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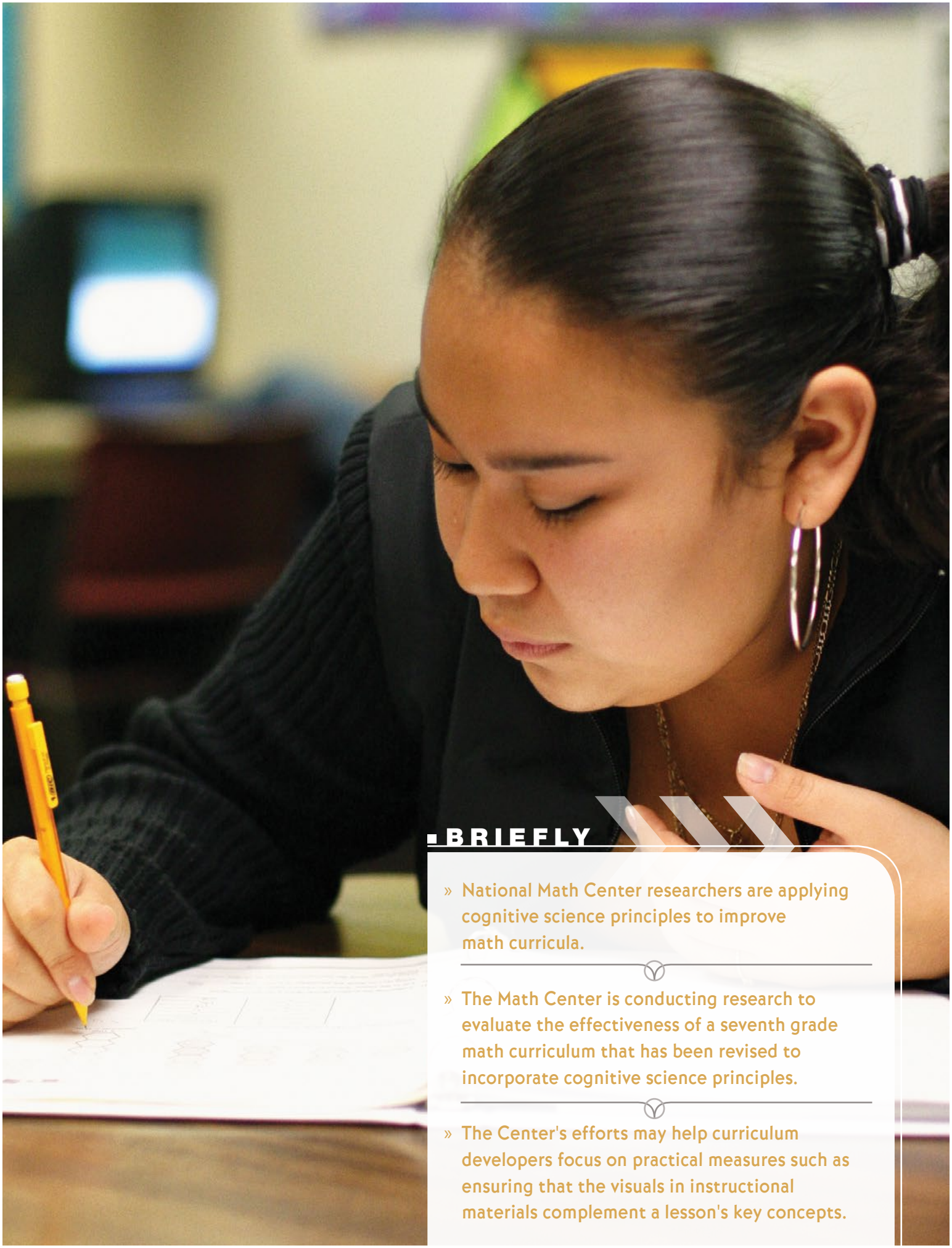
R&D ALERT

timely knowledge for education and human development



BRIEFLY

» National Math Center researchers are applying cognitive science principles to improve math curricula.

» The Math Center is conducting research to evaluate the effectiveness of a seventh grade math curriculum that has been revised to incorporate cognitive science principles.

» The Center's efforts may help curriculum developers focus on practical measures such as ensuring that the visuals in instructional materials complement a lesson's key concepts.

MERGING cognitive science and curriculum to strengthen middle school math

Consider that colorful photographs, eye-catching illustrations, and captivating images intended to make textbooks more appealing may actually distract students from the lesson at hand. Or that asking students to simply solve math problems might not be as effective as having them explain the steps of solutions that are already worked out—even some that are worked out incorrectly.

Although such statements may sound counterintuitive, they reflect well-established research findings on the cognitive science behind student learning. And it is these and other such findings that are guiding researchers at WestEd's National Center on Cognition and Mathematics Instruction (the Math Center, funded by the U.S. Department of Education) as they apply research-based principles to revise a widely used middle school math curriculum. The redesign is intended to provide a kind of blueprint that curriculum developers can use to make their work—in any number of curricular areas—more effective.

"The center's work really is multifaceted," says WestEd's Steve Schneider, who directs the Math Center. "It's a curriculum engineering project where the modifications can be broadly applied. We hope what we generate can become a design template to guide others when revising their own instructional materials."

The center is translating research about how students process information into a set of design principles and applying those principles in the revision of existing curricula. Researchers are then testing "whether the same large learning gains found in labs will occur in authentic classroom settings that are using the revised curricula," says Jodi Davenport, Director of Research for the center.

Funded by a five-year grant from the U.S. Department of Education's Institute of Education Sciences, the Math Center is a collaboration between WestEd, the lead institution, and partners at Carnegie Mellon University, Temple University, the University of Illinois at Chicago, the University of Wisconsin–Madison, and Worcester Polytechnic Institute.

