



An Econ Educators Guide to our AI-Powered Future



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EconEd -- Chicago, *September 26, 2024*

Economic consequences of new technologies

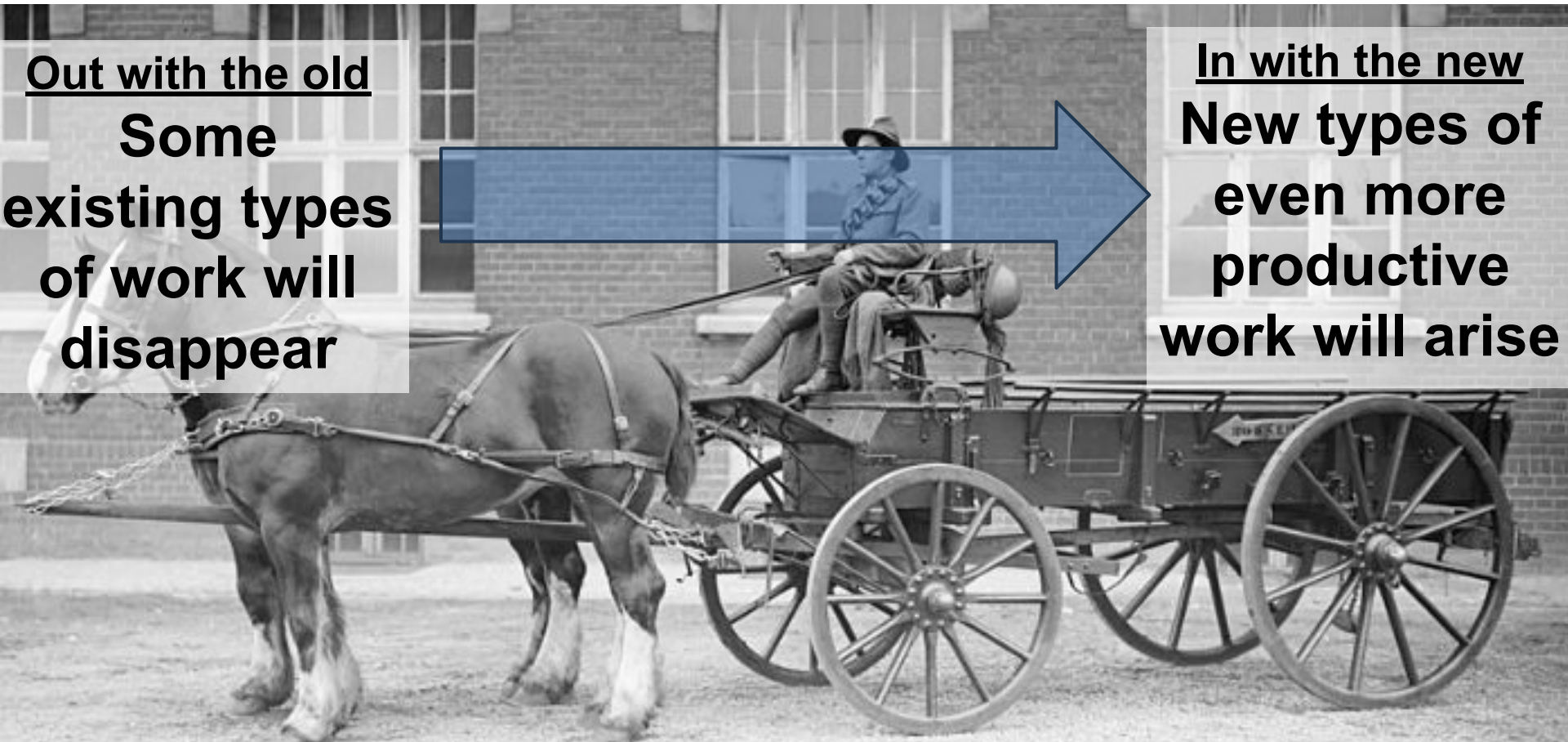
Out with the old

Some
existing types
of work will
disappear



In with the new

New types of
even more
productive
work will arise



Economic consequences of new technologies

Out with the old

Some
existing types
of work will
disappear



High-stakes at-home
assessment is dead
(AI-fueled plagiarism killed it)

