



Maryland students make math gains, powered by educator professional learning

by Elizabeth Foster

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Student success is at the heart of every educational initiative, and the evidence is clear:

WHEN EDUCATORS ENGAGE IN HIGH-QUALITY PROFESSIONAL LEARNING, STUDENTS THRIVE.

Across the U.S., schools are seeing improved outcomes tied directly to actions aligned with the Standards for Professional Learning developed by Learning Forward – a research-based framework for designing and implementing professional learning that transforms teaching and boosts student success. Investments in these types of high-quality professional learning strategies are critical, including support from state and district budgets, federal Title II funding, and grants from foundations and research agencies.

This report highlights compelling examples of how schools, districts, and states are leveraging professional learning aligned with the Standards for Professional Learning to improve student achievement. It shows how professional learning that is based on proven standards and moves beyond outdated, passive training isn't just an investment in educators—it's an investment in students.

IMPROVEMENTS IN TEACHING PRACTICES

Students in Jared Thomas' Math 6 class at Gaithersburg Middle School in Montgomery County, Maryland are talking about math – a lot. The classroom buzzes with groups of sixth-graders talking about the meaning of math vocabulary and sharing their approaches to solving problems. The students are not just more engaged and more confident than they were at the beginning of the year, they are also performing better.

Thomas' students are benefiting from the focused collaboration of a small team of educators working to improve how they teach the district's selected math curriculum, Illustrative Mathematics. They are making real growth: students in participating teachers' classes improved their proficiency scores on district tests from an average of 9% to an average of 52% over just one marking period.

Thomas and his fellow teachers have been intentionally facilitating more student discourse as a way to improve

students' academic vocabulary and conceptual understanding. They have learned about this strategy from their participation in a professional learning network facilitated by Learning Forward, an international leader in professional learning. In this network, teams of educators from multiple districts collaborate to address challenges they are having with implementing curriculum with their students.

In Thomas' network team, teachers discussed how to get students to really understand the math vocabulary and its meaning, and how to encourage them to engage with the math concepts rather than try to only produce the “right” answer. In the past, Thomas would have spent much more time in direct instruction trying to achieve this goal. But he and his colleagues have been learning and practicing how to facilitate more student interaction – and it is working. Thomas and his colleagues attribute the increases in students' math learning and achievement to the new instructional methods, which they learned about through their team's planning discussions about the curriculum and sharing their classroom experiences and data with each other.

Progress like what is happening in the classrooms at Gaithersburg Middle School is about to grow. The state of Maryland recently adopted the Standards for Professional Learning, the framework in which the Learning Forward network is grounded. Adopting and implementing the standards helps states and other education entities provide guidance and resources to ensure educator learning experiences are high-quality and lead to improvements in student outcomes. This positions more educators to have access to the kinds of collaborative, curriculum-aligned opportunities that are benefitting students at Gaithersburg.

REACHING ALL STUDENTS

The Maryland middle schools in the network are seeing early indicators that instructional improvements are resulting in gains, especially for clusters of students who have been historically marginalized. For example:

- Hispanic students at Gaithersburg Middle School had nearly achieved the school’s goal for math proficiency five months early (7% proficiency by mid-year, compared to the school’s full-year goal of 7.8% proficiency, on the Measures of Academic Progress mathematics test).
- Gaithersburg’s Black and Hispanic students outperformed the district average by 20% and 10%, respectively, on Illustrative Mathematics’ “cool down” activities, which are short, end-of-lesson assignments to quickly assess understanding of key concepts covered during the lesson.
- Montgomery County teachers engaging in the network report improvements in math outcomes among multilingual learners, including more student discussion and increased confidence with math

vocabulary. They attribute this, in part, to a strategy several teams developed together: having students annotate their assignments by highlighting the new math vocabulary as a way to both check and bolster their understanding.

MAKING THE MOST OF HIGH-QUALITY CURRICULUM

The spark for improving outcomes started with the district’s adoption of Illustrative Mathematics, but the professional learning is the fuel that helps teachers reach the goals for students. Although teachers recognized the potential of the curriculum right away, the structure and pace of it was new and different from what they had been doing. They needed time and support to understand the instructional shifts it requires and to practice new teaching strategies.

