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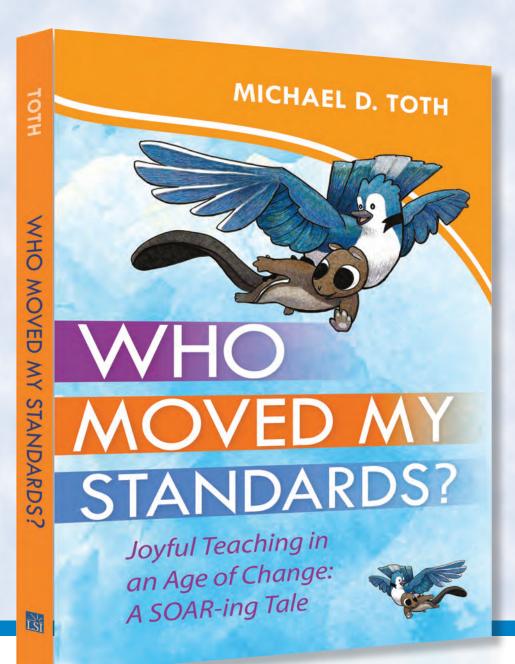
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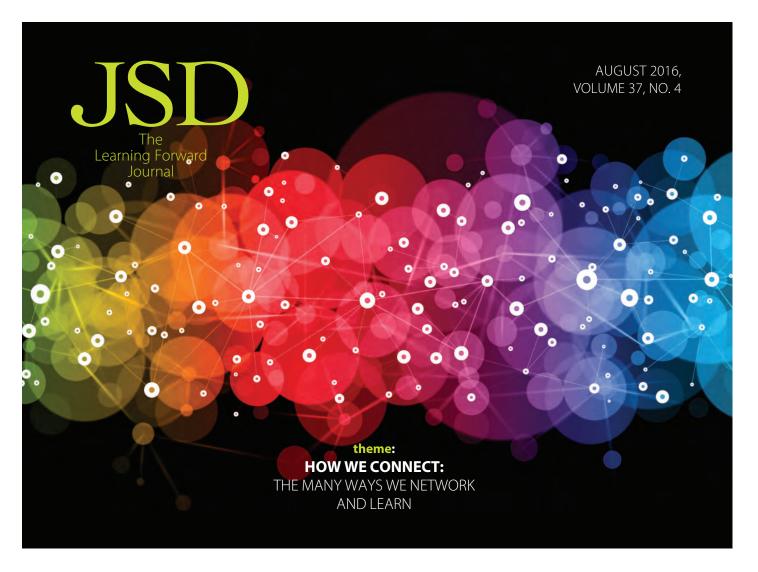




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I FOUND MY LEARNING COMMUNITY. YOU CAN, TOO.

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got involved in #sschat and found a few like-minded peers to interact with," Presley said. "I just work better when I can bounce ideas off someone like myself."

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A program from the Northwest Arkansas Writing Project aims to improve the teaching of academic writing and, in doing so, increase student achievement. Three specific practices would transfer easily to any professional learning community.

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The changing field of professional learning over the past 20 years has also led to changes in the role of central office director of professional learning, reflecting a move toward a school- and teambased, collaborative, personalized, just-in-time approach to professional learning aligned with educator performance and student outcome standards.

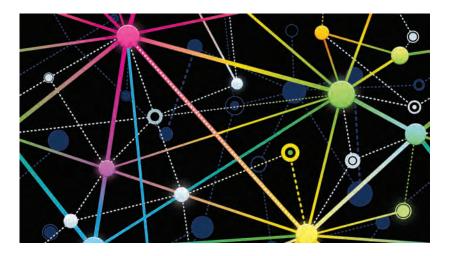


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By Julie A. Brua and Matthew K. Moreland

Working with their classmates and coaches in the Learning Forward Academy, learning leaders in the Aptakisic-Tripp School District No. 102 in Buffalo Grove, Illinois, developed and implemented an action plan to support teacher-driven professional learning that would lead to improved student literacy.



ANNUAL CONFERENCE SPOTLIGHT

6 WAYS TO CONNECT

earning Forward's Annual Conference offers six networking sessions where you can meet colleagues facing similar challenges in job-alike and special interest sessions:

1 NETWORKING MEET-UP FOR SUPERINTENDENTS

Reflect on something you've heard or learned that challenged your thinking, discuss common themes among speakers, or talk about an idea you might like to try implementing in your district.

2 NETWORKING AND SHARING WITH PRINCIPALS AND ASSISTANT PRINCIPALS

Consider the changing roles and expectations for principals and assistant principals. Explore ways in which principals and assistant principals can facilitate school improvement.

3 NETWORKING FOR THE BIG 50

Join a discussion about the major issues facing the largest school districts. Focus on the ways in which students learn across content areas, examine the link between professional learning and student achievement, or discuss the best way to deploy resources.

4 NETWORKING MEET-UP FOR STATE OR PROVINCIAL EDUCATION AGENCIES

Share successful strategies for implementing quality professional

NETWORKING SESSIONS

- 4:45 p.m. to 5:45 p.m. Monday, Dec. 5, 2016
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learning aligned to educator evaluation systems, college- and career-ready standards, and new assessments.

5 FACILITATED STUDY GROUP ON RESEARCH

Learn to connect research and practice. See how to become comfortable using data, research, and program evaluation in daily decision making.

6 NETWORKING SESSION FOR TEACHER LEADERS

Consider teachers' roles in schools and districts and how best to advance teaching and learning. Share next steps you will take when you return to your school or district.

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What we say and what we mean

be use a lot of jargon and shorthand in education, just as other professions do. Our shorthand helps us move quickly through conversations, establishing that we have a shared understanding of an important idea and allowing us to get on to real work.

The danger of using this secret code, though, is that maybe we don't really have a shared understanding of an important idea. Maybe we just think we do and base subsequent interactions on that assumption. Sometimes we waste valuable resources because we each had very different ideas.

Learning Forward is just as guilty of using secret code. We even put code words on the cover of this magazine. I'd like to expand on some of the terms we use throughout this issue just so we're clear on the assumptions that underlie the code.

COLLABORATION

Learning Forward believes that collaborative learning is among the most powerful ways that educators can understand and address their most pressing student learning challenges. However, collaboration — the act of coming together around a shared task or common goal — doesn't in itself constitute learning.

Tracy Crow (tracy.crow@ learningforward.org) is director of communications for Learning Forward. Collaboration leads to learning when colleagues state an intention to gain new knowledge, skills, attitudes, practices, or beliefs. Collaboration without such a stated intention may also lead to learning and to great solutions. However, if the stated purpose of collaboration is learning, educators are much more likely to set and achieve meaningful goals.

COMMUNITIES

As anyone who has participated in a PLC without a plan knows, gathering a group of people and calling it a team or community or task force doesn't constitute learning.

Yet communities can be among the most powerful forums for learning. Communities of practice that focus on authentic problems and a cycle of inquiry advance their understanding and capacity to serve students. They have protocols and structures that prioritize purposeful learning, and they know whether they are achieving the goals they set.

NETWORKING

Making great connections with new people, gathering business cards, setting up future conversations, identifying common interests and acquaintances — these elements of networking can all lead to positive outcomes. The act of doing those things doesn't, however, constitute learning. Networking can lead to learning.

As with communities and collaboration, both intentional and



incidental learning is a valuable outcome of networking when the conditions are right and participants approach their networking with curiosity and a growth orientation.

There are several other terms I could add to this list. Sharing doesn't equal learning. Neither do feedback, team time, or technology platforms. While all of these resources and concepts contribute to and enable the most effective forms of professional learning, they are only useful when learners employ them with purpose and are most likely to lead to change with sustained support and effort.

Without such purpose, none of these things — collaboration, communities, networks, time for learning — is likely to contribute to better results for adults and students, and those who invest in these resources will logically withdraw their support.

We hope that this issue of JSD can contribute to your understanding of how to boost collaboration's potential. We're eager to hear how your efforts pay off. Please let us know any time.



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...and many more! #learnfwd16 Tom Guskey
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Anthony Muhammad Achievement Gap Trap

WHAT'S NEW

- REDESIGN PD TRACK to reimagine and rethink professional learning.
- REDESIGN IMPLEMENTATION AND COACHING SUPPORT SESSIONS to think creatively about how to address problems and measure impact.
- **TECHNOLOGY SHOWCASE** demonstrations with the latest technology solutions to your professional learning challenges.
- SUMMIT SESSIONS provide a 3-hour, in-depth look at topics.
- NETWORKING meet-ups with skilled facilitators for superintendents, principals, teacher leaders, Big 50 districts, state education agencies, and a study group on research.





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essentials

ELEMENTARY FOCUS

Not So Elementary: Primary School Teacher Quality in Top-Performing Systems National Center on Education and the Economy, July 2016

This paper gives new insights into a critical driver of the success of the world's top-performing education systems — developing elementary teachers with deep content knowledge. These high-performing



systems recognize that a strong foundation in the core subjects in the early grades increases the chances that all students will achieve at higher levels throughout their schooling. The report finds that teacher

preparation in Finland, Japan,
Shanghai, and Hong Kong builds
deep understanding of the content
being taught in elementary schools
as well as of how young students
learn and understand that content —
two essential components of highly
effective teaching.

The report also gives guidance on what the United States can learn from these systems to strengthen teaching in elementary schools. In the report, leading Australian researcher Ben Jensen describes how high-performing countries ensure that their elementary teachers have strong content knowledge. They have done so by focusing on the selection of teachers, content specialization, initial teacher education, and professional learning systems in their schools.

www.ncee.org/elementaryteachers



LEARNING PREFERENCES 2016 Results From the SIIA Vision K-20 Professional Learning Survey Education Technology Industry Network of SIIA, June 2016

The survey finds that educators from pre-K-12 and higher education institutions most often enroll in courses that provide training for online software and digital resources and classroom management/ behavior training. "Educators have an increasing number of online professional learning choices that provide them with a flexible alternative to traditional professional development formats," said Karen Billings, vice president and managing director of the Education Technology Industry Network. "The Vision K-20 Professional Learning Survey provides educators and administrators with critical insight to how educators are taking online PL courses, why they take them, and who provides them."

Key findings from this year's report about pre-K-20 online professional learning include that educators enroll in online professional learning courses when they are personally interested in the subject and want to increase their knowledge in that area; the most common online professional learning courses that educators select are courses that provide training for software and digital resources and classroom management/behavior training; and educators with less than 20 years of experience working in an educational institution are more likely to enroll in an online

professional learning course than educators with more experience. www.siia.net/visionk20

BETTER THAN A BAND-AID

No Panacea: Diagnosing What Ails Teacher Professional Development Before Reaching for Remedies New America, June 2016

New America identifies key obstacles that prevent professional learning from reaching its potential for growing teachers' knowledge and skills. The authors find that these obstacles prevent four elements of a productive professional learning cycle from occurring: identifying teachers' development needs; selecting aligned, evidence-based professional learning approaches; implementing approaches with fidelity; and assessing outcomes. The authors argue that challenges in the professional culture many teachers experience reinforce these obstacles. They also highlight how federal, state, district, and schoollevel stakeholders play a role in contributing to these obstacles and professional culture barriers, as do educator preparation programs.

Report co-authors Melissa Tooley and Kaylan Connally intend for No Panacea to provide a diagnosis of the underlying causes of ineffective professional learning that can serve as a foundation for remedying the U.S. approach to teacher development. "Ultimately," the report says, "we strive to encourage a move away from putting Band-Aids on our current PD efforts and toward working collaboratively to create a high-functioning system of educator professional learning — from initial preparation through the highest levels of career advancement." www.newamerica.org/education-

policy/policy-papers/no-panacea

STUDENT ACHIEVEMENT

Can Professional Development of Teachers Reduce Disparity in Student Achievement?

Teaching and Teacher Education, August 2016

This paper describes a national, school-based professional development intervention in which large student achievement gains were previously signaled using singlelevel regression analyses and effect sizes. However, such analyses can be misleading since educational data typically do not meet independence assumptions. The current study investigates the effectiveness of the professional development intervention using hierarchical linear modeling, with particular focus on whether disparities were reduced for groups typically underserved by the New Zealand education system.



Results indicate that students from all learner groups made large gains, especially in writing, but additional targeting

would be required to improve equity across student groupings.

www.sciencedirect.com/science/article/pii/S0742051X16300932

TEACHER DIVERSITY The Effects of Teacher Match on Academic Perceptions and Attitudes

Working paper, June 2016

In this paper co-authored by Anna Egalite (North Carolina State University) and Brian Kisida (University of Missouri), the authors examine research that has demonstrated



positive benefits for students assigned to demographically similar teachers. Because teachers are more likely to be white and female than their students, however, demographic mismatches may contribute to racial and gender achievement gaps.

Using data from six U.S. school districts collected by the Measures of Effective Teaching project and a teacher fixed effects approach, the authors estimate how assignment to a demographically similar teacher affects student reports of personal effort, happiness in class, feeling cared for, student-teacher communication, post-secondary motivation, and academic engagement, as well as student achievement.