The same rules apply to Gen Ai

In with the new

New types of
even more
productive
work will arise



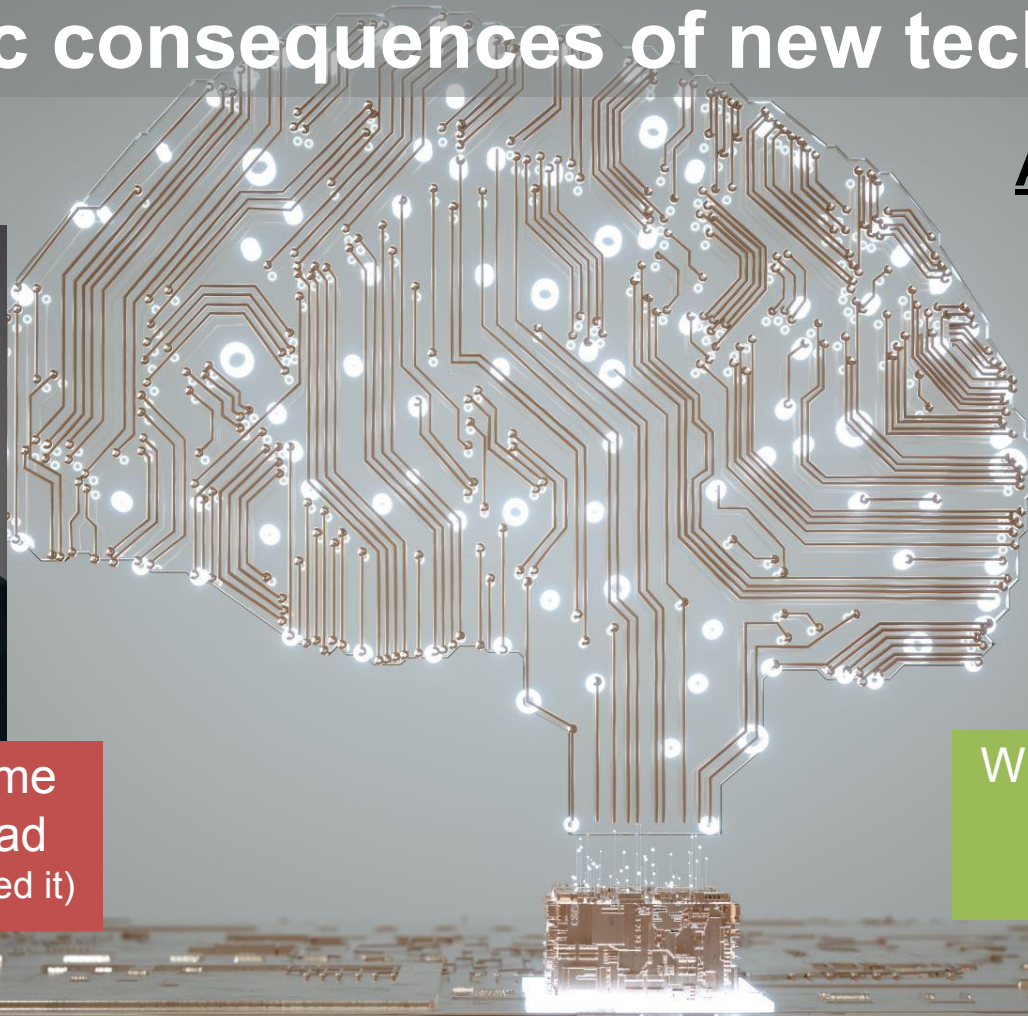
With new tools we can
do new things
(Let's figure out what)

Economic consequences of new technologies

AI as a foe



High-stakes at-home
assessment is dead
(AI-fueled plagiarism killed it)



AI as your friend



With new tools we can
do new things
(Let's figure out what)

AI as a foe



Justin Wolfers Webinar: Assigning Homework in ...

Econ ED

Assigning Homework in a World with ChatGPT

October 11th | 1:00 PM ET

Watch on YouTube

Watch later

Justin Wolfers

An earlier webinar: <https://tinyurl.com/54peshr3>

Bloomberg



[Opinion](#) | Adrian Wooldridge, Columnist

Can Oxford and Cambridge Save Harvard From ChatGPT?

Their time-tested tutorial system offers top US universities a way to blunt AI cheating and revive real learning.

August 23, 2023 at 12:00 AM EDT

One uneconomic idea



An Oxford tutorial

One big idea:

Personalization at scale



One big idea:

Personalization at scale



One big idea:

Personalization at scale



One big idea:

Personalization at scale

Four (tentative) ideas:

A Socratic tutor

- Ask for help, but not for the answer

A practice exam coach

- Drill each student before the exam

A teaching collaborator

- Your personal Center for Teaching adviser (and they understand econ)

