

R&D ALERT

Powerful professional development for science teachers

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Surprising findings on how to deter youth crime

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Quality online material bridges research and practice

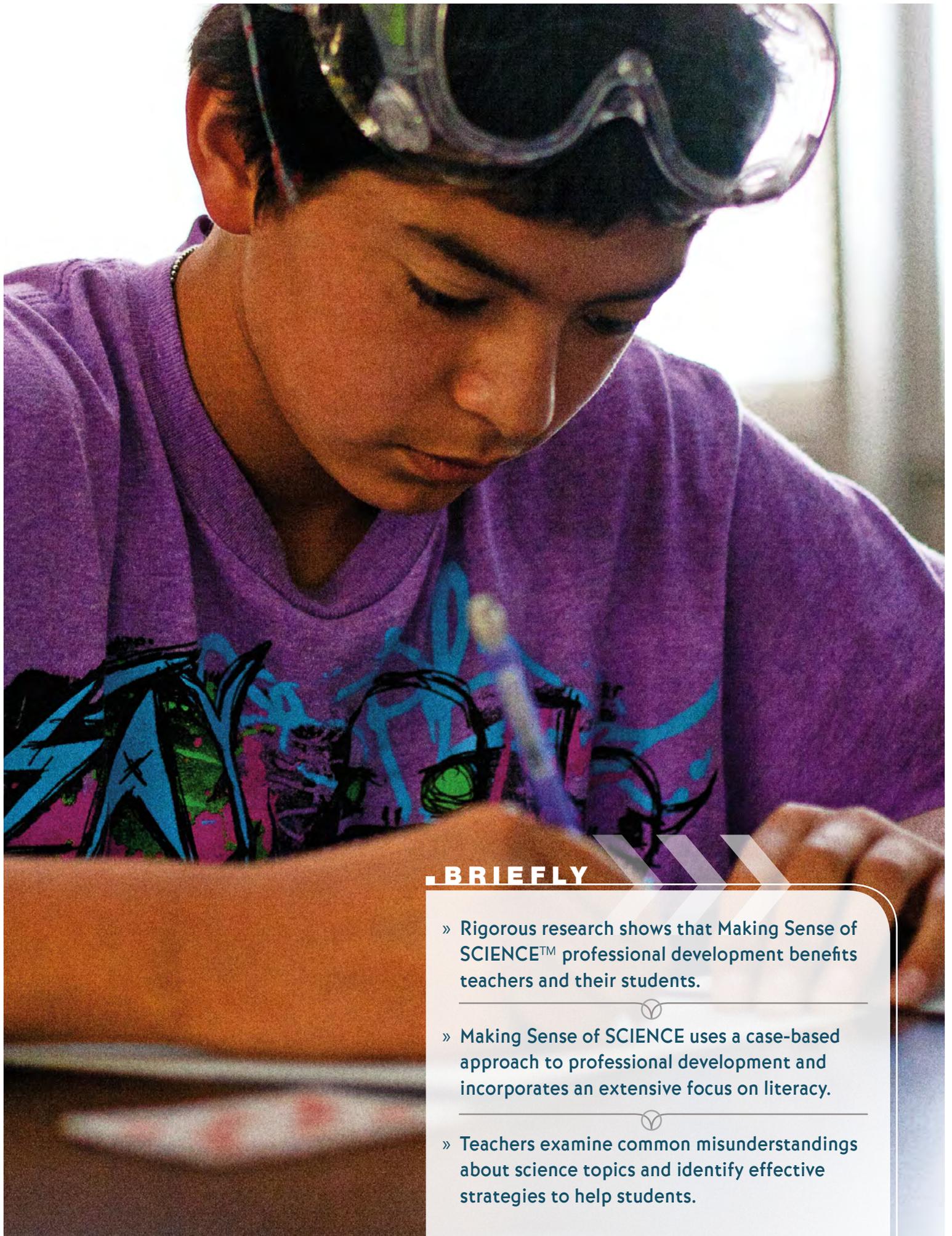
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The Center for the Future of Teaching and Learning joins WestEd

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timely knowledge for education and human development





■ BRIEFLY

- » Rigorous research shows that Making Sense of SCIENCE™ professional development benefits teachers and their students.

- » Making Sense of SCIENCE uses a case-based approach to professional development and incorporates an extensive focus on literacy.

- » Teachers examine common misunderstandings about science topics and identify effective strategies to help students.

Science learning for teachers that improves *students'* achievement

Many professional development programs can document a positive impact on teachers who participate. But does the professional development make any difference for *students*?

Remarkably few programs can answer that important question positively (or at all). But for WestEd's Making Sense of SCIENCE™ professional development, according to several rigorous large-scale research studies, the answer is a resounding yes. The professional development improves teachers' science and literacy understanding, as well as pedagogical content knowledge so effectively that their *students' learning* benefits significantly. According to a recent study, students whose teachers participated in the professional development outperformed comparable students by more than 40 percent.

Teachers and teacher educators across the country have been taking note. As director of education at Discovery Place, a science and technology museum center in Charlotte, North Carolina, Stephanie Hathaway often provides resources and training for teachers in the region. So when she got the opportunity several years ago to learn a method of showing teachers how to deepen their own science knowledge while also clearing up students' misconceptions, she quickly signed on. Now the center has partnered with local schools to broadly adopt Making Sense of SCIENCE professional development.

"My colleagues and I believe the WestEd program is the most impactful professional development we've ever participated in," Hathaway says. "Breaking down some of the misconceptions people usually have about science content is one of the most powerful things I've seen with teachers. The curriculum is geared toward teachers rather than students, and it's not the kind of make-and-take activity you typically get."

