

R&D ALERT

Partnering
with parents
for student
achievement

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If at first you
don't succeed
at algebra 1

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Confronting
common
math pitfalls
head-on

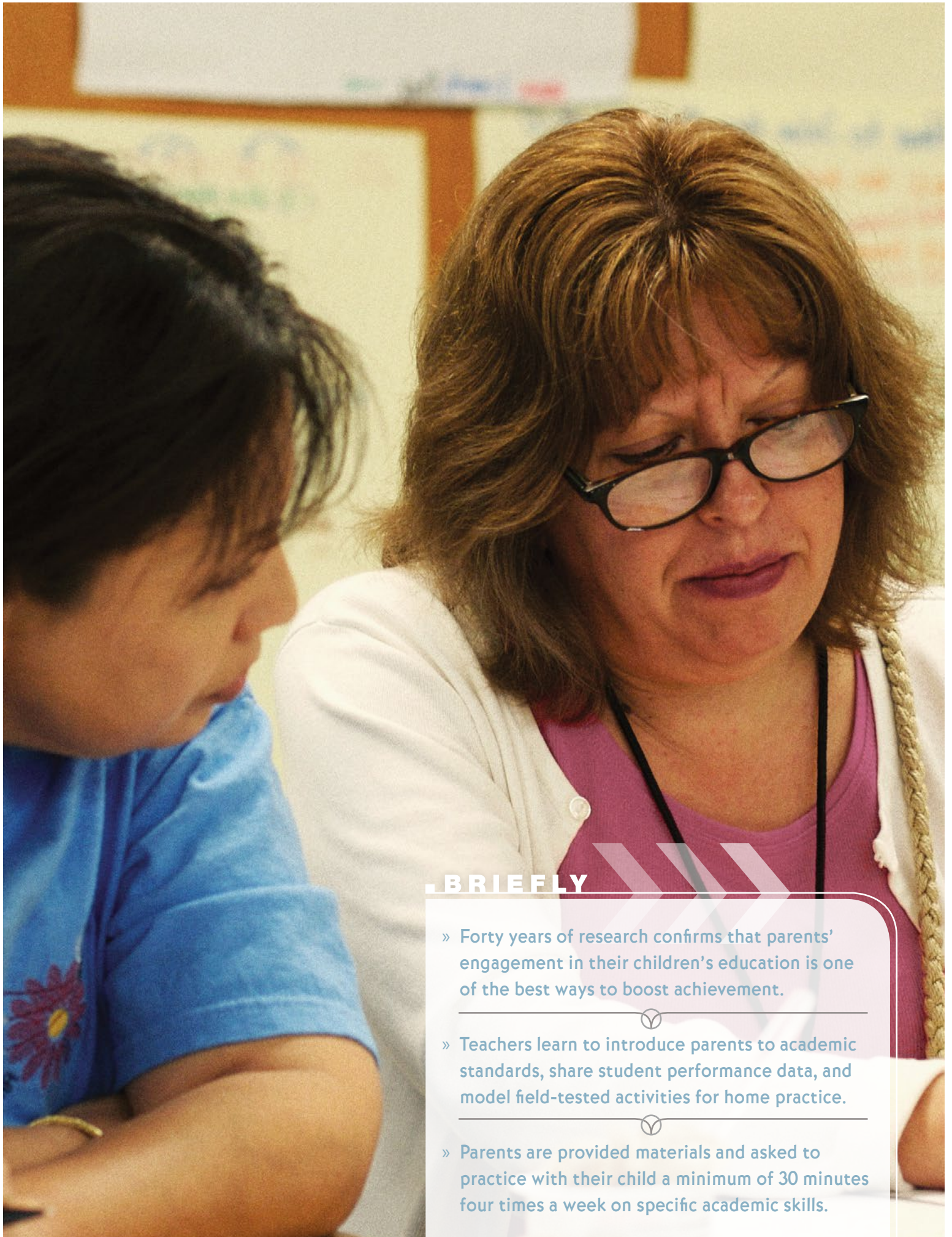
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Mentoring pro-
gram supports
collaborative
school culture

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timely knowledge for education and human development





BRIEFLY

- » Forty years of research confirms that parents' engagement in their children's education is one of the best ways to boost achievement.

- » Teachers learn to introduce parents to academic standards, share student performance data, and model field-tested activities for home practice.

- » Parents are provided materials and asked to practice with their child a minimum of 30 minutes four times a week on specific academic skills.

PARENTS

AS

PARTNERS

in Student Achievement

Parent-teacher conferences have long been the primary tool that schools use to promote school-family engagement, which is one of the keys to boosting students' academic success. But WestEd's Maria Paredes says that for many parents, traditional 15- or 20-minute meetings with teachers twice a year aren't doing the job. "They have little focus, are not strategic, and are a far cry from what is necessary for parents and teachers to collaborate and drive student achievement," Paredes says.

A WestEd senior program associate, Paredes heads up its Academic Parent-Teacher Teams (APTT) project, which puts a new twist on parent-teacher interaction. Paredes came up with the approach while working in the Creighton Elementary School District in Phoenix, Arizona, first as coordinator of parent programs and later as the district's director of community education.

Paredes knew that 40 years of research had confirmed that parents' engagement in their children's education was one of the best ways to boost their academic achievement. "We knew family engagement worked, but we had not found concrete, effective ways to put it into action," she says. "Years of sending home hot-pink flyers inviting parents to events with no direct connection to academic learning had diminished parents' sense of having a role to play in their child's school achievement. The bake sales, the musical performances—they're fine for community building and socializing, but you can't stop there. You have to make sure that you are giving parents the information they need to support their children's learning."

A gauge of the APTT model's effectiveness comes from a 2010 study of first-grade students in the Creighton schools whose reading fluency scores in September averaged 16 words-per-minute read correctly. By November, students in classrooms participating in the APTT model had increased their scores to an average of 45 words-per-minute read correctly. That compared with an increase to only 27 words-per-minute read correctly for those in classrooms not using the model.

ENGAGING PARENTS IN DAILY LEARNING TASKS

Paredes set out to provide Creighton parents—many of whom had limited education and were learning English as their second language—with concrete information about both their children's academic progress and research-based, outcome-oriented strategies they could use at home to reinforce the instruction their children's teachers were providing in the classroom. Says Paredes, "We were teaching parents how to help build their children's vocabulary, support their math skills, and improve their critical thinking."



