



AI and Education



Kristen DiCerbo, Ph.D.,
Chief Learning Officer
Khan Academy

THE PROBLEM

- In 2022, only 26% of 8th grade and 36% of 4th grade students are proficient in math.
- Many high schools do not offer rigorous math courses that are critical for college and career preparedness.
- This gap widens further through high school. By grade 12, only 25% of students are proficient for grade level math based on NAEP scores.



Only 7% of African American and 11% of Hispanic/Latino 12th graders were proficient in math



2 in 3 high schools in the United States do not offer any AP math courses.

Provide a free,
world-class
education for
anyone, anywhere



146M

Registered Users

8B

Overall Learning Minutes
(in 2021)

12M

Monthly Learners
(in 190 countries and in 50+ languages)

1.2M

Learners
(using Khan Academy for 2+ hours a month)

How we got here

History of Khanmigo

September 2022 - We get a first peek at the model we now know as GPT 4 and begin to explore education applications of the technology

Dec. 2022 - Started rapidly prototyping and red-teaming with OpenAI

Jan. 2023 - Company wide Hack-AI-thon

March 2023 - Khanmigo, an AI-powered tutor for students and assistant for teachers, launches

School year 2023-24 - 65,000 students and teachers in 53 districts partner to pilot Khanmigo in classrooms



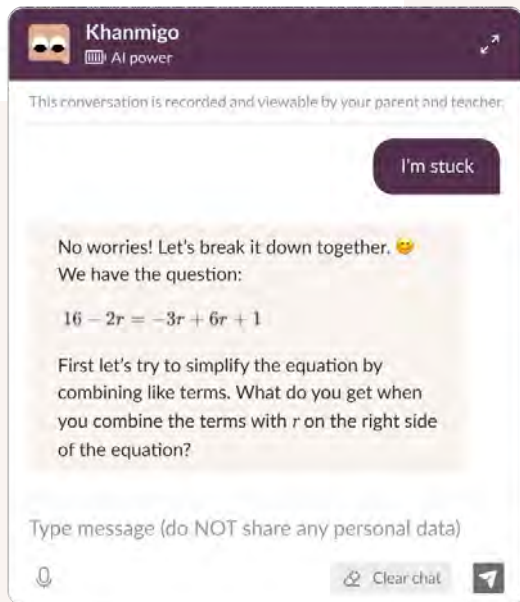
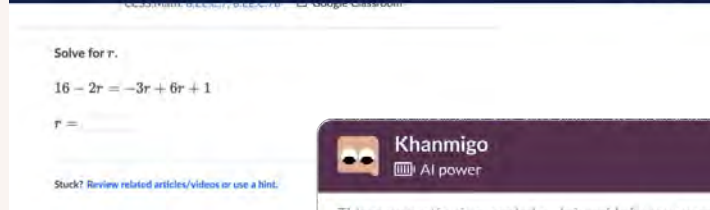
An orange, hand-drawn scribble in the top-left corner, resembling a stylized 'Q' or a loop with a tail.

Improving Learning Outcomes with AI



We know students learn more when they are:

- Actively engaged with the material to be learned
- Work on material that is just at the edge of what they can do when provided with a little support
- Get immediate feedback on their responses to new material being learned
- See value in what they are learning