RESEARCH-BASED DESIGN PRINCIPLES

To revise an existing curriculum, the center's team applied four design principles that reflect cognitive science research findings:

1. Integrating visual images and verbal information in meaningful ways promotes understanding of key concepts and development of critical skills.
2. Practice that is structured to give students opportunities both to solve problems and to study already worked-out problems (some of which may be solved incorrectly) promotes deeper conceptual understanding.
3. Spacing out the presentation and review of key concepts and facts over time helps students better retain what they learn.

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305C100024 to WestEd. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

4. Testing students periodically, accompanied by targeted feedback, gives students opportunities to practice retrieving knowledge and to learn from their mistakes.

According to Davenport, some of the principles—such as those related to spacing out learning and periodically testing—are derived from basic psychological concepts documented more than a hundred years ago; other principles have been recognized more recently. A core concept is that students have a "limited amount of working memory," she says, "and when many things are competing for that memory, it's important to keep the focus on what's relevant."

It is also significant that the Math Center researchers are applying the four design principles *simultaneously*, in combination, as they revise the math curriculum. This approach differs from other studies that have explored cognitive science principles typically by focusing on just one at a time.

For example, in the revised curriculum, a sixth grade unit on area and perimeter was reworked to take into account both of the first two design principles. In both the original and revised units, students were asked to sketch floor plans for a new bumper car ride that met certain specifications. In the original unit, the problem was accompanied by a photograph of an amusement park. In the revised version, the photograph was eliminated and replaced with a sketch of three possible floor plans for the new ride, including one that "does not meet the requirements." Students were asked to determine "Which one does it fail to meet?" and "How can you tell?"

Schneider explains that pictures like the one of an amusement park are not just filling space unnecessarily but actually distract students because such pictures are not directly related to the math of the problem. In this case, showing floor plans for the bumper car ride can better help students acquire the math content they need because the plans more closely represent the details of the problem.

before

1. Coney Island Park wants a bumper-car ride with 24 square meters of floor space and 22 meters of rail section.

a. Sketch some floor plans for this request.

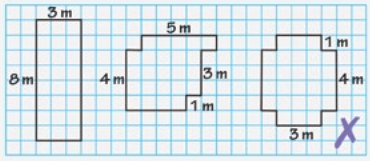
b. Describe the bumper-car ride in terms of its area and perimeter. Report what each measure tells you about the ride.

after

1. Coney Island Park wants a bumper-car ride with 24 square meters of floor space and 22 meters of rail section.

a. Sketch some floor plans for this request.

Dominick completed the first two floor plans in a correct way, but his third plan does not meet the requirements. Look at his work, and then answer the questions below.



Dominick's third floor plan meets one requirement, but not the other. Which one does it fail to meet? How can you tell?

b. Describe the bumper-car ride in terms of its area and perimeter. Report what each measure tells you about the ride.

> Students have a limited amount of working memory… and when many things are competing for that memory, it's important to keep the focus on what's relevant.

"A change that simple, which strengthens the connection between the visual and verbal material, is sometimes all it takes to help students understand a concept," Schneider says.

Explaining problems that have been solved incorrectly, says Davenport, is increasingly being seen as "one of the most effective kinds of practice for students." Instead of just getting the answer to a problem, students must thoroughly understand the steps taken to arrive at a solution and must have the conceptual understanding to determine if and where an error was made. Ultimately this kind of practice "helps students ***not*** make that same mistake," says Davenport.

TESTING THE REVISIONS IN CLASSROOMS

A study involving 120 teachers at 87 schools in 17 states was conducted from January to June 2012. Its goal: to determine if sixth and eighth graders using the redesigned curriculum units showed greater improvements in math scores (as measured by pre- and post-tests) in comparison with peers using the original curriculum. To prepare, teachers took part in a two-day, online professional development workshop led by WestEd facilitators in which participants learned about the research behind the four design principles, studied the changes made to the curriculum, and practiced applying those changes to their lesson plans.

Each teacher involved in the study was randomly assigned to provide data from two specific middle school math units: one in its original format and the other as revised. Weekly logs completed by the teachers noted if and how they had applied elements of the four research-based principles to their instruction.

Data analysis is still underway, says Davenport, but "we are seeing trends going in the expected direction," in favor of the redesigned curriculum. Schneider reports that teachers describe the revisions as "very positive," noting that the changes "make sense and enhance the materials."

The Math Center is also conducting a study—which began in fall 2012 and runs through spring 2014—to evaluate the effectiveness of the entire revised seventh grade math curriculum. The first year of this study provided practice opportunities for teachers to gain familiarity with the design principles, and the second year focuses on testing the impacts of the revised curriculum in comparison with the original curriculum. This effort is intended to generate more findings about whether and for whom the revised materials improve outcomes.

LESSONS LEARNED

Schneider and Davenport say they hope the Math Center's work on the middle school math curriculum sheds light on the value to be gained when research findings from cognitive science are applied to curriculum development and teaching practices across the board. "The point," says Schneider, "is to use what the research tells us about how students process information—and to tailor instruction accordingly to support their learning."

According to Davenport, such strategic support is a matter of making conscious decisions when writing curriculum and developing instructional materials. "A lot of development that's happening now is arbitrary," she says. "It needs to be more targeted."

Specifically, she'd like to see curriculum writers and teachers everywhere focus on proven, practical measures,

BRIEFLY

» A first-ever analysis linking child welfare and education data provides a crucial step toward understanding and serving the academic needs of children and youth in foster care.

» The data verified that students in foster care are a unique, at-risk group in need of targeted support.