A text aggregator

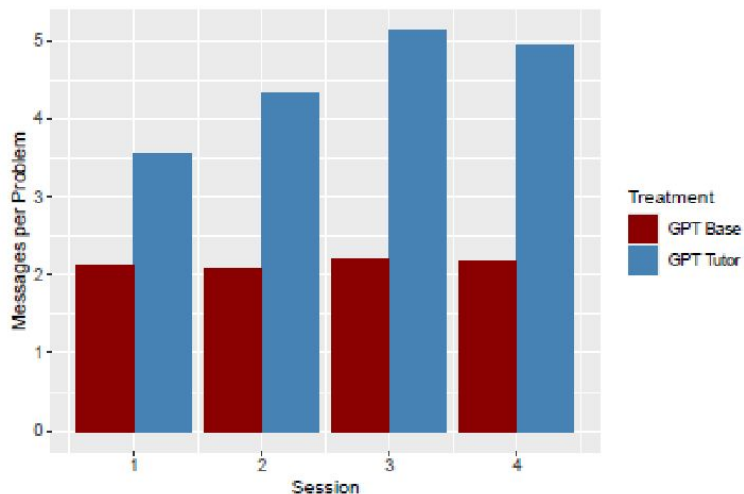
- Create new ways of engaging with your students

Table 1: Regression results on normalized student performance in the practice (assisted) and exam (unassisted) problems across grades and sessions; fixed effects are suppressed. Robust standard errors are clustered at the classroom level.

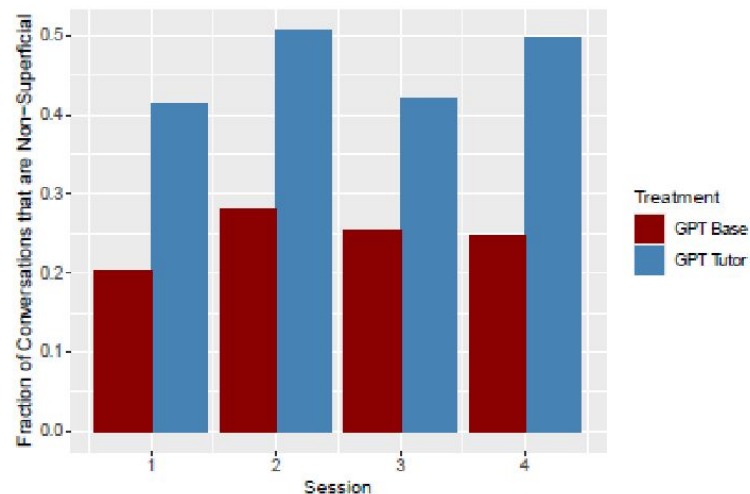
	<i>Dependent variable:</i>	
	Practice Perf	Exam Perf
	(1)	(2)
GPT Base	0.137*** (0.031)	-0.054** (0.022)
GPT Tutor	0.361*** (0.032)	-0.004 (0.013)
Prev GPA	0.802*** (0.076)	1.334*** (0.069)
Control Arm Mean	0.284	0.321
Control Arm SD	0.287	0.277



Student engagement rises with an AI Tutor



(a) Avg. # of Messages per Problem



(b) Frac Non-Superficial Conversations per Session

[Source](#): Bastani, Bastani, Sungu, Ge, Kabakci and Mariman (2024), "Generative AI Can Harm Learning"

“Our results suggest that students attempt to use GPT-4 as a “crutch” during practice problem sessions, and when successful, perform worse on their own.”

[Source:](#) Bastani, Bastani, Sungu, Ge, Kabakci and Mariman (2024), “Generative AI Can Harm Learning”

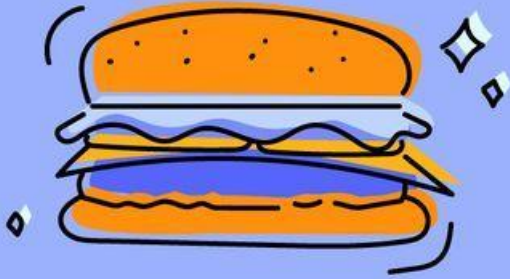


Idea #1: A Socratic Tutor

Like a TA: Ask questions, provide guidance, but not answers.



