

Overview

ALTER-Math is designed to significantly boost math learning progress for middle school students, particularly those from low-income families, by creating a scalable and effective AI-augmented learning environment. Grounded in the learning by teaching (LT) framework, the platform uses large language models (LLMs) and cutting-edge AI technologies to transform students' roles from passive learners to active teachers. The system incorporates proven learning science strategies, such as conceptual change and social psychological interventions, to engage and guide students toward deeper math understanding. To maximize impact, ALTER-Math will be integrated into Math Nation, Florida's core curriculum aligned with the B.E.S.T. standards and used by over one million students annually. It will also leverage resources from Betty's Brain, an established edtech platform, to enhance math learning through teachable agents, further empowering students' learning experiences.