

▲ PROBLEM-BASED LEARNING

Beyond the Right Answer

A model for integrating **AI** and **cognitive bias** into problem-based learning

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Your students are using AI

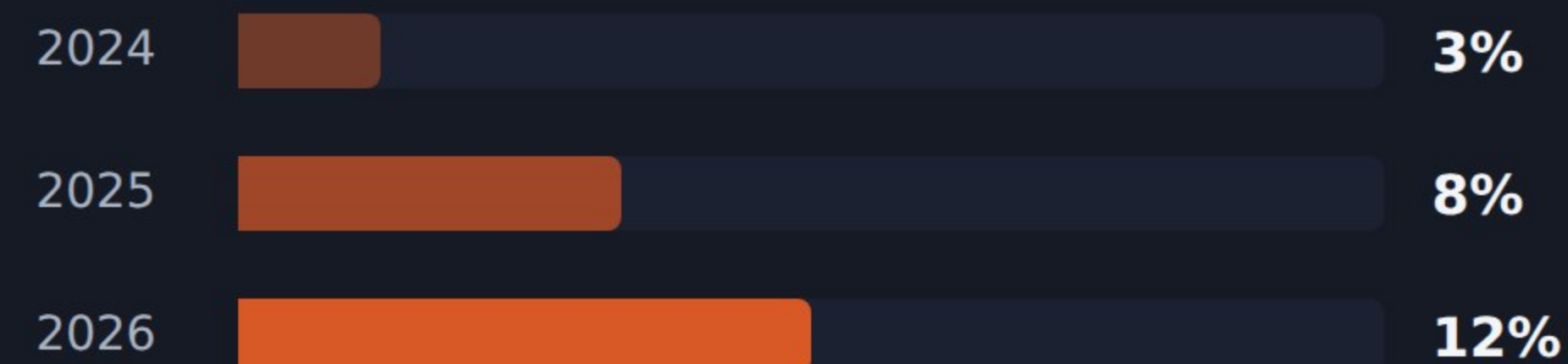
In the largest UK student survey, AI use is no longer a trend. It's simply how students study now.

95%

of students now use AI in their studies,
and **94% use it on assessed work**

AI-generated text pasted straight into assessed work

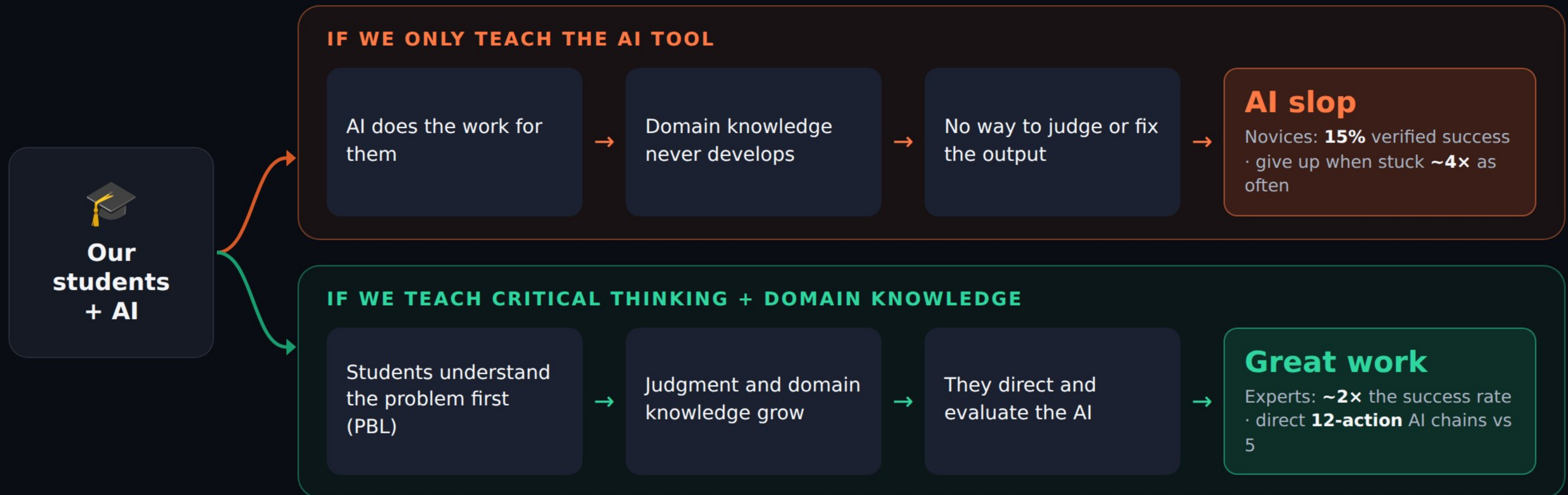
Share of students · HEPI surveys 2024 → 2026