You need a system that prepares teachers to coach parents so they understand there are key concepts each child has to master at each grade level, and that they themselves play a part in making sure that happens.

This teaching takes place during three, 75-minute APTT team meetings that include the teacher and the parents of all the students in the class, and one traditional 30-minute individual session between the teacher and each student's parents. It is during the team meetings that parents, working with the teacher and each other, review data on student achievement levels; discover exactly what students will be expected to master during the school year; set specific, short-term academic goals for their own child; and learn how to work with their child at home.

Paredes concedes that traditional parent-teacher conferences often work "just fine" in upper- and middle-class families. "Because of the parents' own experiences, they know exactly what to ask, and have the context in which to understand the importance of good grades when it comes to transitioning successfully into high school and college," she says. Beyond that, Paredes also notes that college-educated parents routinely provide their children with "highly structured family lives that include rich language experiences, vacations, enrichment activities, and other resources that add layers and layers of support to what is happening in school."

Yet in families where, for generations, children had not been expected to excel academically, let alone attend college, "Parents need to be given information about their children's progress in completely different ways," Paredes says. "You need a system that prepares teachers to coach parents so they understand there are key concepts each child has to master at each grade level, and that they themselves play a part in making sure that happens."

BRINGING PARENTS INTO DATA DISCUSSIONS

To boost participation, teachers send parents personal invitations, in the parents' first language, to the APTT meetings, the first of which is a team meeting held within three weeks of the beginning of the school year. "If you make sure parents understand they are coming to meet with the classroom teacher and learn about strategies they can use to help their child, they are very willing to come," says Paredes. At the team meeting, parents receive information about the teacher's grade-level expectations in key academic areas. For example, parents of fourth graders in Creighton were told that their children would be expected to know multiplication facts from 0 through 12 by the end of the school year. Parents also review bar graphs with assessment data detailing exactly how close each student in the class is to meeting each expectation. (Teachers protect student privacy by identifying each with a random number known only by his or her parents.)

"When you invite parents to engage with this kind of knowledge and they understand where their child is performing in comparison to grade-level expectations, it creates a sense of urgency, something that has been missing in the past," says Paredes. "We're leaving out the feelings and simply saying, 'Here are the facts.'" And even if the news is bad and a student is performing far below expectations, "We tell parents we have the entire school year to help them reach expectations."

Next, teachers work with parents to set 60-day academic goals for their child. One such goal for a child who scored low on a four-minute, 55-question multiplication test might be to increase his score on the same test by

50 percent. The teacher then coaches parents on how to use specific activities—perhaps card or dice games—to help their children practice their multiplication facts. “We give parents all the materials they’ll need and tell them to get involved and practice with their child a minimum 30 minutes four times a week,” says Paredes. “But we find that once the whole family gets engaged, they often spend a lot more time than that.”

Teachers also ask parents to retest their children once a week “so they know whether they are getting closer to their goal,” says Paredes. In October and November, parents meet individually with their child’s teacher to reinforce what happened at the first meeting and create a more detailed student improvement plan. At December and March team meetings, achievement data are shared again, and new goals are set. Paredes says parents also share advice and success stories.

Paredes points out that under the APTT model, “We aren’t asking parents to teach; we’re asking them to provide their children with practice and support they need to achieve skill mastery.” After all, she adds, “Practice is everything. Middle-class families know that, but for us to assume that families that come from chronic poverty and generations of unsuccessful schooling can do this without training, coaching, and support is unrealistic. We have to build in them the capacity to connect what their children are learning in school to what’s happening at home—to create complementary learning environments.”

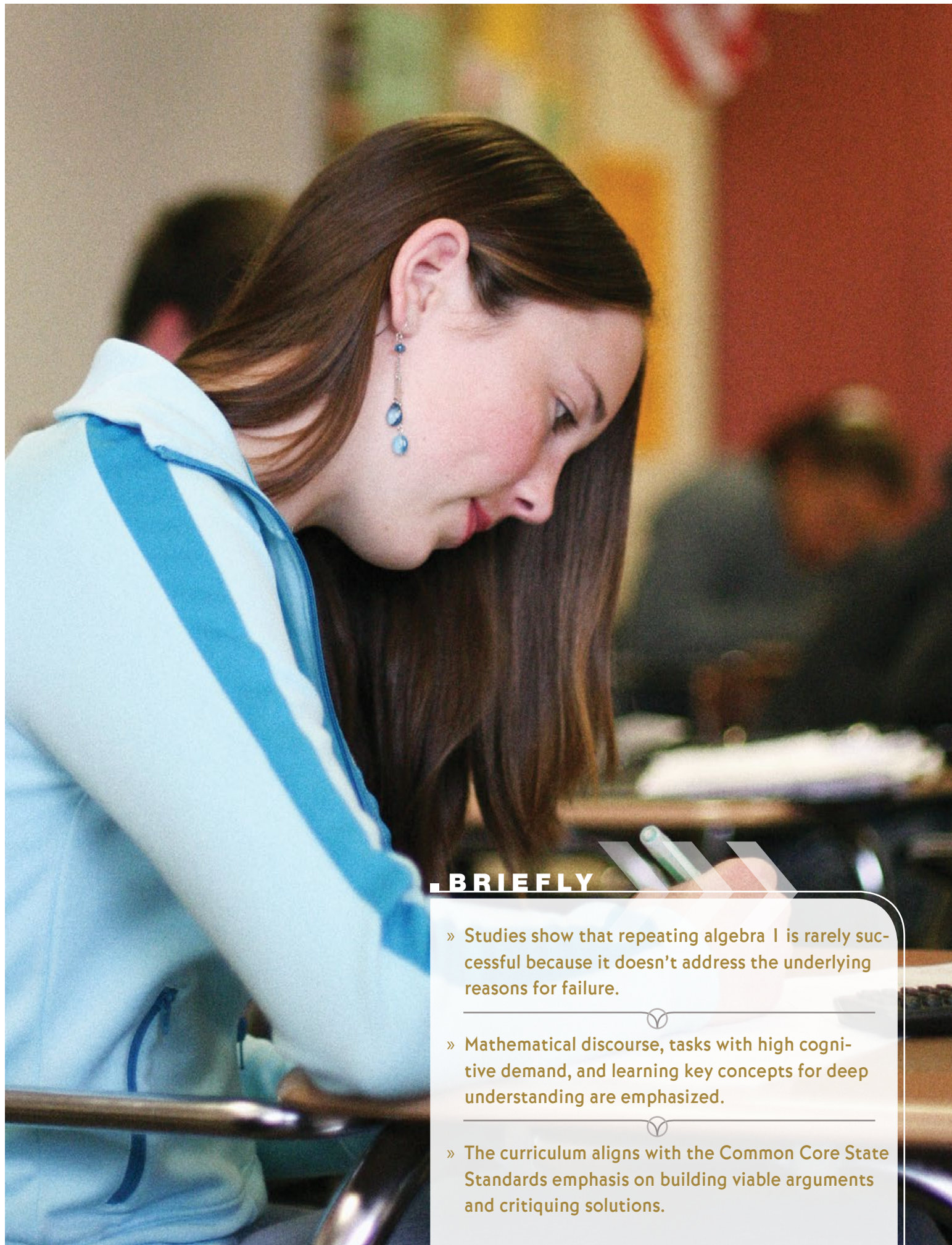
Paredes is encouraged by the scores of testimonials she receives from teachers and parents. One teacher admitted to being “amazed by how well the program worked,”

