

LEADING WELL UNDER PRESSURE

2026 MASE Fall Leadership Conference

October 21-23, 2026 | Brainerd, Minnesota

Moving Beyond the Math Wars:
What Special Education Leaders Need to Know to Improve Mathematics Outcomes for All Students

2026 MASE FALL LEADERSHIP CONFERENCE

CAREI

Your CAREI Team

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Session Overview & Objectives



01 Describe the Math Wars and their influence on instruction for students with disabilities

02 Identify evidence-based practices across A Three Sciences Framework

03 Evaluate mathematics initiatives through an evidence-based lens

04 Identify leadership actions that can strengthen instruction and MTSS systems for students with disabilities



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CAREI

Makes research accessible and actionable for educational improvement.

CAREIMath

Builds educator knowledge and supports implementation of coherent mathematics systems.

Canon of Mathematics

Synthesizes the research foundation for mathematics teaching and learning.

Learning Science. Instructional Science. Mathematics Science.

One Student, Multiple Mathematics Experiences

Hypothetical example: Maya, a fourth grader learning subtraction



Core instruction	Intervention	Specially designed instruction
Solve 402 − 178.	Practice two-digit subtraction.	Use a written algorithm and “regroup.”
Explore strategies independently.	Use base-ten blocks and “trade.”	Follow a step checklist.
Explain thinking on an exit ticket.	Track correct answers each week.	Monitor an individualized goal.

Do these experiences build on and support one another?

Follow a Student Through Your System…



Discuss with a partner:

- ➔ Where are instructional approaches, vocabulary, representations, and expectations **aligned?**
- ➔ Where do they **differ**, and how might those differences affect students' learning?

Keep one area of your system you'd like to examine more closely in mind throughout this session.

The Math Wars: Are We Rowing in the Same Direction?

Competing Beliefs Shape Decisions.

Inquiry and Explicit Instruction

Productive Struggle

Math Fact Fluency

Concepts, Procedures, & Algorithms

Curriculum, Professional Learning, Observations, & Intervention Choices



Leaders are the coxswain → Set direction, coordinate effort, and focus on students' progress.

Inquiry vs. Explicit Instruction:

What Support Does Learning Require?

When content is unfamiliar…

- ➔ Activate and check prior knowledge
- ➔ Model with a worked example
- ➔ Guide practice and correct errors

As knowledge develops…

- ➔ Explain relationships
- ➔ Reduce prompts as accuracy improves
- ➔ Apply learning to new problems



What are your students currently experiencing? Do they receive this type of instruction?

Productive Struggle:

What makes the struggle productive?

Challenge that supports learning

- ➔ Prerequisite knowledge is available
- ➔ Scaffolds make the task accessible
- ➔ Feedback improves the next response

Signals to change instruction

- ➔ Repeated errors or guessing
- ➔ No usable starting point
- ➔ Persistence without progress



When students struggle, do they receive the modeling, feedback, and practice they need?

Math Fact Fluency:

Building Accurate and Efficient Performance

Accuracy, Efficiency & Automaticity

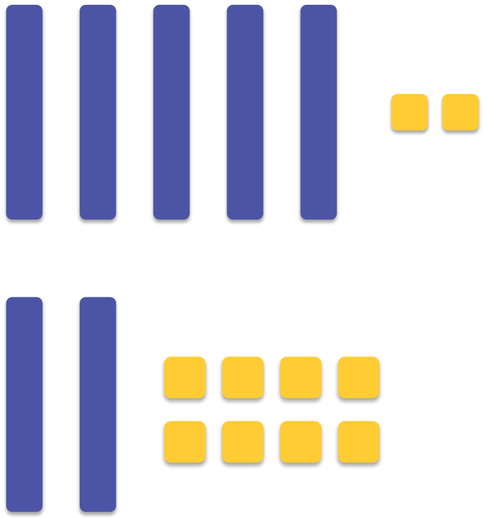
- ➔ Teach to accurate performance first
- ➔ Provide sufficient supported practice opportunities
- ➔ Revisit skills over time
- ➔ Flexible strategy use (timed practice is one option)
- ➔ Pair fluency strategy with individual goals and monitoring



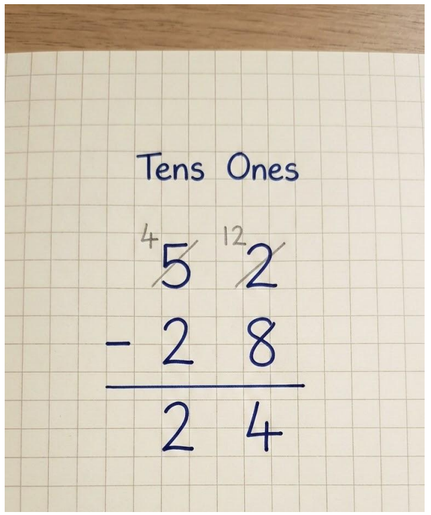
Are beliefs about fluency or timed practice limiting access to sufficient, supported practice?

