Call for Effective Technology Research Learning Agenda

Accelerate
The National Collaborative for Accelerated Learning

Artificial Intelligence (AI) and technology-enabled learning and instructional tools are rapidly entering classrooms, but evidence about their effectiveness remains limited. As educational technology companies launch new products, educators and leaders must make decisions without sufficient data on which tools improve learning outcomes across diverse student populations and whether their benefits justify implementation costs. Through Accelerate's Call for Effective Technology (CET) grant program during the 2025-26 school year, we aim to address existing gaps in the research by funding promising AI and tech-enabled tools and studying their design, implementation, impact, and cost-effectiveness. Based on our review of current evidence, Accelerate has identified the following priority research areas:

Tool Design & User Experience (Usability & Feasibility)

- **User Interaction Patterns** | Analyze when teachers and students engage with the tool and when they do not
- **High-Value Features** | Identify which aspects of the tool are most valued and utilized by different user groups
- **Instructional Alignment** | Determine how effectively the tool complements existing teaching pedagogy and instructional materials

Implementation & Integration

- **Classroom Integration** | Understand when and how tools are effectively integrated into authentic classroom settings
- **Adoption Conditions** | Identify environmental factors that support or hinder effective implementation
- **Resource Requirements** | Document the personnel, time, and infrastructure needed for successful adoption and ongoing use

Impact Assessment & Evaluation

- **Student Achievement** | Measure impact on students' learning outcomes (e.g., on standardized assessments, state and national benchmarks)
- **Equity Considerations (subgroup/heterogeneity analysis)** | Evaluate differential effects across diverse student populations, including those with IEPs, multilingual learners, and economically disadvantaged students
- **Longitudinal Outcomes** | Track the persistence of learning gains over time to assess long-term educational value
- **Feedback Mechanisms** | Evaluate the impact and effectiveness of AI-driven instructional feedback for tutors

Research Study Design & Methodology

- **Rapid-Cycle Evaluation** | Utilize methodologies that provide evidence on faster timelines while accommodating iterative design
- **Impact Evidence** | Prioritize studies that focus on policy-relevant student outcomes
- **User Feedback Systems** | Support tools with mechanisms for collecting and analyzing teacher and student experiences and leverages those experiences to iterate on model design

Cost-Effectiveness & Scalability

- **Comprehensive Costing** | Collect detailed, itemized data on all implementation costs to schools/districts in order to facilitate a comparison to other modalities of individualized instruction
- **Scaling Factors** | Identify the key factors that support and constrain successful expansion to new settings

Comparative Analysis (AI/Tech-Enabled vs. Human Tutoring)

- **Program Design and Usability** | Compare the design of and engagement with fully AI-enabled vs. AI-enhanced vs. human-only tutoring models
- **Implementation** | Assess whether AI tools successfully address common implementation and scaling barriers present in human-powered tutoring programs
- **Impact** | Assess the impact on student achievement of fully AI-enabled vs. AI-enhanced vs. human-only tutoring models

Appendix: Sample Research Questions

Tool Design & User Experience (Usability & Feasibility)	• What aspects of good teaching/tutoring can an AI tutor effectively replicate? What aspects do AI tutors struggle most with? • In what ways might an AI tutor provide benefits to classroom teachers and existing tutoring programs/tutors (e.g., providing insights into student learning, saving teachers time)? • What time-of-day or contextual factors predict higher engagement with educational technology tools? • How do teachers integrate tool usage into their daily instructional flow, and what barriers prevent consistent implementation? • What patterns emerge in how students navigate through tool features, and how do these patterns correlate with learning outcomes?
Implementation & Integration	• Does AI-enabled tutoring support more personalized delivery of HQIM-aligned content than current tutoring providers and programs? • Does AI address challenges with program implementation and student participation associated with human-provided tutoring? • What instructional models (station rotation, whole group, flipped classroom) yield the most effective integration of AI-enabled tools? • What specific preparation activities most effectively mitigate technical disruptions during instructional time?
Impact Assessment & Evaluation	• What is the impact of AI-enabled tools on tutor performance and student learning? • How does the impact of AI-enabled tutoring differ in different educational settings and contexts? • What program design features of AI tutoring are associated with student learning gains? • What is the differential impact of the AI tool on procedural skills versus conceptual understanding in mathematics? • To what extent does the technology improve performance on higher-order thinking tasks compared to basic knowledge recall? • What is the relationship between frequency of tool usage and magnitude of achievement gains?
Research Study Design & Methodology	• Can we design high quality research of AI-enabled products that provides evidence on program implementation and impact on a faster timeline that accounts for and incorporates iterative design?
Cost-Effectiveness & Scalability	• What is the cost per unit of student learning gain (e.g., per standard deviation increase) for AI-enabled tutoring compared to traditional high-dosage tutoring? • What are the marginal costs of scaling AI tutoring tools to additional students or schools, and how do those compare to (or add to) staffing-based interventions? • To what extent can AI tutoring tools maintain effectiveness as they are scaled across diverse populations and geographies? Do they suffer the same outcome attenuation as traditional HDT when scaled?
Comparative Analysis (AI/Tech-Enabled vs. Human Tutoring)	• Does AI address challenges with program implementation and student participation associated with human-provided tutoring? • Does AI-enabled tutoring support more efficient and effective instructional feedback and coaching for tutors? • How does the cost and cost-effectiveness of AI-enabled tutoring compare to human tutoring? • How does the design and implementation of AI-facilitated tutoring (e.g., tutoring bots) compare with AI-supported human tutoring? With fully human tutoring? • What is the current landscape of AI tutoring products in the market? What underlying technologies do they rely on? Where are they strong and where are they weak?