

What We Learned: Reducing Barriers to Structured Peer-Mediated Learning Through the Enhanced Decision Tool

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Introduction

Too many students do not demonstrate executive functioning skills or learn the fundamental mathematics knowledge needed for career readiness in STEM and other fields. Structured peer-mediated learning (SPML) helps teachers personalize instruction and can significantly improve students' math learning. Controlled studies show that SPML strengthens executive functioning skills, supports foundational math skills, deepens conceptual understanding, and improves problem-solving performance, even for students with math difficulties (Fuchs et al., 1997, 2020, 2021, 2023; Wang et al., 2019).

Despite a strong evidence base and agreement on its potential impact, SPML is underutilized. To understand how to better support educators in implementing SPML, the American Institutes for Research[®] (AIR[®]) conducted a series of needs-sensing activities with teachers, instructional leaders, and technical assistance providers designed to identify implementation challenges, understand existing workflows, and gather feedback on potential supports. These activities informed the development of our solution: a teacher-facing [Enhanced Decision Tool \(EDT\)](#) to help teachers overcome core implementation challenges in SPML. By reducing planning burdens, EDT enables teachers to provide differentiated, high-quality instruction that supports all learners.



How We Conducted Needs Sensing

To inform EDT development, AIR employed a multimethod needs-sensing approach. This process combined a targeted literature review and technology landscape scan with ongoing stakeholder engagement and educator feedback. AIR regularly convened an advisory board and end-user panel to gather perspectives from math education experts, district and school leaders, teachers, and technology specialists. These activities provided insight into current peer-mediated learning practices, implementation challenges, and opportunities for technology-enabled supports that could reduce implementation burdens and strengthen consistent use of evidence-based SPML practices.

Needs-Sensing Activities

- Literature review
- Technology landscape scan
- Advisory board
- End-user panel
- Educator survey
- Ongoing consultation

Specific activities included:

- **Literature review** of research on peer-mediated learning, math instruction, teacher needs, assessments, and curricular considerations.
- **Technology landscape scan** that examined existing curriculum-support, student-pairing, and instructional decision-making tools.
- **Advisory board meetings** to provide strategic guidance and feedback on EDT development.
- **End-user panel** focus groups, prototype reviews, and usability testing.
- **Educator survey** related to SPML implementation that examined existing user experience, challenges, support needs, and interest in technology-enabled solutions.
- **Ongoing consultation** with content experts, implementation specialists, and prospective users throughout development.

These activities provided multiple perspectives on current SPML practices, implementation barriers, and opportunities to reduce educator burden through technology-enabled supports.

What We Learned

Needs-sensing activities engaged more than 60 educators, district leaders, technology specialists, and researchers and revealed **six key needs** to effectively implement SPML. While educators valued SPML and recognized its potential to improve math learning, they consistently emphasized the need for supports that reduce implementation burden and fit within existing instructional workflows.

89% of educators whom we engaged in needs sensing believe SPML improves students' executive functioning and math learning.

Six Key Needs:

1. Identifying When to Implement SPML
2. Aligning Activities With Existing Curriculum
3. Supporting Data-Informed Student Grouping
4. Planning Support
5. Monitoring Progress Efficiently
6. Building Educator and Student Capacity

Key Need 1: Identifying When to Implement SPML

87% of educators agreed that school schedules with time for planning and conducting peer-mediated learning would be helpful for implementation.

Educators face challenges identifying when and how to incorporate SPML within existing instructional schedules. Competing curricular demands and limited instructional time often result in inconsistent implementation.

Key Need 2: Supporting Data-Informed Student Grouping

80% of educators whom we engaged in needs sensing expressed interest in automated student grouping using existing performance data.

Teachers recognized the importance of intentional student pairings but described challenges reviewing data, adjusting groups over time, and preparing differentiated materials for students with varying learning needs.

Key Need 3: Aligning Activities With Existing Curriculum

89% of educators expressed interest in a tool that would link to existing math curriculum and create aligned SPML material for students.