Using a case-based approach, similar to what helps doctors, lawyers, and other professionals wrangle with the ambiguities of knowledge in practice, Making Sense of SCIENCE provides teachers with tools to examine common misunderstandings about science topics — for example, incorrectly equating the concept of *energy* with a *force* or *power*. After collaboratively analyzing student work in the case, teachers work with colleagues to identify effective interventions for students. Teachers also focus on literacy by exploring the language of science and how to use it to communicate with students and represent concepts in different ways.

"Teachers typically say this is the hardest professional development they've ever been to, but also the best," Hathaway says.



According to a recent study, students whose teachers participated in the professional development outperformed comparable students by more than 40 percent.

PROVEN EFFECTIVENESS

Research backs up that claim. Multiyear randomized controlled studies involving middle and elementary school students show that Making Sense of SCIENCE has a statistically significant impact on both teachers' and students' learning. The results hold true across multiple states, in districts of various sizes, with novice and veteran teachers, and with students from a range of socio-economic backgrounds and English proficiencies. Teachers' science knowledge is shown to increase at levels normally attained only from one-on-one tutoring, and their students significantly outperform control groups on tests of science content knowledge.

Perhaps most impressive are results showing that English language learners and low-performing students made the biggest strides in understanding science. "Those who had the most to gain gained the most," says Kirsten Daehler, WestEd Senior Research Associate and director of the Understanding Science for Teaching team, which began developing Making Sense of SCIENCE in 1998. The research reveals what Daehler calls "a cascade of influences" from the professional development to the teacher to the classroom to the students.

Another crucial finding is that the learning lasts. Teachers retain knowledge well beyond the initial training. As they gain confidence in their own understanding and become more comfortable sharing insights and problems with colleagues, they also develop a wider range of strategies to help students.

"I think it's such in-depth learning that it sticks with them. That is not typical," says Kevin Niemi, outreach program

manager with the Institute for Biology Education at the University of Wisconsin-Madison.

Niemi works with teachers in the Madison Metropolitan School District, one of the implementation sites for Making Sense of SCIENCE. He says the WestEd courses proved so beneficial and rigorous that the university and the district adopted a plan to let participating Madison teachers earn graduate credits in science education.

"I think what's unique about WestEd's program is the application of the knowledge," Niemi says. "It creates discourse between teachers. It's not the expert standing at the front of the room. It's we as a group of professionals who help each other."

MOVING FROM SCIENCE MYTHS TO MASTERY OF LEARNING

The Making Sense of SCIENCE series focuses on core topics in earth, life, and physical science for grades K–8. Each of the 15 courses in the series, such as the one on Force & Motion, provides 40 hours of professional development: a Core Course, which includes intensive science and literacy learning, typically done during a one-week summer institute; and Looking at Student Work, a set of follow-up activities teachers use during the school year to collaboratively examine work samples from their own students.

Each course provides a mix of direct instruction, discussion, hands-on learning, reading and writing, and reflection. Core components include:

» **Science Investigations.** Teachers work through hands-on experiments and other activities that

often mirror what students might do in a classroom, but in a way geared to adult learners. The activities enable teachers to acknowledge their own misunderstandings about science topics and build bridges to common pitfalls that students might have.

- » **Literacy Investigations.** Scientists communicate with a variety of words, images, symbols, and actions — from reading graphs and diagrams to writing lab protocols. Based on work of the National Writing Project and WestEd’s Reading Apprenticeship program, each Making Sense of SCIENCE course focuses extensively on literacy to build teachers’ understanding of and facility with these science-specific ways of reading and writing.
- » **Teaching Investigations.** Through discussion of written cases about actual classroom practices and by sharing their own experiences, teachers reflect on ways of translating science to students and then evaluating their students’ understanding.
- » **Classroom Connections.** Making Sense of SCIENCE courses include time to read about and discuss why some students fail to learn. Teachers move from avoiding the most vexing instructional challenges to collaboratively confronting them, so teachers can anticipate and be able to solve common classroom problems in learning science. “We go for the jugular,” Daehler says. “We don’t waste time on things that are easy.”