The network embodies curriculum-based professional learning, an approach to educator development that is tightly tied to the instructional materials teachers use in their classrooms. Teachers engage in the curriculum units from the perspective of students and then reflect on their experience and adapt their instruction accordingly. For many educators, this entails a shift from typical “sit and get” sessions to meaningful engagement with the curriculum’s day-to-day experiences and materials.

Teachers also receive support from district math coaches, two of whom participate in the network. The coaching is part of Montgomery County Public Schools’ recently launched initiative to increase middle school math achievement through equitable, grade-level, rigorous

Learning Forward’s Curriculum-Based Professional Learning Network

Learning Forward’s **Curriculum-Based Professional Learning Network** supports educators as they shift to a new math curriculum and navigate the challenges of leading math instruction that is different from what they learned in their teacher preparation programs. The network reinforces the principles of high-quality professional learning that participants can also apply in other areas of their work.

Since their participation in the network started about 18 months ago, educators from seven middle schools across three districts have done a deep dive into the curriculum, generated data through cycles of improvement, and modified their classroom instruction. Improvements in their instruction and their students’ math knowledge shows that educator learning consistent with the **Standards for Professional Learning** leads to better outcomes for teachers and students, including those who traditionally have been farthest from opportunity.

instruction anchored in high-quality curriculum.

Given the time and professional learning support, teachers are now making thoughtful and deliberate efforts to improve instruction. At Gaithersburg Middle School, teachers homed in on one of the curriculum's specific teaching strategies: math language routines. These are short, structured ways of guiding students to use mathematical vocabulary and concepts as they discuss potential solutions to problems. The teachers realized that in order to have time for students to talk more, they needed to decrease the amount of teacher talk in classrooms.

Unsure if this was possible, they investigated their current actions. They tracked how much time they spent giving direct instruction, discussed ways they might cut it back, and decided on their ideal balance of teacher and student talk. They changed their patterns and collected data about whether they were meeting their goals and whether the extra time was resulting in more student dialogue. Their data suggested that the answer to both questions was yes, as the peek into Thomas' classroom reveals.

Over the past year and a half, the team of Gaithersburg math teachers has made other changes as well. Based on their collaborative professional learning, they have done more "backwards mapping" (starting with the end goals in mind), rehearsed their instructional moves more, looked at student work and assessment data in a more structured way, and focused more on strategies for meeting diverse students' learning needs.

With these changes, as teachers started to see results in the classroom, they began to feel more confidence and trust in the curriculum. This meant that more teachers were able to successfully complete lessons, including key curricular components like math language routines, in more

classrooms, ensuring that more students were accessing and engaging with the math content.

STANDARDS THAT LEAD TO HIGH-QUALITY PROFESSIONAL LEARNING

This kind of teacher investigation and improvement is possible because the professional learning network is grounded in the **Standards for Professional Learning** to ensure that it is high quality and aligned to a strong evidence base. It draws on **research** confirming that teachers' knowledge, beliefs, and practices can improve as a result of professional learning, and that those improvements lead to more student learning and higher achievement.

The network is designed around teachers' experiences and needs. Rather than engaging in a one-size-fits-all approach that teachers often find unhelpful, the educator team collaboratively chooses to work on specific challenges they are having with the curriculum and their students. Facilitators from Learning Forward help them learn more about the parts of the curriculum they have targeted, identify and try strategies that will work well with their particular group of students, and collaboratively assess their efforts and determine next steps. As the school year progresses, they continue identifying challenges and opportunities so they can master the whole curriculum.

Consistent with the **Culture of Collaborative Inquiry** standard, the network facilitates structured collaboration that embraces an inquiry approach, addresses individual and collective learning, and builds capacity for teacher voice

Proficiency scores increased from 9% to 52% on district math tests over one marking period.

Hispanic students had nearly achieved the school's goal for math proficiency HALF A YEAR ahead of schedule.

Research foundations of Standards for Professional Learning

Standards for Professional Learning represent the best available **research** about the professional learning content, processes, and conditions that lead to better teaching and student learning. Educators can use the standards to shift from outdated passive approaches to more dynamic, learner-centered methods of educator development.