Their results show that students assigned to a demographically congruent teacher experience important benefits in terms of academic perceptions and attitudes. The largest benefits are demonstrated by black male students assigned to black male teachers and by black female students assigned to black female teachers. However, they find little convincing evidence of test score impacts associated with student/teacher demographic pairings.

https://ced.ncsu.edu/wp-content/ uploads/2015/07/Egalite-Kisida-Teacher-Match-Working-Paper-June-2016.pdf

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HOW TO GET IN TOUCH

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ecause many school and system leaders and policymakers advocate and support teacher collaboration as a means to improve student achievement, it's important to understand how collaboration, teacher characteristics, and school characteristics interact to affect student achievement — and how the Standards for Professional Learning (Learning Forward, 2011) fit into this equation.

REFERENCES

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Learning Forward. (2011). Standards for Professional Learning. Oxford, OH: Author.

Ronfeldt, M., Farmer, S., McQueen, K., & Grissom, J. (2015). Teacher collaboration in instructional teams and student achievement. *American Educational Research Journal*, 52(3), 475-514.

LEARNING COMMUNITIES: Sustained teacher collaboration about instructional strategies, curriculum, students, and assessment is the primary vehicle for continuous improvement of teacher practice, sharing accountability, and collective responsibility.

LEADERSHIP: Teacher collaboration requires leaders who are able to cultivate the capacity to collaborate about instruction, curriculum, students, and assessments, create and support instructional teams to maintain engagement in high-quality collaboration, and serve as an advocate of teacher collaboration.

RESOURCES: Sustained teacher collaboration requires time, staff, and materials.

DATA: Districts that have invested in developing a data system that links educator and student data for multiple purposes have shown positive results (Ronfeldt, Farmer, McQueen, & Grissom, 2015).

LEARNING DESIGNS: Teacher collaboration is by its nature a powerful learning design. Teacher collaboration is grounded in the social interaction theory of learning and aligns with research on communities of practice, relevance to practice, and collective practice.

IMPLEMENTATION: This standard stresses sustained support, constructive feedback, and application of change research.

OUTCOMES: In the Ronfeldt study, teacher collaboration focused on teachers' core responsibilities — instruction, curriculum, assessment, and student success. It showed that teacher collaboration could be tied to both teacher and student improvement.

The Ronfeldt study concluded that "[s]tudent achievement gains are greater in schools with stronger collaborative environments and in classrooms of teachers who are stronger collaborators" (p. 512). Another study likewise concluded that "our results suggest that schools with greater levels of teacher collaboration did indeed have significantly higher levels of student achievement. Thus, not only is collaboration good for teachers — quite possibly by fostering teacher learning — but it is also positively related to student achievement" (Goddard, Goddard, Kim, & Miller, 2015).

WHAT ARE THE COMPONENTS OF A STRONG COLLABORATIVE ENVIRONMENT?



ow can schools and systems create structures and supports so educators engage in the kinds of collaborative problem solving and intentional learning that they value? What do lead learners need to consider? Here are several critical factors in supporting meaningful collaboration and questions to ask when addressing each.



When educators talk about their learning needs, they cite time as the resource they need to engage in collaborative learning. Without structures that provide time throughout the workweek, educators have no hope of participating in ongoing purposeful collaborative learning.

- Does our system's schedule allow teams to meet regularly before, during, or after school?
- Has our system communicated a plan to teachers about how to use time effectively?
- Have we provided all available resources and support to make meaningful collaboration possible in the time allowed?

2 VISION

When learners share a deep understanding of the vision and goals, they become clear about their role in helping to achieve the goals.

 Have our team or system leaders facilitated the creation of a school and systemwide vision and goals for all learners, whether adults or students?

ALIGNMENT AND ACCOUNTABILITY

Learning Forward's Learning Communities standard cites the importance of alignment among school and system goals along with policies and structures to support learning communities. Such alignment prevents fragmentation among learning communities.

Have our school and system leaders

- intentionally aligned learning communities vertically and across schools?
- Have we developed systemwide policies that support and integrate learning communities so that leaders can hold teams accountable for results?

4 CLEAR TEAM GOALS

When educators understand specifically why they are meeting, they are more likely to benefit from collaboration.

 Has our team examined many sources of data to pinpoint student learning needs and achievement gaps to better determine its own learning needs?

COLLABORATION SKILLS

Each team member needs opportunities to understand, practice, and apply a range of collaboration skills.

- How do we encourage team members to build such understanding within or beyond their team learning time — wherever they have opportunities to learn foundational skills and practices in communication, decision making, and conflict resolution?
- As all team learners develop deeper skills in collaboration, how do we encourage them to share more equally in team leadership?

WHERE STRONG COLLABORATION DOES EXIST, THE BENEFITS ARE SUBSTANTIAL

Teachers whose schools have strong collaboration report dramatically higher satisfaction with day-to-day work. Strong collaboration prepares teachers to face key challenges (e.g. use of data, technology, differentiation).



Source: Bill & Melinda Gates Foundation. (2015). Teachers know best: Teachers' views on professional development. Seattle, WA: Author.

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TWITTERPATED

I FOUND MY LEARNING COMMUNITY. YOU CAN, TOO

By Eric Celeste

his issue is personal for me because the advice it contains about breaking out of silos and building networks is so relevant. As someone who has spent his career writing and editing, my most consistent coworker for more than a quarter-century has been my keyboard. It is always there for me, reflects my thinking — sometimes exactly! — works at the same pace as I do ... it's really a lovely colleague.

The fact that this was my most long-lasting professional relationship meant the opportunity for networking, creat-

ing workplace feedback loops, and challenging myself were too rare. Like teaching, writing and editing are professions where you are often left to chart your own course with little oversight. It was easy to feel adrift, unsure of my place in relation to my colleagues and my profession.

Until, that is, I discovered Twitter. As a tool for personal learning, I've found this social media platform to be astoundingly effective. As I transitioned from a general assignments writer into one focused on education, it provided me a way to dive deep into the newest research, monitor the latest ideas from thought leaders, see discussions of best practices, and be aware of relevant policy debates and industry trends — all from my computer (or, more likely, my phone). Once I got comfortable with entering into

back-and-forth discussions myself, I found I could create meaningful professional relationships not only with other writers but also with esteemed researchers, policymakers, and educators. These folks engaged in open dialogue and gave feedback because the medium is designed for an exchange of ideas among those who care deeply about a subject, whether that be professional learning in education or professional soccer in Europe.

The point here is not that social networks are the best professional networking outlet for everyone. (Although I think everyone should give Twitter a go.) The point is that it's crucial to find a way to break out of your silo and seek your own learning community, whether online or in person, across classrooms or nations, in person or on Skype. The stories in this issue give a snapshot of that concept, from using social media to online coaching and collaboration to bridging silos within the school itself.

The value of seeking various means of collaboration and networking is not new, of course. The Learning Communities standard in Learning Forward's Standards for Professional Learning (Learning Forward, 2011) identifies as necessary to high-quality professional development "learning communities committed to continuous improvement, collective responsibility, and goal alignment." And there have been countless blog posts, research papers, and books written on the value of high-quality networks.

Perhaps one of the best such works is *The Power of Teacher Networks* (Meyers, Paul, Kirkland, & Dana, 2009), which defines a teacher network as a group of at least 10 teachers (and as large as 50) that comes together at least once a month locally and serves as an affiliate within a larger nationwide network. I would argue, though, that social media has made that definition more flexible in terms of the number and frequency, and that, as we show in this issue, what matters more than numbers or frequency is an ongoing ability to inspire, solve problems, and increase student outcomes.

In fact, Learning Forward Executive Director Stephanie Hirsh wrote in her foreword to the book that effective networks "serve teachers and students by providing collegial support that builds and retains great teachers by improving classroom practice, spreading great practices across school and district boundaries, and offering teachers a vision for demonstrating leadership" (Meyers et al., 2009). That still seems like a good definition today.

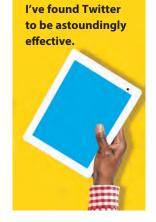
How do they do that, though? In multiple ways.

Effective networks offer teachers a way to emerge from their silos, allowing for sharing and support between colleagues — as is described in our story on expanding the faculty workroom. An effective network offers opportunities for professional learning, as you'll see in our story on teacher labs. And the fact that such networks can break down walls between classrooms, districts, states, and countries means that "spreading great practices" occurs like a ripple in a pond. As well, these networks can serve "a moral purpose," as Hirsh noted — advocating participation in policy discussions. (For example, Learning Forward's Agents for Learning Competition promoted discussions on the most effective use of Title II funds under ESSA implementation. Read more about it on p. 68.)

Perhaps the most important reason such networks are important to professional learning is this: By their nature, they create a sense of collective responsibility and mutual accountability for shared improvement. Groups that come together in whatever fashion — in social networks, via online video conferencing, or around conference tables — share in solutions to problems of practice and therefore feel collectively responsible for the success of all their students.

This accountability toward not only a solution but also to improved outcomes is a fundamental element to the success of such networks. I know that if I share with my online network a problem I'm having, its members not only want to give me best-practice advice but also ask to be

notified of the final result. That the networking provides this sense of collective purpose is its most important trait and the reason it deserves renewed exploration.



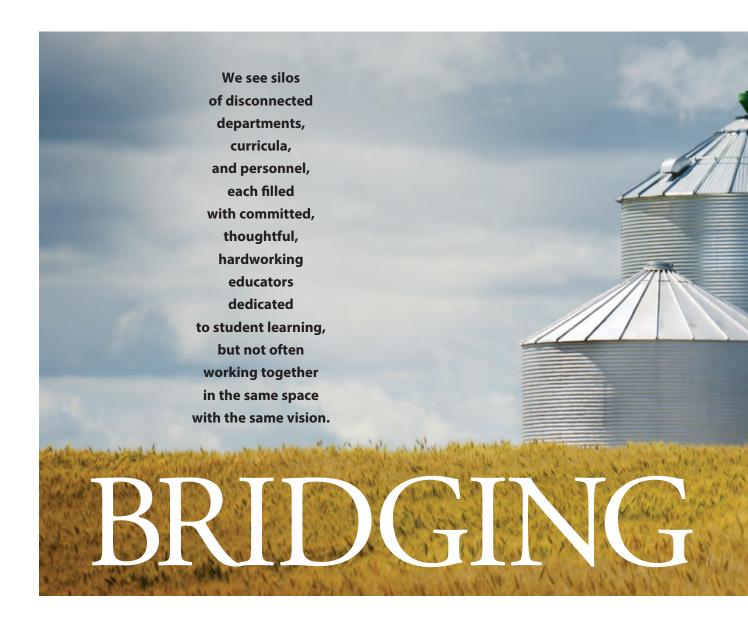
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By Erin Gilrein and Jennifer Wolfe

rowing up in rural America, we passed silos on our way to school filled with silage, a combination of whole maize plants, beets, grass, and alfalfa. While the ingredients varied from silo to silo, these products made a healthy and sustainable feed for livestock when nutrition was scarce. Indeed, they were the lifeblood of farms during winter.

As educators today in a suburban high school on New York's Long Island, we don't see too many silos on our way to work, but we see them in the prevailing structure of

public education: silos of disconnected departments, curricula, and personnel, each filled with committed, thoughtful, hardworking educators dedicated to student learning, but not often working together in the same space with the same vision.

This silo culture, in light of recent demands associated with teacher evaluation and student testing, stands in the way of cultivating healthy and sustainable environments for learning. Student learning thrives when all of these professionals share and work toward the same vision and support each other with cooperation and collaboration.

CAREER LADDER FOR TEACHERS

A 2014 report from the Alliance for Excellent Educa-



tion notes that half a million U.S. teachers either move or leave the profession each year because of inadequate administrative support and isolated working conditions (Haynes, 2014).

To stem the tide of new professionals leaving teaching, the Oceanside School District created a program that sees teaching as a six-year career ladder beginning with an internship and ending with National Board Certification, with board-certified teachers supporting new interns and residents.

Here's how the program works: A preservice intern student teacher comes to Oceanside during the last year of an education degree program. If hired, he or she becomes a resident teacher during the first four years of teaching, a National Board Certification candidate in the years following tenure, and then a National Board Certified Teacher who advocates for public education and is a skilled mentor for the next round of interns and residents.

The district brought together three board-certified teachers, representatives from all levels of district administration, and faculty members from Adelphi University to create an internship that dovetails with the four-year mentoring program to create a five-year tenure attainment program.

RESIDENCY PROGRAM

The idea for this trajectory came from our experiences with internships and National Board Certification. We were also familiar with Ron Thorpe's vision that teachers

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Resident teachers

learn deeply with

an effective and

mentor guiding

accomplished

them toward

effective

teaching,

tenure, and

National Board

Certification.

have to transform their profession from the inside out (Thorpe, 2014). Thorpe's observations on the challenging nature of the teaching profession support why it is critical for a new teacher to be guided, mentored, and supported by an effective and accomplished veteran teacher. During our three years overseeing

a residency program in our district, we saw how astute Thorpe's observations were.

Our agenda was simple: Create a collaboration between the newest teachers and the district's 19 board-certified teachers. This idea solved two perceived problems: first, not all new teachers qualify for a mentor under state regulations, and certainly not all teachers in years two to four; and second, the district's board-certified teachers were ready to be recognized as formal, funded, district-supported teacher leaders.

In 2013, we introduced a districtwide program using board-certified teachers as mentors to teachers in years one to four using a virtual platform. Teachers in years one

to four became resident teachers, reflecting the culture change we hoped to achieve. Like medical residents, resident teachers are new to the job and learning in every moment. However, in this program, they don't work alone in a silo. Instead, they learn deeply with an effective and accomplished mentor guiding them toward effective teaching, tenure, and National Board Certification.