Concepts, Procedures, and Standard Algorithms:

Mathematical meaning and procedures develop together



52 = 5 tens + 2 ones
28 = 2 tens + 8 ones



12 ones − 8 ones = 4 ones
4 tens − 2 tens = 2 tens

The algorithm preserves and reinforces the meaning

Are students learning mathematical meaning alongside reliable methods they can use independently?

Examine Instructional Expectations:

Discuss with a partner and identify one challenge or belief in your system that warrants attention.

Connections

How do content, approaches, and expectations connect across settings?

Beliefs

Do educators believe students with disabilities can develop mathematical proficiency? How is that belief reflected?

Learning Opportunities

How might beliefs shape access, support, progress, and independence for students?

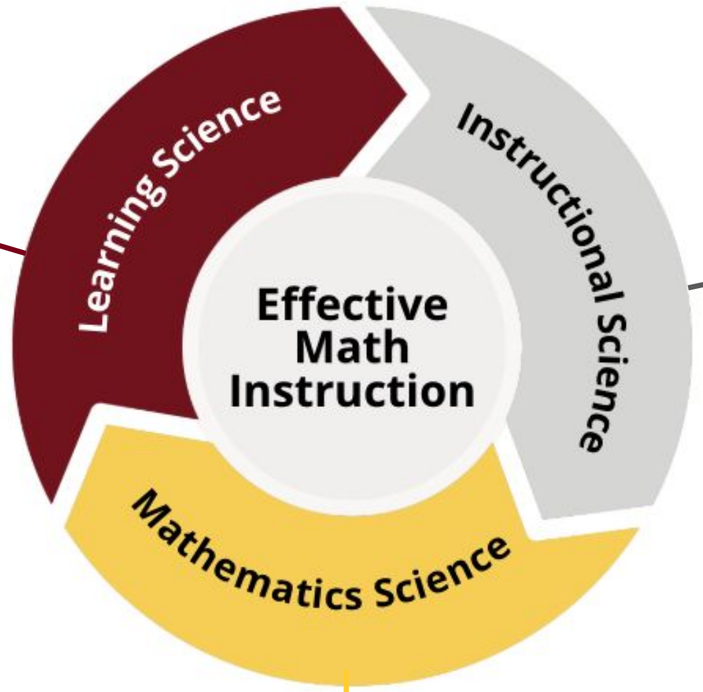




The Three Sciences Framework

A shared lens for instructional and system decision-making

How students acquire, retain, organize, and retrieve knowledge



How effective instruction is designed and delivered

What it means to become proficient in mathematics

Pullen, 2025



Learning Science

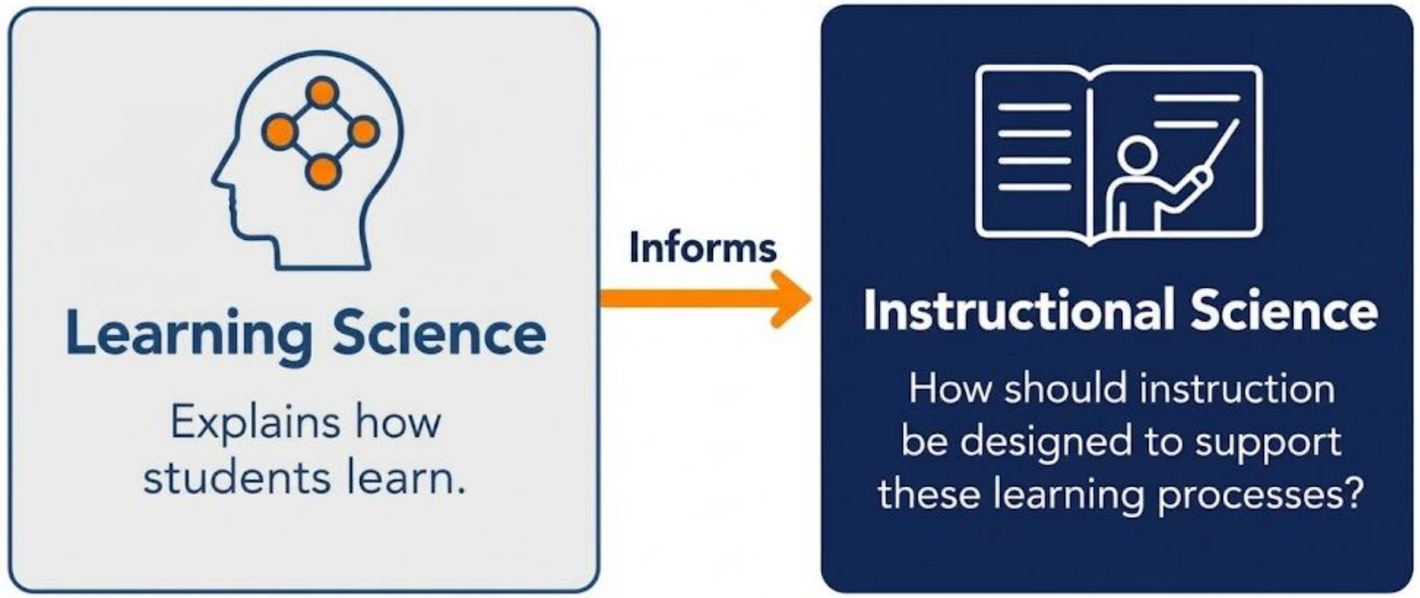
Do our materials and routines reflect how students acquire and retain knowledge?

