

# Co-Creating a Human-Centered AI Learning System for the Future of Education

## Introduction & Problem

Traditional education often uses a "one-size-fits-all" approach because teachers cannot manually personalize lessons for 30 different students at once. Current AI use in schools is often "dyadic" (two-way), meaning students talk directly to the AI while the teacher is left out. This can lead to students using AI as a shortcut for answers rather than a tool for thinking. The vision of this research: to create a co-designed partnership where the Teacher, Student, and AI work together.

## Research Questions

To what extent do current dyadic (one-to-one) LLM interactions satisfy the pedagogical requirements of personalized learning, and where do they fail to account for the holistic classroom context?

What specific interaction modalities and systemic features are requisite to transition from the current dyadic situation to a collaborative AI-integrated learning system?

How can a co-created, human-centered platform effectively orchestrate the feedback loop between Teacher, Student, and AI to ensure pedagogical control remains with the educator?

## Methods: The Co-Design Process

The project followed a three-stage iterative research process with a "ThinkTank" of 28 teachers and students:

**Cycle 1 (Exploration):** Teacher and student interviews to find out their fears (losing control) and needs (better critical thinking). With multiple pilot researches the different aspects of the collaboration are explored. The result: a clear list of requirements.

**Cycle 2 (Design):** Prototypes based on the "Flight Simulator" metaphor—students are in the "Cockpit" (private learning space) while teachers are in the "Control Tower" (strategic oversight). These prototypes are co-designed in six stages.

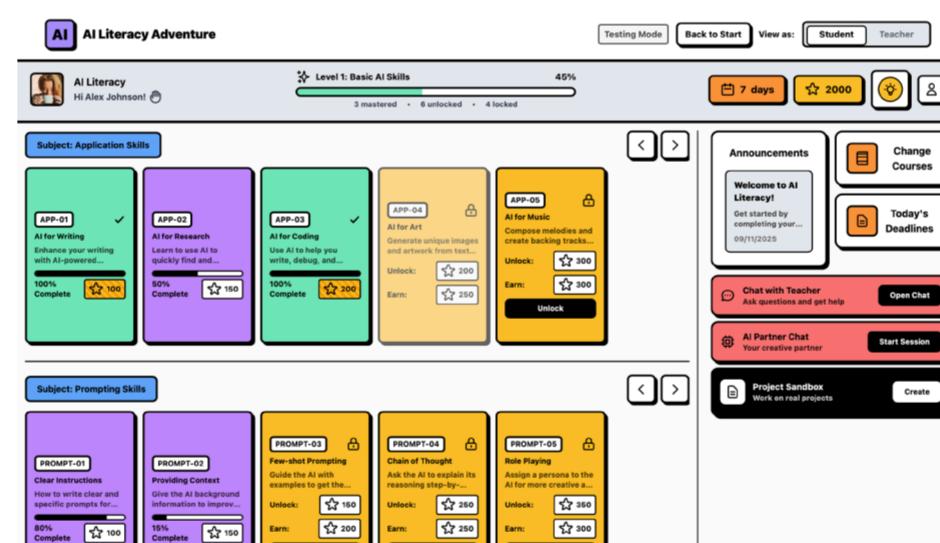
*Highlight: Part of cycle two was the 11-hour Co-Design session where the students and teacher one-by-one gave feedback on a prototype. Utilizing vibe-coding to real-time update the interface and creating an IKEA-effect for deeper feedback.*

**Cycle 3 (Evaluation):** Comparing the new system

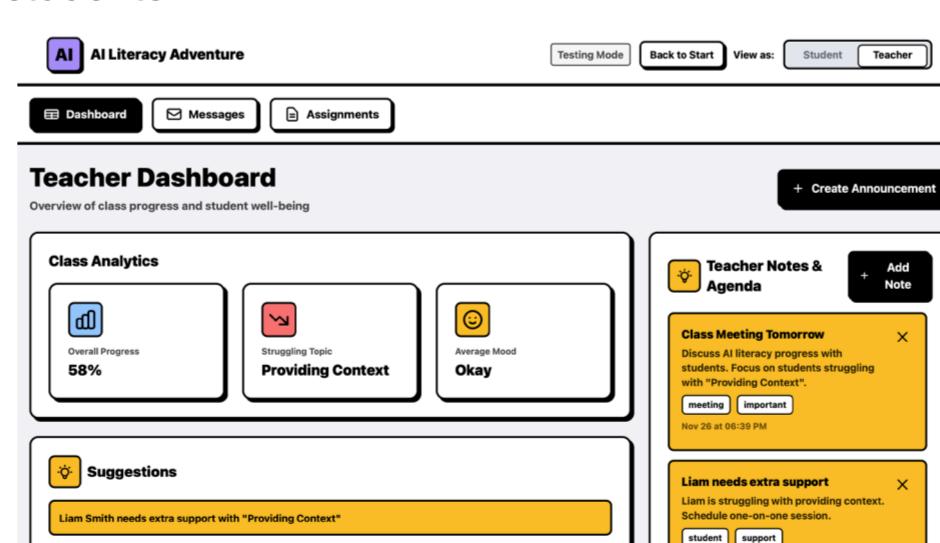
"Cubo" against standard AI tools like ChatGPT, through a study with 16 students and 4 teachers.