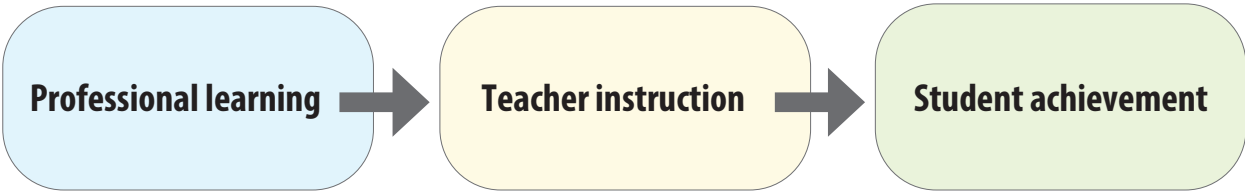
Recent research conducted by the American Institutes for Research (AIR) found that when professional learning is aligned to the standards, it leads to improved teacher instruction and “meaningful improvements in student achievement.” AIR’s meta-analysis, which included 48 randomized control trial studies, examined the link between the quality of professional learning, as articulated in the standards, and outcomes. It found a chain of effect, such that standards-aligned professional learning leads to improved teacher instruction, which in turn leads to higher student achievement.

and agency. Collaboration happens among teachers in a school, across schools within a district, and across districts with other network teams. Together, educators gain tools to identify and analyze student-level data, engage in role-alike discussions about student engagement, and share insights on other topics and strategies.

This helps them make the most of their schools’ collaborative planning time and professional learning communities to tackle their most pressing challenges. For example, as teachers become more comfortable with the curriculum, they are better able to prioritize components of the lessons and draw on each other’s experiences to address challenges like students being disruptive or not answering the math discussion prompts.

Another evidence-based approach from the Standards for Professional Learning that the network applies is using **cycles of testing and reflection** that support teachers in trying out new ideas to determine what works best for their students. Students benefit when teachers complete the full cycle that includes planning, instruction, and data monitoring.

At Gaithersburg Middle School, teachers regularly completed this cycle. They administered cool downs daily, recording their data online or on paper to discuss with their network colleagues and their coach. Then they used the curriculum’s “Unit at a Glance” guidance to determine how to follow up on the student results, such as re-emphasizing points students missed or “pressing pause” to review and



All 11 Standards for Professional Learning are associated with statistically significant improvements in teacher instruction and student achievement.



“Our professional learning community adapted our planning time and tools, such as our calendar, based on what we learned improves student outcomes. Our intent was to shift away from direct instruction and do a deep dive into best practices for allowing students to lead their own learning. At the same time, we are finding ways to additionally support our special education and English Language Learner students.”

— Jared Thomas, 6th grade math teacher at Gaithersburg Middle School, Montgomery County, Maryland



Black and Hispanic students outperformed the district average by 20% and 10% on end-of-lesson assignments.

deepen student understanding of key concepts. These cycles of planning, predicting, implementing, collecting data and reflecting are the hallmark of the network’s professional learning and are underway across the districts at regular intervals.

EXPANDING THE IMPACT

The kind of high-quality, standards-aligned professional learning the network is facilitating is spreading across schools and districts – and educators are learning and improving their instruction as a result. This is made possible, in part, by the fact that it is aligned to the school and district strategic plans and priorities. This kind of strategic alignment is key to making changes sustainable, a consideration that is important in education, which is often plagued by trends that come and go.

In some schools, the network teams are seen as pilots for future scaling. In addition, coaches who are participating in the network are incorporating practices

from the network into their regular practice with other teachers, including collaborating around a classroom-level problem of practice, collecting and discussing data, and productively deploying the resources of the curriculum. District leaders are discussing how this way of organizing, implementing, and measuring professional learning and its impact on educators and students might be used for content areas other than math.

In addition, the Maryland State Department of Education has been quick to translate into practice the recently adopted Standards for Professional Learning, using Learning Forward’s guidance and implementation tools. For example, state mathematics leaders learned about the standards and the **action guides** for implementing them at the Mathematics Supervisors Collaborative Meeting in October.

Thanks to these efforts, teachers across the state are poised to engage in the same kind of high-quality professional learning as Jared Thomas and his team — and more students will be able to achieve the kind of impressive results of the students at Gaithersburg Middle School. □



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