THE MENTORING RELATIONSHIP

The mentoring program is a combination of online and face-to-face interactions. Online interactions happen via the Teaching Channel Teams platform (www.teach ingchannel.org/professional-development), an extension of Teaching Channel that is locally controlled and offers a space for private, collegial group work with access to all of Teaching Channel's resources, including an extensive video library of accomplished teachers.

From participant feedback and reflections in the pilot year, we learned that we needed to include face-to-face interactions in addition to the Teams virtual interactions. A mentoring relationship requires a critical element of trust, and this is best fostered when the mentor and resident teacher can sit side-by-side to discuss classroom experiences and learn together. Then the relationship can thrive in the online environment.

Another way that we gain the trust of participating teachers and the local union is by permitting resident teachers to decide what videos they share. We met with our local union to discuss issues of privacy and assuage concerns. Resident teachers film many more lessons than they share, and the act of self-reflection happens with each video, whether that video is ever shared with a mentor.

Resident teachers share 15- to 20-minute videos of their classroom practice with their mentors via Teaching Channel Teams using specific feedback protocols. Mentors watch the videos from resident teachers and give feedback and support to enhance effective practice. In a private group, resident teachers provide contextual information for videos and seek feedback based on their professional goals, classroom challenges, or observation feedback from administrators.

Mentors and resident teachers learn feedback protocols. We teach a warm and cool feedback protocol adapted from the National School Reform Faculty because it supports and encourages teachers while allowing room for growth (McDonald & Allen, 1999).

First, the resident teacher offers key contextual information about the class makeup and the scope and sequence of the lesson. Then the resident teacher states his or her focus and the specific topics on which he/she would like feedback. With warm feedback, the coach states exactly what is effective and why it is effective. With cool feedback, the coach asks probing questions to encourage the teacher to think about areas of improvement.

For example, resident teacher Kayla Toscano says, "Many times, the feedback started as just rhetorical questions, like 'What could you have done here to ___?' While that helps me to stop and reflect, I need to be able to respond and bounce ideas off of another person, and, in turn, hear their opinions about my ideas."

We encourage questioning with cool feedback because that is where the transformative growth occurs. It is the probing questions that allow resident teachers to grow — to see areas of weakness and determine how they can best develop their practice to meet the needs of their students.

"The Teams mentoring process has helped me to become a more reflective and effective educator," resident teacher Aileen Monks says. "As a new teacher, it is often hard to find the time to sit down and truly reflect upon every lesson deeply. Having the videos and being a part of this program has allowed me to develop as a reflective teacher so that I am able to do so with more ease. In turn, I find that I am a more thoughtful planner and well-rounded teacher."

In these mentoring relationships, we encourage teachers to engage in conversations about effective teaching. As Jim Knight points out, "If we want reflective educators, teachers who think, we must make sure that teachers are free to make meaningful decisions about what and how they teach" (Knight, 2014). We remind mentors and resident teachers that there are many ways to be effective teachers who have a positive impact on student learning, and we need to guide each other to discover what effective teaching looks like in our own classroom.

Mentors also use the rubrics from Charlotte Danielson's Framework for Teaching with correlated questions from the National Board Certification portfolio and existing videos from the Teaching Channel's video library. For example, when con-

sidering Danielson's Domain 2: Classroom Environment, we ask questions from the National Board portfolio such as:

- What are the relevant features of your teaching context that influenced the selection of this instruction?
- What were the specific procedures and teaching strategies you used in this lesson, including those used to foster student participation in the whole-class interaction or smallgroup discussion?
- What were your reasons for those choices?
- How do you ensure fairness, equity, and access for all students in your class?

Questions such as these bring awareness back to the framework of National Board Certification — the Architecture of Accomplished Teaching (National Board for Professional Teaching Standards, 2014):

- Who are my students?
- What do these students need at this time, in this setting?
- What are my high, worthwhile goals?
- How do I best implement, evaluate, and reflect on my instruction and the students' learning?

"One thing I learned from my mentor is that, regardless of how many times you might teach a given lesson, there is always room for improvement," resident teacher Tracy Malpigli notes. "My mentor has been teaching the same grade for quite a few years, but treats each year as if it is her first on the grade level. She designs her lessons around the students seated in front of her each year and is continually trying out new methods and approaches. It is very inspiring."

This reflective work is the work that teachers do every day and complements other models of effective teaching, such as Danielson. The growth mindset illustrated by mentors reminds resident teachers that there is always room for growth and improvement, especially when tailoring lessons to meet the needs of the students at this time and in this setting.

We purposely embed National Board questioning strategies in the mentoring process to propel teachers along the career trajectory. The most accomplished teachers support the newest teachers. The goal is that, after working with board-certified teachers for four years during residency, resident teachers will see board certification as the next professional step.

In fact, 70% of participants indicate they are interested in pursuing National Board Certification at some point in their career, and 76% of participants report the mentoring process helped them have a positive impact on students.

For example, elementary teacher Kelly George says, "During the review of a video I submitted, my mentor pointed out a student who requires regular refocusing/redirecting. In one part of the video, this student wasn't engaging and I had refocused/redirected him more than once, but I did not engage him in the dialogue. My mentor spotted this and brought it up to me. As I reviewed the video, I was able to clearly see what she meant. The next lesson, I continued to redirect this student and I made it a

point to engage him in the dialogue. I used a beach ball to toss back and forth with the class and made it a point to call on him, even if he didn't raise his hand. The result was that he engages more, and I do not need to redirect him as much."

High school teacher Deanna Confredo says, "My mentor teacher and I developed a concrete strategy for students to write thesis statements and evaluate the thesis statements of their peers. I have now adapted this strategy and use it regularly in my classroom. This was effective because the rubric is straightforward and simple for my students to apply."

And elementary teacher Kenneth DiDonna says, "Mentoring had a profound effect on my students' learning. I was able to use ideas from colleagues to give more choice and empowerment to the students. My questioning techniques also improved greatly, which allowed for a more student-centered classroom."

The National Board has extensive research on the impact of board-certified teachers on students, available at **www.nbpts. org/advancing-education-research**.

OPPORTUNITIES FOR EXPERIENCED TEACHERS

The mentoring program provides leadership opportunities for seasoned teachers as well. Board-certified teachers and their accomplished colleagues enhance resident teacher practice through video reflection and peer support.

What began as an experiment in supporting new and board-certified teachers became an opportunity to reshape professional learning in the district on a larger scale than the mentoring program. After the program's pilot year, the district combined the program with the district's formal mentoring program, creating a four-year tenure attainment mentoring program that helped new teachers earn tenure with feedback and ongoing support from board-certified teachers and other accomplished teachers for the four years of their residency.

The growth mindset illustrated by mentors reminds resident teachers that there is always room for growth and improvement.

Administrators also created a private Teams group, sharing videos of faculty meetings, presentations, and teacher conferences with each other to get feedback and improve practice. Diane Provvido, assistant superintendent for curriculum, instruction, and research, observed, "It's the one 'room' we can go to virtually at any time to enhance our professional growth and, ultimately, the growth of our students."

In the program's second year, Oceanside's board-certified teachers and district administrators participated in an all-day session to explore the Teaching Channel's potential to transform professional learning. By the next year, in fall 2015, a team of teachers and administrators devised a "choose your own adventure" professional learning experience that combines inperson instruction on how to use the Teaching Channel Teams platform with opportunities for participants to individualize the

most meaningful activities on the Teaching Channel to earn professional development hours and credits.

Teachers can form groups and earn hours as Teaching Channel novices exploring the platform and as Teaching Channel advanced users digging deeper into features and learning plans. Their plan is "symbolic of how building trust and community in the best interest of students is the only way to be an effective educator these days. And better yet, our plan supports the building of trust and community among teachers of all grades and subjects" (Manning & Zirogiannis, 2015).

Then departmental, grade-level, and building groups appeared. Teachers and administrators were sharing ideas, commenting on Teaching Channel videos, reflecting on personal classroom videos, annotating articles, and developing a closer professional community. This tool, combined with administrator trust and support, has encouraged board-certified teachers to become teacher leaders, trusted mentors, and change agents in the district.

PARTNERS IN EDUCATION

We have been partners in education for almost 13 years. We teach two 9th-grade humanities classes together, run National Board Certification candidate cohorts together, are coregional directors of the National Board Council of New York, are founders and directors of the Long Island National Board Network, and present at local, state, and national conferences together. We list these to illustrate the value of collaboration.

Our personal experience has shown that what supports new teachers is healthy for all teachers, no matter the stage of their career. We've bridged our own departmental and grade-level silos to come together as collaborative teaching partners. As teacher leaders, our vision extends beyond our classroom walls, and we consciously try to unite teachers in the spirit of cooperation and collaboration.

ONE LAST THING

This cooperation and collaboration between resident and experienced teacher cannot work without central office, building-level administrator, and Teacher Center support. Robert Fenter, former assistant superintendent for curriculum, instruction, and research, adds that our board-certified teachers "provide us with an army of resources to help us to achieve goals that aren't feasible any more just to be done by administrators and probably never should have been done solely by administrators."

For this to work, teachers and administrators must build trust. When we first discussed the idea of this program with our superintendent, we added this caveat: Administrators will not be allowed access to the administrative rights of the Teams page.

We feel that teachers are the most vulnerable in their early years, certainly those before tenure. New teachers would not feel comfortable submitting videos for growth if they knew adWe've bridged our own departmental and gradelevel silos to come together as collaborative teaching partners. As teacher leaders, our vision extends beyond our classroom walls, and we consciously try to unite teachers in the spirit of cooperation and collaboration.

ministrators were watching what they submitted, how many times, and what kinds of videos they watched, not to mention if administrators could see the questions they asked their mentors.

The administrators agreed without hesitation to our condition, illustrating their trust in teacher leaders, especially board-certified teachers.

Knowing the critical importance of maintaining trust, we asked administrators in an end-of-year survey why they agreed to let board-certified teachers work with resident teachers without their direct supervision. The responses: "No matter how strong our relationship is with our teachers, we are still their evaluators. ... They will freely talk to another teacher." "I trust in the instructional expertise of my National Board Certified Teacher." "It sends a message of solidarity and trust ... that can yield more authentic results." These answers can only come from an environment that is ripe with high expectations and deep trust.

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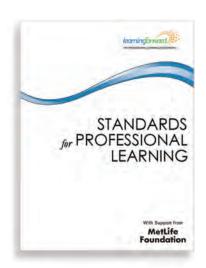
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Teachers in the Avondale School District in Auburn Hills, Michigan, participate in Teacher Lab, which combines preobservation dialogue and study with classroom observation and debriefing. Above, 1st-grade students at Auburn Elementary engage in a chalk talk during a "Creating Cultures of Thinking" Teacher Lab.

OPEN DOORS, OPEN MINDS

EMPOWERED TEACHERS WORK AND LEARN SHOULDER TO SHOULDER

By Marcia Hudson, Lauren Childs, and Cynthia L. Carver

nergized by a sense of curiosity and anticipation, a group of observing teachers moved quickly down the elementary school hall toward the host teacher's classroom. The group had come together for a day of professional learning focused on student conferencing within a readers workshop.

As the teachers slowed near the classroom's open door, the facilitator whispered, "Before we go in, I have a question. When is the last time you had an opportunity to watch live classroom instruction?" The group grew quiet and pensive. A flurry of expressions crossed their faces.

After several minutes, one teacher said, "I'm embarrassed to say this, but the last time I had an opportunity to observe live instruction would have been when I was student teaching. That was over 32 years ago!"

Others voices chimed in: "10?" "Mine would be 18." "Two years ago."

In this article, we share our experience of Teacher Lab, a job-embedded form of professional learning that has been a critical addition to professional learning practice for nearly a decade in the Avondale School District in Auburn Hills, Michigan.

Using a full-day released time format, Teacher Lab combines preobservation dialogue and study with class-

TEACHER LAB LEARNING SURVEY RESULTS

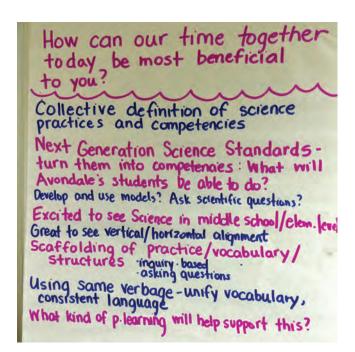
The following data is excerpted from a survey of district teachers conducted in 2013-14. In this particular question, teachers were asked to describe the benefits of Teacher Lab by selecting from a list of options. Teacher responses are listed by percentage of positives votes received.

How might you describe what you took away from your teacher lab experience?

•	Professional resources	.98%
•	An example I wanted to try in my own practice	.96%
•	A new reflection on an instructional strategy	.94%
•	New information	.92%
•	New understanding of familiar information	.92%
•	Specific tips and guidance about classroom work	.88%
•	A sense of connection to my colleagues	.88%
•	A new insight about student learning	.84%

room observation and follow-up debriefing. Participating teachers consistently report high levels of satisfaction with lab learning (see box above), and an internal evaluation has linked Teacher Lab participation with improved student achievement (Feun & Carver, 2013). Specifically, study data found that the longer a teacher participates in Teacher Lab, the greater his or her gains in student achievement.

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Moreover, the reported gains were strongest in schools and grade levels where Teacher Lab participation was consistent over time. At the center of this success are teachers who see themselves as responsible for their own learning.

