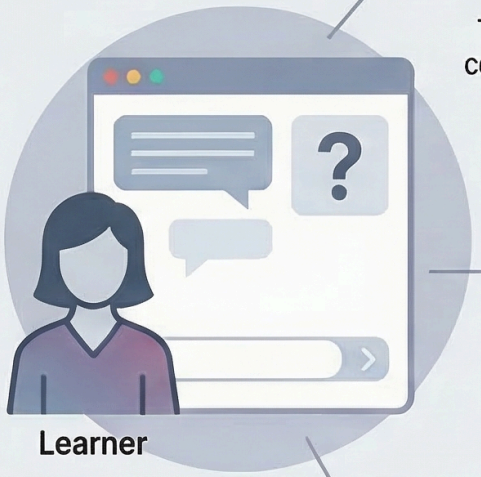
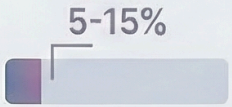
Beyond the Chatbot: Transforming Education with Proactive AI Tutoring

The Problem: The "Reactive" Learning Gap



The 15% Completion Ceiling



Traditional digital learning often sees completion rates hover between 5-15% due to disengagement.

The Reactive Chatbot Trap

Reactive systems force learners to self-regulate, a skill many students have not yet mastered.

The "Novelty Effect" Attrition

Initial enthusiasm for new AI tools typically fades quickly without calibrated, sustained challenge levels.

The Solution: Proactive Adaptive Sequencing

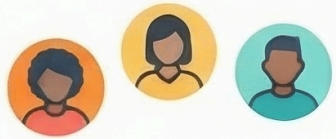
Reinforcement Learning (RL) Optimization

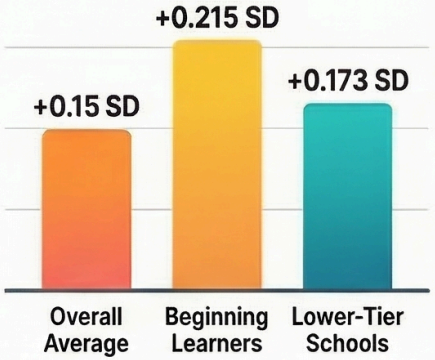
RL algorithms proactively select the next best problem to maximize long-term learning outcomes.

+0.15 SD Increase in Exam Scores

Proactive sequencing led to significantly higher performance compared to fixed, non-adaptive lesson orders.

Closing the Achievement Gap





Gains were highest for beginners (+0.215 SD), helping level the field for disadvantaged learners.

NotebookLM