When evaluating AI, don't forget opportunity cost



A



B



Option A



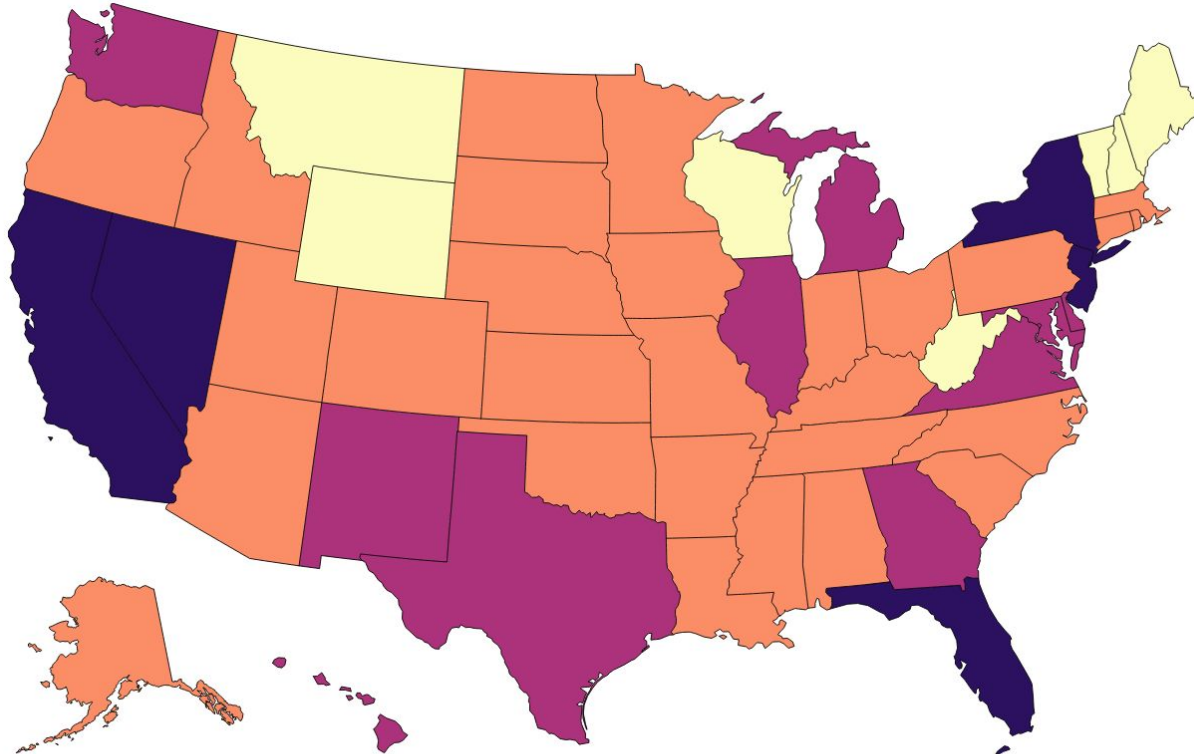
Option B

A carefully-crafted Socratic tutor is now integrated into Achieve

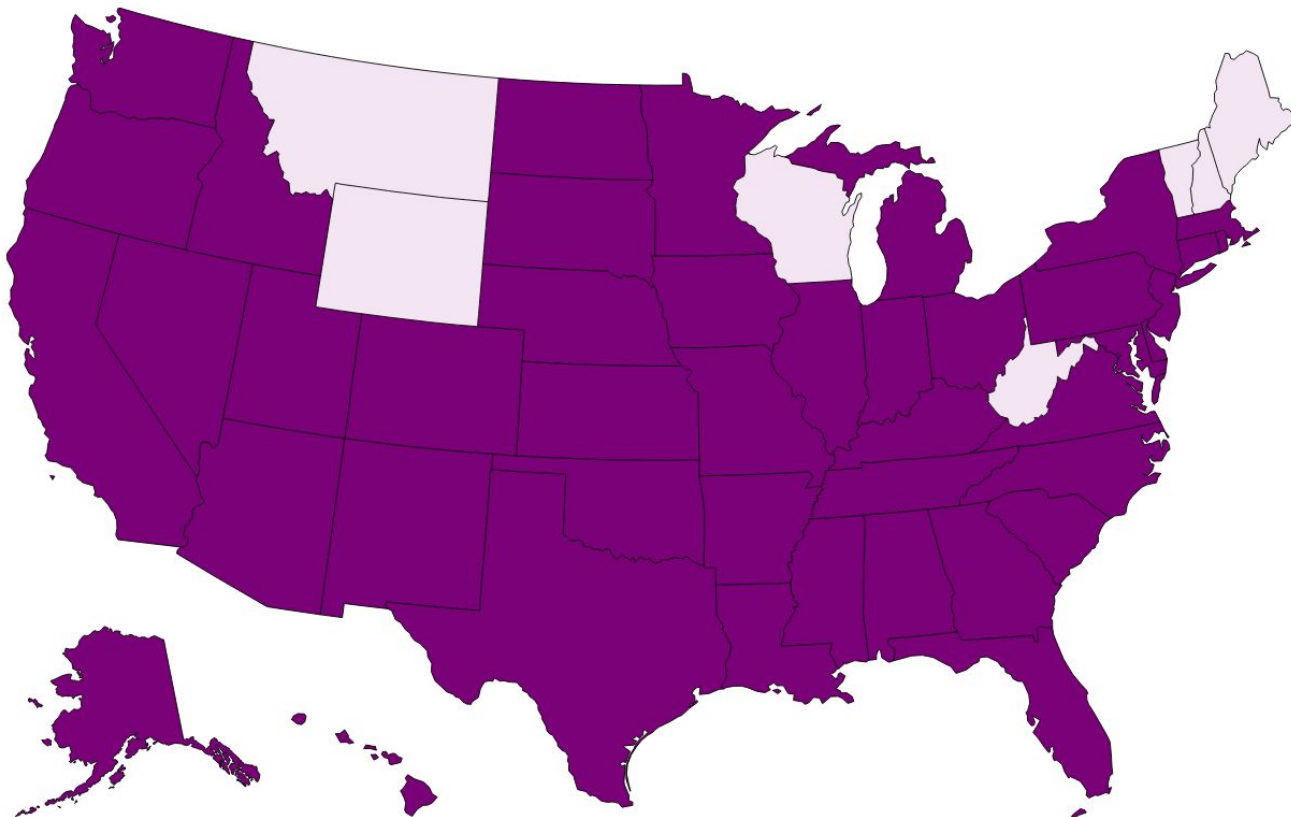
- ❑ Requires students to **try first**
- ❑ Explains, but **responds with questions**
 - ❑ Never gives the answer
- ❑ Carefully trained on our **teaching materials**
 - ❑ Knows the question, the answers, and why the wrong answers are wrong
- ❑ **Multilingual**
 - ❑ Will respond in basically any language