noting that the model “opens [parents’] eyes to what they need to do to make their child successful and shows them that if we work together we can achieve more.” A young parent stood up at a Creighton Community Council meeting to report that until attending APTT meetings he and his wife, both high school dropouts, had no clear concept of how to work with their oldest child, who was in kindergarten. “He thanked the board, the principal, and their child’s teacher for helping them become supportive parents,” recalls Paredes.

DEVELOPING TEACHER SKILLS AND SPREADING THE WORD

Critical to the success of the APTT model is professional development and support for teachers focusing on building capacity to deliver the essential elements of the model with fidelity and proficiency. Teachers learn how to introduce grade-level Common Core standards in parent-friendly language, share student performance data on which action can be taken, model field-tested activities for home practice, provide guided practice on activities, and coach families on setting academic goals for their child. Paredes notes that without adequate time and effective training, “something that has the potential to be very effective can be bewildering to teachers.” She says that after the initial team meetings, it’s important for teachers to debrief, noting what went well and what needs to be refined.

The APTT model, still in place in Creighton and other Arizona schools, has been replicated in 14 schools in Washington, D.C., and in a number of schools in California, Nebraska, and Colorado. Paredes says most are Title I



■ BRIEFLY

» Studies show that repeating algebra I is rarely successful because it doesn't address the underlying reasons for failure.



» Mathematical discourse, tasks with high cognitive demand, and learning key concepts for deep understanding are emphasized.



» The curriculum aligns with the Common Core State Standards emphasis on building viable arguments and critiquing solutions.

STUDENTS TAKE AN Alternative Route

to Algebra 1 Success

Too many of the nation's 14-year-olds inadvertently narrow their college options before they've even settled into high school. They do so, in either grade 8 or grade 9, by failing the gateway course for all college-preparatory high school mathematics: algebra I. Worse yet, many of those who try to get through the gate a second time fail again.

"When a student fails algebra I, it's common practice to have the student repeat the course—often with the same textbook and the same teacher," says Mardi Gale, a senior research associate at WestEd. "But studies have shown that repeating algebra I is rarely successful because it doesn't address the underlying reasons for students failing the course in the first place."

Key among these reasons, according to Gale, is that K-12 mathematics instruction often focuses too much on following computation rules to solve problems and not enough on understanding how the mathematics work. "Instead of helping students build number sense—the conceptual understanding of numbers and their relationships—math teachers [who have repeaters in their class] tend to continue emphasizing the same computation procedures and shortcuts that students failed to grasp the first time around," she says.

Gale is primary author of the Aim for Algebra™ intervention program, a supplemental curriculum designed to help high school students prepare for success in algebra by revisiting and building a solid understanding of challenging math concepts introduced during elementary and middle school but which many have failed to learn deeply enough to retain.

Developed as a series of 12 modules that teachers can use in high school classes, the Aim for Algebra curriculum has shown impressive results—not only with low-performing secondary students but also with algebra and pre-algebra classes in the middle grades. In randomized controlled studies, Aim for Algebra demonstrated statistically significant gains in student achievement. In many cases students made double-digit improvements between pre- and post-tests in just six weeks.

FOCUSING ON UNDERSTANDING

The Aim for Algebra curriculum modules, published by *It's About Time*, focus on common trouble spots for students—such as exponents, the coordinate plane, and signed number operations—and are designed to be flexible so teachers can use them as needed to supplement comprehensive mathematics textbooks. In some Colorado school districts, for example, teachers used the modules beginning in sixth grade to help students develop their understanding of math concepts and then added other parts of the program as students advanced through the eighth grade.

San Diego City schools used the modules in after-school programs where struggling students receive individual tutoring. High schools in Tracy, California, have used Aim for Algebra with students needing math support and with non-native speakers.



Because the curriculum emphasizes collaborative group work on problems and classroom conversations about math, students get robust practice sharing their ideas on how to go about solving a problem.

Each Aim for Algebra lesson contains three sections:

Launch, the warm-up section, emphasizes ways to connect the new content to prior learning. Rather than teach students shortcuts that can distort mathematical problem-solving, Aim for Algebra scaffolds skills within and across topics so students can confidently draw on experience when confronting new material. For example, whereas teachers traditionally show students a shortcut method of cross-multiplying to find the missing part of a proportion, Aim for Algebra emphasizes the broader concept of equivalent ratios so students will understand factoring, common denominators, and other fundamental principles they will return to again and again in math.

Or, instead of teaching students FOIL, a common shortcut for multiplying binomials in order of the First terms, the Outer terms, the Inner terms, and then the Last terms, Aim for Algebra ensures that students understand the distributive property so they can use it with many different applications.

“If you only teach the computation rule,” Gale says, “students get confused because they’re not sure what or why they are multiplying. If students understand the relationships between numbers, they can work at the conceptual level instead of just following the rules. There are steps to follow, but that’s different from memorizing a rule that’s not connected to the mathematics.”