Principle	Implication for Instruction
Learning begins with prior knowledge	Activate what students already know and connect it to new mathematics
Working memory is limited	Manage complexity through clear explanations, careful sequencing, and worked examples
Knowledge becomes organized (*schemas)*	Help students connect concepts, procedures, and representations to recognize patterns and solve problems
Practice makes knowledge durable	Use retrieval and distributed practice to strengthen retention and build automaticity with foundational skills

Bransford et al., 2000; Sweller, 1988; Cepeda et al., 2006; Roediger & Karpicke, 2006

Instructional Science

From understanding learning to designing effective instruction



- How should we introduce new math concepts and skills?
- How do we connect understanding and procedures to authentic problems?
- What practices will make learning last?
- How much support does a student need — *and when can we fade it?*
- How do we know students are learning during and after the lesson?

Match Instruction to the Stage of Learning

The Instructional Hierarchy

Acquisition	Fluency	Generalization	Adaptation
Gaining accurate performance of a skill	Performing accurately and efficiently	Application in new contexts	Flexible use in new situations
Model, guided practice & correct errors	Supported, repeated practice opportunities	Vary examples, formats, and contexts	Opportunities to combine and adjust established skills

Instructional Design & Delivery

Design

- Sequence prerequisites and new content
- Select examples and representations
- Plan scaffolds and practice
- Include cumulative review

Delivery

- Model and explain clearly
- Provide frequent opportunities to respond
- Check understanding and adjust pacing
- Give corrective feedback



Do our materials and classroom implementation provide the support students need?

Mathematics Science

Understanding the structure of math helps to clarify why gaps persist, and why instruction must be precise

Domain-specific knowledge

Number sense & operations, algebraic thinking, geometry, measurement & data; language & representations

Cumulative structure of mathematics

New learning builds on connected mathematical knowledge; weak foundations restrict access to later content

Conceptual-procedural reciprocity

Understanding supports procedures, and procedures can deepen understanding.

Representations and mathematical language

Connect models, symbols, vocabulary with abstract concepts



Putting the Three Sciences Together

Skill: Understanding addition within 100 using place value

Concrete:
Hands-On, Manipulatives

- Students use base-ten blocks or bundles to compose/decompose numbers
- Teachers name the mathematics as students manipulate objects
- Students explain what the model shows

Learning Science: reduces cognitive load, anchors meaning

Instructional Science: explicit modeling and guided practice

Math Science: builds place value structure



Putting the Three Sciences Together

Skill: Understanding addition within 100 using place value

Representational:
Drawings, Visual Models

- Students draw tens and ones to represent quantities and actions
- Open number lines used to show combining, decomposing or shifting values
- Ten-frames or base-ten sketches used intentionally
- Teachers explicitly connect drawings back to concrete models and forward to equations

Learning Science: bridges concrete experience to abstraction by externalizing thinking

Instructional Science: scaffolded transition with explicit connections, not abrupt removal of support

Math Science: reinforces place value structure and relationships, not surface features



Putting the Three Sciences Together

Skill: Understanding addition within 100 using place value

Abstract:
Symbols & Equations

- Students writing equations (e.g., 34 + 54) that represent prior models
- Students explain how tens and ones combine, not just compute
- Students connect symbols to drawings or concrete models used earlier
- Teachers press for mathematical language (e.g., compose, decompose, regroup)

Learning Science: frees working memory because meaning is already secured

Instructional Science: gradual release to independent practice based on readiness, not pacing

Math Science: fluency grounded in place value structure and equivalence



Abstraction is meaningful only when symbols remain connected to structure.