Share of economics majors who speak a language other than English at home

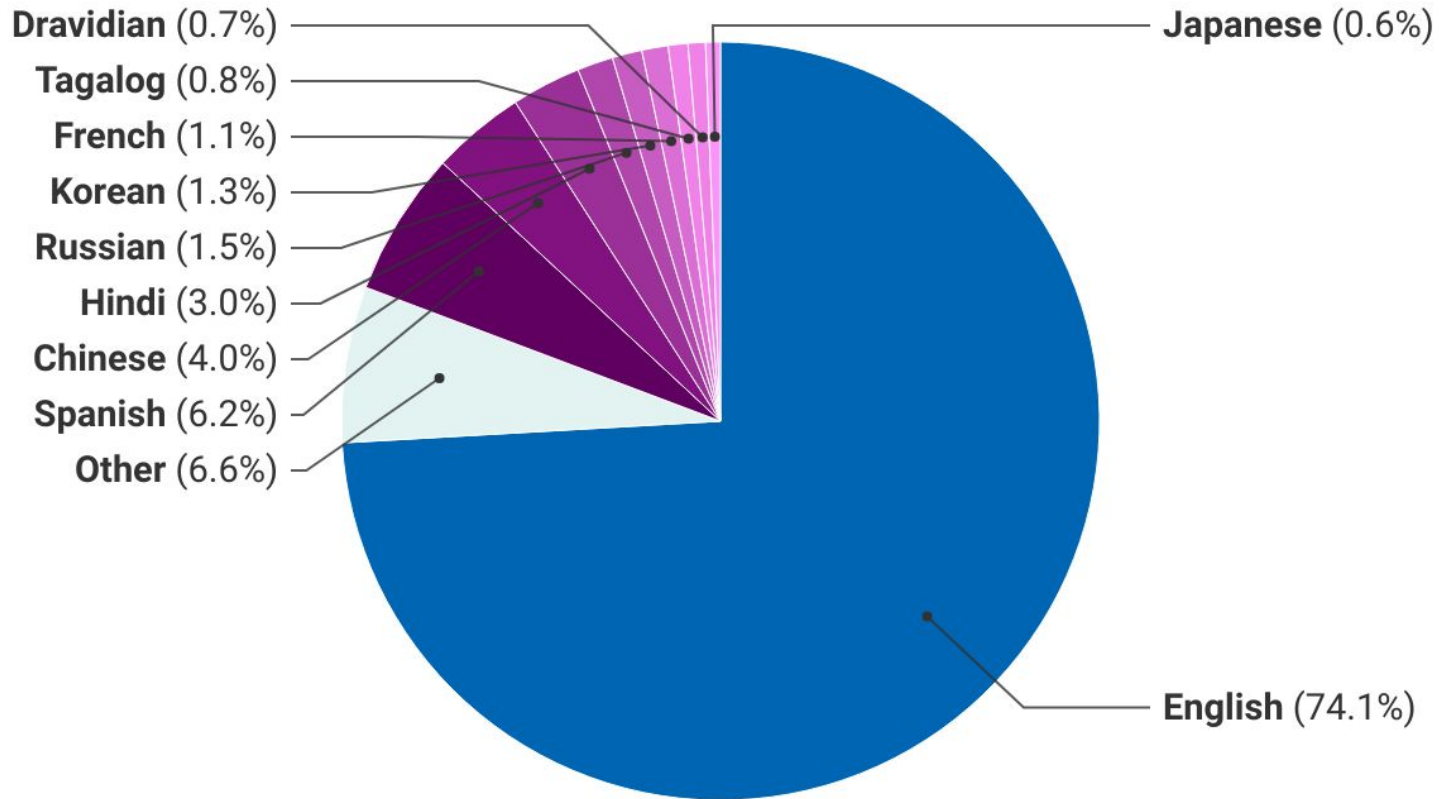
■ < 10% ■ 10%–20% ■ 20%–30% ■ ≥ 30%



States where **at least one-in-ten** economics majors speak a language other than English at home