» The data sharing between California's social services and education systems was a major accomplishment, setting the stage for future interaction and data sharing.

Shared data reveal the invisible achievement gap of students in foster care

At any given time, tens of thousands of children and youth in the U.S. are in the foster care system. Many have been abused, neglected, or abandoned, and they face a challenging journey of uncertainty, often not knowing where they will live next, where they will go to school, or whether they will have contact with friends and relatives.

Child welfare professionals work diligently to support children in foster care but typically have no access to information about what happens during a large part of these children's lives—school. Similarly, educators often have no information about a student's foster care status. The lack of data makes it difficult, if not impossible, for adults to fully understand and support the academic needs of students in foster care.

"In the absence of data, students in foster care tend to become invisible in the education system," says WestEd Senior Research Associate Vanessa Barrat. "How can we provide effective educational support to these students without knowing who they are or what their academic needs are?"

For the last few years, The Center for the Future of Teaching and Learning at WestEd has been working toward bridging this data divide in California, the state with the largest number of children and youth in foster care. Through funding from the Stuart Foundation, WestEd staff and a number of partners brokered a first-ever data-sharing agreement between the California Department of Social Services (CDSS) and the California Department of Education (CDE) as a critical step toward better understanding and serving the academic needs of youth in foster care.

The initiative resulted in a recently released report, *The Invisible Achievement Gap: Education Outcomes of Students in Foster Care in California's Public Schools*—a first-of-its-kind analysis linking statewide data from the child welfare and education systems, giving a fuller picture than ever before available of all K–12 students in the state's foster care system.

CONFIRMING THE NEED FOR SUPPORT

In most states the child welfare and education systems maintain separate data systems, with no common identifiers to track children across the systems. So, even though a state social services department typically tracks data on individuals in the foster care system (e.g., entrance and exit dates, home placement), the respective state education department usually has no access to that information and no way of tracking how many children who are in foster care also attend public schools, where they are enrolled, or how they are faring.

This lack of cross-system data leaves both educators and child welfare professionals without basic information. For instance, a student may have to repeat an important course such as Algebra I (delaying his ability to move on to higher math) because he changed foster care placements and schools several times over the last few years,

> Now that we have solid data, we have a chance to really understand the specific risks and challenges that students in foster care face, so we can target programs and support.

thereby missing important content. But the teacher has no way of knowing why this student is struggling in class and falling behind.

Initially, the sheer size of the child welfare and education systems' datasets made the process of combining them somewhat daunting: With about six million students, California has the largest student population of any state in the country. Manipulating and matching such large amounts of confidential data across two totally unconnected systems—CDE's California Longitudinal Pupil Achievement Data System and CDSS's Child Welfare Services Case Management System—required intense data security and a meticulous data-matching process.

To produce the *Invisible Achievement Gap* report, WestEd staff carried out a rigorous, multistep data-matching process, resulting in a linked dataset of more than 43,000 students (ages 5–17) in foster care in California—the first set of that scope and magnitude. An analysis of this data gave an illuminating, if not totally unexpected, snapshot of the characteristics and academic outcomes of students in foster care.

The data revealed a previously unconfirmed achievement gap between students in foster care and other students in the state. For instance, on the statewide mathematics test administered in grades 2–7, students in foster care had the lowest proficiency of any group, including other at-risk subgroups such as students with low socioeconomic status (SES), English language learners (ELL students), and students with disabilities.

More generally, results from all the statewide tests showed that students in foster care were consistently outperformed by low-SES students, and they had an achievement gap similar to that of ELL students and students with disabilities. Their academic outcomes consistently fell alarmingly below those of the general student population; in English language arts and mathematics, students in foster care scored at the two lowest performance levels at twice the rate of all students statewide.

The data verified what those in the field have seen on a smaller scale—that students in foster care are a unique, at-risk group in desperate need of the kind of targeted support often provided to other at-risk subgroups. Findings also revealed a more detailed picture of how and why this population is struggling academically.

"The report highlights more than just academic difficulties—it shows that children and youth in foster care have trouble staying in school," says Barrat. "When you look at their academic outcomes when they are actually present in school, students in foster care are at least on par with some other at-risk populations. But when you look at how they are participating in school—testing rates, dropout rates, graduation rates—they are definitely the *most* at-risk population."

Students in foster care had the lowest participation rate of all students in California's statewide testing program, and they had a dropout rate three times higher than the statewide rate. In addition, the grade-12 graduation rate for students in foster care was just 58 percent—lower than the graduation rate of any other at-risk subgroup and far below the statewide average graduation rate of

84 percent. The poor dropout and graduation rates are particularly worrisome, as students who do not complete high school are more likely to experience unemployment, poverty, incarceration, and health problems.

THE TIME IS NOW

Although disheartening, the findings are a crucial step toward addressing the challenges faced by students in foster care—particularly in an era of increased focus on data-driven decision-making. Barrat says the collaborative data-sharing process was a big accomplishment that seems to have set the stage for future interaction and data sharing between California's social services and education systems.

