

# AI Chatbots Will Help Students Learn Nothing Faster Than Ever

[danmeyer.substack.com/p/ai-chatbots-will-help-students-learn](https://danmeyer.substack.com/p/ai-chatbots-will-help-students-learn)

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Here's Sal Khan, the founder of Khan Academy, [in a recent TED talk](#) describing Khanmigo, the AI chatbot they have embedded throughout their website.

But I think we're at the cusp of using AI for probably the biggest positive transformation that education has ever seen. And the way we're going to do that is by giving every student on the planet an artificially intelligent but amazing personal tutor. And we're going to give every teacher on the planet an amazing, artificially intelligent teaching assistant.

Khan describes several interactions between students and teachers and AI, most of which are extremely novel and all of which very helpfully define the narrow limits of any impact we should hope to see from AI chatbots on schooling.

## Khanmigo in Action



This conversation is recorded and viewable by your teacher.

$$3-18 + 2m = m$$



I see that you tried to simplify the equation, but I'm curious about how you got to your step. Can you explain your thought process? Remember, we need to distribute the -2 to both the 9 and the 2m inside the parentheses. Let's try that step again:

In one example, a student asks for help solving a math problem involving an algebraic expression. Khanmigo doesn't just walk the student through some correct steps for finding the answer but also seems to understand how the student might have been thinking about the math.



It's great that you're thinking about college in 10th grade! Here are some key things to focus on:

1. Maintain good grades: Your GPA is an important factor in college admissions, so keep working hard in your classes.
2. Explore your interests: Join clubs, participate in extracurricular activities, or volunteer in your community to discover your passions and develop

In another, a student asks for advice about preparing to apply for college. Khanmigo advises the student to maintain good grades and explore their interests.

Later, a teacher asks Khanmigo for advice on launching a lesson about the Spanish-American War. Khanmigo recommends that students take on roles as diplomats in the war and represent their country's interests.

I want to offer that these demos are mostly very novel and unlike anything I have ever seen from digital technology. Here I am on the same side of most chatbot boosters—including venture capitalists, tech journalists, Sal Khan, and many others.

## The Size of Learning

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But what these demos also have in common, in addition to their novelty, is their small learning unit size—the size of their ideas, the number of people they depend on, the context they require about the learner, their scope, their aperture, their duration.

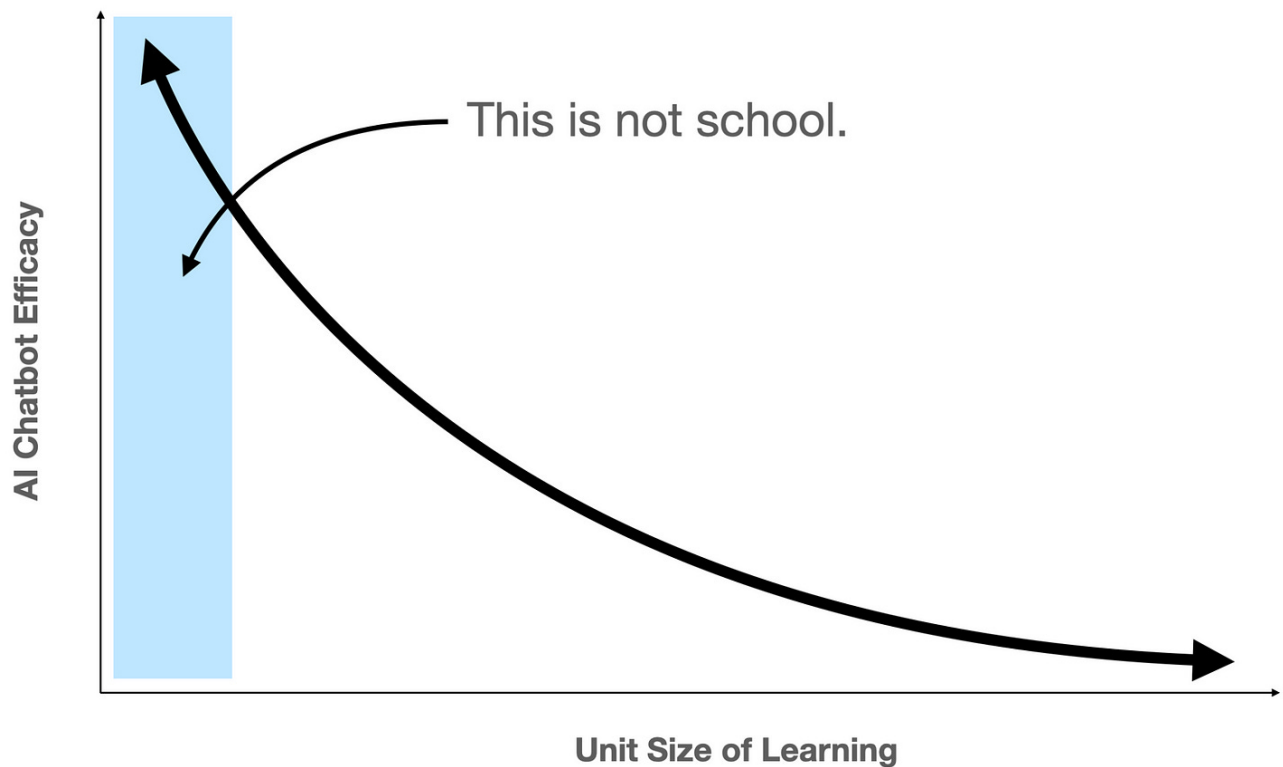
They are extremely novel and extremely small.