4x in two years, and self-reported numbers tend to run conservative.

What we teach shapes what AI gives back

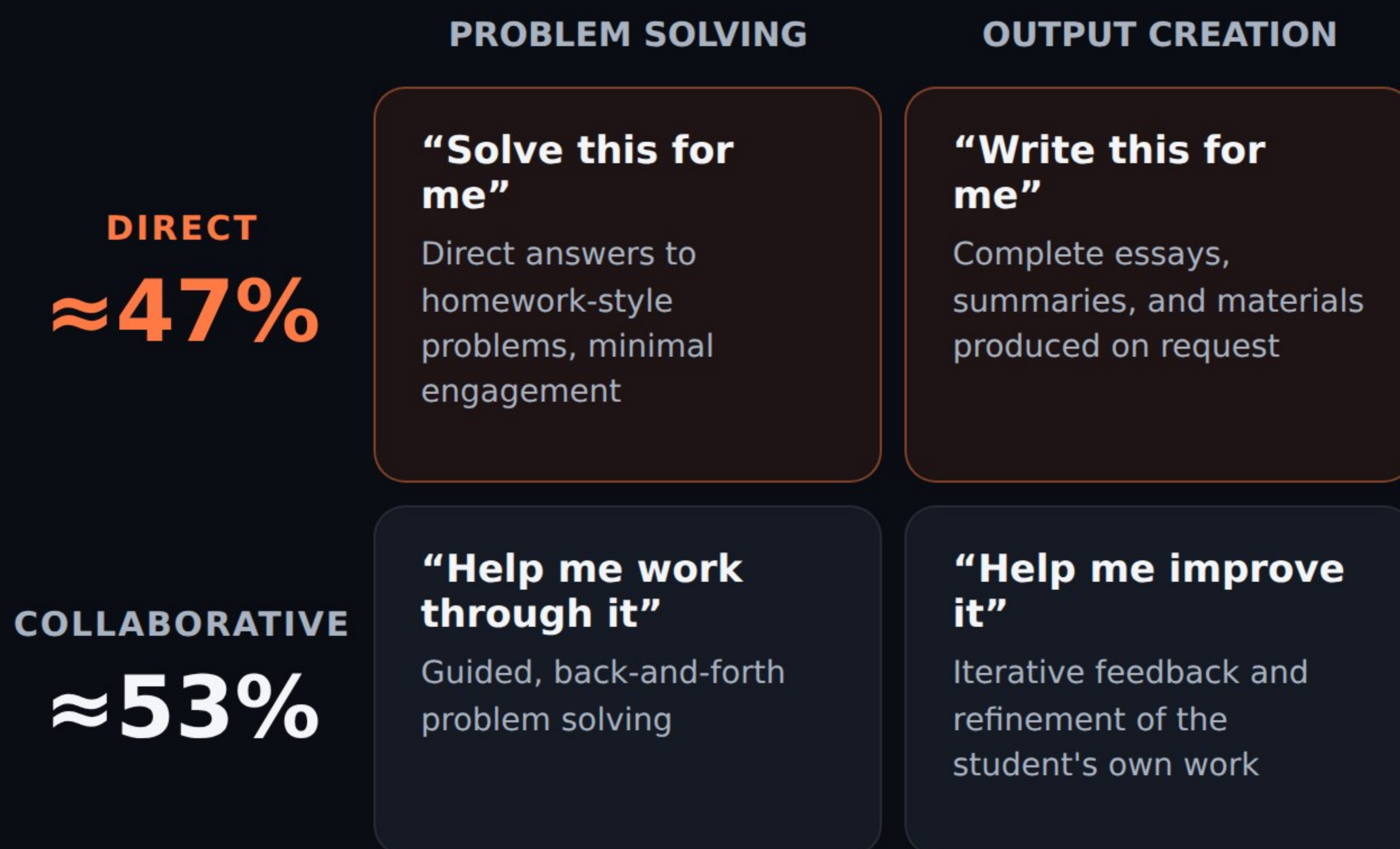
Anthropic studied ~400,000 real AI work sessions. The difference between slop and great work wasn't the tool. It was how deeply the person understood the problem.