Educators emphasized that successful implementation depends on activities aligning with district curricula, standards, pacing guides, and instructional approaches. Many described spending significant time adapting resources before they could be used.

“What happens is a lot of teachers are willing to try new things, but they also don’t want it to be too time consuming for them throughout the school year.

– End User Panelist, Data Manager

Key Need 4: Planning Support

68% of SPML users identified lack of planning time to create material as an implementation barrier.

Educators reported that preparing for SPML requires drawing information from multiple data systems, instructional resources, and curriculum materials. Finding time to plan high-quality SPML was identified as a major barrier.

Key Need 5: Monitoring Progress Efficiently

88% of educators were interested in student self-monitoring supports, and 85% wanted implementation feedback and recommendations.

Monitoring multiple student partnerships simultaneously was viewed as difficult and often unrealistic within typical classroom conditions. Educators wanted practical tools that provide useful information without creating additional requirements.

“Support teachers with tailored materials that are both convenient and rooted in evidence-based interventions, so they no longer have to choose between what is convenient and what works.

– Advisory Board Member

“If this [PML] was modeled to people—shown exactly how to do it using the adults as kids—it would be so beneficial because a lot of times we go through these [professional development trainings], and it’s literally just someone talking at you.

– End User Panelist, Teacher

Key Need 6: Building Educator and Student Capacity

91% of respondents wanted training resources and implementation supports.

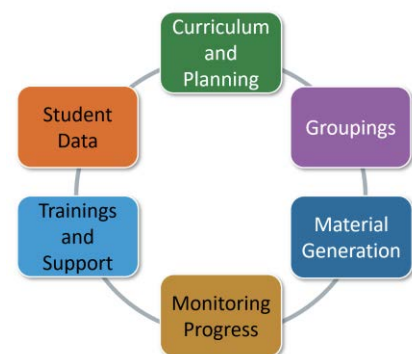
Educators emphasized that successful implementation requires both teacher and student training. Stakeholders requested examples, videos, checklists, and implementation guidance to support consistent use of SPML.

Early-Stage Prototype Result: A Refined EDT Proof of Concept

EDT Early-Stage Prototype Accomplishments:

- Engaged more than 60 educators, district leaders, researchers, and technology specialists in ongoing needs sensing and codesign.
- Identified six core needs associated with SPML implementation.
- Developed and refined an EDT concept responsive to educator needs.
- Built EDT features for data upload, activity planning, student grouping, and curriculum-aligned material generation.
- Established strong educator demand for the proposed solution.

Needs sensing informed not only what the EDT should do but also how it should fit within educators' existing workflows. Through iterative codesign with teachers, district leaders, technology specialists, and math experts, AIR refined the EDT concept and developed features focused on reducing implementation burden. This phase of the project resulted in a proof of concept that integrates **curriculum planning, student data, automated grouping, curriculum-aligned materials, training resources, and monitoring progress support** within a single educator-facing workflow. Feedback consistently reinforced the value of a tool that supports evidence-based practice while preserving teacher autonomy and instructional decision making.



Conclusion and Next Steps

The needs-sensing and codesign activities confirmed both the promise of SPML and the practical barriers limiting widespread implementation. Findings directly informed the development of the EDT prototype, resulting in an educator-centered solution designed to reduce planning burden, support curriculum alignment, and streamline implementation. Strong stakeholder interest, positive feedback on EDT concepts and features, and clear demand for technology-enabled supports suggest the EDT is a promising approach for increasing access to high-quality, evidence-based math instruction. Future work will focus on continued refinement, user testing, and evaluation of the EDT's impact on implementation and student outcomes.

“ I think this is very valuable. I can see myself using this tomorrow . . . it just feels natural to take what I'm teaching and put it through this system that then gives me valuable suggestions as well as a lesson and worksheet. The worksheets are generated in order to enhance the learning. It feels very intuitive and very user friendly.”

– End User Panelist, Teacher

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