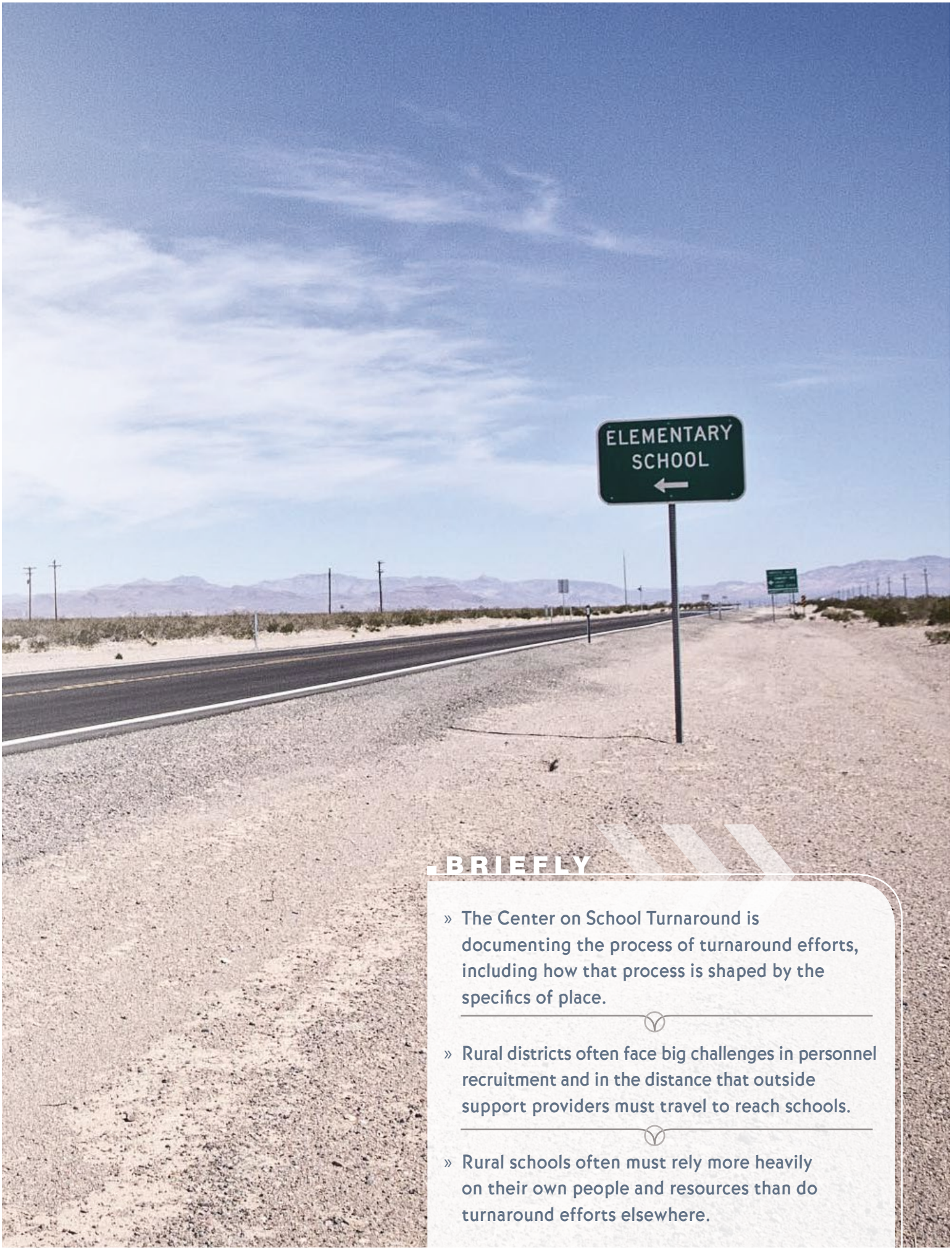
"Everyone was on board, but we were walking in uncharted territories," says WestEd Senior Research Associate BethAnn Berliner. "Individually, these systems are both very complex. The child welfare system is particularly dynamic because the majority of children come in and out in a very small time frame, one that's shorter than the school year. Merging the two systems wasn't easy, but we knew we needed to do it to fully serve students in foster care."

The job of mining this groundbreaking dataset is not yet done. Researchers from the University of California, Berkeley, are developing Part 2 of the report, looking exclusively *within* the population of K–12 students in foster care to see the relationship between education outcomes and particular characteristics of the foster care experience. In addition, WestEd is releasing a brief that includes recommendations for actionable next steps: *Addressing the Invisible Achievement Gap—Areas of Focus for Improving Education Outcomes for California Students in Foster Care*. Ultimately, Barrat and Berliner hope that child welfare professionals, educators, and policymakers can use this sort of data to inform more and better interventions for students in foster care.

In California, the report and its findings arrive at a timely moment, as the state's new school funding formula gives schools and districts additional resources to support students in foster care. Under the Local Control Funding Formula, enacted in 2013, California school districts receive supplemental grants—on top of base per-pupil grants—for each low-SES student, ELL student, and student in foster care. The funds must be used to "increase or improve services" for these at-risk subgroups.

"This report shines a bright light on issues that educators are preparing to more fully address under this new funding context," says Berliner. "It's no longer an open question of how students in foster care are faring academically. Now that we have solid data, we have a chance to really understand the specific risks and challenges that students in foster care face, so we can target programs and support—like dropout prevention and postsecondary preparation—to help them succeed in school and in life."

For more information about *The Invisible Achievement Gap*, contact Nikki Filby at 415.615.3124 or nfilby@WestEd.org. The report is available for purchase or free download from WestEd.org/bookstore.



BRIEFLY

» The Center on School Turnaround is documenting the process of turnaround efforts, including how that process is shaped by the specifics of place.

» Rural districts often face big challenges in personnel recruitment and in the distance that outside support providers must travel to reach schools.

» Rural schools often must rely more heavily on their own people and resources than do turnaround efforts elsewhere.

Rural Turnaround

challenges and opportunities

Amargosa Valley School could be considered representative of almost any preK–8 school that serves a large proportion of socioeconomically disadvantaged students and is focused on turning around persistently low achievement. Like other schools supported by federal School Improvement Grants, Amargosa is beginning to implement a reform plan toward what they hope will be dramatic improvement. But as a rural school, Amargosa has particular challenges and strengths that set it apart.

