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The Math Crisis We Can Solve:
Start with How Teachers Learn, in Training and in the Curriculum They Teach

By Steven Shadel, Senior National Content Specialist, Great Minds

If math is the language of problem-solving, our nation's classrooms are struggling to speak it fluently. Despite the best efforts of teachers and administrators, students are just not reaching the levels of math knowledge needed for future success.

What if part of the solution came from a curriculum that does more than teach students—it teaches *teachers*, too?

The Numbers Tell the Story

In much of the country, with the exception of some states like Alabama and Louisiana, student math performance has sharply declined and has yet to recover to pre-pandemic levels. While there has been some progress nationally among elementary students, average middle school scores are stuck at historically low levels on the **Nation's Report Card**.

Math isn't just another subject. It is the foundation for reasoning, logic, and future opportunity. Research consistently shows that students who master algebra are more likely to graduate from high school, attend college, and earn higher wages as adults.

An Urban Institute **analysis** found that gains in math achievement are more strongly tied to lifetime earnings than gains in reading. Even a modest improvement in children's math performance—roughly moving from average to above average—is linked to higher earnings by age 30.

Math opens doors, but too few students have the opportunity to walk through them. Just 1 in 5 grade 12 students reached the proficiency benchmark in the latest **Nation's Report Card for high schoolers**.

Behind these numbers are teachers and students doing their best in classrooms that look very different from even a decade ago. While there are many reasons for recent achievement declines, and multiple ideas for reversing them, it's important to look at the support teachers are receiving, including ensuring they have access to in-the-moment training embedded within the curriculum.

Educators are being asked today to teach math conceptually, helping students think and reason like mathematicians. But many have not been given the preparation to do it with confidence.

Teacher Move	Embedded Support
Plan with Confidence	Lesson at a Glance, Key Questions, Achievement Descriptors
Teach with Clarity	Sample solutions, visual models, pacing
Respond in the Moment	Margin notes, differentiation ideas, language supports

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As Michelle Kays, a math teacher and instructional coach at Florence Unified School District in Florence, Arizona, explained, "I'm a traditionalist, and that's how I was taught—you instruct, they learn. It wasn't as much engagement. Now it's collaboration, discourse, and reasoning, and that's a big shift for teachers."

The challenge is real, but so is the solution. If we want students to thrive in math, we must help teachers learn math in the way we want students to experience it: through deeper understanding, discovery, and real-world connection.

That's why the next chapter in math recovery isn't just about what students learn; it's about how teachers learn, too.

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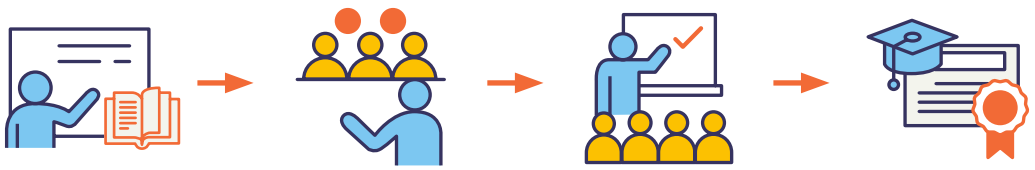
Teachers Haven't Been Adequately Supported

The 2024 National Council on Teacher Quality State of the States **report** examined teacher preparation nationwide and found that most programs devote too little time to math content and instructional methods. The report concluded that teachers are expected to deliver math instruction aligned with new, concept-driven frameworks but rarely receive the training to do so.

Dr. Kelly Smith, Director of K–8 Curriculum, Instruction, and Assessment at Florence Unified School District in Florence, Arizona, put it plainly: "Teachers are being asked to teach math in completely different ways than they were taught, and they don't always get the support they need to do that well. That's not on the teachers, that's on the system."



Strong teacher prep builds math content and pedagogical knowledge.

Teachers with the right math knowledge better support student learning.

Students with skilled elementary teachers develop a strong math foundation.

Early math skills are associated with success across subjects and higher earnings as adults.

Source: https://teacherquality.nctq.org/review/standard/Elementary-Mathematics/2025

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A Shift in Practice and Mindset

Over the last two decades, math instruction has undergone one of the most significant shifts in the history of education. In strong classrooms today, teachers facilitate student-led problem-solving and reasoning instead of simply demonstrating procedures and asking students to do them on a worksheet. That change can be both exciting and intimidating.

For many teachers, it means letting go and trusting students to explore ideas together. Kays described that moment of adjustment: "You have to give up some control. The students are doing the teaching to themselves and with each other. As a teacher, that's scary at first, but when you see the reasoning that comes out, it's amazing."

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In addition, effective math instruction today emphasizes a deep understanding of math concepts, sometimes using concrete objects or hand-drawn models, as well as the development of strong procedural and numeracy skills.

This important balance marks a shift away from an overreliance on rote memorization and math "tricks," and many teachers say it allows them to rediscover math through a new lens. "I learned more from the kids doing this curriculum than I learned pretty much my whole career," Kays said. "When you give them the chance to reason and explore, what comes out is incredible."