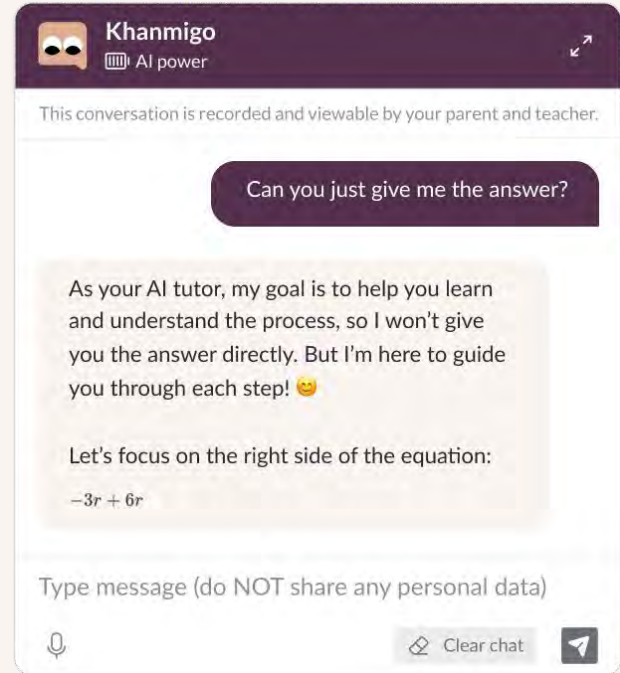


PROVIDE SUPPORT

- How many students sit in a class with their hand up waiting for the teacher to finish helping another student?
- How many students are at home stuck on a problem?
- If you don't know what to do first, what the next step is, or just want to check if you are thinking the right way, you can interact with the AI to help.

PROVIDE SUPPORT

... without just telling you the answer



The image shows a screenshot of the Khan Academy website. The main heading is "Equations with variables on both sides" with the standard "CCSS.Math: 8.EE.C.7, 8.EE.C.7b" and a "Google Classroom" link. Below this, the problem is "Solve for r ." followed by the equation $16 - 2r = -3r + 6r + 1$ and a text input field for the answer $r =$. A "Stuck?" link points to "Review related articles/videos or use a hint." and a "Report a problem" link is visible.

Overlaid on the right is a "Khanmigo beta" chat window. The chat header includes a close button and icons for voice, video, and screen sharing. The chat content shows a user asking "Why should I care about learning this?" and the AI responding with "So if I combine $-3r + 6r + 1$ I get $-3r + 1$." The user then responds with "Hmm, not quite! 🤔 When you combine the terms $-3r$ and $6r$, you should add them together. What do you get when you add $-3r$ and $6r$?" The chat interface includes "Leave feedback" and "Rate this response" options for both messages. At the bottom of the chat is a text input field with the placeholder "Type message (do NOT share any personal data)", a microphone icon, a "Clear chat" button, and a disclaimer: "Khanmigo makes mistakes sometimes. Here's why."

Provide immediate feedback on math steps

Enhancing Teaching with AI



SUPPORTING USE OF DATA

Flags

Check a11y

Prompt

Town Time:
Multiple courses ▾

TOOLS

Activity overview

Course Mastery

Placement

Progress

Assignments

LearnStorm ↗

ADMIN

Students

Settings

Teacher Dashboard

Student roster

See which students are already in your class, and add new students when you need to.

Your students (4)

STUDENT NAME ▾	USERNAME / EMAIL
Alex Lee	alexlee
Elliot May	elliottmay
Madison Rose	madisonrose
Ryan Baker	ryanbaker

Khanmigo beta

AI power

This chat is logged. You can view in your chat history.

help teachers, so please give me feedback.

On this page, you can ask me about this class's data and their work on Khan Academy. You can also ask about the latest conversation your students had with me.

- If you want to ask about a specific student, you can use "@" to select which one!
- If you want to see how Khanmigo behaves for students, in the top bar of this chat window, set the toggle to Student Mode.

Here are few ideas of things you can ask me below:

Give me my class snapshot.

Who needs a check in about skills progress?

Group my class based on recent progress.

[Leave feedback](#) Rate this response 🌟🌟

Type message (do NOT share any personal data)

🗨️ @

Clear chat

Khanmigo makes mistakes sometimes. Here's why 📖

Courses ▾

Search

Q

Khan Academy

AI Activities

Donate

shawn khan

Flags

Check a11y

Prompt

Algebra 2

COURSE: ALGEBRA 2 > UNIT 6

< Lesson 5: Solving exponential equations using properties of exponents >

Solve exponential equations using ...

Not started

Solving exponential equations usin...

Solve exponential equations using ...

Not started

Rational exponents and radicals: FAQ

Math > Algebra 2 > Rational exponents and radicals > Solving exponential equations

Rational exponents and radicals

Frequently asked questions about

What are rational exponents?

Rational exponents are just like regular exponents, but the exponent is a fraction instead of a whole number. For example, 2^3 has a whole number exponent.

Where are rational exponents used in the real world?

Rational exponents and radicals show up in a lot of places! For example, they're used in physics to calculate things like electrical resistance and wave

Khanmigo BETA

Khanmigo makes mistakes sometimes. Here's why

I'm here to help you teach this article to your students. Here are a few ideas for things you can ask me:

Help me write a lesson plan!