Step just outside the doors of Amargosa Valley School and the view is starkly different than anything you would see from an urban or suburban school. Amargosa is in the midst of a desert. It is not merely rural, it is *remote.* The valley has little more than a sheriff's office, community center, and graveyard. There are no students' homes nearby—no one lives close enough to walk to school. Located in Nye County, Nevada, one of the largest geographic counties in the United States, Amargosa's school district is spread over an area so vast (nearly twice the square mileage of New Hampshire) that a fleet of 100 buses must travel more than 1.3 million miles each year to serve the district's 18 schools.

The Journeys Project of WestEd's national Center on School Turnaround (CST) is documenting Amargosa's story in order to capture lessons of turnaround efforts, from the early stages through implementation. In Amargosa's case, the project also highlights issues that may be unique to rural schools. Across the country, rural schools tend to perform on par with urban and suburban schools, but this broad similarity belies significant underlying differences.

BRINGING THE RESEARCH TO LIFE

The CST's Journeys Project documents some of the very concrete challenges of turnaround, including how these challenges are tied to the specifics of place. "The schools we are following may or may not be successful in their turnaround efforts," says WestEd's Sylvie Hale, who directs the project. "We hope they will be, but we don't know in advance. We're on the journey with them." Following each story as it unfolds, the project team chronicles issues in periodic episodes posted online, and produces webinars and shares relevant research in a blog. The team invites comments from practitioners, researchers, and the general public in order to engage in a dialogue about the turnaround process.

The CST also has administered a questionnaire to senior staff from 13 state education agencies about implementation of turnaround strategies in rural schools and has conducted a review of research literature on rural school improvement. A CST handbook, *The State Role in School Turnaround: Emerging Best Practices*, captures results from this survey and the literature review in a chapter on "Building Rural District Capacity for Turnaround."

Most rural districts, like Amargosa, are small in population and large in geographic area. The handbook chapter notes that a smaller population can mean smaller classes or schools, and smaller districts tend to outperform larger ones. Yet, being spread over a large area may limit the

> The strength and commitment of local community members in a rural area can provide one of the biggest boosts to school turnaround efforts.

district's capacity to manage turnaround efforts because staff must travel so far to reach each school.

Even though Nye County has enough schools to warrant a district office, recent budget cuts resulted in a smaller staff responsible for covering the same 18,000 square miles. Fortunately for Amargosa, its federal School Improvement Grant (SIG) has provided resources for hiring a School Improvement Director to work exclusively to support Amargosa's turnaround effort. But most rural schools don't have this luxury.

LIMITED HUMAN CAPITAL

One of the biggest challenges in rural districts, noted in the literature and in the CST survey results, is limited human capital. Recruiting new administrators and teachers can be difficult, and staff turnover can have an immediate ripple effect in a small community. Any SIG recipient must follow a particular model for improvement. All three SIG models that schools can choose from require replacing the school's principal; some require replacing a majority of the staff. In remote communities that already struggle to attract teachers and administrators, this approach is usually neither possible nor desirable.

According to WestEd's Heather Mattson, who coordinates the Journeys content team, Amargosa chose a SIG model that doesn't require replacing teachers: "Being a rural school, they thought it might be too difficult to hire," she explains. "But, by the summer before they started to implement the grant, more than half of their teachers had left anyway." The resulting need for recruitment posed a serious challenge. The school had just eight weeks to fill 8 of its 14 certified positions, including the critical positions of counselor, reading specialist, and special education teacher.

It was particularly difficult to recruit and hire a new principal. The district attempted a nationwide search, but ended up with very few candidates from outside the local area. District leaders felt fortunate that they were able to hire a strong candidate nonetheless. Robert Williams was a Teacher on Special Assignment who had recently been managing the school after the principal was reassigned. Williams was tapped for his in-depth knowledge of the school and its turnaround plan and because he was considered "a leader with a lot of potential," according to the district's superintendent.

To help address rural schools' staffing needs, many state education agencies (SEAs) provide support in the form of career fairs, access to alternatively certified teachers, and strategic partnerships. Rural schools and districts also may offer bonuses, additional pay, or travel expenses to attract candidates. Perhaps most importantly, rural schools and districts are trying to create an environment where enthusiastic, committed, and effective teachers and leaders want to be. As noted in the handbook, "An environment of success and collaboration is attractive to potential recruits." Williams has used this strategy to recruit teachers, telling potential hires that the work will be challenging but that Amargosa has a multiyear, comprehensive plan for helping students learn and thrive.

In addition to addressing staffing challenges, low-achieving schools must focus on improving teaching practices,

which requires providing access to professional development and opportunities to collaborate and share resources. This, too, can be a challenge in rural communities where the teaching staff is smaller (often one teacher per grade level) and professional development opportunities are limited because education service providers are often far away, resulting in considerable travel time and costs.

The sheer distance between Amargosa and other schools has created large challenges for networking and connecting with potential sources of support such as grade-level Professional Learning Communities (PLCs). Amargosa's plan for conducting a PLC with a "nearby" school (over 50 miles away) via an online software program ran into major problems. As soon as teachers logged on to the program, it slowed to a halt—the school simply did not have enough internet bandwidth. The school and district have since solved this problem, but it temporarily delayed effective group conversations.