Critical thinking and domain knowledge aren't competing with AI. They're the multiplier.

How students actually use AI

Anthropic classified ~574,000 real student conversations. Four patterns emerged, and about half the time students asked for the answer rather than the thinking.



All four patterns occur at similar rates (23–29% of conversations each); Anthropic doesn't publish exact per-cell splits.

~half

of conversations are **Direct**: seeking finished answers or content with minimal engagement.

That's the half where we can make the biggest difference.

Your brain on ChatGPT: **cognitive debt**

MIT Media Lab put EEG caps on 54 students writing essays: with an LLM, with search, or with brain only. Connectivity scaled down with every layer of help.

Neural connectivity while writing (strongest → weakest)

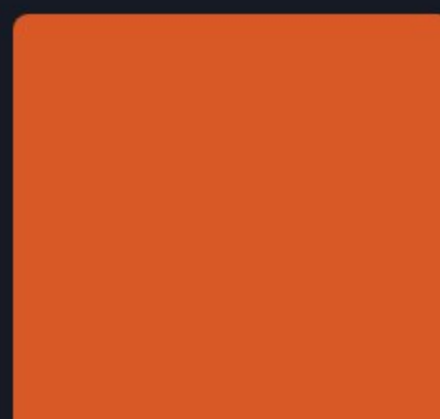
Brain only



Search engine



ChatGPT



Schematic of the study's ordering: "brain connectivity systematically scaled down with the amount of external support."

83%

of LLM users **couldn't accurately quote** from the essay they had finished writing minutes earlier

The debt compounds

LLM users reported the **lowest ownership** of their work, and when later asked to write *without* AI, their neural engagement stayed depressed.

I'm seeing it in my intro classes

Same students, same semester. Maybe this looks familiar.