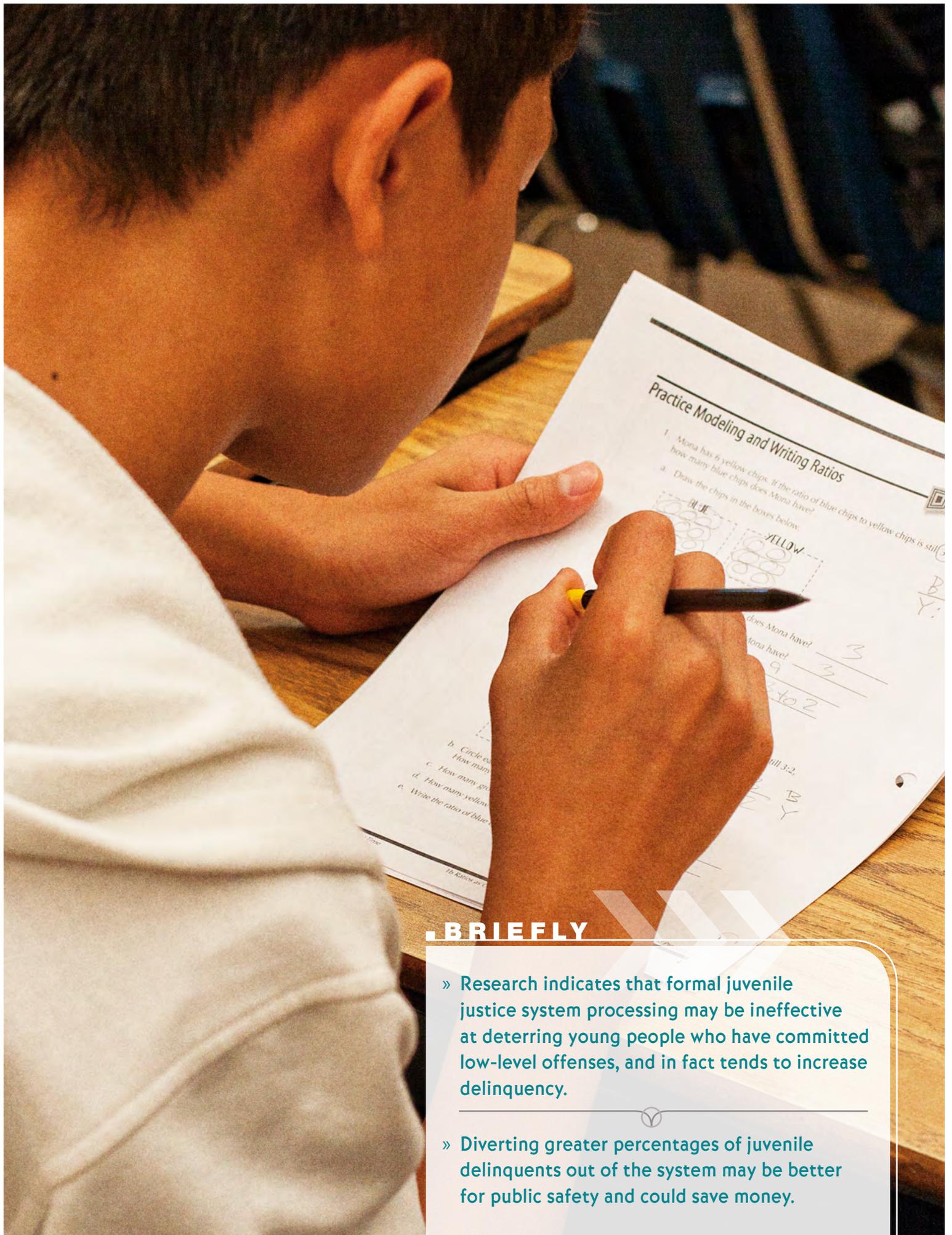
Kathy Huncosky, a science instructional research teacher in Madison, describes herself as someone trained predominantly in general elementary teaching methods who later specialized in science. After WestEd’s training and then becoming a facilitator of Making Sense of SCIENCE courses, she discovered the difference between listening to a science lecture and working like a scientist.

Matthew Ellinger, a former elementary teacher and principal who wrote some of the case studies, says working on Making Sense of SCIENCE gave him a clearer sense of the trajectory of science education, such as why textbooks introduce magnets before motors. It also helped him see that while his science lessons were often engaging to students, they were not necessarily enduring. “From my casual stance [my students] seemed to learn a lot of science, but I didn’t know how to back that up with samples of student work or with what students actually said or did,” he says. “It was an important shift for me.”

“I think there is something really transformative for teachers who participate,” Daehler says. “They start off thinking their job is to teach science to kids, and then come to recognize the importance of understanding kids’ ideas and helping their students move toward more accurate and complete mental models in science.”

The development and evaluation of the Making Sense of SCIENCE courses has been supported by the National Science Foundation, the Stuart Foundation, the Institute of Education Sciences, and the W. Clement & Jessie V. Stone Foundation. In June 2011, WestEd in partnership with the National Science Teachers Association (NSTA) began publishing a series of books with companion CDs that provide all the materials needed to implement the courses for teachers and to learn how to facilitate them.

That’s good news for educators such as Kathy Huncosky, who says the Madison district has chosen to adopt Making Sense of SCIENCE as its K–8 professional development model. Many Madison teachers who completed the WestEd courses have continued to collaborate on their



Practice Modeling and Writing Ratios

1. Mona has 6 yellow chips. If the ratio of blue chips to yellow chips is still 3:2, how many blue chips does Mona have?

a. Draw the chips in the boxes below.



How many blue chips does Mona have? 3
How many yellow chips does Mona have? 6
3 to 2

- b. Circle every 3 blue chips.
- c. How many groups of 3 blue chips are there?
- d. How many yellow chips are there?
- e. Write the ratio of blue chips to yellow chips.

BRIEFLY

- » Research indicates that formal juvenile justice system processing may be ineffective at deterring young people who have committed low-level offenses, and in fact tends to increase delinquency.
- » Diverting greater percentages of juvenile delinquents out of the system may be better for public safety and could save money.

I N C R I M E P R E V E N T I O N ,

What Is **Best** for Young People?

When a 14-year-old throws a brick through a school window, or shoplifts, smokes marijuana, or commits some other low-level criminal offense and is caught in the act, how should society respond?

Many assume that formally processing the young person through the juvenile justice system would drive home the seriousness of crime and, thereby, discourage future offenses. But extensive research suggests that the exact opposite is the case — actually removing young people from the formal juvenile justice system turns out to be more effective and likely less expensive.

"Juvenile system processing appears not to have a crime control effect, and across all measures appears to increase delinquency," concludes the 2010 Campbell Collaboration report, *Formal System Processing of Juveniles: Effects on Delinquency*, coauthored by WestEd Senior Research Associate Anthony Petrosino and Research Associate Sarah Guckenburg (with Bridgewater State University professor, Carolyn Petrosino).

Based on a systematic review of the best existing evidence, the authors compared the crime-deterrent effectiveness of different paths by drawing on study data in which young offenders were randomly assigned to be processed through the official juvenile justice system or, instead, to be dealt with in an alternative way — either released outright or assigned to a formal diversion program. Drawn from 29 randomized experiments involving 7,304 low-level juvenile offenders (age 17 or younger) from 1973 through 2008, the data show that the young

people who went through the system were more likely to commit subsequent crimes than those assigned to a diversion program with services.

Even those who were released outright were slightly less likely to commit subsequent offenses than those who had been assigned to the formal system — and that deterrent effect was achieved without the substantial costs of running young people through the formal system.