## Extremely Small vs. Extremely Large

- “What is the answer to this math question?” v. “What is math and what’s interesting about it to *me*?”
- “What are good steps for *anyone* to take to get to college?” v. “What are good steps for *me* to take to get to college? What should I study there? Should I *wait* to go to college?”

- “What is a good lesson plan for tomorrow’s lesson?” v. “What is a good lesson plan for tomorrow’s lesson given *my* strengths, given *my students’* strengths, given the kinds of lessons we’ve already learned this week?”

I don’t think I’m in conflict with any chatbot boosters here. None of them, to my knowledge, have proposed that chatbots will help students answer any of the Extremely Large questions.



### Getting Schooling Wrong

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Where we *are* in conflict is the belief among chatbot boosters that schooling is merely the sum of lots of extremely small learning units and *if* any extremely large units play a role in schooling we can unbundle them and address them separately.

But schooling is no more the sum of small learning units than the human body is the sum of its bones. Nor is it any easier to unbundle relationships, context, time, or other humans from schooling than it is to unbundle someone’s heart from their body. In schooling, students find it very hard to separate extremely small learning units like “how do I factor this expression?” from extremely large learning units like “who am I?” and “do I belong here?”

Chatbot boosters have a model for schooling—why we do it and how it works—that is wrong.

Their model for schooling leads them to say truly baffling things like, “You can now ask as many questions of a video as you would ever dream of,” a dream that I am wagering is not common among middle school students.

Their model for schooling leads them to suggest that an AI chatbot that knows nothing of your biography, your academic history, your interests, your fears, the culture of your school, the resources local to you, etc, could “give every student a guidance counselor, academic coach, career coach, life coach.”

Their model for schooling hasn’t worked. It didn’t work when Sal Khan suggested explanation videos would transform education in 2011. It didn’t work when he suggested auto-graded exercises would transform education in 2016. It didn’t work when Udacity tried and failed to support students at San Jose State University in 2013, retreating nearly entirely into corporate certification followed by Coursera in 2016.

Their model for schooling hasn’t worked and none of their proponents are ever asked to account for it not working. We are only told how their model has been failed by humans and their lack of interest in unbundling themselves.

### **Wrong But Popular**

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My hypothesis for the enduring popularity of this model of schooling among technologists is that a huge majority of the people who work in technology (and those whose philanthropy derives from their work in technology) had little use for many of the extremely large units of learning in their own schooling. In their own schooling, they learned very quickly by themselves. They often perceived themselves (perhaps rightly) as more intelligent than their peers or even their teachers. They were able to unbundle extremely large questions about their identity, their place in the world, from the smaller questions of how to work with algebraic expressions.

While these people may be overrepresented in the technology sector, they represent a minuscule fraction of the people who send their children to be educated in public schools every day. Those people generally like their neighborhood school and teachers and wish for better human relationships within it—more transparency, a warmer welcome, a greater recognition of the value of the kids. They are not

clamoring for a digital substitute for human relationship. They have not wanted that historically and are not going to start now, even though the chatbots are smarter and quicker with smaller units of learning than ever before.

### **Where We Will and Won't See Transformation in Schooling**

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AI chatbots are most effective as the unit size of learning asymptotically approaches nothing. They will help students learn nothing faster than ever. Anyone in the extremely small units of learning business is in a lot of trouble.

But anyone doing the work of amplifying and enhancing what most people like about schooling—the relationships you form, how those relationships are enhanced through learning small ideas and vice versa, how those relationships make all of us better people, where by “us” I mean the students, yes, but also the teachers in a reciprocal relationship across every demographic line you can imagine, a relationship which few adults understand and even fewer get to experience firsthand—you’ll be fine.

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