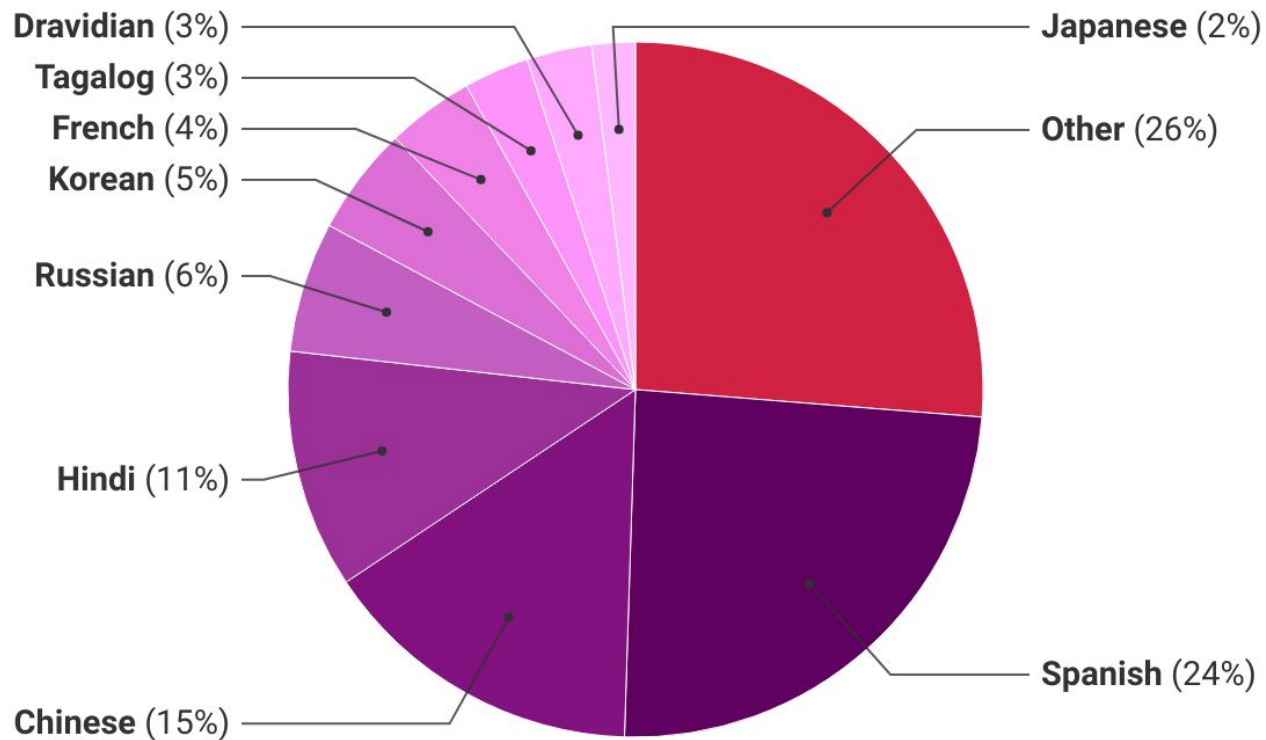


Language spoken at home by Economics majors



Which (non-English) languages are they speaking?

*Language spoken at home by economics majors
among those who speak a language other than English at home*



Idea #2: Midterm exam coach



+



Introducing your midterm econ coach



Justin Wolfers, *Adapting to AI*


Demonstration of midterm coach

YOU can create your own super coach



+

Your
econ personality
goes here
(drag and drop your past
exams and your slides)

A man with a grey beard and a blue shirt under a grey blazer stands in a classroom, smiling. He has his arm around a white humanoid robot with glowing blue eyes. The robot has a friendly expression. In the background, several students are seated at desks, and a chalkboard displays various mathematical diagrams and graphs. The scene is brightly lit, suggesting a modern educational environment.