Explore choreographs the activities of the lesson, engaging students in rich discussions of math ideas. Like the Japanese math lessons lauded in the Third International Mathematics and Science Study (TIMSS), Aim for Algebra focuses

on students’ active construction of knowledge. Students discuss and complete problem-solving tasks independently, in pairs, and with the whole class. While students work on tasks, the teacher circulates and asks probing questions to ensure they are on the right track and not just offering “pat” responses. Recognizing that there may be a variety of correct ways to represent a solution, the teacher avoids telling or showing students how to solve the problems so they can learn to do the thinking themselves.

Summarize ensures that students can connect their experiences to the stated purpose of the lesson and then extend their understanding by applying the mathematical concepts they’ve learned to new problems, through discussion and homework practice.

TALKING ABOUT MATHEMATICS TO DEEPEN UNDERSTANDING

Because the curriculum emphasizes collaborative group work on problems and classroom conversations about math, students get robust practice sharing their ideas on how to go about solving a problem and hearing others’ explanations. Aim for Algebra also encourages students to explore graphic representations of mathematics concepts. Rather than primarily following directions and filling out worksheets of practice problems, students are urged to work collaboratively to explore and defend their thinking in pairs or small groups and expand on their problem-solving strategies. In this way, the curriculum aligns with the Common Core State Standards’ emphasis on learning to construct viable arguments and critique the work of others.

“I implemented the Rational Numbers module, and my classroom became a lot more student driven,” a participating

teacher explained in a feedback survey on Aim for Algebra professional development. “Group work and presenting/ discussing ideas was a norm rather than direct teaching.” English language learners “really took to the drawing of fractions to demonstrate equivalence and operations. It provided the concept that they did not get in prior years.”

Aim for Algebra teaches students to use and understand the precise language of mathematics, another emphasis of the Common Core State Standards for Mathematical Practice. The goal is to help students develop knowledge they can apply in the future, not just memorize it for a test. A strong academic vocabulary supports students to apply math principles in various contexts and helps to develop understanding. For example, in the Rational Numbers module, Aim for Algebra encourages students and teachers to translate decimal numbers precisely to emphasize the place value of the quantities. We want students to consider the number “0.425” and say “four hundred twenty-five thousandths” not “point four, two, five.” Using the precise language reinforces the understanding of place value and relative value of the decimal number.

MAKING THE CURRICULUM WORK FOR TEACHERS

WestEd provides extensive teacher professional development in the use of Aim for Algebra, including working to build the knowledge and skills required to structure and model a lesson, anticipate the misconceptions and questions students are likely to have, and guide student reflections that will promote retention of new ideas. In addition, the facilitator’s guide for each module lays out a complete lesson plan that links learning objectives to learning activities, which in turn are linked to assessments.

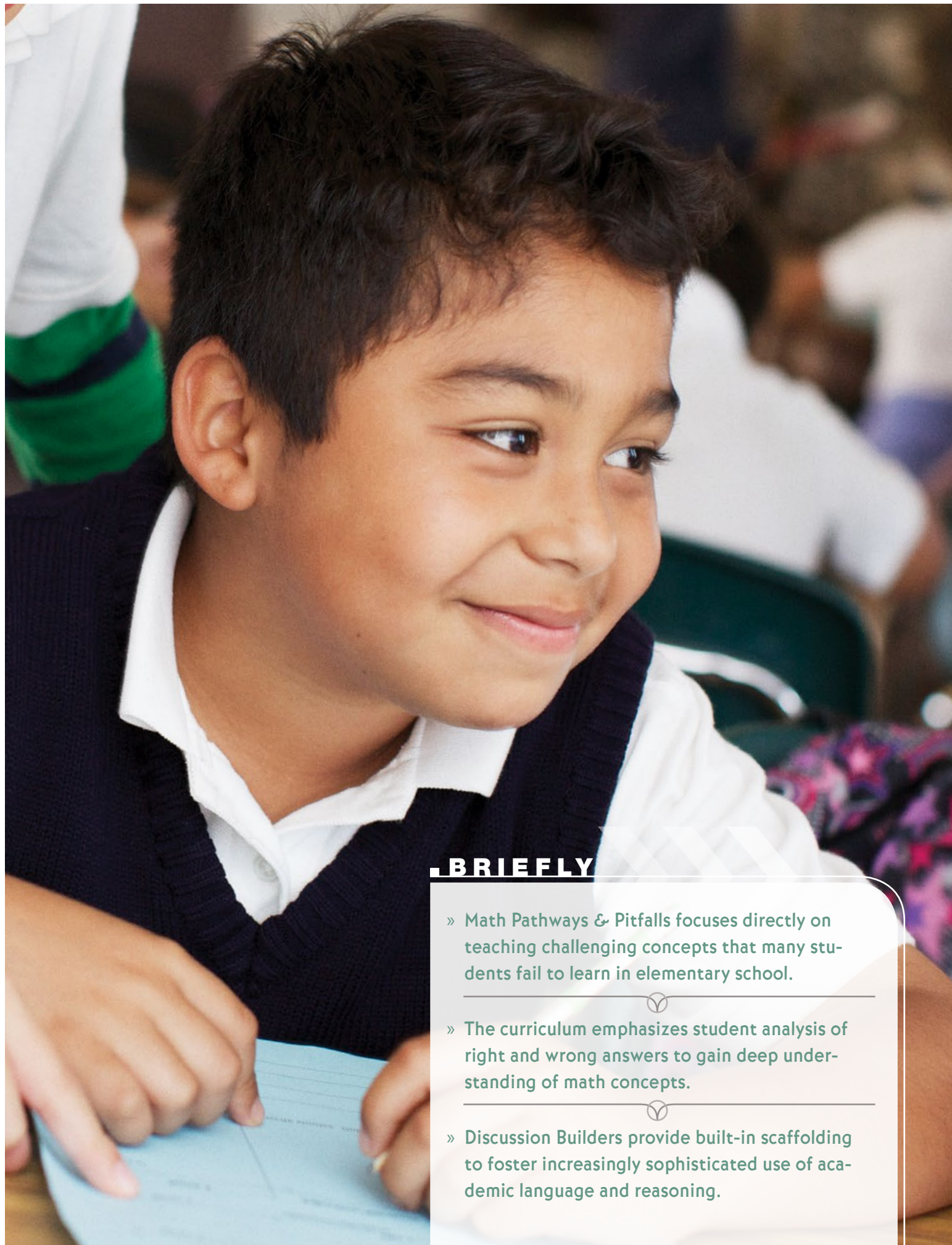
Gale says teachers who effectively implement Aim for Algebra have marveled at how well their students carry over understanding of vocabulary and number sense to topics not covered in the curriculum. Teachers often notice an increase in the understanding and confidence exhibited by students in regular math classes.