FROM INSERVICE EDUCATION TO PROFESSIONAL LEARNING

For years, school leaders have used inservice education and professional development to bridge the gap between current practices and new understandings from educational research. And for years, teachers have argued that one-size-fits-all rollout trainings and information dumps are a waste of resources, limited in impact, and frustratingly disconnected from teachers' actual learning needs. Three indicators suggest that this conversation is moving in a different direction.

First, educators have increased access to research and standards that inform the design, facilitation, and assessment of teachers' professional learning. Today, standards guide and inform our work in multiple areas, from academic and content standards, to teaching and leadership standards.

Learning Forward's (2011) Standards for Professional Learning can be used to guide the design, implementation, and evaluation of professional learning. Using these standards, we can help educators develop the knowledge, skills, and dispositions needed for students to perform at high levels.

Second, our language is changing. For years, our discourse assumed that outside experts directed professional learning. Background information, specific how-to tips, and encouragement were shared with those presumed to know less. Increasingly, however, leaders are aiming to engage and support teachers' continuous improvement by shifting the learning pro-



cess from one of passive reception to active engagement.

With this shift in thinking has come a corresponding shift in language use. Professional development has now become professional learning, thereby signaling the importance of educators taking an active role in their continuous improvement. By making learning the focus, those who are responsible for professional learning can concentrate their efforts on ensuring that learning for educators leads to learning for students.

Third, teachers and administrators are taking real strides to create professional learning opportunities that take place in the classroom, grounded in educators' day-to-day teaching practice and designed to advance instruction aligned with student learning needs.

Through job-embedded professional learning, educators pursue conversations about how to tap into the wisdom of practice locked behind the classroom door and leverage that wisdom in ways that make the complexity of teaching and learning accessible to collective examination, shared understanding, and intentional mastery.

In Avondale, job-embedded professional learning is becoming the norm. Area teachers are increasingly taking up new roles and projects to ensure better alignment between what data tell them students need to learn and what teachers need to learn in order for student to achieve. What follows is the account of what happened when a small, struggling school district committed to a vision of teachers becoming active partners in their own professional learning.

WHAT IS TEACHER LAB?

The Teacher Lab experience, whole-day or partial, involves three roles and three key components. We begin with the three





Far left: Preobservation chart written by facilitator.

Center: Teachers Daniela VonAllmen, left, and Molly Abbott observe their colleague, Maria Henige, as she facilitates a lesson.

Near left: Martha Ruit observes 8th-grade students during science class.

roles: host teacher, facilitating teacher, and four to 10 participating teachers.

The **host teacher** opens his or her practice to observation and reflection by colleagues. In an early iteration of lab learning, a 2nd-grade teacher, serving as host, shared what she had learned at a writing conference. As she opened her door to hosting an observation, her colleagues were able to observe a writers workshop session in action.

As K-12 teachers continue to explore and design lab opportunities, variations have emerged that include special services practices (e.g. counseling, social work) as well as professional learning practices for educators and administrators (e.g. coaching, mentoring).

The **facilitating teacher** takes a lead in creating the lab experience. The facilitating teacher contacts participants, establishes norms for observation, and ensures that the debriefing stays on topic. A facilitating teacher directs and moves the discussion forward with strong questioning skills and is careful to tie professional reading to the discussion. Importantly, the facilitating teacher encourages all observing teachers to take ownership of their learning and commit to specific action steps.

The **observing teacher** actively participates in a sequence of activities designed to contribute to both individual and collective goals for advancing instructional practices with K-12 students. While customizing is only limited by one's imagination, a lab experience always includes preobservation study, live classroom observation, and post-observation discussion.

During preobservation, teachers gather to study a select problem of practice. Through facilitated reading and discussion, teachers engage in collaborative inquiry designed to deepen their understanding and provide them with a lens for observing classroom instruction. In this way, the group operates much like a professional learning community (PLC) through activities that may include book or video study, analysis of student work, and review of data.

Following preobservation is classroom observation of the targeted instruction practice in the host teacher's classroom. The day ends with a facilitated debriefing with the host teacher. During this post-observation discussion, teachers reflect on new insights and set personal goals for their own practice.

Today, Teacher Lab is a preferred format for professional learning in Avondale. Nearly 94% of teachers in the district have participated voluntarily in at least one lab learning experience, and annual surveys highlight teachers' overwhelming satisfaction with lab learning.

Teachers regularly report new understanding of familiar practices and valuable insights on the nature of student learning. Teachers also report gaining teaching tips that can be applied in the classroom immediately and feeling more connected to their colleagues.

A SPECTRUM OF PROFESSIONAL LEARNING

The purpose for lab learning varies widely and creatively to meet teachers' needs. Learning lab models fall into four categories (see diagram on p. 22): exemplary demonstration, demonstration lesson, open practice, and collaborative inquiry.

In **exemplary demonstration**, a teacher who has studied and mastered an instructional practice opens his or her classroom for other teachers to observe a well-grounded, mature demonstration of research-based practice. As Avondale teachers adopt and implement new curriculum programming, exemplary demonstration serves as a model for new instructional strate-

gies and curricular approaches. The emphasized purpose for the observation is the exemplary enactment of an instructional practice.

In a **demonstration lesson,** a teacher engaged in extended professional learning around a specific instructional practice models features of that practice for observing teachers. For ex-

ample, recent labs support the schoolwide adoption of visible thinking by several of the district's schools (Ritchhart, Church, & Morrison, 2011). The host teacher provides a preobservation description of strategies and anticipated moves and follows up with a post-observation reflection on decision points, moves, insights, and concerns. Importantly, the host teacher models his or her capacity to learn from practice and articulate that learning for others.

In **open practice**, a teacher who is developing an aspect of his or her instructional practice opens the doors for colleagues to observe. Open practice lab offers observers an opportunity to learn from someone just one step ahead and provides the host with feedback for moving his or her practice to the next level.

As the demands of career- and college-ready standards and other instructional and pedagogical mandates appear, Avondale staff members use open practice extensively. The group's purpose for the demonstration drives details of the lab design. The key question is: Who needs what out of the observation opportunity, and what tools and processes will help us make the most of a live classroom observation to meet those needs?

Finally, in **collaborative inquiry**, the purpose of lab is for a group of teachers to collectively pursue an identified question or set of questions that each member of the lab is committed to exploring through close observation of live instruction. The group draws on the lab as a source of data for its collaborative investigation.

As lab learning has matured and evolved, Avondale staff members are increasingly drawn to this type of authentic, action-oriented research. Teachers gain new and shared understanding through the sustained study of instruction, a phenomenon of learning and development, or a problem of practice.

Indeed, many of Avondale's teacher leaders joined with teacher leaders from neighboring districts in Oakland County to create an electronic guidebook — a living document of their experience with Teacher Lab so others might lead their own sustained professional learning (Oakland Schools, 2014).

IMPORTANCE OF A PROFESSIONAL LEARNING CULTURE

Creating new structures and roles to support professional learning can have a powerful impact on the culture of a school.

SPECTRUM OF PROFESSIONAL LEARNING

Exemplary Demonstration Open Collaborative demonstration lesson practice inquiry

Teacher Lab has helped Avondale transform its professional culture from one of privacy (Little, 1982) to one of thinking (Ritchhart, 2015).

Before Teacher Lab, many of the district's teachers had lived a career that favored autonomy and privacy. The Teacher Lab experience in Avondale has made visible how interactions, expectations, and language can be reshaped in ways that change the story arc of professional learning for teachers. Music teacher Jenny Johnson says she no longer feels like a solo act. "During the reflection session at the end of my first lab day, I realized that I wasn't alone in my thoughts, and I didn't feel like I was a solo act any longer. I was part of a learning community. I took the lessons learned back to my classroom to try with my students. More fundamentally, I gained confidence as a learner and teacher."

Ron Ritchhart (2015) has described eight cultural forces that exist in all groups and serve to identify what is valued within that group: opportunities, time, modeling, language, environment, interactions, routines, and expectations. Ritchhart further argues that for classrooms to become cultures of thinking for students, schools must become cultures of thinking for teachers. That is, teachers must first experience their professional lives being shaped and leveraged to value, make visible, and actively promote their own professional learning.

Looking back, that is the change that began when Avondale teachers started thinking together about teaching and learning. The cultural forces that had long valued a culture of privacy and polite sharing cracked open to the possibility of collaboration, inquiry, and shared leadership through Teacher Lab. Kindergarten teacher Colleen Bugaj explains, "Teacher Lab has created a new normal at our school. This normal allows us to look closely at the practice of a teacher and encourages us to participate in a discussion of that practice. This normal allows teachers to become involved in the practice of a colleague and to mentor in ways we never could when we taught with our door shut. Our normal has grown to include giving and receiving meaningful feedback to others, while also providing an opportunity to use that feedback ourselves."

Today, Avondale teachers find *opportunities* for thinking about the complexities of their own and others' teaching practice in all three parts of a lab day. Opportunities to describe current understandings of a focused aspect of their practice and to

articulate wonderings or targeted inquiries set up individual and collective explorations of what advances and hinders learning. Lab participants comment on the striking difference of such an expressive opportunity compared to the passive nature of past professional development opportunities.

According to Teacher Lab coordinator Marcia Hudson, "Our experiences with Teacher Lab help us to fine-tune the dialogue and energy around our professional learning experiences. Through this collaboration, we advance our collective understandings, create a commitment to continuous improvement, and strengthen our individual leadership skills. The structure of Teacher Lab learning has accelerated our professional growth and identity development as leaders."

Within a Teacher Lab day, *time* to think is a driver for teachers to marshal resources and advocate for creating lab opportunities inside their professional day. Teacher Lab provides teachers with time to describe, wonder, reason with evidence, consider different viewpoints, uncover complexity, make connections, build explanations, capture the heart, and form conclusions (Ritchhart et al., 2011).

Additionally, teacher-designed *routines* and *structures* support the kinds of sustained thinking that leads to effective professional learning. For example, when Teacher Lab groups set norms and commit to using protocols, participants learn their way into deep descriptions, analysis, and reflections that support sustainable improvements in instructional practice.

The three-part structure of a Teacher Lab day further creates opportunities for teachers to *model* their thinking and practice for one another. Modeling socializes teachers to the profession and offers opportunities to make their thinking visible. Teachers gain shared understanding by discussing problems, sharing solutions, and articulating ideas, which leads to shared vocabulary or *language* for teaching and learning.

Also important is creating a climate where the professional environment for thinking is nurtured. Creating that environment requires shared leadership that supports and maintains opportunities for differentiated professional learning and collaborative inquiry as well as opportunities that nurture professional *interaction*. Teacher Lab encourages teachers to connect with one another on personal and professional levels.

Finally, teachers need *expectations* for thinking that articulate a shared learning agenda and hold everyone accountable for continuous improvement. Teacher Lab provides a unique setting for working simultaneously on personal and collective interests, and from teachers' professional goals to school and district improvement goals.

Through Teacher Lab, teachers and administrators partner to create a learning-oriented culture that supports a focus on inquiry, thinking and learning.

TAKING OWNERSHIP OF LEARNING

Teacher Lab has made a difference in how Avondale teach-

ers see themselves as professionals. Through lab learning, teachers are gaining new understandings of teaching, of students, and of themselves as learners. Through Teacher Lab, teachers are recognizing the importance of taking ownership of their own learning, as well as contributing to the learning of their colleagues. As a result, the language around professional learning is shifting from "they" to "we" as practice is deprivatized through collaborative inquiry.

Teachers' participation in Teacher Lab further supports a new way of looking at their leadership — not out front, with titles or action plans, but more subtly, shoulder to shoulder. We are beginning to understand how this cultural shift can lift teachers into new professional identities, new ways of enacting leadership for learning, and renewed relationships with other educators, all aimed at guiding powerful learning outcomes for the students they serve.

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our years ago, high school social studies teacher Amy Presley was in a rut. She wanted to do more than teach students facts about history. She wanted to create meaningful experiences they would remember forever.

Figuring out how to do this day in and day out was taxing. Every turn seemed to present a different challenge, and Presley often felt alone. She was ready to give up until she found a group of social studies educators using a Twitter hashtag as a way to share resources and discuss their craft.

"I got involved in #sschat and found a few like-minded peers to interact with," Presley said. "I just work better when I can bounce ideas off someone like myself."

Energized by the community and ideas she encoun-

tered on Twitter, Presley began to seek out other opportunities to work online and offline with educators outside her school and district. "It morphed from there into other groups, and events like EdCamp became a regular part of my routine," she said.

When Presley's family relocated, this broad network of colleagues even helped her land a job at a school near Tulsa, Oklahoma (A. Presley, personal communication, January 17, 2015).

While educators can still make connections with peers through traditional professional development channels, the rise of social media has made it increasingly common that teachers reach beyond the walls of their schools to grow in their teaching (Carpenter & Linton, 2016; Carpenter & Krutka, 2015).

One recent survey of 20,000 teachers found that 57%



I've felt less alone and frustrated even when there is nothing to be done about the school environment/admin/district issues from the teacher level."

— Participant in survey of teachers about their professional learning networks

pants described unique combinations of people, resources, and digital tools, and they appeared to be drawn to these networks for a variety of reasons.

For example, a social studies and technology teacher defined her network in terms of a diverse assortment of educators, saying, "My PLN is made up of teachers, library media specialists, administrators, retired educators, professors of all subject areas and levels. Each person in my PLN helps me learn and grow."