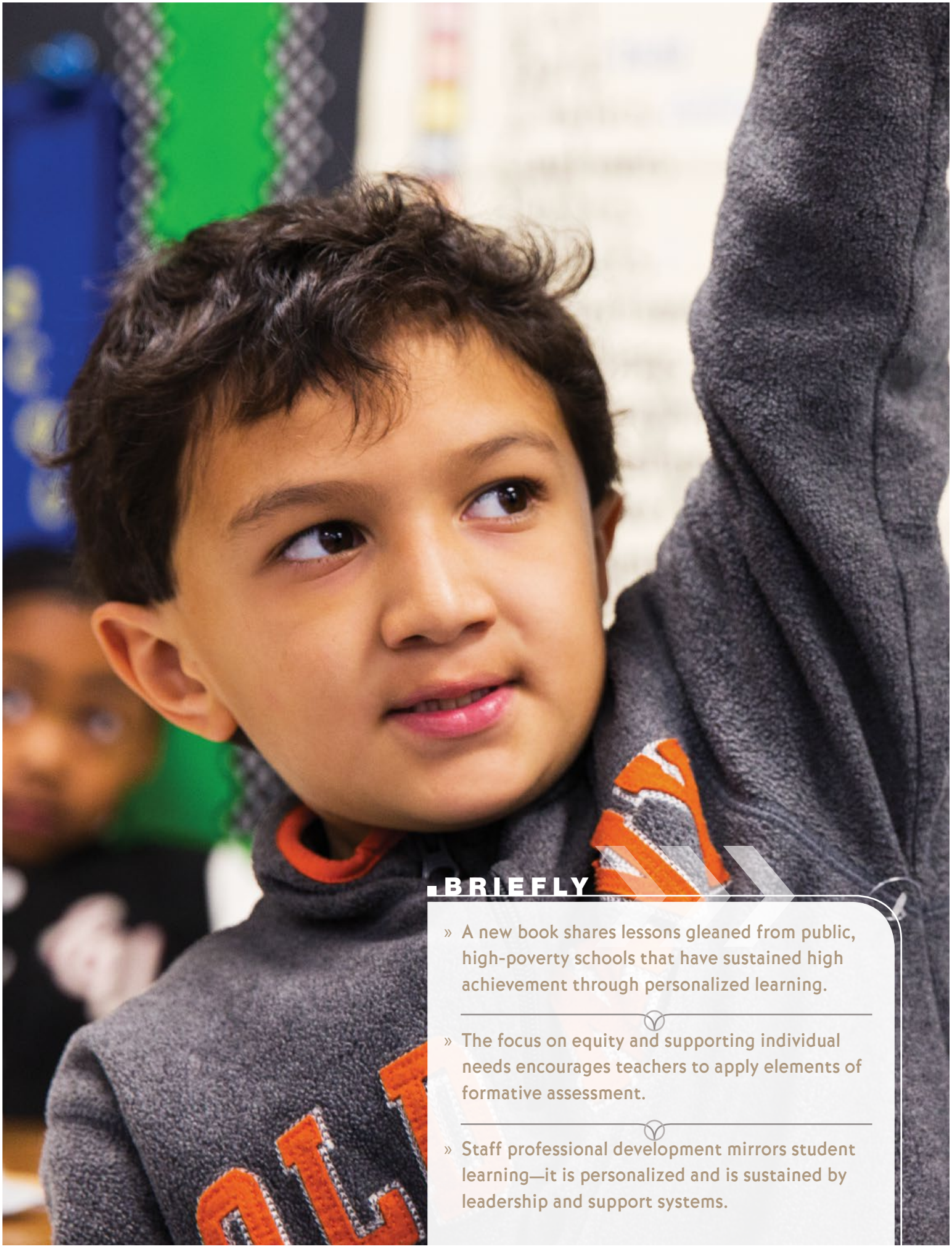
The CST handbook chapter discusses how SEAs can assist rural schools with recruitment and retention of staff and access to professional development. Some SEAs gather groups of rural districts together for shared professional development and collaboration, for example, or offer technological support to share resources and knowledge across remote areas.

STRENGTH FROM WITHIN

In the face of significant challenges, a rural school may have to rely "more heavily on its own resources and ingenuity to drive its improvement than elsewhere," according to the CST handbook chapter, which notes that people are at the heart of rural communities, schools, and districts. The strength and commitment of local community members in a rural area can provide one of the biggest boosts to school turnaround efforts. There are likely to be strong connections and ample opportunities for interaction among staff, parents, and community members, which can provide important support to a school. The local school board is likely to pay close attention to its schools, and a rural school is often a community gathering place and "point of pride for the community," according to the CST handbook. The community's investment and commitment can help tremendously to support student motivation and success.

Sam Redding, Associate Director of the CST and coauthor of the handbook chapter on rural turnaround, has written of Amargosa: "Don't count out the gritty folks in this community. On one side of the ledger are the factors weighing against a small, remote school with a high mobility rate. On the other side are strong and committed school people and a community that will applaud their candid appraisal of what needs to be done for kids and their bold actions in making it happen.... This is a turnaround journey worth watching, and we will all learn from the trip."

For more information on rural turnaround and the Journeys Project, please contact Sylvie Hale at 415.615.3188 or shale@WestEd.org, or visit centeronschoolturnaround.org/journeys.



BRIEFLY

» A new book shares lessons gleaned from public, high-poverty schools that have sustained high achievement through personalized learning.

» The focus on equity and supporting individual needs encourages teachers to apply elements of formative assessment.

» Staff professional development mirrors student learning—it is personalized and is sustained by leadership and support systems.

Equity-focused

schools carry all students to high levels

Despite decades of experience supporting efforts from local to state levels to improve learning for underserved students, Sonia Caus Gleason and WestEd's Nancy Gerzon could not point to examples of entire schools accomplishing what they believed was possible: high-poverty public schools personalizing learning for all students to consistently reach high achievement.

They began asking colleagues to identify exemplary schools that met their dual criteria of high poverty and high achievement. A typical response: "I don't know any, but tell me when you find them."