Despite teachers’ enthusiasm for the program, some have not been able to continue using it because of restrictive district pacing guides that expect all teachers to instruct and assess students in the same way and at the same rate. Gale says one of the lessons of Aim for Algebra is that successful interventions require flexibility. Not all students have the same gaps in learning, and not all will learn at the same pace. Teachers can still meet accountability goals by using Aim for Algebra, and administrators must support their efforts to offer deeper instruction that deviates from district-level plans.

Aim for Algebra also supports an approach to teaching mathematics that addresses the intent and goals of the Common Core State Standards and the CC Standards for Mathematical Practice, which 46 states are committed to implementing. “The program encourages mathematical discourse, tasks with high cognitive demand, and a focus on teaching key concepts for deeper understanding,” Gale says, “all of which contribute to developing mathematically literate students who can meet the demands of the 21st century.”



For more information about Aim for Algebra, contact Mardi Gale at 818.906.8880 or mgale@WestEd.org.



BRIEFLY

- » Math Pathways & Pitfalls focuses directly on teaching challenging concepts that many students fail to learn in elementary school.

- » The curriculum emphasizes student analysis of right and wrong answers to gain deep understanding of math concepts.

- » Discussion Builders provide built-in scaffolding to foster increasingly sophisticated use of academic language and reasoning.



Conquering the Pitfalls on the Pathway to Math Success

Claudia, a sixth grader in a bilingual education class, “hated” math at the beginning of the school year. And she was very shy about speaking in class. As the year progressed, however, her teacher, Tatiana Peugnet, observed that “Claudia gradually became more confident about speaking out and sharing her math work.”

Part of the reason for that transformation, Peugnet believes, is the approach to mathematics learning that is central to WestEd’s Math Pathways & Pitfalls curriculum, which Peugnet uses in her classroom. A K–8 intervention curriculum that can be integrated into the core curriculum or used in supplemental programs, Math Pathways & Pitfalls develops students’ mathematical language and analytic skills in order to foster a deep understanding of key mathematical concepts.

Over time, Peugnet found that the curriculum’s approach to learning helped her develop a safe, productive classroom atmosphere for academic discussions. “Initially, one of Claudia’s big fears was having the class disagree with her answers, but she really began taking more risks as the year went on. Math actually became one of the subjects she really enjoys.”

Research—including two national randomized trial studies—shows that even fairly limited exposure to the Math Pathways & Pitfalls curriculum significantly improves student achievement. A five-year study (2005–10) funded by the U.S. Department of Education’s Institute of Education Sciences (IES) found that a total of 30 hours of exposure to Math Pathways & Pitfalls lessons

over two years raised both standardized and project-administered mathematics test scores for the full sample of students, of which approximately 70 percent were Latino, 55 percent were English language learners, and 75 percent were eligible for free or reduced-price meals.

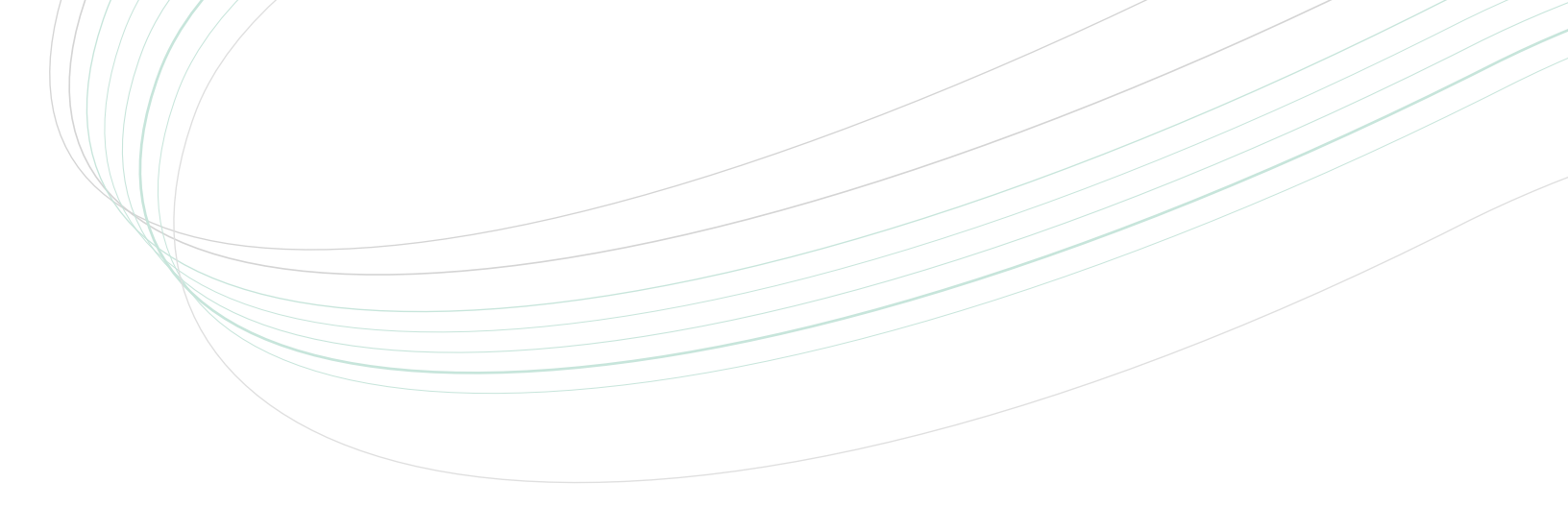
Alma Ramirez, Co-Director of Math Pathways & Pitfalls, says that the IES study results were particularly notable because few studies have been able to report successful interventions for raising the mathematics achievement of English language learner and Latino student groups.

“The lesson structure was intentionally designed to create a safe way for students, particularly ELL students, to share their mathematical processes and reasoning,” Ramirez says. “We’ve built in supports along the way so it’s safe for students, and even teachers, to take intellectual risks.”