Building Coherence Across Core, Intervention, and Special Education

01	Shared beliefs	Students with disabilities can develop mathematical proficiency.
02	Knowledge and confidence	Build content knowledge and expertise. Reduce teaching anxiety.
03	Connected instruction	Align goals, vocabulary, representations, and approaches.
04	Assessment to instruction	Identify needs, select responses, and evaluate progress.
05	Coordinated responsibilities	Clarify instruction, monitoring, communication, and decisions.



Where are these foundations shared? Where do teachers and students navigate disconnected support?

Lay the Foundation for Coherence This School Year

Assemble the Team

Include core, intervention, special education, and leadership.

Examine Current Practice

Inventory materials and assessments. Trace a student's experience.

Judge with Evidence

Identify strengths, gaps, and unknowns through the self-assessment.

Act and Monitor

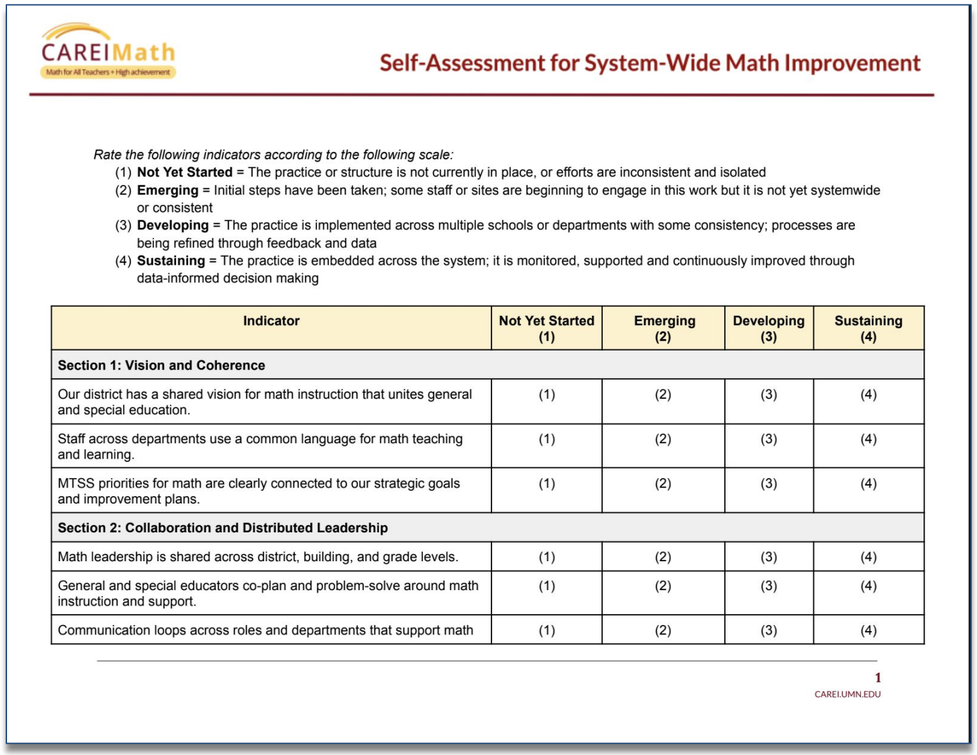
Select one priority. Define supports, responsibilities, and measures.



Tool: CAREIMath Self-Assessment

Sections:

- ➔ Vision and Coherence
- ➔ Collaboration and Distributed Leadership
- ➔ Data-Informed Improvement
- ➔ Capacity Building and Professional Learning
- ➔ Equity and Commitment
- ➔ Math Systems Alignment and Resources



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Math for All Teachers + High achievement

Self-Assessment for System-Wide Math Improvement

Rate the following indicators according to the following scale:

(1) **Not Yet Started** = The practice or structure is not currently in place, or efforts are inconsistent and isolated
(2) **Emerging** = Initial steps have been taken; some staff or sites are beginning to engage in this work but it is not yet systemwide or consistent
(3) **Developing** = The practice is implemented across multiple schools or departments with some consistency; processes are being refined through feedback and data
(4) **Sustaining** = The practice is embedded across the system; it is monitored, supported and continuously improved through data-informed decision making