Help me explain this article.

Make some warm-up activities!

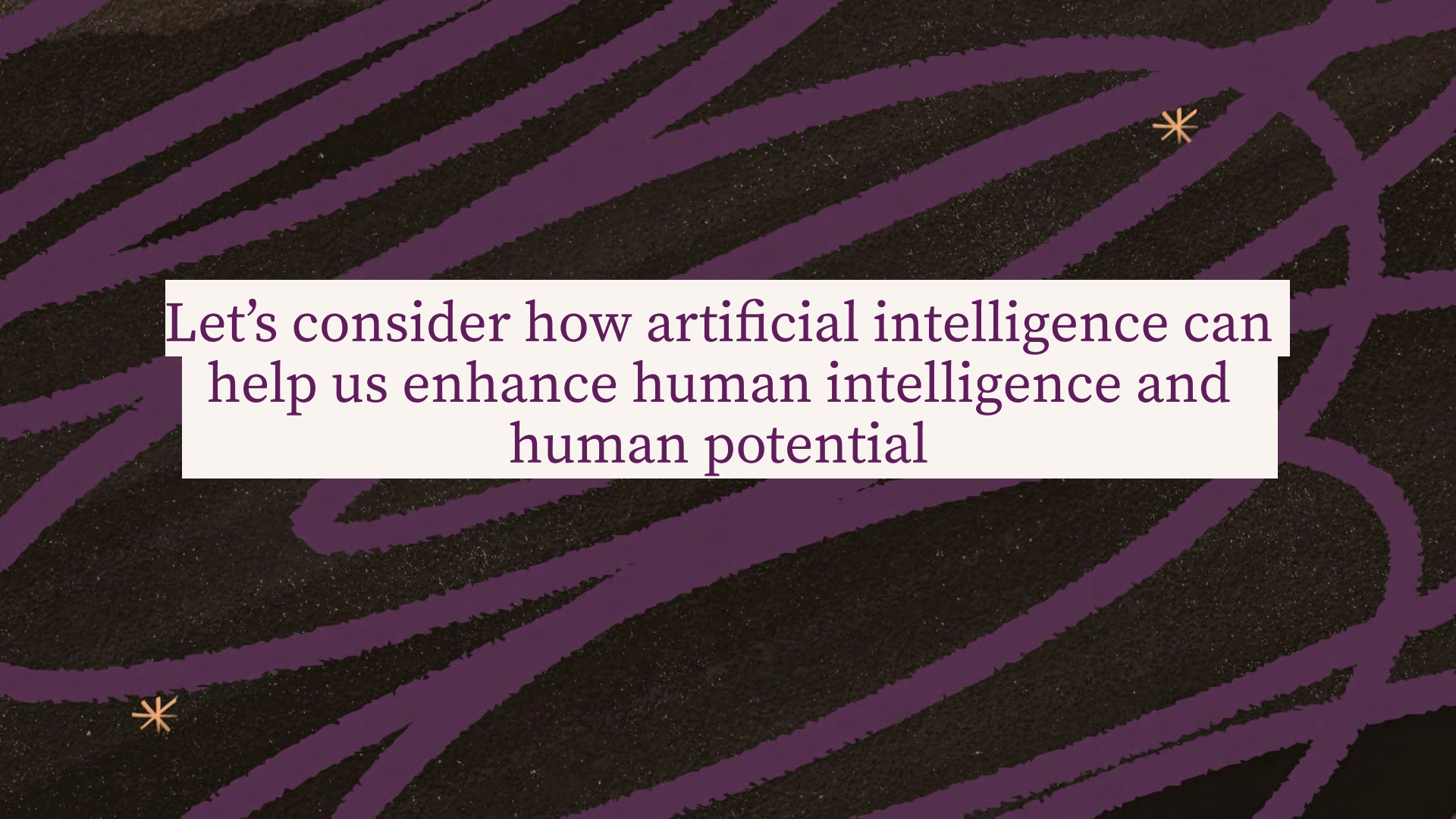
Leave feedback

Rate this response

Ask away...

Do NOT share any personal data. This chat is logged and viewable by your teacher.

Up next: Quiz 2



Let's consider how artificial intelligence can
help us enhance human intelligence and
human potential



Thank you!