As Petrosino sees it, by formally processing young people who commit low-level crimes, "we are kicking ourselves twice. Removing kids from the system," he says, "is both cheaper and more effective for crime control."

The report authors conclude: "Given the financial costs associated with system processing (especially when compared with doing nothing) and the lack of evidence for any public safety benefit, jurisdictions should review their policies regarding the handling of juveniles."

THE JUVENILE JUSTICE SYSTEM

To understand the report's findings, it is helpful to know how the formal juvenile justice system works. What happens when that 14-year-old is caught throwing a brick through a window? The answer is complicated because,



We are kicking ourselves twice. Removing kids from the system is both cheaper and more effective for crime control.

from the moment a youth is apprehended and at every step thereafter, the law allows enormous discretion in how the system responds to this type of offense.

Officials at each step — including police officers, district attorneys, juvenile court intake officers, juvenile and family court judges, and others — can decide whether the young person should be officially processed (that is, sent further along the path to juvenile or family court), diverted to counseling or other services, or released altogether.

Different states and local jurisdictions have different rules and options, but generally the final possible step in the system is to appear before a juvenile or family court judge for *adjudication*, a process in which the judge reviews evidence, hears testimony and arguments, and determines whether the youth is guilty of the offense. If so, the judge then determines the disposition, or penalty.

Despite the sensationalized picture often painted by the media of violent juvenile crimes, most cases in juvenile court systems involve less serious offenses. The population in the Campbell Collaboration report included very few offenders accused of more serious personal offenses, like robbery. The population was largely made up of first- or second-time offenders, most likely involved in property or drug offenses.

"Kids like these are on the cusp," says Petrosino. "Their crimes are too serious for a slap on the wrist, but perhaps not serious enough to put through the system."

IMPETUS FOR THE RESEARCH

Given all the different potential paths through and out of the system, which ones lead to the best outcomes?

"All along the way there are diversion points where kids can be kicked out of the juvenile justice system," notes Petrosino. "Whether these points are used enough or effectively is the question."

The question is not a trivial one. The National Center for Juvenile Justice reports that in 2005, 1.7 million delinquency cases were processed in the U.S. at the juvenile court intake stage, meaning the district attorney had brought charges. Sixty percent of those cases proceeded to formal processing, while 40 percent were removed from the system, either released or diverted to an alternate program.

One major impetus for the 2010 report was to provide feedback to juvenile court judges who want evidence-based guidance on how best to handle these kinds of cases, especially those involving "kids on the cusp." As a Research Fellow at the Academy of Arts and Sciences in Cambridge, MA, from 1999–2004, when Petrosino explored possible research projects to inform the juvenile court system, he learned that juvenile judges simply lacked strong evidence either from research or their own data-tracking instruments on the most effective ways to handle juvenile offenders.

Based on his extensive research and reports about programs like Scared Straight, Petrosino already had strong ideas about what doesn't work in the realm of crime prevention. Popular in the late 1970s, and still used in some regions, the Scared Straight program strives to frighten young people who are considered at risk for criminal behavior into leading law-abiding lives by putting these youth in face-to-face contact with convicts who talk about what led them to prison. But Petrosino's research revealed that, instead of serving as a crime deterrent,

exposure to Scared Straight or similar programs actually *increased* participants' delinquency.

In his own work, and in the wider research about the criminal justice system, Petrosino sees a pattern: The more harshly people are treated in the justice system, the more likely the treatment will backfire. "Scared Straight operates on the theory that if we scare kids — if we bring them to adult prison and have them interface with prisoners — the experience is going to have a deterrent effect on crime. And yet it seems to backfire. Similarly, when we officially process them, the power of the system also seems to have a backfire effect." Petrosino also cites a recent Canadian review examining the relationship between the length of prison sentences and recidivism. That review captures a similar backfire effect. It seems that the harsher the sentence given to a convicted criminal, the worse its outcomes will be in terms of crime control.

"You have to ask yourself, is this a good use of our resources?" says Petrosino. "There have got to be smarter ways to do this."

SEEKING SMARTER WAYS

The authors of the Campbell Collaboration study do not interpret their findings as an indictment of the juvenile justice system. "There will always be a percentage of kids who need to be dealt with more seriously," says Petrosino. "But it is incumbent on jurisdictions to review their current policies. Jurisdictions can direct greater percentages of juvenile misdemeanors out of the system without risking public safety — and perhaps even save some money in the process."

Some of Petrosino's future work will likely focus on understanding "smarter ways" for handling youthful

offenders. In a system that gives so much discretion to its officials, Petrosino sees a key role for empirically based instruments for assessing risk, which can contribute to sounder and more consistent decisions about the best course of action for individual young people. He believes key priorities should include pursuing research and development of risk-assessment tools and training officials in how to use them.