**Idea #3: AI is your
teaching collaborator**

Prompting engineering for economists

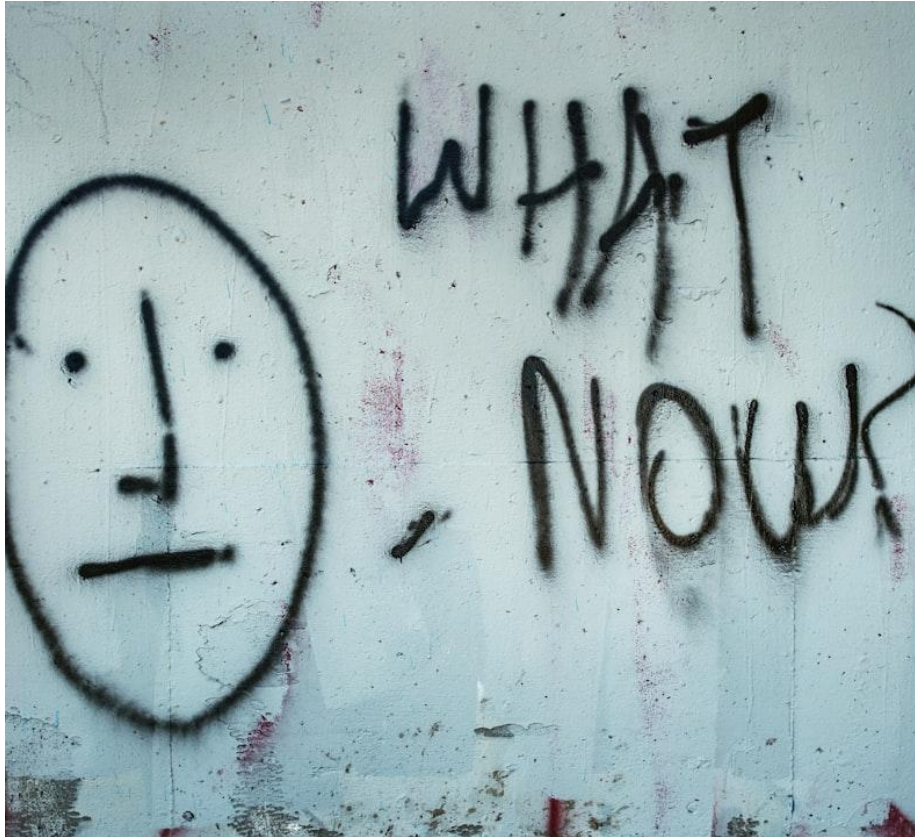
- ❑ “Please think up some active learning activities for my class on externalities”
- ❑ If I posed that question to you, could you give me an answer that met my needs?
 - ❑ Needs **context**:
 - Who are my students?
 - Who is the instructor?
 - What is being taught?
 - ❑ Needs **instructions**:
 - What sort of activities?
 - How much class time is available?
 - ❑ Needs a precise **task**
 - What precisely do you want from me?
 - ❑ And an opportunity to **ask questions**



Prompt engineering an econ teaching collaborator

- ❑ **Context:** I am a faculty member who teaches introductory economics, and I am looking for ways to incorporate active learning into the class. The **participants** are mainly American-born freshmen and sophomores, and this is their first economics class. There are about five hundred students in my class, and they enjoy interacting with each other.
 - ❑ **Instructions:** I have attached a PowerPoint presentation describing tomorrow's class. Could you please look at these slides and suggest places in the class where I could insert **an activity that would make students actively engage with the material and each other**. These activities could include answering a poll for an important question that can help me check their understanding, or a class-wide exercise that aggregates answers using iclicker, or think-pair-share exercises, games, or even the opportunity to act out some economic ideas. I'm particularly interested in interactive exercises that highlight big ideas.
 - ❑ **Task:** Please **provide me with five ideas for active learning opportunities** to use in tomorrow's class. Each of your suggestions needs to be concrete, describing exactly what issue is to be discussed, or scenario is being presented. Describe the relevant scenarios in vivid detail, making them as realistic as possible. I need to give students clear and explicit instructions about what they're doing, and also highlight the link between the activity and the underlying economic ideas.
 - ❑ **Ask questions:** Please begin by asking me anything else you need to know to provide useful advice.
-

Quick reflection: What have we learned?



What are one or two of **the most important insights** that you have learned in this session? And what are some concrete ways in which you might **change your teaching**?



<https://tinyurl.com/mpyw5jmk>

Trying to figure out our key takeaways so far (according to you)



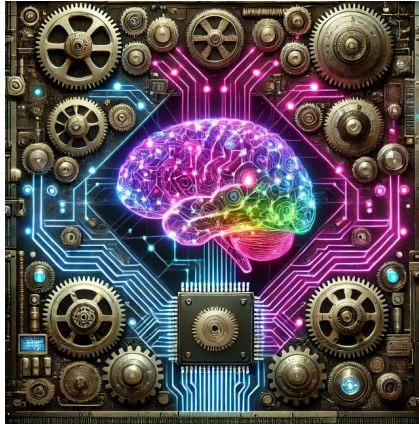
My task: Reading, making sense of, and summarizing all of these responses, and distilling the key themes