Gleason and Gerzon persisted, eventually selecting four schools to study in depth. "The schools actually *exceeded* our expectations," says Gerzon, a WestEd Senior Program/Research Associate. "The sophistication and intensity with which they personalize learning for students and staff goes well beyond what we thought we'd see."

She and Gleason capture what they learned from these four exemplary schools in a new book, *Growing Into Equity: Professional Learning and Personalization in High-Achieving Schools*, published by Corwin.

Each of the case study schools serves significant numbers of low-income students (ranging from 46 to 80 percent of the school's total) and has had rising student achievement for 5 to 10 years—not only for its general student population but also for each of its disaggregated subgroups, such as English learners and students of color. Each has pursued personalization for students across the board to reach equity in learning. Student achievement surpasses state averages, and a large majority of each school's students reaches high achievement levels.

"We were looking for schools where every single student mattered and did well, whatever their background," wrote the authors. The schools they selected to study: Stults Road Elementary in Dallas; Social Justice Humanitas Academy, a small high school in Los Angeles; Montgomery Center School, a preK–8 school in Vermont; and Tusculum View Elementary School in Greeneville, Tennessee.

The authors found many elements that have surfaced in other studies of high-performing schools, such as heavy teacher collaboration and high academic standards. But a focus on *equity* turns out to be what sets these particular examples apart and constitutes the first of three main findings that the book details:

1. Equity is a core value that drives everything else. Every student is expected to succeed, and "the focus on equity compels educators to become increasingly precise in personalizing student learning," says Gerzon.
2. Professional development is key and, like the personalization of student learning, is personalized for each educator.
3. Leadership and support systems sustain and guide the focus on equity, personalization, and continuous improvement.

COMMITMENT TO EQUITY DRIVES PERSONALIZATION AND HIGH EXPECTATIONS

"Equity is *the* fundamental value exhibited by these schools," says Gleason, a professional learning consultant and coach. "It's visible through public commitments and specific practices." It means educators focus not just on the needs of a generalized body of *all* students, but attend specifically to the needs of *each* student.

A central and striking quality of the case study schools, according to Gleason and Gerzon, is that every student is known well—and not just by one teacher but by many. Toward this end, Montgomery Center has its middle school subject matter teachers work with the same students for three years. And Beth O'Brien, the principal, notes that for children in special education, "they are not only the special educators' responsibility, they are *all* of our responsibility."

Teachers in these schools probe deep to understand the interests, home background, parents, and culture of each student, as well as the child's learning style and academic strengths and weaknesses, says Gleason. They also tap the community to help personalize instruction. Tusculum View Elementary, for example, uses parent volunteers, retired teachers, peer tutors, community mentors, and college students to work with students.

The case study schools have very little whole-class teaching, no mixed expectations, no grading on a curve or teachers working in isolation. Instead, students work often in small groups or at learning stations on personalized lessons. "Student groupings are flexible; we don't assign classrooms by reading level," says Tusculum View Elementary's principal Patricia Donaldson. "A teacher might begin class with a short whole-group lesson but will then move students into small groups or send some to work individually on computers with a prescriptive learning path or other projects. Within the small groups, there may be further differentiation."

DRIVE TO PERSONALIZE ENCOURAGES FORMATIVE ASSESSMENT

Having worked extensively with schools, districts, and state education agencies to deepen formative assessment practices, Gerzon expected formative assessment to be a major contributor to the success of these four schools. Although she found that none had yet undergone extensive training in formative assessment practices, the schools' focus on equity and supporting individual needs was leading teachers to apply elements of formative assessment.

Gerzon says the schools she observed had begun to use more data, including data related to daily instructional goals. "The teachers look at evidence regularly," she notes. "They are getting smarter all the time about how to use that evidence."

Tusculum View, for example, uses technology-based programs that include formative-like assessments to track individual student learning and data that help teachers shape instruction, Donaldson says. A reading program used by the school provides explicit, systematic, personalized instruction and provides ongoing performance data and analysis.

"We keep refining. We are a lot better in using formative assessments and hard data for planning than we were even four years ago," Donaldson says. "Student conferencing has been another tool for using formative assessment information. Teachers frequently work with students individually to help master skills before the final

> Equity is *the* fundamental value exhibited by these schools. . . . It's visible through public commitments and specific practices.

assessment. The students can tell where they are, what they are strong in, what they have mastered, and what they need to know."

Similarly, Montgomery Center's O'Brien says her school has "come a long way" in using assessments and evidence to shape instruction. The use of evidence accompanies a fundamental shift in all four schools toward thinking it is high academic achievement, not time, that must be the constant in education. Teachers act on the belief that all children can reach lofty academic goals, though students will travel different paths at different paces to reach those heights.

PROFESSIONAL LEARNING AND SCHOOLWIDE SYSTEMS SUPPORT SUCCESS

Gleason and Gerzon emphasize that successfully creating a culture of personalization and high achievement requires continuously building educators' skills, knowledge, and dispositions. It requires a culture of ongoing professional learning that is supported by leadership. In the four schools, they observed that the equity focus and personalization drive have shifted professional learning in fundamental ways. It now mirrors student learning in that professional development is personalized. The schools' leadership and support systems promote ongoing, customized professional learning.

When O'Brien became principal at Montgomery Center in 1999, she set out to cultivate a learning culture among teachers. "We were not a collaborative culture," she says. "So we began focusing on really developing excellence in teaching and using data to plan support and intervention."