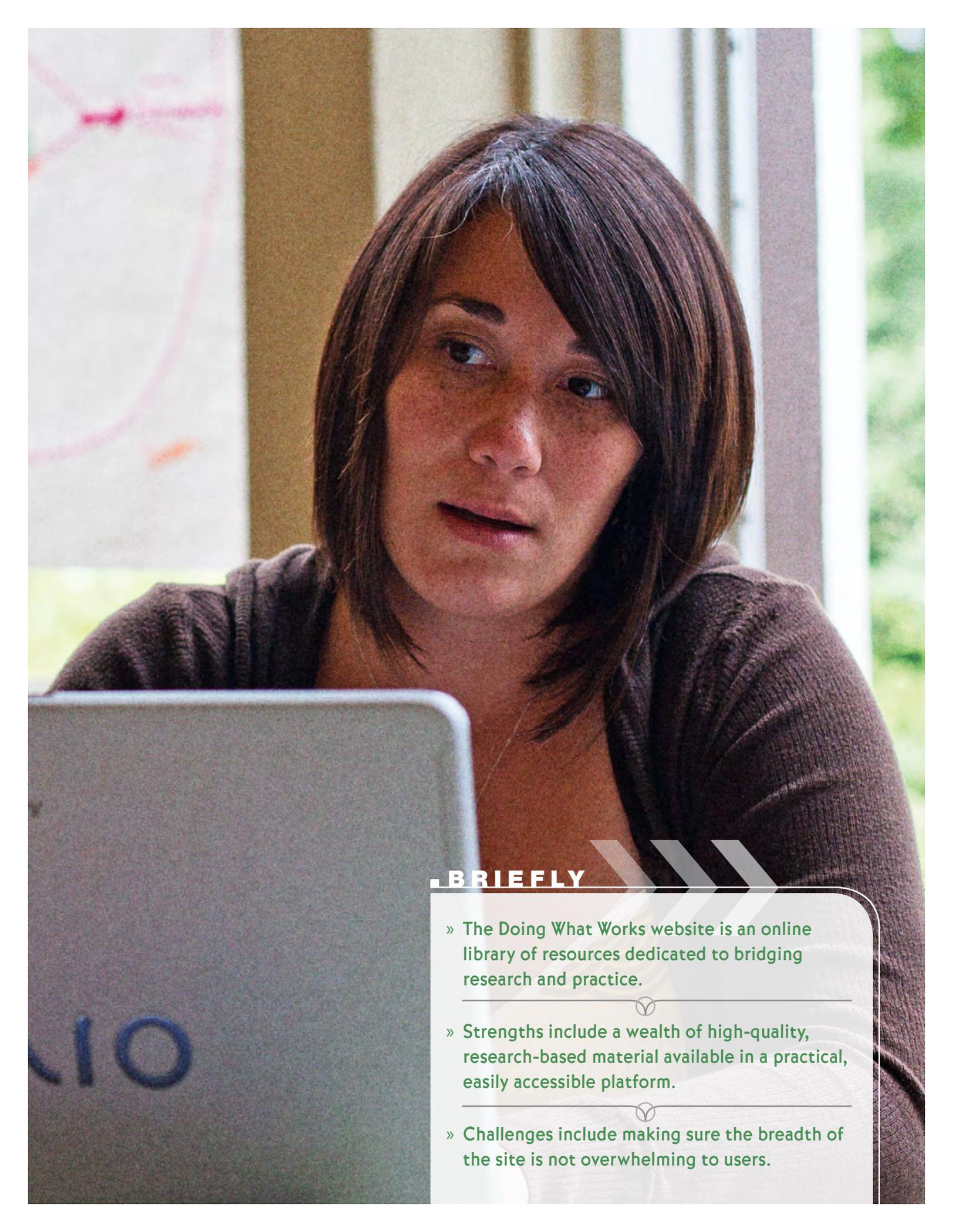
Research is also needed on alternatives to the formal juvenile justice system. For example, after reading the 2010 Campbell Collaboration report, Scott Peterson of Global Youth Justice approached Petrosino and his coauthors about evaluating the effectiveness of "youth court," a non-system alternative program for low-level offenders. In this program, all key court positions — judges, jury members, prosecutors, and defense attorneys — are held by young people.

"If you are the kid who threw the brick through the window," explains Petrosino, "you and your parents might be offered the opportunity to have your case handled by youth court instead of the regular system, provided that you agree to abide by the assigned punishment."

Like many other alternatives to formal processing, youth courts are relatively untested. Petrosino and colleagues are enthusiastic about launching studies of such alternatives, in hopes that more effective programs can provide considerable payoffs by moving young people out of the formal juvenile system process, reducing future offenses, and costing society less.



For more information about the *Formal System Processing of Juveniles* report, contact Anthony Petrosino at 781.481.1117 or apetros@WestEd.org.



BRIEFLY

- » The Doing What Works website is an online library of resources dedicated to bridging research and practice.
- » Strengths include a wealth of high-quality, research-based material available in a practical, easily accessible platform.
- » Challenges include making sure the breadth of the site is not overwhelming to users.

“Doing What Works”

bridges

Research
and Practice

For education research to matter, it must reach educators in a form that is informative and readily usable. Translating research into practice is not a new challenge, but the explosion of online environments and access to multimedia technologies have opened new possibilities for addressing this longstanding challenge.

Enter Doing What Works (DWW), an online library of resources that is “building a bridge between research and practice,” according to WestEd Senior Program Director Nikola Filby. Launched five years ago by WestEd for the U.S. Department of Education (ED), in partnership with American Institutes for Research and RMC Research Corporation, the DWW website includes content based on research undertaken by ED’s Institute of Education Sciences (IES). Its strength lies in its “wealth of high-quality, practical tools that school leaders, service providers, and university faculty can use, particularly for planning and conducting their own professional learning,” says Filby.

