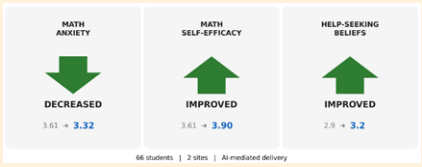
emancipation

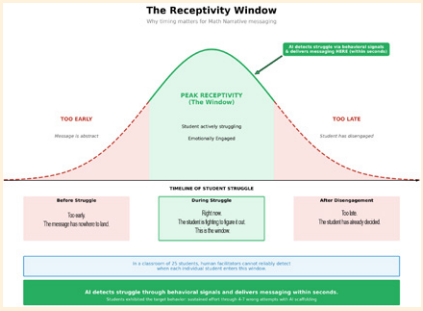
About our project

We built an AI tutor inside a video game and taught it to recognize the exact moment a student was struggling with a math problem. At that moment, and only that moment, the AI delivered a targeted message about struggle and capability. Across 66 students in two cities, math anxiety dropped, confidence grew, and students became more willing to ask for help.

Top learnings about impact



Mediated Narrative Delivery



Peak Receptivity Window

Narrative Deployment Sample

Measured Outcomes:

- **Math Anxiety DECREASED: 3.61 to 3.32.** Students came back to their next session carrying less dread. Once they had been supported through the hardest moment, the fear started to lift.
- **Math Capability Beliefs IMPROVED: 3.61 to 3.90.** Pushing through real difficulty, with the right support at the right moment, changed what students believed they could do.
- **Help-Seeking Beliefs IMPROVED: 2.9 to 3.2.** When the AI made support feel like a normal part of working through a problem, students stopped treating asking for help as a sign of weakness.

Insights For AI-Mediated Math Narrative Deployment:

1. **The best moment to reach a student is the hardest one.** AI detects the exact moment a student hits the wall and delivers a message within seconds, inside the peak receptivity window. That is when students are most open to a new belief about themselves. No teacher can reach every student at that moment, at that speed, at scale. AI can.
2. **The same message does not work for every student.** When all students received identical encouragement, most improved but some shifted in the wrong direction. The AI has to read where a student starts before deciding what to say. Adaptation is not a feature. It is the foundation.
3. **No audience means no shame.** In a classroom, getting a problem wrong in front of peers carries a social cost, and that cost stops students from trying again. Without an audience, students failed four to seven times in a row and kept going until they got it right. Six percent of students walked into a session hostile to the chatbot and left genuinely engaged in mathematics, within a single session. AI does not ask students to be braver. It removes the condition that demands bravery.

Top learnings about process

AI tracks what students do, not just what they say they feel. Students showed us the hardest behavior to teach: they stayed with a problem through four to seven wrong answers and kept going until they got it right. That kind of behavioral data gives us real-time evidence of growth that a survey cannot capture on its own, because surveys ask students to name what they are experiencing before they fully understand it themselves. We used self-reporting to confirm what the behavioral data was already showing.

Watch the game walkthrough:

Explore more data about our results:

THE MATH NARRATIVE PROJECT