Another participant noted the people, technologies, and types of interactions she experienced: "My PLN is a neighborhood of interconnected educators in Twitter, Google Plus, Vine, blogs ... who share openly ideas, issues, strategies, collaborate with students/classes on relevant topics, collaborate on project development, and 'hang out' for discussing issues or planning projects."

Although participants reported diverse conceptions of professional learning networks, a majority referenced digital tools, resources, people, or a combination of these. More than 90% of teachers mentioned resources and digital tools. These educators listed 54 unique websites, online communities, and social media platforms, the most popular being Twitter, Edmodo, blogs, Google Plus, Facebook, and the Discovery Educator Network.

However, professional learning networks are not just about technology. Seventy-one percent of participants identified one or more people in descriptions of their networks. Respondents mentioned educators they connected with through social media, colleagues in their local networks, or a combination of the two.

Participants reported growing in various ways thanks to their professional learning networks. Many teachers described instances when their networks helped them to overcome professional challenges such as isolation, stress, or burnout.

For example, one participant wrote, "I've felt less alone and frustrated even when there is nothing to be done about

of respondents used technology to access educators with whom they wouldn't otherwise have been able to collaborate (Scholastic & Bill & Melinda Gates Foundation, 2014). The term "professional learning network" (Trust, 2012) describes the innovative, organic, collaborative, self-directed approach to professional learning enacted by educators like Presley.

THE BENEFITS

Unlike many traditional professional development options, educators can create professional learning networks (PLNs) tailored to their needs and interests.

We recently surveyed 732 pre-K-12 teachers to better understand their perceptions of their professional learning networks (Trust, Krutka, & Carpenter, 2016), including the impact on their teaching and student learning. Partici-

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the school environment/admin/district issues from the teacher level." Other teachers reported feeling re-energized after connecting with positive, innovative peers. Respondents also noted that their professional learning networks helped them feel more confident in taking risks and trying out new ideas.

Many also emphasized the importance of collaboration through their professional learning networks. Teachers' networks can serve as an immense, virtual faculty workroom. In particular, online spaces can attract colleagues not based simply on locality, but on shared interests in a topic.

People within such spaces often work toward continuous improvement, contributing their unique talents and skills, and taking collective responsibility for success. By overcoming typical geographic constraints, many teachers explored diverse perspectives, found new partners for collaboration, and received candid feedback via professional learning networks.

A majority of participants also credited professional learning network activities with enhancing their knowledge and skills. For some teachers, this meant learning about new ideas, resources, strategies, and digital tools. For others, it meant cultivating their intellectual skills, such as reflection and metacognition.

Almost all participants reported applying knowledge from their professional learning networks in their practice. These changes included everything from trying out a new app to implementing a radically different teaching style, such as negotiating curriculum with students. Professional learning networks also support disposition changes: One-third of respondents reported shifts in their professional identity as a result of engaging in professional learning network activities, and one-fourth stated that their professional learning networks changed how they thought about teaching.

Professional learning networks provide opportunities for teacher leadership that may not always be available at participants' schools. Given their self-organized and organic nature, professional learning networks allow teachers to make positive contributions to their profession and the professional learning of others. For example, teachers moderate some of the most popular education-focused Twitter chats, and many have used blogs as a way to find voice and an audience for sharing their experiences and innovative ideas.

Finally, most teachers in the survey reported making efforts to examine how their professional learning network activities shaped student learning. Some participants described changes in students' knowledge and skills, such as a deeper understanding of the content or improved technology skills.

Teachers also noted a positive impact on their students' attitudes, emotions, and interests. For example, respondents felt that because of their professional learning network activities, students were more engaged in and excited about learning. A math teacher said her professional learning network influenced her teaching so that her "students now are in more control of their learning. They ask better questions, they communicate in

LEARN MORE

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class more with their peers and myself, and they have a better understanding of what they do and do not know."

FACTORS SHAPING SUCCESS FOR TEACHERS

While the potential benefits are enticing, teachers may experience some initial challenges in establishing effective professional learning networks.

It can take time to learn how to use digital tools and interact in online spaces in order to cultivate a supportive network, and educators who do not quickly find their niche or tribe may not persist long enough to reap the potential benefits.

The quantity of people, content, ideas, and technologies that suddenly become accessible via professional learning networks can sometimes be intimidating and even overwhelming.

Teachers who use their professional learning networks to associate with like-minded educators risk creating echo chambers in which they are not challenged to consider diverse and dissenting perspectives. Other teachers may wonder about the quality or credibility of content they encounter in online professional spaces. Even educators who become enthusiastic participants in rich professional learning networks that stretch beyond school walls can sometimes experience a sense of frustration and isolation within their schools (Cook, Johnson, & Stager, 2015).

The most important step for teachers as they begin to explore professional learning networks is to become connected with other educators who will support their growth. We recommend Twitter as a means to connect initially. The widespread use of education-related hashtags and the popularity of education Twitter chats (Carpenter & Krutka, 2014) make Twitter one of the easier methods to find other educators with shared interests.

However, Twitter is not the only option. For instance, teachers already using Edmodo, Schoology, or Discovery Education products with their students can access the professional discussion forums or networks that these services support.

Some teachers may prefer to begin with just one digital tool or network and set aside time every week to connect and learn with other educators. However, every tool and network is different, so teachers may want to consider exploring different options if they feel a particular tool is not supporting their learning.

As teachers become more comfortable engaging in profes-

sional learning network activities, they can benefit from improving and modifying their networks to fit their needs. For example, teachers might make efforts to diversify their networks so as to avoid groupthink that could result in exposure to fewer new ideas.

Teachers also benefit when they push themselves to move beyond only observing and acquiring ideas. For instance, conferences or regional Edcamps (Carpenter & Linton, 2016) allow many educators to meet face-to-face with professional learning network colleagues they initially met and interacted with online. Teachers who initially connect via Twitter can move their conversations to videoconferencing tools such as Skype or Google Hangouts to allow for more extended discussions. Educators can also look for a colleague of the same content area or grade level and propose that their classes collaborate on an activity or project.

FACTORS SHAPING SUCCESS FOR ADMINISTRATORS

School administrators can support professional learning networks as one innovative aspect of a larger plan for teachers' professional growth. Leaders understandably have an interest in professional learning that is related to student curriculum, educator performance standards, and district and school strategic plans.

While the self-directed nature of much professional learning network activity could be perceived as competing with required professional development, professional learning networks can support the work of teachers to meet both personal and system goals.

Schools and districts can at times have good reasons to want groups of teachers to have shared professional development experiences and common understandings of certain topics. After all, research has emphasized the importance of professional development being coherent with ongoing initiatives and mandates (Garet, Porter, Desimone, Birman, & Yoon, 2001).

Using their professional learning networks, teachers can import novel ideas from outside the local context that may help address district goals. A number of participants in our study considered their local professional learning communities (PLCs) as part of their overall professional learning network.

And teachers can be encouraged to connect in-school or indistrict professional development with their professional learning network activities in ways that are reciprocally beneficial (Trust, 2014). Many teachers in our study reported being invigorated by what they learned in their professional learning networks and, as a result, ultimately sought out yet more professional learning.

We agree with the assertion that "no school system can single-handedly meet the developmental needs of every teacher it employs" (Ferriter & Provenzano, 2013, pp. 20-21), and districts should welcome professional learning networks as a means to address more of those needs.

Districts might benefit from looking for ways to leverage teachers' existing professional learning network activities and increase awareness of the concept. District professional learning days could include sessions that introduce interested educators to the basics of professional learning networks.

Given the enthusiasm evident among so many of our participants, many districts likely have teachers on their staff who would willingly help their peers develop professional learning networks. In addition, the U.S. Department of Education (2014, 2016) has created resources that can support districts navigating this new terrain, such as its *Online Professional Learning Quality Checklist* and the 2016 *National Educational Technology Plan*.

However, new kinds of expertise may be necessary to facilitate the development of professional learning networks. Experience in implementing and assessing more top-down initiatives may not be instructive regarding how best to support professional learning networks. Measuring outcomes could be more complicated when teachers are pursuing personalized learning. And administrators who want to encourage professional learning networks must be careful to avoid the tendency to tie "bureaucratic, managerial knots that squeeze out autonomy and instead seek and reward compliance and uniformity" (Kennedy, 2014, p. 691).

Virginia's Albemarle County Public Schools is an example of a district that embraces professional learning networks. The district's website states that the district "encourages teachers to leverage social media and virtual learning opportunities to personalize professional learning while meeting the state's requirements."

Virginia educators can earn recertification points for eight different types of professional activities, and Albemarle County

Public Schools provides suggestions for how self-directed professional learning can fit within those categories.

For example, the district encourages teachers to gather and submit evidence of their professional learning network activities to earn points under the "education project" category. Teachers can include blog posts and screenshots of online discussions as evidence of their projects.

Becky Fisher, the district's director of end user experience and professional development, estimates that more than a quarter of district teachers have received recertification points for such professional learning (personal communication, January 20, 2016). Fisher said that she does not see these

activities as detracting from district goals and initiatives. Rather, professional learning network activities are considered part of a balanced professional learning diet, consistent with the district's goal to encourage lifelong learning among faculty.

The district's support of teachers' professional learning networks does not preclude the district from, at times, requiring certain professional development of teachers. The district has, however, also innovated in combining its more traditional professional development offerings with professional learning

Teachers already using Edmodo, Schoology, or Discovery Education products with their students can access the professional discussion forums or networks that these services support.

network activities.

For example, after participating in district-provided face-toface workshops, teachers can often earn additional recertification points through a set of supplementary, administrator-approved activities such as experimenting with ideas from the workshop and then discussing what they learned on discussion boards, their professional blogs, or Twitter chats.

MEETING TEACHERS' NEEDS

As Learning Forward Executive Director Stephanie Hirsh said, "Many people have lost confidence in the power of professional learning to improve practice and results for all students" (Hirsh, 2015, p. 6). Recent survey research suggests that the majority of teachers are not satisfied with the professional learning available, and there is frustration regarding how PLCs are implemented in many schools (Bill & Melinda Gates Foundation, 2014).

This makes the enthusiasm for professional learning networks among our respondents particularly noteworthy. Respondents credited their networks with contributing to an array of improvements in their practice and student experiences.

Professional learning networks can expand the faculty workroom to meet the specific needs of teachers and encourage innovation. However, much work remains to be done in determining how to maximize the potential of these networks to benefit students, teachers, and school systems.

Teachers must reflect on the benefits, application, and results of their professional learning network activities. For professional learning networks to have a broad impact, teachers and administrators alike may have to take risks and support one another in exploring uncharted waters. Yet these challenges are worth facing, as Amy Presley's story reminds us.

Presley is a dedicated educator. She often spends her nights chatting with fellow teachers online about how to improve education and her teaching. On many weekends, you can find her at Edcamp unconferences. She brings ideas and resources from educators around the world into her teaching to create exciting and memorable learning experiences for her students.

The responses from our participants suggest that many educators like Presley have used their professional learning networks to find what they need to thrive professionally. We believe more teachers and schools would be wise to consider how professional learning networks could become a part of their professional learning activities, too.

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CLOUD COACHIG

By Lindsay Clare Matsumura, Donna DiPrima Bickel, Dena Zook-Howell, Richard Correnti, and Marguerite Walsh

> WEB-BASED LEARNING HOLDS PROMISE, ESPECIALLY FOR DISTRICTS WITH LIMITED RESOURCES



eb-based coaching shows significant promise for linking teachers to highly expert practitioners. This is especially important in districts that cannot afford to hire full-time school-based coaches or to train and support coaches to be experts in

coaches or to train and support coaches to be experts in all content areas.

Web-based coaching also offers special affordances that may not be available in face-to-face coaching. In particular, the opportunity for coaches and teachers to reflect on video together is a powerful way to focus attention on the student thinking shown in classroom interactions and small but significant instructional decisions.

While web-based teacher professional development shows a great deal of potential for improving practice, research is in the early stages of determining how to best design these experiences to further teaching and learning. Here we describe what we are learning about designing a web-based literacy coaching program based on our work translating the Institute for Learning's Content-Focused Coaching program (Bickel, Berstein-Danis, & Matsumura, 2015) to an online format.

This project is motivated by our past research showing

that the program is effective at improving reading comprehension instruction and students' reading achievement in high-poverty elementary schools (Matsumura, Garnier, & Spybrook, 2013).

Implementing the program would be impossible for districts that have neither school-based coaches nor resources to provide in-depth training to coaches to develop

their teaching and coaching skills. Supported by the Department of Education's Institute for Education Sciences, we are developing a webbased version of Content-Focused Coaching comprised of an eightweek workshop followed by online coaching that has the potential to serve districts with varying professional development resources and needs.

Would teachers
feel comfortable
digging deeply into
their instruction
with a web-based
coach?

Moving from face-to-face to web-based delivery raised many questions about our work. We wondered: Would teachers feel comfortable digging deeply into their instruction with a web-based coach — a person they have never met before? How might the program help teachers improve their instruction? How would teachers respond to the challenges of using new technology? In the following sections we describe our project and what we are

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EXCERPT FROM THE FRAMEWORK FOR TEACHER AND STUDENT TEXT INTERACTIONS				
DIMENSIONS	TEACHER MOVES	STUDENT MOVES		
Posing questions to construct the gist	Ask open-ended questions that require students to respond in more elaborate ways to explain idea in the text.	Demonstrate understanding of key ideas in the text.		
	Ask questions that surface students' potential misunderstandings.	Respond using own words rather than repeating the text verbatim.		
	Ask questions in sequence that help students construct understanding of the key ideas in the text.	Respond in longer ways that connect ideas within the text.		

learning so far in response to these questions.