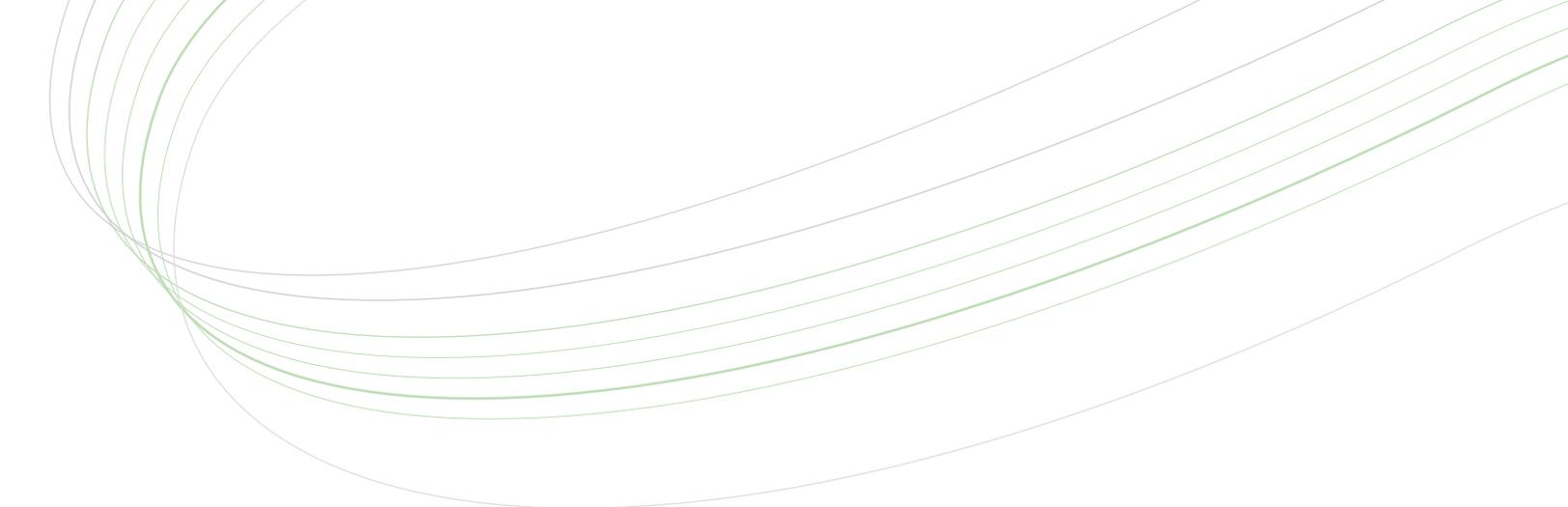
The DWW website provides access to resources in six broad areas: data-driven improvement, quality teaching, literacy, math and science, comprehensive support, and early childhood education. The material is organized into 16 topics, such as: “Turning Around Chronically Low-Performing Schools,” “How to Organize Your Teaching,” “Adolescent Literacy,” and “Encouraging Girls in Math and Science.” Most of the topics correspond to existing IES “practice guides.” More than 400 people have signed up for a webinar on the most recent topic, “Teaching Fractions,” which is particularly relevant to Common Core Standards.

Educators can access all the material on the website – supported by federal funds, free of charge to users. DWW has been used by teachers, professional development providers, coaches, school and district administrators, technical assistance providers, university faculty, data specialists, employees of state education agencies, among others. In October 2011, WestEd was awarded a five-year, \$15-million continuation contract to develop additional content for the website and strengthen outreach and support for users.

IMPLEMENTATION AWARDS HELP FINE-TUNE DWW

Although the DWW website has grown increasingly popular – the number of visits tripled from 2008 to 2011, including a quadrupling of the number of long visits – and users indicate that its content is helping them achieve their goals, Filby says there is still much to learn about how to deliver the resources in an effective manner. In late 2010, to increase use and gain insights into how people were using DWW resources, WestEd granted implementation awards to 26 school districts and other educational agencies – institutions of higher education, national associations, and nonprofits – to use the website’s materials in their professional development programs. The awards typically helped recipients fund planning time, adapt DWW materials, and develop and





pilot professional development relevant to their settings. DWW staff worked closely with local project coordinators, providing technical assistance and other support.

The Spring-Ford Area School District (Pennsylvania), for example, used its implementation grant to have seven elementary schools develop behavior support teams, guided by DWW materials. In the North Kitsap School District (Washington), staff designed professional development that focused on using nonlinguistic representations – such as pictures, diagrams, charts, and models – to reorganize their teaching in order to increase student achievement. According to one of the district’s English Language Arts teachers who participated in professional development organized around DWW materials, “students are better equipped to show their understanding by using a variety of tools and strategies.”

In exchange for the implementation funds, awardees were asked to document how they used DWW materials, describe the outcomes they achieved, and explain how they planned to sustain their programs. A Spring-Ford special education teacher, for example, said the fact that the materials were research-based gave the district’s professional development program credibility. “It’s tiring for teachers to have something new to do each year, so the research base helps them...know that it is worth doing.”

Recipients’ feedback has helped WestEd evaluate the strengths and weaknesses of DWW. One of the main strengths, Filby says, is that it “offers a wealth of quality, research-based material of a sort that has not been available before in a practical, easily accessible platform.”

But, she adds, having so much material turns out to be a mixed blessing. “It’s like a library – a modern library – organized around learning, seeing, and doing, which people tell us makes sense. We’ve learned that because the site is so robust we have to make sure people know what – out of all the material available – is going to be *particularly* useful to them.” Some users have reported that the breadth of resources can be overwhelming, and consequently can require time and skill to figure out how to use the website effectively.

A BRIDGE IN THREE PARTS

The website is organized around a three-part framework that invites educators to “Learn What Works,” “See How It Works,” and “Do What Works.”

According to Filby, “users can learn what the research says” through videos, with transcripts, that summarize the research and explain key concepts of the recommendations; a diagram that serves as a visual reminder of the recommendations; and a short video of an expert discussing, and sometimes demonstrating, the recommended practices. The “Learn What Works” section also provides a link to an IES practice guide.

The “See How It Works” section features video clips of teachers engaged in putting the recommendations into practice and, simultaneously, describing the process. “The videos show the teacher working with her students, but what you hear is a narration by the teacher about what she’s doing, why she did it, and the results,” says Filby. “It’s a much more efficient process than sitting in a classroom observing a 45-minute lesson. In less than four

[DWW] offers a wealth of quality, research-based material of a sort that has not been available before in a practical, easily accessible platform.

minutes, you get a bird's-eye view of a lesson and hear the teacher reflect on what happened." The teachers featured are, according to Filby, working at "real schools doing these things successfully." Profiles of the schools are provided so users can compare them to their own. But Filby notes, "even if the schools aren't all that similar to yours, maybe what they're doing is still applicable."

