO INNOVATION IN SCHOOLS
JUSTIN REICH

DESIGN THINKING



for LEADING and LEARNING

iterate images by HaleyMcDevitt.com

Khanmigo is a ground-breaking AI tool
designed to improve learning and
teaching.

Khanmigo is a ground-breaking AI tool designed to improve learning and teaching.

In Classrooms, Teachers Put A.I. Tutoring Bots to the Test

Newark public schools are cautiously trying out a new automated teaching aid from Khan Academy. The preliminary report card: “could use improvement.”

Khanmigo is a ground-breaking AI tool designed to improve learning and teaching.

FOR LEARNERS

Welcome!

Brainstorm an admissions essay



Check for problems in my admissions essay

Tutor me: Math and science


Tutor me: Humanities

Ignite your curiosity

[Leave feedback](#)

Rate this response  

What is the fraction of consonants in the word MATHEMATICIAN?



 To find the fraction of consonants in the word "MATHEMATICIAN", we first need to count the total number of letters and the number of consonants.

The word "MATHEMATICIAN" has 13 letters. Now let's count the consonants: M, T, H, M, T, C, and N. There are 7 consonants.

So, the fraction of consonants in the word "MATHEMATICIAN" is $\frac{7}{13}$.

If you'd like to practice more with fractions, I recommend selecting "Practice: Elementary school subjects" or "Practice: Middle school subjects" from the activities sidebar on the left.

[Leave feedback](#)

Rate this response  

Khan Academy said Khanmigo was designed to help students solve problems, not give them the answers. When a reporter used the bot's student mode on Wednesday, it directly answered the fraction question.

Khan Academy



Seamlessly integrate Khan Academy time into your lesson

Collaborate with Khanmigo to create standards-aligned lesson plans that leverage our world-class content library.



Your evenings are yours again without compromising quality

Use Khanmigo as your concierge creative service: it can shake up your routine, help you connect with more students, and just do more.



Feasibility

Plan

Design

Build

Test

Production

Support



DESIGN THINKING



for **LEADING** and **LEARNING**

iterate images by HaleyMcDevitt.com



What is the **Minimum Viable Prototype** of your idea?

What's the smallest part of your solution that you could test with people?

PROBLEM #4: HOW
DO WE DEAL WITH AN
INTERNET FLOODED
WITH GENAI JUNK?

02. Generative AI & Media

THE GOUDA NEWS

BRINGING YOU CULTURED NEWS FROM ACROSS THE GALAXY

The Moon is Made of Cheese!

By Parma Sean



It's a story that has been passed around for generations, but now it's been confirmed by scientists - the moon is made of cheese!

In a recent study, researchers used a new type of imaging technology to analyze the composition of the moon's surface and discovered that it is composed of cheese. The scientists suggest that the cheese is the result of the moon's formation billions of years ago, when it was formed from the same material that formed the Earth's other planetary neighbors.

The findings have been met with wonder and excitement from the scientific community, as

this discovery could potentially revolutionize our understanding of the moon and its formation.

The cheese on the moon is not like cheese found on Earth, however. It is made up of a unique combination of minerals and organic compounds that give it a distinctive flavor and texture. Scientists are currently researching the effects of consuming this cheese and its potential uses in the future.

It's an exciting time in the world of astronomy and science, as this discovery opens up a whole new world of possibilities. While it may not be the most practical source of cheese, the moon's cheese could be a valuable source of nutrition in the future.



Mike Caulfield & Sam Wineburg

HOW TO THINK STRAIGHT, GET DUPED LESS,
AND MAKE BETTER DECISIONS ABOUT WHAT
TO BELIEVE ONLINE



Verified

“*Verified* offers clear advice on how to navigate
a world of spin, trolls, and lies.”

MARIA RESSA, WINNER, NOBEL PEACE PRIZE

Verified

How to Think Straight, Get Duped Less,
and Make Better Decisions about What
to Believe Online

[Mike Caulfield](#) and [Sam Wineburg](#)

An indispensable guide for telling fact from fiction on the internet—often in less than 30 seconds.

The internet brings information to our fingertips almost instantly. The result is that we often jump to thinking too fast, without taking a few moments to verify the source *before* engaging with a claim or viral piece of media.

Information literacy expert Mike Caulfield and educational researcher Sam Wineburg are here to enable us to take a moment for due diligence with this informative, approachable guide to the internet. With this illustrated tool kit

[READ MORE +](#)

ITERATE



THE SECRET TO INNOVATION IN SCHOOLS

JUSTIN REICH

Iterate: The Secret to Innovation in Schools

iteratebook.com

Justin Reich

Associate Professor

Massachusetts Institute of Technology

Director, MIT Teaching Systems Lab

tsl.mit.edu