Participation on non-proctored work

Everyone's suddenly doing the
homework



Scores on non-proctored exams

And the homework looks great



Scores on proctored exams

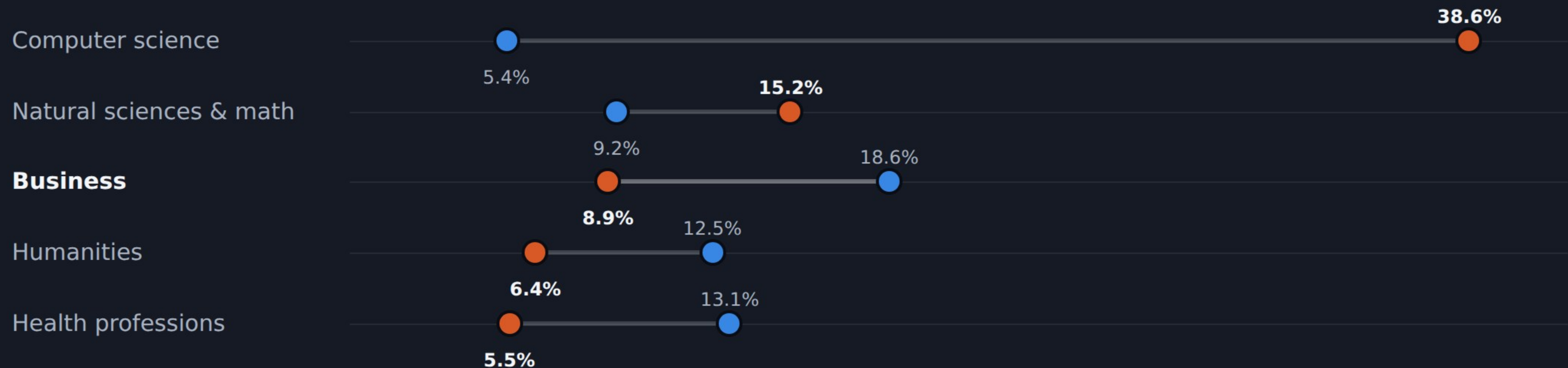
But close the laptop, and the learning
isn't there

The work looks better than ever. The learning isn't keeping up.

Good news: our students' AI habits aren't set yet

Share of student AI conversations vs. share of U.S. bachelor's degrees. STEM over-indexes heavily, while business students are still early in their AI journey.

● Share of Claude conversations ● Share of U.S. bachelor's degrees



Computer science: **38.6% of conversations** from 5.4% of degrees. Business: 8.9% from 18.6%. **We arrive early enough to help shape how our students use it.**

▲ ACT II · THE STAKES

Students are offloading **exactly the thinking** their profession is about to pay a premium for.

Meanwhile, the profession is already moving

AI adoption in tax and accounting firms nearly doubled in a single year, and it's already reshaping what firms bill for.

Tax firms using AI-powered research weekly



Top uses: advisory projects (44%), tax planning (40%), compliance research (39%). **Judgment work, not data entry.**

84%

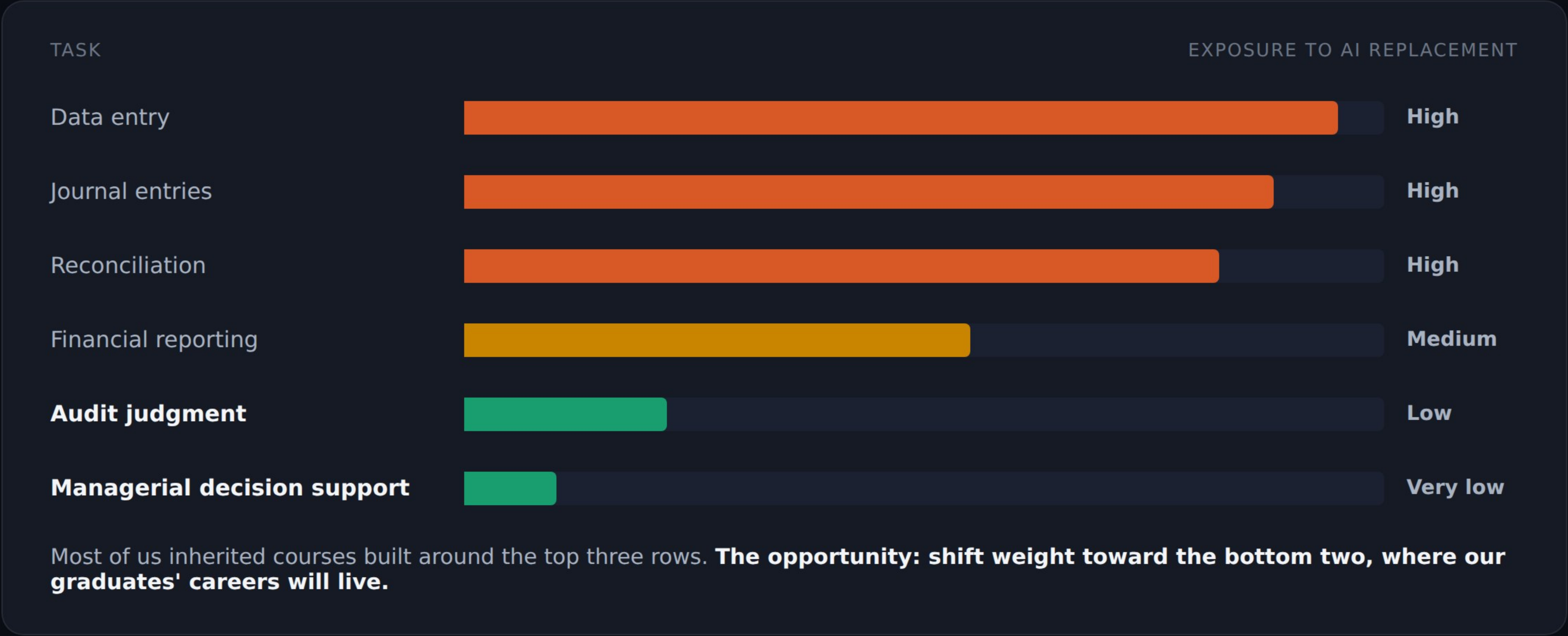
of tax professionals agree AI saves them time, reallocated to client response, quality, and work-life balance