Lastly, each practice section helps educators "Do What Works" by providing downloadable PDF documents that describe practical ways to put the recommended practices into place and provide the actual tools to facilitate that process. The tools include outlines and agendas for workshops, self-assessment instruments, planning guides, and worksheets to help participants complete tasks such as analyzing how well collaborative time is being used in a school and selecting members of a team to guide the way a school uses data to improve instruction.

Based on input received so far, plans call for making the website even more user-friendly. One enhancement will be to offer more examples of how educators nationwide are using the material. Another will be to improve the search feature "so people can find material for a specific audience or purpose — for example, those materials especially suited for beginning teachers," says Filby. She adds that WestEd staff are also developing more structured professional development packages, such as one that provides a sample agenda and all materials for a two-hour workshop on using data.

Overall, Filby believes principals and other school leaders recognize the value, especially in these hard financial times, of an online resource that takes advantage of

the latest interactive technologies. "Yet, if our goal is to build a bridge between research and practice, we're only partway there," Filby says. "We've made the research understandable and brought it to life through some real-life examples. But we need to keep improving usability, finding more ways to help people know how to put it into action in their own settings. That's the challenge."

Because the implementation awards have proven helpful to the development of DWW resources, "we'll be offering more awards as a way of encouraging people to use the website and let us know how it's working," Filby says. Details will be available on the DWW website. Staff will also make presentations and consult with organizations interested in using the materials.

"Contact us," she says. "We're here to help."



For more information about Doing What Works, contact Nikola Filby at 415.615.3124 or nfilby@WestEd.org.



Q&A with Director Holly Jacobson

The Center for the Future of Teaching and Learning Joins WestEd

The Center for the Future of Teaching and Learning, a respected nonpartisan organization best known for its annual report examining the status of teaching in California, became part of WestEd in 2011, and Holly Jacobson became the Center's new Director.

Prior to leading the Center, Jacobson had spent nearly two decades with the California School Boards Association (CSBA), most recently as its Assistant Executive Director for Leadership Development and Policy Analysis. In that role, she oversaw much of CSBA's policy agenda, including teacher quality, curricula, standards, assessment, accountability, preschool, and charter schools.

R&D Alert recently spoke with Holly Jacobson about the focus and future plans of the Center for the Future of Teaching and Learning at WestEd.

Q: You most recently worked with California school boards. How does that role prepare you for your new job?

A: While I have been able to see how best practices happen at the local level, I also was focused on trying to provide insight and direction on state policy, particularly accountability and assessment issues. I understand that state policy is not always well conceived because legislators are too far removed from the classroom. It's the same issue that people raise with the federal government and accountability: that the federal government can't possibly be thinking of every scenario. So I think there are ways to help support local districts and local policy with sound data that will help inform their practices.

Q: Do you see your role as bringing those parties together?

A: I do. Collaboration is a primary focus for the Center, which for 15 years has been providing research to policymakers to help strengthen the teacher workforce in California.

Q: What does it mean to strengthen the teaching force? What goes into that?

A: Well, it's really looking at the entire spectrum, from how they're prepared through their teacher credentialing program in higher education, how they're assigned in the classroom, and how they're supported in their work through professional development. For example, in this past year's research, we looked at the principal's role in supporting teachers, and we've looked at specific issues related to the teaching profession. One of our concerns has been science education. We recently released a report about how well prepared teachers are to teach science in the elementary grades.

Q: Why the focus on science?

A: Despite the call for STEM-related [science, technology, engineering, and math] priorities in California and nationally, many teachers at the elementary grades do not have a high level of comfort or deep background in science. Also, because of accountability measures focusing almost exclusively on language arts and math, we wanted to know how that has affected science instruction in the elementary grades. And sure enough, teachers



overwhelmingly feel underprepared to teach science. We found that 85 percent of elementary teachers have received no professional development in science in the last three years.

Q: What do you hope the report will achieve?

A: We're hoping policymakers will think about what broader policies can reverse the current trends in science. First, what can be done to ensure that accountability systems don't undermine the goal of providing comprehensive science education for all students? We also think that state and local districts need to be thinking about the kind of professional development that teachers need in science. And as we think about science instruction that is consistent with the National Research Council's framework, which calls for kids to engage in the practice of science and to reason scientifically, that will require a deep understanding of science content plus different strategies for teaching science.

Q: The report finds broad support for better science education training and resources, but this comes at a time of more limited spending for education. How do you persuade policymakers to provide more?

A: I think that policymakers haven't had a lot of pressure to provide resources for science. Obviously, given diminished resources, that's problematic. But time is a resource that doesn't necessarily require a lot of money. Just expanding the amount of time that teachers spend providing instruction in science would be helpful. We found that 40 percent of elementary teachers spend 60 minutes or less per week on science.

Q: How will WestEd's resources and expertise help the Center's work?

A: WestEd has considerable expertise in the STEM arena. NAEP [National Assessment of Educational Progress] is going to come out with its technology and engineering assessment in 2014, offering the Center an opportunity to begin conversations about teacher readiness to deliver technology and engineering content. Within WestEd, our Center can help scale up work in support of teachers and inform policymakers. Together we hope to have a stronger voice on teacher issues at the state level. WestEd has done so much to spread effective practices in classrooms, and, within WestEd, we can now ensure such practices get scaled up on a district and state level.

WestEd also brings tremendous intellectual capacity. It's a phenomenal organization with deep expertise in both research and practice — including professional development and instruction. I think the Center, with our policy expertise, can help spread effective practices even further. And with WestEd's national reach, there are opportunities for the Center to expand beyond California and link to what's happening in other states.

Q: Do you envision a broader reach for the Center?

A: That just came up in relation to the science report. There was a lot of curiosity from the media about how California compared to the rest of the country in terms of the quality and quantity of science instruction. We're looking now at the Common Core Standards to see how well California teachers may be able to address them and what kind of professional development they might need.