We are developing this web-based coaching program through a series of design cycles where we try it out, get feedback from teachers, and revise accordingly. In the first year of the program, we worked with seven teachers from three schools in a large urban school district. This past academic year, we worked with 15 additional teachers in two districts.

All of the teachers are in schools that serve large numbers of students from low-income backgrounds. To learn from our work with teachers, we ask teachers to complete multiple surveys and interviews, and we study videotapes of teachers' classroom text discussions taken before the workshop, right after the workshop, and following coaching.

LAY THE GROUNDWORK

While Content-Focused Coaching can be applied in any content area, the in-person research project coaches worked with teachers in grade-level teams in targeted ways to study two techniques — Questioning the Author (Beck & McKeown, 2006) and Accountable Talk — to increase the quality of classroom text discussions. The goal for meeting in grade-level teams was to establish a shared vision for instruction around particular content and language to talk about that instruction.

The eight-week online workshop plays a similar function in that it lays the groundwork for coaching. Teachers participate in a weekly routine where they read books and articles to build their knowledge, study models of text discussions and Institute for Learning-developed lesson plans, provide feedback to other teachers on their lesson plans, and reflect with other teachers about their experience on a discussion board.

Because teachers in the project do not necessarily know one another nor share a common curriculum, teachers plan lessons using common texts (e.g. *A Long Walk to Water* by Linda Sue Park). Working from the same texts enables teachers to compare lesson plans and learn from each other.

APPLY KNOWLEDGE TO PRACTICE

Upon completing the online workshop, teachers engage in web-based coaching with a Content-Focused Coaching coach to apply what they learned in the workshop in their own class-

room. Using a gradual release of responsibility approach, the coaching begins with teachers teaching one of the model lessons they analyzed in the online workshop. In subsequent cycles, teachers move on to implementing lessons they planned in the workshop, and then to implementing the model using the texts they normally use in their school.

A key feature of web-based coaching is the use of a conceptual tool we developed called the Framework for Teacher and Student Text Interactions. The framework summarizes key dimensions of Questioning the Author and Accountable Talk, such as identifying stopping points in texts to pose a question, asking questions that help students construct an understanding (the gist) of a text, crafting cognitively demanding questions, holding students accountable to rigorous thinking, and creating a positive classroom learning community.

The framework describes teacher and student actions, called talk moves, in a discussion. (See excerpt above.) This descriptive language for a particular dimension is used as a lens through which coach and teacher reflect on a discussion. For example, evidence that students are constructing the gist of a text (one of the framework dimensions) is apparent when students identify key ideas in the text, use their own language to discuss the text, and connect ideas. Teacher moves associated with this dimension include asking open-ended questions that support students to respond in longer ways, surface misunderstandings, and focus students' attention on key ideas.

Each coaching cycle consists of three phases:

- Prelesson coaching conference to determine instructional goals. A coaching cycle begins with teachers emailing the coach a lesson plan. During individual prelesson phone conferences, the coach and teacher decide together what dimensions of the framework to focus on in the coaching cycle.
- Written reflection on instruction. Subsequently, teachers videotape themselves enacting the planned lesson (about 30 minutes) and upload the videos to a secure server. The coach then views and edits teachers' videotaped lessons using QuickTime Pro to identify three short segments (two to three minutes each) that highlight specific and valued events in the instruction. The coach uploads the video clips to the online coaching interface from the University of Virginia's Center for Advanced Study of Teach-

ing and Learning, then writes comments and reflective questions for each lesson segment to draw attention to particular teacherstudent interactions in the discussion.

When the clips are uploaded, the teacher is notified and invited to generate a short written response to the coach's comments. The goal of the written feedback is to provide an opportunity for teachers to gather questions and ideas before the post-lesson conference. Teachers' written responses serve a similar function for the coach in that it provides the coach insight into teachers' instruction and intentions to better tailor comments to teachers in the post-conference.

• Post-lesson conference: Joint reflection on the videotaped lesson. A coaching cycle ends with individual post-lesson phone conferences (about 45 minutes). During the conference, coach and teacher watch and reflect on the lesson segments guided by the framework. The coach and teacher also determine next steps, including identifying the framework dimensions that are to be the focus of the next coaching cycle.

COACHING IN ACTION

To get a sense of what teachers experience in the coaching, here we describe a coaching cycle for one teacher. Kathleen Johnson taught for many years in an urban district. The majority of her students were from low-income families and transitioning from bilingual education.

Johnson was interested in focusing on two dimensions of the framework: Posing questions to construct the gist and accountability to rigorous thinking. During the first coaching cycle, she worked to apply the concept of planning openended questions at particular stopping points in the text *A Long Walk to Water* by Linda Sue Park. Johnson's videotaped lesson indicated that she was asking many traditional, closed-ended questions during discussion that directed student talk in less productive ways.

In her written reflection, the coach invited Johnson to consider the kinds of student responses she received to particular types of questions. For example, one of the selected video clips focused on a moment when a student brought in tangential information. Johnson asked the coach to think about different questions she could have asked the student in response to his seemingly off-topic comment.

This written conversation continued by phone in the post-conference, when Johnson requested that they begin discussion with this video clip. After viewing the video clip together, the coach proposed that they answer Johnson's question collaboratively by considering possible talk moves that could be used in such a situation. They tried different talk moves at various junctures of the video clip, pausing the video and discussing how a particular talk move might assist student thinking and understanding.

Finally, the issue of the initial question became the focus. The box above right shows a portion of the coaching conversa-

COACHING CONVERSATION

Coach: If you begin with a really open-ended question like, "So, what are we learning here? What is the author telling us about this war?," the kids have to start to talk about the war. They have to make some claims about it.

Johnson: I got more into those questions after the first chapter. "What was he thinking when that happened? How does this new information affect Salva?" I think those are more the open ones that you're thinking about.

Coach: Sometimes, when we're asking a question, we're actually inserting some of the answer in our question, like how does such and such affect Salva? If we do that, we're actually alerting them to the fact that something affected Salva. If we just say, "What are we learning here?" or "What's happening here?" or "What new information is the author telling us?," then they have to come up with the fact that something has affected Salva. The students might not have realized that, and that's information for us as teachers that something just went right over their heads. We're learning that something we thought was going to be really easy for them to digest is not.

Johnson: I see a pattern here. The online workshop facilitator talked about the same thing. We're so used to asking what we believe is open-ended, because to me open-ended is where they have to give you information, not just a yes/no. But you're asking for them to really delve into what's going on. I guess I'm looking for more concrete information.

Coach: You want that concrete information to come from the kids.

Johnson: I want them to think more rigorously or get into it but I also want to make sure that they understand the fundamental things that are going on that they may not.

tion in which Johnson considers why she asked the kind of questions she asked and begins to make connections between theory she studied during the online workshop and the observations she is making with video during her coaching phase.

This conversation explored the continuum of open-ended questions and how some questions, while allowing for longer responses, provide students with teacher-generated information rather than allowing them to surface the key ideas from the text themselves.

The nuance that not all open-ended questions are created equal and that small differences in the wording of a question affect the opportunities students have to think and grapple with text is an example of the substantive coaching conversations that occur when pre- and post-conferences are built on reflection and use video as the vehicle for co-study.

ESTABLISHING TRUST

One of the surprises for us was the ease with which teachers established trust with a web-based coach. One 4th-grade teacher said, "I always felt like ... something would be more beneficial for me if I had that interaction with the person face-to-face, but this [experience] made me think a little bit differently because ... even though I wasn't face-to-face with [the coach], I feel like we always stayed in contact, and if I needed anything, I knew I could come to her."

Teachers also reported that they appreciated the focused attention they received from the coach. Another 4th-grade teacher remarked, "When I was on the phone with [the coach] ... she actually took the time to go through the chapter with me So to me, it didn't matter if she was sitting there or I was on the phone with her because she still did the same thing, or maybe even more than someone would do if they were sitting with me."

Interestingly, other teachers also commented that they received more focused attention from the online coach than from their school-based coach. One 5th-grade teacher said, "I don't see my [district's] literacy coach that often, and we don't have in-depth conversations like with the online coach."

While the comparison between district and online coaching might be an artifact of the particular schools we were working in and might not be the case in a different district, it is notable that all of the teachers reported that they felt at least as comfortable and supported by the web-based coach as from their school's literacy coach.

EVIDENCE OF CHANGE

Teachers were positive overall about the amount that they learned from the project (workshop plus coaching) and the usefulness of what they learned for improving their practice.

In surveys, all teachers agreed that the coach's written comments focused on issues that were relevant to their practice, easy to understand, and worth the time it took to read and respond to the comments. They also noted that the experience increased their confidence in their teaching.

As one 5th-grade teacher wrote, "This program made you look at the way that you were teaching, made you look at instruction, and made you look at the questions that you were asking, and made you look at student engagement, and if they're really learning."

Another 4th-grade teacher wrote, "Even though [the program] was a lot of work, it definitely has helped me become a better teacher. And the way I looked at comprehension is so totally different than I did stepping into the classroom in September."

Our early study of teachers' videotaped lessons likewise suggests that teachers are improving their instruction. At the end of the first coaching cycle, compared to baseline, teachers were more inclined to segment the text during discussion and pose questions that guide students toward constructing a coherent

representation of the text. Furthermore, there was an increase in the extent to which teachers showed how students' ideas related to one another in the discussion.

Promising trends are evident for the general rigor of the discussion, which includes teachers posing more cognitively demanding questions, as well as for students linking contributions, providing more extended explanations, and providing text-based evidence to support their responses.

TEACHER RESPONSE

Learning online is not without its trials. We were pleased to see that most of the teachers, although slightly apprehensive at first, were mostly very positive about viewing themselves on video. We were surprised to learn that some teachers lack computer literacy skills that made engagement in the online workshop more time-consuming and frustrating than we anticipated.

During problem-solving technical issues with teachers over the phone, we learned that some teachers did not know which browser they were using, were unsure about how to download (and then locate those) files, or how to work on and save a downloaded document and then upload it to a website.

Some teachers do not own a home computer and experienced difficulty with district firewalls when uploading text and video files or viewing videos. Based on teacher feedback, we are considering greater initial support to reduce these problems through a combination of additional visual aids, and more technology training for less tech-savvy teachers in advance of the workshop.

PROMISING DEVELOPMENT

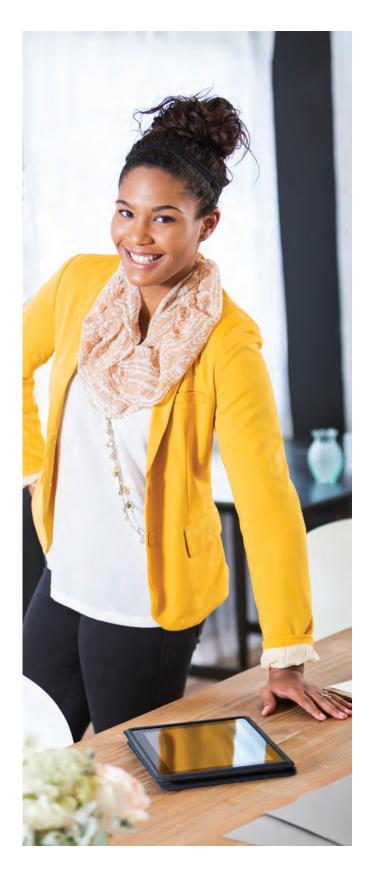
Online professional learning holds great promise as a way to deliver powerful learning to more teachers at lower cost. As our research base grows, districts can become more confident about outsourcing some professional learning that addresses particular instructional goals. Our work suggests that, instead of districts hiring and training district-level content-specific coaches, teachers can work effectively with other teachers beyond their gradelevel team, school, or district and form meaningful learning partnerships.

This has special implications for rural districts and schools with few teachers who teach the same grade and subject matter. Teachers can form trusting, positive relationships with a remote coach and learn to use cognitive tools to guide self-reflection on teaching and learning.

Online learning that combines opportunities for teachers to build new knowledge and apply that learning with feedback from other teachers and a highly qualified coach shows real potential for improving teaching and learning.

Of course, these online efforts would need to be integrated with other professional learning in a district, and administrators will need to acknowledge and value the time and effort teachers commit to this work in meaningful ways (e.g. to count

Continued on p. 39



ALGEBRA? THERE'S AN APP FOR THAT

FLORIDA GOES ONLINE WITH MATH SUPPORT FOR TEACHERS AND STUDENTS

By Joy Bronston Schackow and Stephanie Cugini

he transition to Common Core State Standards for Mathematics has created a need for high-quality professional learning on content and pedagogy. This is especially true for algebra 1 teachers in Florida, where students must pass a standards-based exam as a requirement to earning a high school diploma. But time, distance, and cost constraints can get in the way.

To address those challenges, the University of Florida's Lastinger Center for Learning and Study Edge, an educational technology company, developed an online teaching and learning system for algebra teachers and students.