An ideal job for AI

Unstructured
text



Large language
model



Structured and
summarized text

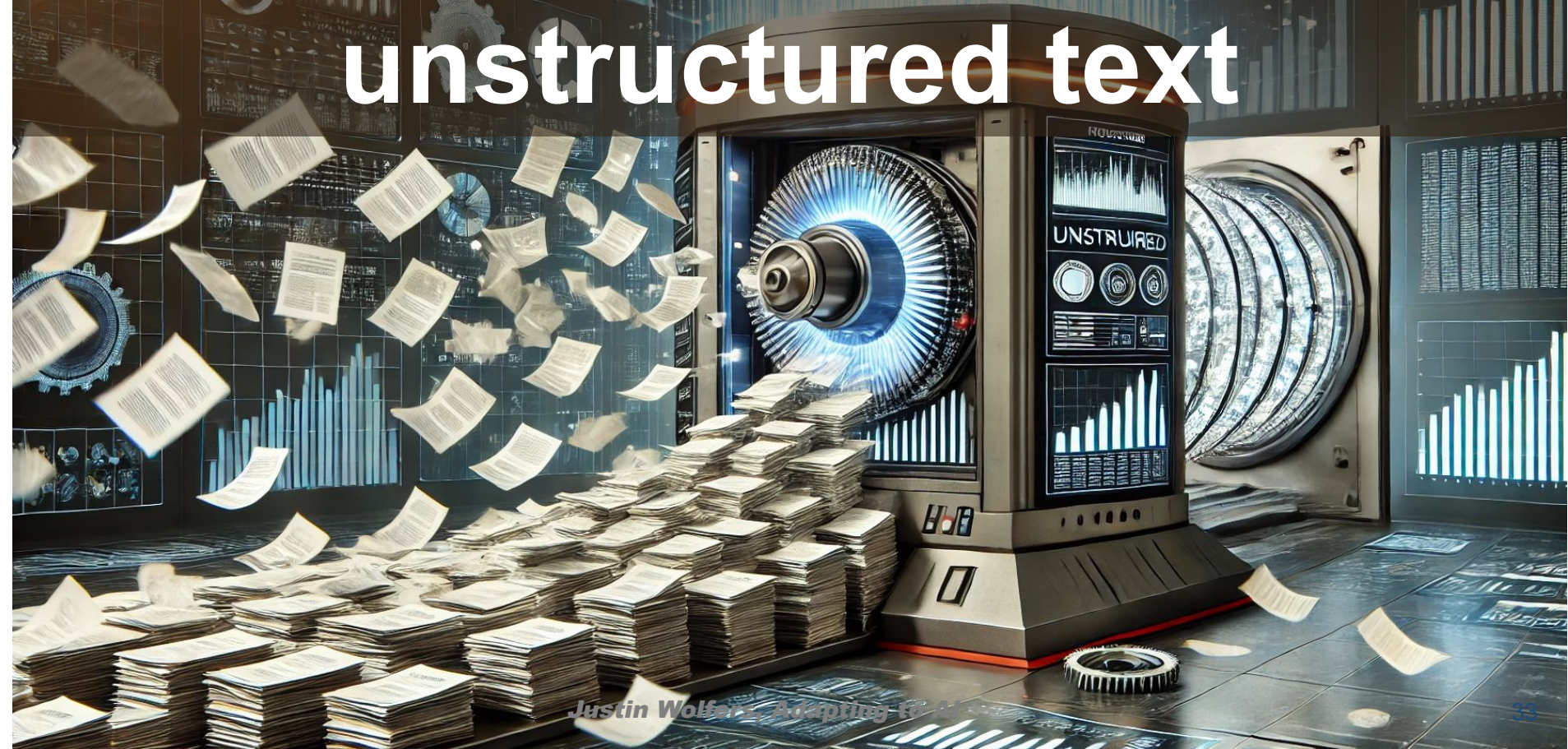
Main ideas

-
-
-

What are the big ideas?



Idea #4: Use AI to summarize unstructured text



Idea #4: Using AI to ask your class what they're thinking

The big idea: Use AI to *summarize* unstructured student feedback

Really important in
large classes

Some applications

- ❑ What did we learn?
 - ❑ What are the today's key takeaways?
- ❑ “The muddiest point”
 - ❑ What concepts did you most struggle with?
- ❑ Rapid response class feedback
 - ❑ How is semester going so far? What am I doing well? How could I do better?
- ❑ Unstructured polling
 - ❑ I'm giving a pre-election lecture: What issues do you want me to cover?

One big idea:

Personalization at scale

Four (tentative) ideas:

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- Create new ways of engaging with your students

A man with long blonde hair and glasses is sitting at a desk in a server room, typing on a keyboard. He is wearing a blue shirt with a yellow logo. The server racks in the background are illuminated with blue light.

What new ideas do you have for us to explore? Which of today's ideas are you excited by? What should the AI developers working on Stevenson & Wolfers work on next?



<https://tinyurl.com/mwd2baem>

What are our
takeaways?