GOING BEYOND RIGHT AND WRONG ANSWERS

Each Math Pathways & Pitfalls lesson takes the unique approach of confronting misconceptions head-on by asking students to analyze both correct and flawed ways of solving a problem. In order to build a sound conceptual





understanding of the topic, students are first shown correct solutions and their justifications. Students are then presented examples of “pitfalls,” which address some of the most common misconceptions cited in the research literature on student thinking—ones that are often used as distractors on state and national assessments. Ramirez notes that the goal for presenting students with both correct and incorrect solutions isn’t for students to guess which one is right, but to enable them to understand and discuss *why* the correct answer works and why the reasoning behind the incorrect answer is flawed.

The curriculum encourages students to explicitly examine and explain their mathematics thinking and processes. This metacognitive approach is particularly important, notes Ramirez, because when students misapply a mathematical procedure it’s generally because they don’t understand the concept that underlies the procedure. By getting into the habit of reviewing their thinking and asking themselves whether or not a solution makes sense, students also become more conscious of how they learn and how they can monitor their own learning and problem solving.

“We all learn from our mistakes,” says Leanna Baker, a first-grade teacher in Hayward Unified School District in Hayward, California, who regularly uses Math Pathways & Pitfalls strategies in her classroom. “Math Pathways & Pitfalls has helped me build a classroom culture where it’s safe for students to talk about the errors they’ve made—and to discuss the reasoning that led to the errors and how to avoid that in the future. It’s really helped my students learn to explain their thinking and take responsibility for their own learning.”

DIGGING DEEP INTO IMPORTANT IDEAS

As states and districts begin to implement the Common Core State Standards, teachers are finding that Math Pathways & Pitfalls aligns well with the math standards’ increased focus on students’ ability to demonstrate conceptual understanding and provide explicit justifications for their approaches to solving a problem. For instance, a Math Pathways & Pitfalls fourth-grade lesson on adding fractions goes beyond asking students to focus solely on getting the right answer to a numerical equation, such as $1/4 + 3/8 = 5/8$. Instead, the lesson guides students to understand and articulate the mathematical ideas behind the procedure, such as what makes fractions equivalent and why a common denominator is required to add fractions. Instruction employs strategies such as having students visualize the addition of fractions along a number line and other types of modeling.

“The Common Core is asking for student reasoning,” says Peugnet, “which is something Math Pathways & Pitfalls helps scaffold by prompting students to justify their answers and analyze common misconceptions. Rather than giving students 25 problems at a time to plow through—which provides practice in the mathematical *procedures*—Math Pathways & Pitfalls encourages deeper discussion of fewer problems. With this curriculum, my students learn the *concepts* underneath the procedures and how to talk about the problems they need to solve.”

To enable students to discuss mathematics concepts, the curriculum focuses explicitly on building students’ discipline-specific academic language. The goal is to help students become comfortable with the unique

To enable students to discuss mathematics concepts, the curriculum focuses explicitly on building students' discipline-specific academic language.

ways mathematics language is structured, through such practices as constructing “if...then” scenarios or posing a conjecture about how to solve a problem or a proof of a solution. Each lesson opens by introducing a few strategically selected key mathematics terms; for instance, the lesson focused on adding fractions begins with students learning how to use the terms “addends,” “common denominator,” “unlike,” and “sum” when discussing the mathematical reasoning behind each problem.

Also, embedded throughout the curriculum's teaching guides are terminology and guidance to help teachers make the curriculum more accessible for English language learners. For example, in the fractions lesson, the curriculum reminds teachers to: “Note [to students] that we don't read halves as ‘twos,’ thirds as ‘threes,’ or fourths as ‘fours.’ The different endings for the denominators of a fraction denote how many equal parts the whole is divided into.”

Another element of Math Pathways & Pitfalls that helps foster metacognitive discussion of mathematic concepts is the curriculum's “Discussion Builders,” which prompt students to learn through active participation. Integrated into each lesson, the Discussion Builders provide built-in scaffolding to foster increasingly sophisticated use of academic language and reasoning as students progress through the grades. As opposed to sentence stems for discussion that only allow room for closed, finite answers, the Discussion Builders are designed as open-ended prompts that encourage students to think about and question the concepts they're learning, says Ramirez.

“The curriculum's focus on language development is my favorite aspect of Math Pathways & Pitfalls,” says teacher Leanna Baker. “Math vocabulary is unique—it's not something you're born with or your parents teach you. The curriculum gives students the opportunity to build both the conceptual and linguistic understanding of mathematics.”

In addition to the IES study, a large-scale experimental study funded by the National Science Foundation found that using just 15 hours of Math Pathways & Pitfalls lessons in place of regular mathematics lessons boosted student achievement during the course of one school year. Ramirez thinks one of the reasons that even a limited amount of exposure to Math Pathways & Pitfalls can produce such dramatic results is that the approach and strategies translate beyond just the individual lessons.

“We've observed that using Math Pathways & Pitfalls curriculum helps teachers and students acquire ‘metacognitive habits of mind’ that they can apply to all academic work,” says Ramirez. “Our curriculum is only a supplemental or intervention curriculum. The point isn't to fill a whole school year of lessons—the curriculum is designed to build a strong conceptual understanding and a way to think and talk about mathematics more deeply. This learning, then, translates to other mathematics lessons.”



For further information about Math Pathways & Pitfalls, contact Alma Ramirez at 510.302.4249 or at aramire@WestEd.org.



■ BRIEFLY

- » A collaborative coaching approach emphasizes structured, focused conversations about developing the novice teacher's instructional skills.
- » Intentional teachers are reflective: they know what they did during a lesson, why they did it, what they would do differently next time, and why.
- » Mentoring relationships and the reflective conversations about teaching that occur within them can enhance collaboration schoolwide.

Mentoring Program Supports

COLLABORATIVE SCHOOL CULTURE

Students are not the only ones expected to learn in schools these days. Increasingly schools and districts are under pressure to ensure ongoing *teacher* learning. Given the advent of rigorous new Common Core State Standards, the ongoing drive to close achievement gaps, and increased focus on teacher evaluation, the need to ensure teacher effectiveness has never been greater.

A mentoring program that serves new teachers offers them the opportunity—starting with their first days in the classroom—to purposefully build their instructional skills. Aimed at developing and retaining novice teachers, this model was developed and refined over the past 20 years by Kathy Dunne and Susan Villani, teacher induction and development experts in WestEd’s Learning Innovations program.

“We lose between 30 and 50 percent of new teachers in this country within their first three years,” says Villani. “The goal of our mentoring model is to help novice teachers become intentional about building knowledge and skills, so that they grow, experience success, and stay in the profession.”