The Center's role is also to make sure everyone is aware of the data. We do that in a strategic way in communicating with policymakers on a regular basis, but also communicating with key stakeholder groups and the media.

This might be an opportunity to look at what's happening in other states as well.

Q: Let's talk a bit about media and communications and your role in informing policy. In many cases you've been the deliverer of bad news, such as the report about the scientific literacy gap. Is it possible to be both a messenger and an advocate? Does it set you up as a critic?

A: I think that rather than being critics, our role is to report on what exists. I'm very proud that the Center provides information that hasn't been manipulated by any particular point of view. Sometimes the news isn't good. But it's always better to have the facts and try to make the facts better over time than to not know at all.

Q: Can you say more about how you do your work?

A: We do pure research that involves survey collections. We do case studies. We've recently started doing focus groups. We did a variety of public opinion work to set the stage for the science report. We convene groups of policymakers and practitioners to help us better understand the implications of our research. For the yearly Teaching and California's Future report, we assemble a very large group that includes state-level policy staff, district leaders, teachers, principals, and superintendents. It's a wonderful way for us to learn from the various perspectives, from the classroom all the way up to state policy leaders. That helps us think through how we will organize and report the data.

The Center's role is also to make sure everyone is aware of the data. We do that in a strategic way in communicating with policymakers on a regular basis, but also communicating with key stakeholder groups and the media.

For example, the science report: We never had data about time spent on science instruction. Now we know that 40 percent of elementary teachers spend less than an hour per week on science instruction. People knew there was a problem but they couldn't quantify it previously.

We also prime the pump. Well in advance of the report's release, we talk about the findings with policymakers who might be interviewed by the media so they can have their communication arms ready to respond. The last thing you want is for someone to say, "I haven't read the report yet so I can't comment." That doesn't create energy about our research findings. And when there's energy behind the findings, policymakers are more likely to take action.

Q: So you need to keep them informed all the way through?

A: Exactly, about the good, the bad, and the ugly. Whatever it is, we're letting them know so that they can be prepared.

Q: Your work is really a lot about relationships.

A: Absolutely. It's very important, though, even beyond relationships, that the data source is one that people trust. It's essential that we be impartial and that we tell the full, accurate story – not one that has been manipulated.



For more information about the Center for the Future of Teaching and Learning at WestEd, contact Holly Jacobson at 916.492.4092 or [hjacobson@WestEd.org](mailto:hjacobs@WestEd.org).

Featured Resources & Services

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More information » WestEd.org/mss

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WestEd operates the Region IX Equity Assistance Center, funded by the U.S. Department of Education to serve Arizona, California, and Nevada. With the aim of ensuring that all students have access to equitable education opportunities, the Center provides technical assistance to public schools, districts, state education agencies, and other governmental agencies in the areas of race, sex, and national origin.

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WestEd — a national nonpartisan, nonprofit research, development, and service agency — works with education and other communities to promote excellence, achieve equity, and improve learning for children, youth, and adults. WestEd has 16 offices nationwide, from Washington and Boston to Arizona and California, with its headquarters in San Francisco. For more information about WestEd, visit WestEd.org; call 415.565.3000 or, toll-free, (877) 4-WestEd; or write: WestEd / 730 Harrison Street / San Francisco, CA 94107-1242.

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The Status of the Teaching Profession 2011

This 13th annual report on the California teacher workforce takes an extended look at principals and their vital role in supporting teacher effectiveness. The report also provides new information on budget cutbacks to teacher professional development, declining enrollment in preparation programs, drops in the rate of newly credentialed teachers, and escalating educator retirements.

Authors: Jennifer Bland, David Sherer, Roneeta Guha, Katrina Woodworth, Patrick Shields, Juliet Tiffany-Morales, Ashley Campbell

Publisher: Center for the Future of Teaching and Learning at WestEd, 2011

Pages: 136 / **Price:** FREE online at WestEd.org/cs/we/view/rs/1196

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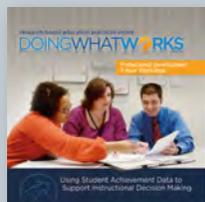


Research-Based Practices for Secondary Schools

Format: Multimedia

Publisher: U.S. Department of Education, 2011

Product #: IN-11-04R / FREE online at WestEd.org/cs/we/view/rs/1193



Increased Learning Time: Beyond the Regular School Day

Format: Multimedia

Publisher: U.S. Department of Education, 2011

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Format: Multimedia

Publisher: U.S. Department of Education, 2011

Product #: IN-11-02R / FREE online at WestEd.org/cs/we/view/rs/1110

Using Student Achievement Data to Support Instructional Decision Making

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Publisher: U.S. Department of Education, 2011

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**continued
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own time and have asked for supplemental training. Huncosky says teachers throughout the district, including those at the high school level, have asked how they can take part.

The Making Sense of SCIENCE model is both adaptable and sustainable because it builds the capacity of districts by training staff developers and teacher leaders to facilitate the professional development in their districts. The growth potential from having locally trained facilitators is key, Huncosky says, as it ensures that districts have the capacity to effectively guide the use and expansion of the program.

Similarly, Kevin Niemi says districts and states must recognize that deep conceptual understanding requires adequate time for teachers to learn. Research supports WestEd's finding that teachers need a minimum of 40 hours

of targeted and measurable professional development to change classroom practices.

"What WestEd does is focus that 40 hours on one topic, such as energy or electric circuits. And those topics are the tough ones to teach when you don't know the content well," Niemi says. "On the one hand, that's a lot of time to invest, but that's what it takes to substantially improve teacher and student learning."



For information about Making Sense of SCIENCE, including information about attending a Facilitation Academy or Teacher Course, visit the project website at wested.org/mss or contact Kirsten Daehler at 650.381.6402 or kdaehle@WestEd.org.

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