O'Brien began to learn about the concept of professional learning communities (PLCs)—structures that help educators inquire about and solve problems and reflect on their work together. And in a practice characteristic of all the case study schools, says Gerzon, everyone studied the PLC concept, built a common understanding, and then carried it out with fidelity. Montgomery Center used PLCs to introduce team-level analysis of curriculum, instruction, and assessment. The school also created grade-level PLCs, a middle school PLC, and an Academic Student Support Team to track the impact of student interventions over time.

All of the case study schools have grade-level or multigrade teacher teams, vertical teams to align the curriculum across the grades, team leaders, and scheduled meeting times of at least an hour a week, usually more. Most also have data teams. And professional development is differentiated so teachers can choose areas where they want to improve. "We assign adults based on what we know the adult's strengths are and on the needs of the kids," says O'Brien. "We put the most highly trained person with the most needy learner." Tusculum View also uses an instructional specialist to help new teachers and, increasingly, experienced ones to refine their teaching and personalize their professional development, Donaldson says.

These four cases show how public schools can both raise the bar and close the gap—increasing learning for *all* students. "The schools featured in these cases are front runners for what is possible at every school," says Gleason. "We saw that public schools *are* able to personalize learning for every student, and all achieve at high levels."

For more information on *Growing Into Equity*, contact Sonia Caus Gleason at 617.943.1721 or sonia@soniacausgleason.org, or Nancy Gerzon at 781.481.1108 or ngerzon@WestEd.org.

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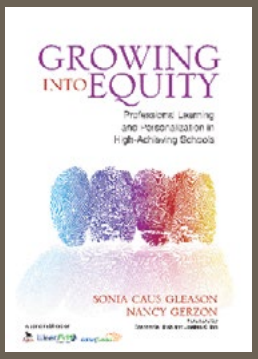

Growing Into Equity: Professional Learning and Personalization in High-Achieving Schools

Sonia Caus Gleason and Nancy Gerzon

What makes a Title I school high achieving? Professional learning and leadership that support personalized instruction makes the difference, as captured in the groundbreaking research of authors Sonia Caus Gleason and WestEd's Nancy Gerzon. Discover new approaches for individual, team, and whole-school professional learning that support personalized learning, drawn from schools that are leaders in overcoming challenges and creating opportunities.

ISBN: 978-1-4522-8765-2 | 216 pages | Corwin, 2013 | $31.95

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Vanessa Barrat and BethAnn Berliner

This first-of-its-kind analysis links data from California's education and child welfare systems to create an education snapshot of K–12 students in foster care in California. The report details a previously invisible achievement gap between children in foster care and other students, including students with low-socioeconomic status, English language learners, and students with disabilities.

Product #: CFTL-13-01RD | 116 pages | WestEd, 2013 | $19.95; PDF: free

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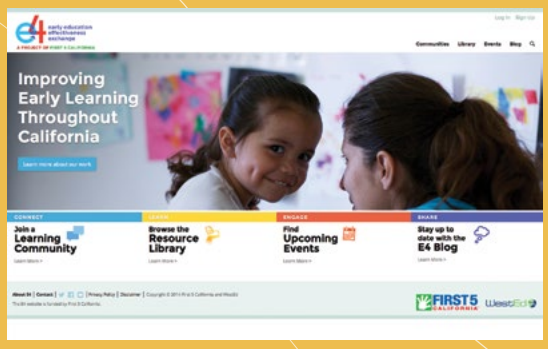
E4: Early Education Effectiveness Exchange



The E4 is a training and technical assistance resource that facilitates quality improvements in early learning programs throughout California. The E4 website offers:

» Learning Communities where new and experienced early educators can connect with colleagues and share resources and ideas

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▸ http://f5cae4.org

Data for Decisions

A new website helping educators use data for effective decision making

WestEd's Data for Decisions Initiative (DDI) seeks to help educators, policymakers, and researchers in accessing solution-driven tools, resources, and research so that high-quality data use can successfully inform teaching and learning. The DDI website provides:

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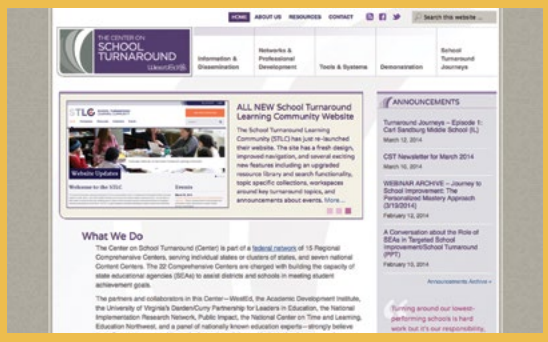
» Technology supports for alignment of embedded assessments with standards and targets

» Technology-enhanced, curriculum-embedded assessments

» Technology supports for teacher use of formative assessment processes

▸ DataforDecisions.WestEd.org

Center on School Turnaround website



WestEd's Center on School Turnaround provides technical assistance and identifies, synthesizes, and disseminates research-based practices and emerging promising practices to help state education agencies increase their capacity to support districts in turning around their lowest-performing schools.

The Center's website offers valuable information, webinars, opportunities to network and pursue professional development, and the School Turnaround Journeys Project, which documents schools throughout the turnaround process.

▸ CenteronSchoolTurnaround.org

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such as making sure instructional materials integrate visuals in strategic ways that complement a lesson's key concepts and skills, or finding ways to maximize the use of students' limited working memory.

"Little things, done over time, become cumulative, and can make a big difference," Davenport says. "So just spending a few extra minutes every day focusing on exactly the right information can lead, over the course of a school year, to much deeper understanding."

For more information about the Math Center's work, contact Steve Schneider at 650.381.6410 or sschnei@WestEd.org, or Jodi Davenport at 510.302.4274 or jdavenp@WestEd.org.

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