At the same time, the model offers an opportunity for exemplary teachers to expand their role by training to become mentors to new teachers. And the *collaborative coaching* dialog between mentor and novice that defines the model “has a way of spilling over into the broader school culture, transforming instructional conversations among experienced teachers and school leaders, as well,” says Villani.

USING COLLABORATIVE COACHING TO DRIVE EFFECTIVE INSTRUCTION

Dunne and Villani’s model, based on the Cognitive Coaching approach developed by education professors

emeriti Art Costa and Robert Garmston, of California State University, Sacramento, is premised on a simple idea: to get off to a strong start, a new teacher collaborates with a skilled mentor to build the new teacher’s classroom knowledge and skills in a carefully structured approach.

To launch a sustainable mentoring program in a school or district, Dunne and Villani first train a group of highly effective teachers to serve as mentors, focusing heavily on developing their collaborative coaching skills. The most successful trainees from that group are selected to apprentice to Dunne and Villani over the next two years to become trainers of future mentors.

While mentoring is a long-standing approach to new teacher induction, traditionally the mentor’s role has been to show her or him how to navigate the practical aspects of teaching, often without opportunities to talk about teaching practice. A collaborative coaching approach, on the other hand, addresses practical concerns, but also emphasizes structured, focused conversations about developing instructional skills. The novice teacher’s questions and ideas, along with the mentor teacher’s classroom observations, help set the agenda for his or her development.

The mentor is trained to listen actively and ask probing questions to help the new teacher clarify and deepen her or his own thinking about challenges, and also generate



ideas for becoming more effective in helping students learn. “These conversations between mentor and novice support the new teacher to become *intentional* in her or his practice,” Dunne explains. “When teachers are intentional, they are self-reflective about their teaching goals, methods, and outcomes, so that when they have completed a unit of classroom instruction, they know what they did, why they did it, what they would do differently next time, and why.”

Wendy Siebrands, a retired associate superintendent in School Administrative Unit #6 in New Hampshire, who coordinated a mentor program for her district, observes: “The [mentor trainees] learn how to act as mirrors for the mentees, reflecting back to them what the mentees are learning...And that reflection piece is extremely important because if the mentee does not own the change in the instruction that’s taking place, then very little will change.”

Melissa Lewis was in Siebrands’s first group of mentor trainees. A former new teacher mentor and lead mentor trainer who is currently principal of Disnard Elementary School in SAU#6, she recalls that, “One of the greatest skills I learned during mentor training is how to be an active listener, how to probe into the thinking of others rather than just share my own thinking. The leadership skills I gained in the mentoring program impact me every day as a principal.”

Being an exemplary teacher doesn’t automatically translate into being an effective mentor. Dunne and Villani have identified a set of knowledge, skills, and dispositions for effective mentors, ranging from the practical—such as understanding new teacher needs

and knowing how to ask effective questions—to the more theoretical, such as understanding the structure and value of the collaborative coaching model.

As mentors begin to work with new teachers, Dunne and Villani guide them in navigating among various approaches to coaching conversations—non-directive, collaborative, or directive—depending on how confident a new teacher is about the particular goal he or she is working on. “The mentor’s ability to adapt her or his approach to the specific needs of the new teacher,” Dunne says, “is the art of effective mentoring.”

To support a new teacher’s continuous skill improvement, the collaborative coaching cycle includes three steps: a planning conversation about a lesson the novice educator will teach, a mentor observation of the lesson, and a reflective debriefing conversation following the observation. Through successive coaching cycles, mentor and new teacher are each developing or honing their own reflective teaching practice.

ADDRESSING THE BROADER SCHOOL CULTURE

Many teachers who leave their school—or the profession—report having been “dissatisfied” with such issues as having too little prep time, lack of faculty influence, too little parent support, no opportunities for professional advancement, and too little time for collaboration.

“We are proactive in addressing some of these issues, not just by providing support and professional development for individual teachers, but also by thinking about the development of a school culture that is conducive to

As mentors start learning and practicing coaching skills—such as reflecting on teacher practice...or asking questions without judgment—they often remark that ‘everyone in the building should be doing this work.’

teachers wanting to stay,” says Dunne. “As mentors start learning and practicing coaching skills—such as reflecting on teacher practice, gathering data, asking questions without judgment—they often remark that ‘everyone in the building should be doing this work.’”

“We’ve discovered that the role of the teacher leaders starts to expand beyond the mentoring program,” says Villani. For example, school administrators often ask teacher leaders to play a role in expanding the mentoring program to provide professional development in content areas, and to take leadership roles beyond the mentoring program to address the needs of the school and district.

Teachers are not the only ones whose roles shift when new norms take hold in the school. Working out new roles and responsibilities for mentors and new teachers requires learning for principals as well. “It is a culture shift to ask principals to move away from a paradigm of praising and judging, to one of coaching,” says Villani. “Many principals don’t know how to ask questions that promote reflection. We frequently provide them training in these skills.”

SETTING THE BASIS FOR A SUSTAINABLE PROGRAM

High-quality teacher mentoring programs can be linked to reducing new teacher attrition by as much as 90 percent. Research, such as that reported on by Thomas M. Smith and Richard Ingersoll in the September 2004 issue of the *American Educational Research Journal*, shows that the duration and quality of mentoring programs matter, and that a high level of commitment by a school or district is an important determinant of that quality.

Dunne and Villani recommend that schools invest resources in providing sustained high-quality training for mentors. For example, in addition to a commitment to the initial three-year training cycle, they may recommend that beginning mentors meet before school starts for a week of intensive training, including several joint sessions with administrators and new teachers, so that all constituents learn the same information together. They may also suggest periodic meetings among mentors over the academic year so they can be a source of support for one another as they encounter new challenges.

Witnessing the positive effects of their mentoring program among the thousands of educators across the country with whom they’ve worked has affirmed Dunne and Villani’s beliefs that mentoring relationships and the reflective conversations about teaching that occur within them can move a school culture toward one focused on collaboration between and among teachers and the leaders who support them.

“Implementing our mentoring model is like planting a seed from which broader change can potentially grow,” says Villani. “When educators become intentional about improving teaching practices, and when their colleagues have the skills to help them reflect on how to become more effective, they grow individually and as a learning community. That’s good for teacher development and retention, and it’s good for enhancing collaborative culture.”