This system, called Algebra Nation, launched throughout Florida in spring 2013. Funded by the Florida Legislature,

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POPSICLE STICK CATAPULT ACTIVITY

Description

Students will work in small groups to build miniature catapults. They will use these catapults to make generalizations about the relationship between the distance that the catapult is pulled back and the distance that the object travels in a parabolic path.



Mathematics Florida Standards

<u>MAFS.912.F-IF.3.7a</u> Graph linear and quadratic functions and show intercepts, maxima, and minima.

<u>MAFS.912.F-IF.1.1</u> Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

Objectives

Students will be able to:

- Represent the path of the object that is catapulted graphically.
- Make generalizations about the pull distance on the catapult and the distance that the object flies.

Time required: 20 minutes

Materials needed (per group):

- 6 Popsicle sticks
- 5 rubber bands
- Plastic bottle cap
- Superglue
- Mini pom-poms or projectile of your choice
- Ruler (with cm)

Lesson preparation

- 1. Superglue one bottle cap to the end of one Popsicle stick. You will need one per group.
- 2. Draw a line on the floor or table where students will stand to launch their projectiles.

the program partners with students, teachers, administrators, parents, political leaders, and local communities to develop and deliver personalized professional learning.

The program includes standards-aligned instructional videos that model Common Core practices, workbooks to accompany the videos, practice assessments that mirror the state's algebra test, and interactive homework assistance where students provide and receive help from peers and study experts.

Since its inception, the program has grown to include a teachers-only area to provide targeted support to improve teachers' algebra content and pedagogical knowledge. With funding from the Bill & Melinda Gates Foundation, the teacher area launched in September 2014 to provide free, ongoing professional learning through collaboration and inquiry with activities that allow teachers to examine, analyze, and reflect on their teaching.

The professional learning support integrated into Algebra

Nation is especially important for mathematics teachers in schools serving high-needs students. High-need schools and districts often have difficulty recruiting and training teachers, limited access to high-quality educational content and materials, and episodic professional development that rarely addresses specific student needs, especially in low-income areas. Economically disadvantaged students are far more likely than their peers to have inexperienced teachers (Ladd, 2011).

USING ALGEBRA NATION

To use Algebra Nation, students and teachers go to the website (www.AlgebraNation.com), select their school from a dropdown list, and then log in using their district credentials. Because Algebra Nation is integrated with each district, there is no need to remember a new username or password. The Algebra Nation app also allows students and teachers to access Algebra Nation using their tablets and smartphones.

POPSICLE STICK CATAPULT ACTIVITY PART 1

Name	
Date	

Challenge yourselves to use the elements of medieval technology to build a mini-catapult and fill the air with projectiles.

Each group will experiment with making a catapult using Popsicle sticks, rubber bands, and everyday materials. Then groups will face off to see which contraption has the best combined accuracy and quadratic function trajectories. Make sure to shoot from the labeled shooting line on the floor or table.

Materials needed:

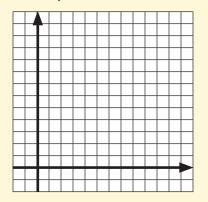
- 6 Popsicle sticks
- 5 rubber bands
- Plastic bottle cap
- Superglue
- Mini pom-poms or projectile of your choice
- Ruler (with cm)

Steps:

- 1. Gather your materials.
- 2. Stack four Popsicle sticks together. Using a rubber band at each end, tie the bundle together tightly.
- 3. Place the remaining two Popsicle sticks together. Bundle only one end together using an additional rubber band. Because your bottle cap has already been secured, use the Popsicle stick with the bottle cap as the top stick in this set.
- 4. Pry the unbundled end open enough to be able to slide the set of four sticks in between perpendicularly to form a cross. Slide the bundle of four sticks down as closely as you can get it to the rubber band holding the two sticks together.
- Secure the body to the wings (diagonally at the point where the Popsicle sticks intersect) by criss-crossing a rubber band from the back of the right wing to the front of the left several times. Repeat with the final rubber band.
- 6. Place your projectile in the cap. Hold the set of four sticks with one hand and, with the other hand, push down on the angled stick just behind the projectile.
- 7. Release your projectile.
- 8. Measure the distance that the projectile traveled.

POPSICLE STICK CATAPULT ACTIVITY PART 2

1. Sketch a graph that represents the path of the objects you catapulted. Label your axes.



- A. What does the *y*-intercept represent?
- B. What does the *x*-intercept represent?

2. Does the distance that the catapult is pulled back and down affect how far the projectile travels? Test and record your data below:

Trial	Pull distance (cm)	Distance traveled (cm)
1		
2		
3		
4		
5		

3. Conclusion: State what your test results show about this relationship between pull distance and distance the projectile travels.

Reflection questions for teachers

- What mathematical connections do you believe students will make?
- What questions could you ask students to further develop these connections?
- What are some challenges in implementing this activity?
- What can you do to overcome these challenges?

, free, powerful algebra tool

Once on the site, teachers can navigate to the Teacher Area, which uses a variety of resources and online platforms to support teachers in their efforts to incorporate both the Common Core content standards and the eight Standards for Mathematical Practice into their mathematics classrooms.

The eight mathematical practice standards are designed to be embedded within mathematics instruction for all grade levels, starting in kindergarten. To this end, the standards are written in a very broad context.

To provide a visual representation of the standards, Algebra Nation created videos of master teachers effectively incorporating one mathematical practice standard in their classroom and then reflecting on the standard and their instructional practices, as well as students' perceptions of the lesson, instructional strategies, and their own learning. The videos include a diverse range of students and teachers to illustrate that these standards can be implemented in any type of classroom setting.

Algebra Nation Study Experts, along with a university faculty member, also serve as facilitators who provide both face-to-face and virtual professional development around the state. Teachers can follow up their face-to-face learning with facilitated sessions online, where they discuss with one another their successes and challenges in implementing what they've learned.

Facilitators use the mathematical practice videos in both face-to-face and virtual professional learning. After showing one of the classroom videos, facilitators engage participants in discussing and reflecting on

the specific mathematical practice standard modeled in the video using a modified version of the National School Reform Faculty's Making Meaning Protocol. Reflection begins at the concrete stage and then moves through a series of higher-level questions, allowing for a richer conversation around the standard and leading to reflection on practical strategies that teachers can use to incorporate the practice standard in their own classroom.

Teachers can also access a resource library that houses standards-aligned lesson plans and activities that they can implement in their classrooms. These include discovery-based lessons, performance tasks, independent practices, and assessments, all designed using research-based instructional strategies with the common focus of improving students' conceptual understanding.

These resources also serve as a professional learning tool to encourage teachers to think about their own practice and how the lesson can deepen student understanding of a specific mathematical concept. After teachers complete the activity during a professional learning session, the facilitator engages groups in discussions around reflection questions. See an example of an activity and reflection questions on pp. 36-37.

Algebra Nation can also create reports on student activity

that allow teachers to view data at the individual and class level. Reports on assessment scores provide teachers with real-time analyses of their students' current levels of understanding on specific topics, which helps teachers to determine which, if any, concepts are in need of remediation.

BUILDING TEACHERS' CONTENT KNOWLEDGE

Algebra Nation provides teachers with synchronous professional learning through a videoconference platform to improve teachers' depth of mathematical knowledge.

Interactive webinars offer in-depth coverage of specific Common Core math standards that are new to the algebra 1 curriculum, such as statistics concepts. Teachers deepen their own understanding of the content and also learn strategies for teaching these standards by working through lessons and activities.

Teachers can then opt to implement lessons on the topic in their own classroom and engage in a simple teacher inquiry process. Webinars are archived and available for any teacher in Florida to access anytime.

VIRTUAL TEACHER NETWORK

One of Algebra Nation's overarching goals is to build a selfsustaining network of mathematics educators who view themselves as owners of and co-contributors to Algebra Nation. This virtual community of practice, comprised of algebra 1 teachers, is one where members interact regularly to enhance their work as practitioners and develop a repertoire of resources.

One platform that supports this network is the Teacher Wall, an online social media platform comparable to Facebook that provides teachers a means to connect and collaborate across time and space.

Teachers log in at any time and from anywhere to engage in meaningful discussions with other teachers on a variety of topics. Teacher leaders act as guides by posing questions that require teachers to reflect on their practice, uncover their beliefs and attitudes regarding mathematics and mathematics teaching, and consider ways to improve student learning.

Teachers also share resources such as worksheets, lesson plans, photos, and other documents they have developed or used in their own classrooms by uploading them as attachments to the wall.

Teachers view the Teacher Area, and especially the Teacher Wall, as a place where they can find support and collaboration as indicated by the following wall posts:

- "The Algebra Nation wall helped me ... in so many areas —
 from unpacking the standards, classroom layout, to specific
 algebra 1 topics and how to teach a concept."
- "The Algebra Nation wall has been a valuable tool that is unlike any other. Together, we have shared ideas, resources, questions, concerns, and even a laugh or two."
- "I find the posts uplifting; we're in this together. We share ideas and suggestions on ways to overcome different and

- sometimes difficult situations."
- "I feel that I have developed relationships with the teachers on the wall and collaborated more here than in my actual algebra 1 team at my school."

IMPACT ON STUDENT ACHIEVEMENT

Algebra Nation has had a significant impact on student achievement in algebra 1. Schools in Florida that were frequent users of Algebra Nation during the 2014-15 school year experienced an average Algebra 1 End-of-Course exam score of 83% — 20 percentage points above the average score of schools with a low usage rate (63%).

The success of Algebra Nation has led to expansion into other mathematics courses. Math Nation launched in January 2016 to support mathematics students and teachers in grades 6-12. So far, Math Nation has provided teachers and students with resources similar to those on Algebra Nation for pre-algebra, algebra 1, geometry, and algebra 2, with plans to add grades 6-8 mathematics, pre-calculus, calculus, and statistics.

CHALLENGES

Developing a professional development component to Algebra Nation has had its challenges. For example, when creating classroom videos to demonstrate the development of mathematical practices, we recorded a diverse range of students that included classrooms with struggling learners and also some with advanced or gifted learners. When teachers with classrooms of struggling learners viewed a video that showed advanced students, they dismissed what they were seeing, stating that their students could not do what they were seeing students in the video do. This lack of buy-in was motivation for recording the

remainder of the videos in classrooms with struggling learners.

Another challenge for Algebra Nation faced was low traffic on the Teacher Wall when it first launched. The launch of the Teacher Area coincided with the implementation of new state standards. We expected this to be a driving force for teachers to use the Teacher Area, especially the Teacher Wall. We hadn't considered just how much teachers had on their plate at the time. They had trouble finding time to post on the Teacher Wall.

To solve this problem, we designated several of the strongest teacher users as guides who would post questions or comments to the Teacher Wall to elicit responses from other teachers. This allowed new teachers to jump easily into the conversation and has helped to build a virtual community of algebra teachers that support and trust one another.

The Teacher area has evolved with time and increasing use. Through an environment built on trust and equity, Algebra Nation uses both positive and negative feedback received from stakeholders to grow and improve its professional development offerings and innovations.

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Cloud coaching

Continued from p. 34

toward state-level continuing education requirements or career advancement).

Our work and the work of others show that web-based formats have the potential to increase teachers' access to expert coaching.

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WHAT STUDENT WHAT STUDENT WHAT STUDENT CAN TEACH US ABOUT TEACHING

By Nikki Holland, Ginney P. Wright, and Christian Z. Goering

o most English teachers, the paper load is the bane of one's existence. Unfortunately, this is true both for those who teach writing and other disciplines as well. In many cases, teachers shy away from including much writing because of the many hours it requires to read and provide substantial feedback on such papers. Yet writing is widely understood as critically important to learning (Applebee & Langer, 2013; Mayher, 1983; Zinsser, 1989).

Initially, it might seem like professional suicide for a learning leader to begin each session by assembling teachers into groups to assess student writing, but that's exactly what we do in the Northwest Arkansas Writing Project's College-Ready Writers Program. The program, part of a National Writing Project grant, aims to improve the teaching of academic writing with a focus on argument and, in doing so, increase student writing achievement.

Participants in our local iteration of the program are 6th- through 12th-grade English language arts teachers in a small rural district in Northwest Arkansas. Each month, par-

ticipating teachers and Northwest Arkansas Writing Project staff meet to examine student work together and plan our next instructional steps, providing a focus to the day's work based on the successes and areas of further development identified by the teachers in constructive conversations.

In this article, we describe three specific practices we use to examine student writing — constructivist coding, calibrating with anchor papers, and affinity mapping — that would transfer easily to any professional learning community.

As a part of the grant, participating teachers step away from their classrooms for one day each month to come together with colleagues to take a closer and deeper look at student writing. After coffee and catching up, teachers find their places, sign in to our shared Google document, and begin writing into the day.

Early in the fall, we begin with more straightforward prompts. By the spring, we are ready to tackle higher-level concerns, and we begin our day writing and thinking together about how to move our teaching and our students' writing forward.

Our shared goal for these sessions is to ground our observations about student writing in the reality of their texts and to make instructional plans that respond directly to the strengths and struggles we identify. To promote a safe space where teachers feel comfortable discussing their students' work, we keep all student writing samples and teacher writing anonymous. In doing so, we are able to shift our focus from teacher to student, an important shift that helps teachers to interpret our meetings as collaborative rather than evaluative.

CONSTRUCTIVIST CODING

Before the session, teachers engage students in a fourday series of activities during which students read and annotate texts to arrive at a claim with supporting evidence. During the session, teachers refer to five student samples (about one paragraph each) to inform their responses to the day's activities.