Indicator	Not Yet Started (1)	Emerging (2)	Developing (3)	Sustaining (4)
Section 1: Vision and Coherence				
Our district has a shared vision for math instruction that unites general and special education.	(1)	(2)	(3)	(4)
Staff across departments use a common language for math teaching and learning.	(1)	(2)	(3)	(4)
MTSS priorities for math are clearly connected to our strategic goals and improvement plans.	(1)	(2)	(3)	(4)
Section 2: Collaboration and Distributed Leadership				
Math leadership is shared across district, building, and grade levels.	(1)	(2)	(3)	(4)
General and special educators co-plan and problem-solve around math instruction and support.	(1)	(2)	(3)	(4)
Communication loops across roles and departments that support math	(1)	(2)	(3)	(4)

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Complete the self-assessment using evidence over judgement:

Judgment: “Our instruction is aligned”

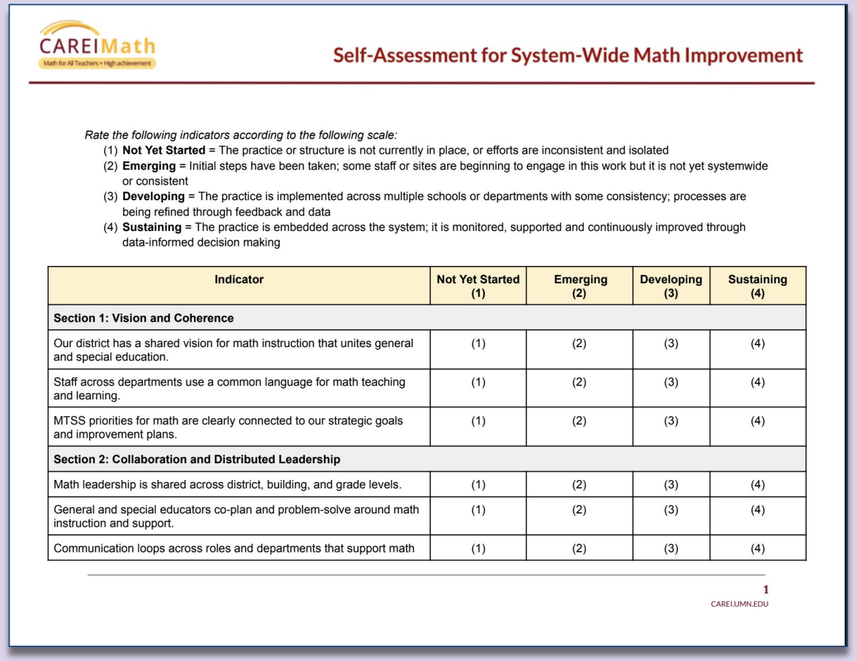
Evidence: “Our lessons, student work, vocabulary, and team records demonstrate alignment”



Self-Assessment of Your System

Directions:

1. Select 2 - 3 relevant items from the CAREIMath Self-Assessment tool
2. Using (and naming) supporting evidence, select a rating for your system (*Not Yet Started, Emerging, Developing or Sustaining)*
   - ↳ You may note “insufficient evidence” in the event you need to gather more information to select a rating



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Commit to One Leadership Action

Reflect and record:

1. **Our priority is…**
   - ↳ Name the challenge or student learning need
2. **Our first action is…**
   - ↳ Choose one step and a date to begin
3. **The people responsible are…**
   - ↳ Name who leads, contributes, and follows up



What Would Be True for Our Students?

Returning to Maya's experience…

Share-out: Given the leadership commitment you made, how might your action impact Maya's experience?



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Feedback & CAREIMath: Fundamentals

CAREIMath: Fundamentals

Build a stronger district mathematics system.

Equip your team to align instruction, assessment, and intervention across Tiers 1–3—and turn research into an actionable improvement plan.

Five modules

1. Foundations of Equitable Mathematics Learning
2. Number Sense & Mathematical Reasoning
3. Mathematics Fluency, Vocabulary, and Problem Solving
4. A Coherent Mathematics Instructional System
5. Assessment for Intervention & Growth

For: District, school, and regional teams leading mathematics improvement across curriculum, instruction, MTSS, and special education.

Commitment: Five full-day modules | 40 hours

Investment: $6,500 per team (up to five participants) | $1,750 per individual

Please leave your feedback at this link or using the QR code below:

Feel free to reach out to Nicole McKevett with any questions!

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