For further information, contact Kathy Dunne at 781.481.1102 or kdunne@WestEd.org, or Susan Villani at 781.481.1112 or svillani@WestEd.org.

Featured Resources & Services

Math Pathways & Pitfalls Intervention Curriculum

“Math Pathways & Pitfalls greatly benefits students' understanding of mathematics at any grade level. It gives students a chance to build inquiry, to develop their critical thinking skills, to verbalize, and to develop their writing skills within the math curriculum.”

— Norma Sakamoto,
37-year teaching veteran

This K–8 intervention curriculum helps students tackle stubborn pitfalls head-on and transform them into pathways for learning key mathematical topics. Each book contains everything needed to teach Math Pathways & Pitfalls effectively, including 20–22 complete lessons, a teaching manual, and a DVD with footage of Math Pathways & Pitfalls in action.

- 1 Grades K–1 | Early Math Concepts | Whole Number Concepts
\$165.00 | 320 pages | Trade paper with DVD, CD-ROM, and Poster
ISBN: 978-0-914409-58-8 | MPP-09-01RD
- 2 Grades 2–3 | Place Value | Whole Number Operations
\$165.00 | 352 pages | Trade paper with DVD, CD-ROM, and Poster
ISBN: 978-0-914409-59-5 | MPP-09-02RD
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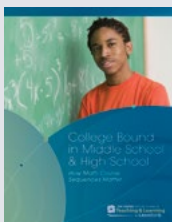


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College Bound in Middle School and High School? How Math Course Sequences Matter

Neal D. Finkelstein, Anthony B. Fong, Juliet Tiffany-Morales, Patrick M. Shields, Min Huang | WestEd, 2012

This study, produced by The Center for the Future of Teaching and Learning at WestEd, explores the connection between mathematics achievement in middle school and high school to better understand the degree to which students stay on the path toward postsecondary STEM study and, if students veer off the trajectory, to better understand when and why.

► <http://www.wested.org/cs/we/view/rs/1274>



What Works Brief #9: Family Engagement

Maria Paredes, Meagan O'Malley, Angela Amarillas | WestEd, 2012

Family engagement is a fundamental element of any school improvement effort. This What Works Brief offers research-based strategies for supporting family involvement, describing behaviors and practices in areas of:

- Parent/guardian-child and parent/guardian-teacher communication practices
- Parent/guardian roles and responsibilities in the home
- Parent/guardian roles and responsibilities at school

► <http://www.wested.org/cs/we/view/rs/1248>

R&D Alert covers issues affecting schools, communities, and human development professionals throughout the United States. Current and previous issues are available at WestEd.org/R&DAlert. Your comments are welcomed. Please address them to Linda Broatch at lbroatc@WestEd.org.

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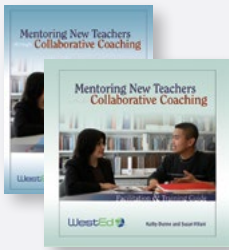
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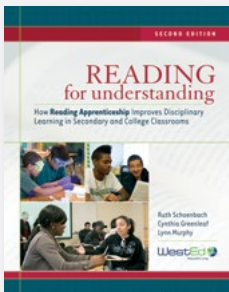
Mentoring New Teachers Through Collaborative Coaching Set

Kathy Dunne, Susan Villani

What are the best approaches for developing effective mentors and improving the professional growth of new teachers? This complete professional development toolkit provides a highly effective research-based mentoring and coaching model, complete with activities, agendas for multiday trainings, and other do-it-yourself resources. Perfect for professional developers, teacher leaders, mentor and/or teacher induction program coordinators, building- and district-level administrators, and faculty from institutions of higher education. Save 10% off the individual prices when you order the set.

Book: \$21.95 | 112 pages | Trade paper | 2007 | WestEd | 978-0-914409-30-4 | LI-06-04RD

Facilitation & Training Guide: \$149.95 | 300 pages | Binder & CD-ROM | 2007 | WestEd | ISBN: 978-0-914409-31-1 | LI-06-05RD



Reading for Understanding

Ruth Schoenbach, Cynthia L. Greenleaf, and Lynn Murphy

This significantly updated edition of *Reading for Understanding* shows how teachers and students can work together to boost literacy, engagement, and achievement. Endorsed by leading researchers and educators at every level, *Reading for Understanding* presents a coherent framework for improving reading and learning among all students—English learners, students with special needs, students in honors/AP courses, and those in technical and community colleges.

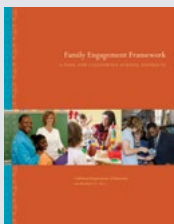
\$29.95 | 416 pages | Trade Paper | 2012 | Jossey-Bass | ISBN: 978-0-470-60831-9 | READ-12-01RD

Academic Parent-Teacher Teams (APTT): Family Engagement in Education

Academic Parent-Teacher Teams show that family-school-community partnerships to advance student learning can have a powerful impact. Anne Henderson, in association with the NEA Priority School Campaign, identified APTT as a national model for engaging families in education.

Who to Contact:

Maria C. Paredes | 480.823.9425 | mparedes@WestEd.org



Family Engagement Framework A Tool for California School Districts

California Department of Education, California Comprehensive Center, 2011

The *Family Engagement Framework* is designed for school districts and schools that are developing and expanding school/family partnerships to support student achievement and close the academic achievement gap.

A collaborative effort between the California Comprehensive Center (CA CC) at WestEd and the California Department of Education, this tool provides guidance to educators, districts, schools, families, and communities as they plan, implement, and evaluate strategies across programs for effective family engagement. The CA CC did a thorough review of literature showing a strong link between parent involvement activities and student achievement.

► <http://www.wested.org/cs/we/view/rs/1222>



Address service requested

**continued
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schools that have failed to meet federal guidelines for adequate yearly progress (AYP) and have chosen to adopt the APTT model as one of their school improvement initiatives.

However, APTT training, offered by WestEd, is available to any district interested in using family engagement as an instructional strategy. As it should be, Paredes insists. "Teachers want parents engaged in their child's academic learning, parents want to be involved, and research

shows clearly that children's achievement benefits from the teacher-parent partnership," she says. "Although it's a largely untapped resource, effective family engagement is one of the keys to lasting school improvement."



For more information about WestEd's Academic Parent-Teacher Teams (APTT) model, contact Maria Paredes at 480.823.9425, or mparede@WestEd.org.

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