## The Final Design: "Cubo"

**Student Dashboard (The Cockpit):** A gamified space where students first learn "AI Literacy" skills and then have a safe online lesson environment to use AI in an educational setting.



**Teacher Dashboard (The Control Tower):** Provides analytics to show who is struggling or distracted, gives suggestions based on the data and creates a sense of control: a new way of personally monitoring students.



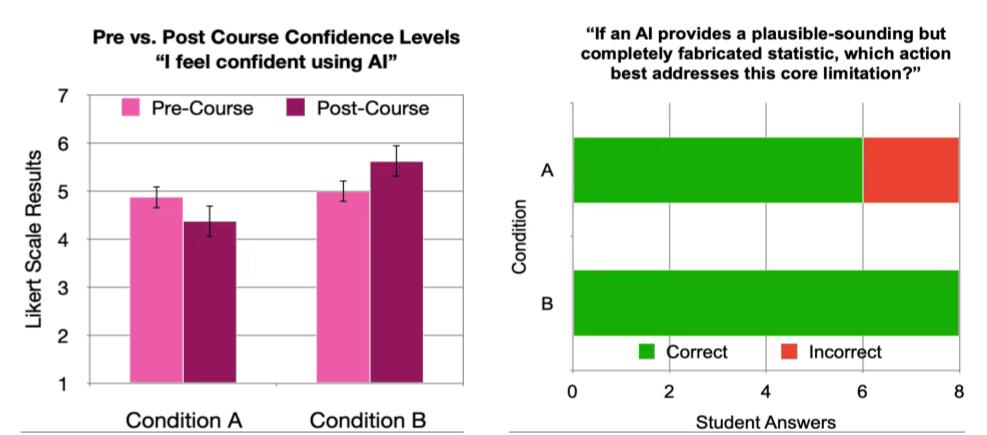
The AI Tutor is programmed using the "Socratic method" to ask guiding questions rather than providing direct solutions.



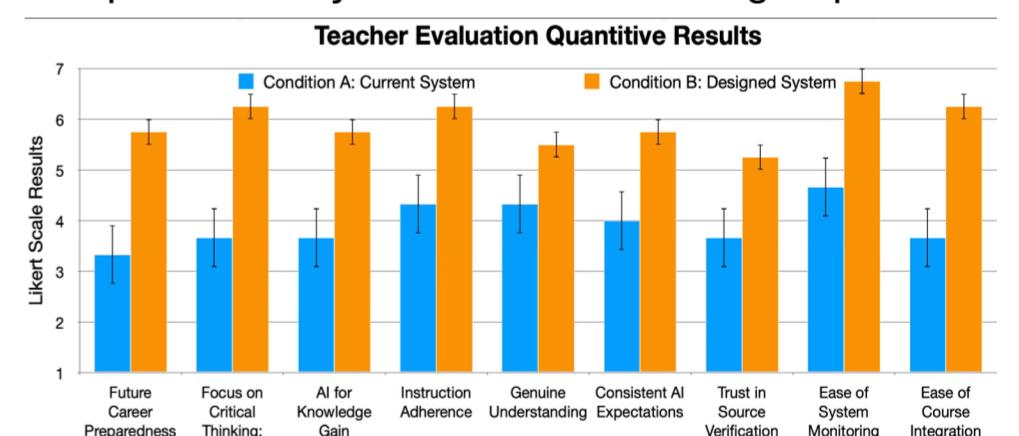
To get started with the program, each mentor receives an "Introduction Box", this improves the feeling of tangibility and control.

## Key Results

Students using Cubo gained significant confidence, while those using standard AI actually lost confidence because they felt overwhelmed and unsure if the AI was lying.



In a later test, 100% of students using Cubo successfully caught the AI making up fake facts, compared to only 75% in the standard group.



Teachers rated the new system much higher for "Ease of Monitoring" (6.75 vs 4.63) and felt they could act more like a "coach" than a "police officer".

## Conclusion and Discussion

Current AI tools often give quick answers, which can stop students from thinking for themselves. Cubo changes this by using a "Socratic" method—the AI asks guiding questions instead of doing the work. This keeps students in the "Cockpit," learning to steer their own education. The study proves that AI does not have to replace teachers. Instead, it handles the "heavy lifting" of tailoring lessons for every student at once. This frees up teachers to move from being "information providers" to being coaches. With the "Control Tower" dashboard, teachers can focus on human-only skills like empathy, motivation, and emotional support. By teaching students how to spot AI mistakes, we turn them into critical thinkers. Ultimately, this transforms AI from a threat into a partner, making the classroom a more human place where technology supports—but never replaces—the teacher-student bond.