With the right tools and ongoing learning, teachers can deepen their own understanding and bring that same joy of discovery to their students. Research supports this. **Studies** show that when teachers engage with curriculum materials designed to support their own learning, they are more likely to identify big mathematical ideas, maintain cognitive demand, and draw out student thinking.

Why Traditional Professional Development Is Not Enough

In an ideal world, every teacher would have consistent, high-quality, in-person professional learning and coaching aligned to great instructional materials. But schools are stretched thin, time is limited, and budgets are tight.

When training happens only during workshops or summer sessions, teachers often return to their classrooms and find it difficult to apply new approaches in real time. Professional development should not feel like something separate from teaching. It should live inside it.

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Dr. Smith noted, “We’ve seen the most growth when professional learning isn’t something that happens once a semester but something that happens in real time, in the act of teaching.”

Teachers need support not just before or after instruction but also *while* they are teaching. It’s wonderful if a coach is on hand, but that’s not likely to be the case the majority of the time. That is where curriculum-embedded professional learning can be a strong source of support.

Turning to the Curriculum

Embedded professional learning integrates teacher growth directly into the curriculum itself. Rather than separating learning from teaching, it makes lesson planning and delivery an opportunity for professional development.

Eureka Math² was intentionally designed to build knowledge for both students and teachers. Point-of-use notes for instructors, sample solutions, and explicit instructional guidance give educators real-time support as they prepare lessons and respond to student questions and needs.

These built-in supports include

- “The Why” sections that explain the reasoning behind each concept
- Margin notes offering instructional tips, language supports, and differentiation ideas
- Sample solutions that show multiple paths to solving problems
- Module overviews and topic summaries that connect lessons to the broader arc of learning
- Visual design cues that help teachers and students see mathematical relationships clearly

Michelle Kays, the math teacher and instructional coach, described how her team uses these features: “We stopped doing lesson plans outside of our curriculum. The teacher edition became our plan. We studied it, annotated it, and knew exactly where embedded supports were. Those big blue boxes [margin notes in the Teach books that offer guidance on differentiated instruction] became our best friends.”

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She added, “If students were struggling, the blue boxes told us, ‘Go back here, try this.’ There’s language support, differentiation, enrichment; it’s all there. You just have to study it and use it.”

Teachers who engage deeply with these embedded supports grow their content knowledge and instructional skills naturally *through* teaching. Dr. Smith summarized it well: “When teachers have access to high-quality materials that teach alongside them, they become learners again, and that’s powerful.”

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> **—Dr. Kelly Smith, Director of K–8 Curriculum, Instruction, and Assessment, Florence USD (AZ)**

When Teachers Learn, Students Grow

Educators who have engaged with curriculum-based professional learning in conjunction with live professional development often describe it as transformative. Many say they have taught a concept for years, but only recently came to truly understand why it works.

Kays experienced that shift firsthand. “By the second year, my scores skyrocketed,” she said. “Once I trusted the structure and used the supports, everything clicked.”

The shift also changed her classroom culture. “Students used to never talk in math,” she said. “Now they love to talk *about* math. Even if their answer isn’t correct, it’s still valued because they’re reasoning and helping each other get there.”

Dr. Smith sees the same transformation across her district. “When you walk into a classroom now, you hear math conversations everywhere,” she said. “Students are debating, asking why, explaining their thinking. That’s what success sounds like.”

In districts that combine embedded professional learning with live coaching, teacher confidence grows, student engagement increases, and math achievement climbs.

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A Layered Approach to Professional Growth

Embedded supports provide day-to-day guidance that meets teachers exactly where they are. Live professional learning and coaching sessions build on that foundation, helping teachers connect insights across grade levels and deepen their understanding over time.

"We practice lessons together as teachers. We model, co-teach, and give each other feedback. It's not about evaluation, it's about support. That's what builds confidence." –Michelle Kays

Together, these layers create a continuous cycle of growth. Teachers feel supported, instruction becomes more effective, and students develop lasting mathematical confidence.

The Path Forward

Teaching math today is complex work, but it is also one of the most hopeful frontiers in education. When we design learning that supports teachers as learners, we do more than change classrooms; we change trajectories. Every note, every model, every embedded insight is an investment in teacher growth. And when teachers grow, students rise with them.

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As Kays put it, "The embedded PD reminds us that we're always learning. Everything we need is there. You don't have to look anywhere else; it guides you step by step. You just plan, practice, and grow right alongside your students."

That is how we solve the math crisis, one lesson, one teacher, and one student at a time.

6 Ways *Eureka Math²* Teaches *While* You Teach

1	Coherence notes clarify intent	4	Lesson-at-a-glance for pacing/materials
2	Margin notes for differentiation & language supports	5	Launch prompts that spark discourse
3	Sample solutions with multiple representations	6	Visual models that expose structure

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