69%

expect to move off hourly billing as AI commodifies routine knowledge; value shifts to **advice**

AI eats the routine. Judgment survives.

The tasks we drill hardest in intro accounting are the ones most exposed to automation.



Reframe accounting as a **judgment profession**

...and teach it that way.

HOW IT'S OFTEN TAUGHT



Number cruncher

Rules to follow

Mechanics to practice

Terms to memorize



WHAT THE WORK REALLY IS



Trusted advisor

Interpretation of messy situations

Judgment under uncertainty

Ethics clients can rely on



It's what we actually do



It's harder to automate



It's more interesting

▲ ACT IV · LIVE CASE

Let's try one. Together.

You're the students. I'll give you a problem. Solve it however you like.

Then we'll come back to the slides and unpack what happened.

Why that just worked

Across 25 studies, the average PBL student out-scores ~86% of traditionally-taught peers on critical thinking

- 1 Understanding must come before terminology**
Teach terms first and memorization is the student's only option. Teach the problem first and critical thinking is the only option.
- 2 A problem students understand is a problem they can think critically about**
The emphasis moves from memorizing to reasoning on day one.
- 3 Group problem-solving makes cognitive bias visible**
When a whole class works one problem, you can point at anchoring and overconfidence as they happen, and teach them.
- 4 Domain language layers on easily afterward**
Once students truly understand the problem, accounting terminology is labels for things they already know.
- 5 Deep understanding is what makes AI useful instead of dangerous**
You can only evaluate AI output on problems you genuinely understand.

Field notes: making PBL land

1 Choose student problems over business problems

A problem they own beats a problem they're assigned.

2 Get a student to explain the topic. Excitement is contagious

The moment a peer explains it, the room leans in.

3 Let students identify the problem themselves

If all they do is correctly name the problem, they've already achieved a lot.

4 Let them be wrong, loudly

Any solution is a good solution for learning. Mistakes are the raw material.

5 Show how cognitive bias shaped their answers

The reveal is the lesson: their own reasoning becomes the case study.

The class session

One repeatable structure, droppable into any course, any topic.



1 · Open with the PBL case

A student-life problem, no jargon. Groups propose solutions cold.



2 · Add the language

Introduce accounting terminology and the business version of the same problem.



3 · Work problems

In-class accounting problems, now anchored to a problem they understand.

▲ THANK YOU

Reach out.

Want the case materials, the slides, or to swap notes on what's working in your classroom? I'd love to hear from you.



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Scan to connect

Sources

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