First, we ask teachers to write about the work they had done with their students. One teacher wrote, "My students tackled this activity with trepidation but forged ahead and worked very hard. I reiterated many times that the students should not be afraid to do something wrong, but that I wanted them to generate ideas and writing. I also feel that my students have not been writers in the past."

Next, teachers respond to student writing samples. They articulate the moves and patterns they noticed in student writing. Many teachers read each student's work several times to search for emerging patterns using a constructivist lens — based on Vygotsky's notion that "cultural develop-

ment appears twice: first, on the social level and, later on, on the individual level" (Vygotsky, 1978, p. 57).

They record the patterns using Toulmin's Model for Argumentation (i.e. claim, evidence, counterclaim, and warrant) for categorizing codes (Toulmin, 2003). Most teachers look specifically at claim and evidence because this was the first activity with argumentation for the school year. For example, one teacher wrote:

- "Student A: Makes a claim but the writing focused on the opinion rather than the argument. Writing skills are low.
- "Student B: Does a good job of making a claim & addressing the opposite side of the argument.
- "Student C: Good at identifying evidence. Addresses both sides of argument & makes a claim."

After teachers read and respond to the samples, we ask them to return to their original writing to add to their initial reflections. Our goal is to collaborate to discover what students were already doing with developing and supporting claims as well as help teachers ground resulting instructional moves in the reality of where students are in the process. One teacher wrote, "I need to now go deeper into claims and use different resources to help teach claim. I also need to do more on claim versus opinion. Visual aids and cartoon strips would be really good to use."

A few teachers noticed that their students couldn't distinguish an argument from opinion, and the opportunity to see this gap provides a clear and focused direction for their next steps when returning to the classroom. We begin to see the implications of this activity in a very explicit way when we engage in a calibration activity later in the day. The results from the work done in this activity pull the teachers through the other experiences with a clear sense of the work that needs to be done.

CALIBRATING WITH ANCHOR PAPERS

To articulate and align our expectations for student writing, we frequently begin sessions by reading a set of papers together to calibrate our responses. In a recent session, we pulled two examples — one 6th grade and one 9th grade — that we felt represented average student responses to the task at hand.

After reading the pieces, we asked teachers to consider the moves the student writers made. Once we discussed those moves as a group, we invited teachers to return to their writing into the day to respond to two questions: What does the student writing tell me about my next instructional steps? What does the student writing tell me about the students' next steps as writers?

This practice accomplishes several goals. First, in exposing teachers to the work being done by students at different

QUALITIES OF CLAIMS IDENTIFIED	BY PARTICIPANTS	
A developing claim	A competent claim	An effective claim
 Might not be based in the sources. Might explain what the writer is claiming but not why. Is broad, not focused. Uses language that is general rather than specific. Sounds more like a personal opinion 	 Emerges from the sources. Provides reasons to answer why the writer is making the claim. Is narrow and focused. Uses language that is correct, detailed, and more exact. Is debatable and may recognize other 	 Synthesizes source material. Uses qualifiers to signal a willingness to consider other perspectives. Takes an angle. Uses language that is precise and suitable for audience and purpose. Recognizes the controversy and may
Sounds more like a personal opinion than a claim.	Is debatable and may recognize other sides of the argument.	Recognizes the controversy and ma propose solutions.

grade levels, it begins a conversation about what we expect from students as they progress from grade to grade. The last several times that we've done this work, we've had excellent 6th-grade writing. The message we hope this sends to teachers at higher grades is: If 6th-grade students can already do this, then my students can do even more.

In this way, looking at anchor papers fulfills a major goal that teachers themselves often bring to professional development: vertical alignment. As we consider what students are already doing, we inform the conversation regarding how the work changes from grade to grade.

Even though the Common Core State Standards provide guidance about what is taught at each grade level, the nuance is up to teachers to parse out. For example, the first writing standard from grades 9-12 is the same: Students should "write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence" (Common Core State Standards Initiative, 2010).

By examining student work together to calibrate expectations for each grade level, teachers can make informed decisions on how to approach this skill in a way that engages students in increasingly challenging experiences.

AFFINITY MAPPING

According to the National School Reform Faculty, affinity mapping is a learning protocol that begins by asking an openended analytic question that asks for defining elements of something and moves through a process that engages participants in generating and organizing ideas into categories in order to detect emerging themes in the data (Peterson-Veatch, 2006).

To teach students how to write effective claims, teachers need a clear understanding of the defining elements that make claims effective and how those elements evolve as students move from grade to grade. To clarify and calibrate our expectations for students' claims, we begin by asking: What makes a claim effective? How can we help students write effective claims? Next, we present teachers with a curated set of claims, retrieved from students' writing, and ask them to organize the claims into categories.

Once teachers have organized their claims into categories,

we ask them to look at trends: What makes one group different from another group? What are the qualities that define the claims that have been categorized within the same group? Teachers discuss these questions in small groups, then we open the conversation to the whole group.

After coming to a consensus on the categories, we write the name of each category on chart paper and generate lists of qualities that each category shares. The chart above shows an example of the qualities that emerged from a group discussion with teachers participating in this activity.

From this point, the discussion can go in one of several directions. We frequently turn next to the research. While we find it critical to connect teachers to what others have said about the topics we cover in professional development, we purposefully begin by engaging teachers in constructing the knowledge for themselves, thus enacting our social constructivist epistemology.

To close the affinity mapping activity, we encourage teachers to think about our second question — *How can we teach our students to write effective claims?* — and talk about how affinity mapping could be used with students. See the sample lesson plan on p. 43.

The benefits of this activity are multiple: Teachers come away from the session with a concrete understanding of a complex term and specific strategies to help students construct effective claims. Affinity mapping can be used in professional development, but it is also a generative learning protocol for students. The process values participants' knowledge and supports their grappling with a complex concept. By grounding the conversation about how to improve students' writing of claims in the student writing itself, we discourage deficit thinking and help teachers collaborate to make instructional moves that will support students' growth as writers.

We regularly hear from teachers who see improved writing performance from their students. For example, in March, one teacher remarked, "Students are doing a better job with taking a position. Overall, most students seem to have taken a position, and many of them have composed nuanced claims that are fair."

While writing into the day during our April session, another teacher reflected, "They have become better writers that can voice

SAMPLE LESSON PLAN

What makes a claim effective, and how can I write an effective claim?

- 1. Tell students the essential questions of the day: What makes a claim effective? How can I write an effective claim?
- 2. Divide students into small groups (3-4), and give each group an envelope with example claims. Note: It's important to cut these so that students can manipulate them.
- 3. Ask students to rank the claims using these categories: developing, competent, effective. Note: This language is higher level than high/mid/low, but it's important for students and for us to remember that this is hard work and that we're all moving toward stronger writing.
- 4. Once students have spent at least 10 minutes reading and organizing claims, ask them to think about what makes the groups different. Here are some questions you might ask:
 - a. Look at your pile of developing claims. What do those writers need to do to get them to the competent claims pile?
 - b. Reread the claims in your competent pile. What qualities do they share?
 - c. What makes a claim effective? What's the difference between a claim that is competent and one that is effective?
- Once small groups have a chance to talk about those questions, engage the large group in a discussion.
 On the board or on a piece of chart paper, record qualities for each of the levels.
- Extension: Consider giving students a developing claim and asking them to revise it to make it competent and then effective. Whole-class discussion to follow.

their claims and support them with others' words (evidence)."

Assessment data also reflect significant growth. For example, when using the Using Sources Tool, a formative assessment tool for evaluating students' use of source material provided by the National Writing Project, we have seen significant growth in writing, even over short time spans. For example, from November to January, we saw a 9.9% improvement in students' integration of source material to support their claims. Additionally, while teachers in November only identified 2.9% of student writers as having effectively distinguished between their own ideas and the source material, that number jumped to 21.7% by January.

SENSE OF SOCIAL RESPONSIBILITY

Myriad forms of teacher assessment and evaluation exist in our schools today, with some more helpful than others. While evaluation isn't the purpose or focus of our work, we learn more about individual teachers by examining their students' writing than any form of accountability could ever hope to do.

Teachers are expected to arrive with student work in hand at each session and know they'll be discussing samples from their classes with their colleagues and us. Because of this, student work informs professional development, and a sense of social responsibility develops that we haven't seen in other forms of professional development.

While each aspect of collaboration and formative assessment outlined in this article contribute to meaningful professional development, the larger goal is for educators to enact appropriate and meaningful instructional moves with students. The centrality of collaboration and formative assessment in our interactions creates critical spaces for teachers to feel confident and supported while evaluating, reflecting, and planning for the implementation of argumentative writing in their classroom.

It is in these critical spaces that teachers learn more about their students, more about themselves, and more about how to effectively connect their students with learning.

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CORE ROLES OF CENTRAL OFFICE LEARNING LEADERS

Learning system designer

Facilitates the development of a district's comprehensive professional learning system.

By Joellen Killion and Cindy Harrison

early 20 years ago, we wrote an article titled "Multiple roles of staff developers" (Killion & Harrison, 1997). We found ourselves in conversations with colleagues like us who had assumed new roles and responsibilities for shaping a program of what we then called *staff development* with little guidance for those in central office who held the roles. Before writing that article, we studied our own work to examine what we did each day and collaborated with colleagues in similar roles to understand what the role of *staff developer* entailed.

Much has changed in the field of professional learning since then. Research shaped a new understanding of what professional learning is, and the responsibility and accountability for it is shifting from central office to school sites in which every educator assumes substantial responsibility for the effectiveness, design, and impact of professional learning.

Learning Forward's Standards for Professional Learning (Learning Forward, 2011) and the accompanying Innovation Configuration maps (Learning Forward, 2012, 2013, 2014) place more agency and accountability for effective professional learning within schools in the hands of principals, teacher leaders, and teachers. When Learning Forward published a new definition of professional learning (Learning Forward, n.d.), many directors in central

2

Program manager

Focuses on the operational aspects of effective professional learning.

3

Coaching champion

Ensures implementation and sustainability of new learning within schools, classrooms, or school system offices and departments.

4

Facilitator

Assists groups with common objectives in completing tasks, planning how to achieve these objectives, and deepening their capacity to collaborate.

Change agent

Has two core responsibilities: promoting and guiding continuous improvement.

offices wondered how their work would change or if there were still a need for the role of director of professional learning in central offices.

Amid this evolution, we have re-examined the role of central office director of professional learning to identify what are now the most essential roles for central office staff related to professional learning. Our continued intent in examining the work of central office professional learning leaders is to elevate the position to have positional and influential power in shaping, maintaining, and refining the district's comprehensive professional learning system.

This article presents five core roles, reduced from eight in our original work, that fall within the portfolio of central office professional learning leaders. Sometimes one person or office within a central office assumes this work. Other times, the work is shared across

multiple offices with someone serving as the coordinator of the various responsibilities.

Each district will naturally approach the responsibilities differently based on size and number of schools, number of initiatives involving professional learning, level of expertise of the central office staff and school leaders, and existing federal, state, and local policy.

Regardless of how the responsibilities are allocated, leaders within each district periodically assess the efficiency and effectiveness with which the work is accomplished and make necessary adjustments to maintain the highest-quality professional learning focused on increasing educator effectiveness and student success.

NEW ROLES

Five core roles emerge for district leaders related to professional learning. They are: **learning system designer**, **program manager**, **coaching champion**, **facilitator**, and **change agent**. The roles overlap and interconnect, making it somewhat artificial to separate them.

The reduced number of roles reflects the shift from a central office-driven, one-size-fits-all, top-down approach to professional learning that existed 20 years ago to a school- and team-based, collaborative, personalized, just-in-time approach to professional learning aligned with educator performance and student outcome standards.

The streamlined roles do not diminish the significance of central office leadership for professional learning, yet they shift those responsibilities to be deeper and more focused on supporting professional learning as it is integrated into the routine work of educators within schools.

Here are the new roles and their core responsibilities and challenges.

LEARNING SYSTEM DESIGNER

Creating a districtwide system for professional learning that embodies the vision and standards for high-quality professional learning is the primary responsibility for learning system designers. The learning system designer facilitates the development of a district's comprehensive professional learning system that includes the conceptual and operational components (Killion, 2013) to create and support effective professional learning for all employees within the district. The program manager then oversees the implementation and operation of the professional learning system.

CORE RESPONSIBILITIES

The learning system designer serves as an advocate for effective professional learning and supports leaders in central office departments and schools to use the professional learning system to design and implement initiatives involving professional learning.

Most innovations, whether in new instructional practices or curriculum, student assessments, financial services software, safety and risk management, or leadership development, require building capacity among employees to implement new practices effectively. Learning system designers ensure that each initiative adheres to the vision and standards for high-quality professional learning.

To be successful as designers of learning experiences, professional learning directors must know and be able to apply the Standards for Professional Learning (Learning Forward, 2011), which define the attributes of effective professional learning. In addition, the learning system designer needs to know about and be able to apply a variety of professional learning approaches

(such as online, face-to-face, or blended learning) and designs (such as flipped learning, training, classroom observation, professional learning communities, instructional rounds, and coaching, among others) that are appropriate to the phase of the learning process, the desired outcomes, the learners, and the context.

The learning system designer must also have the skills necessary to assist others in developing the expertise to use the approaches and designs to plan and execute effective learning experiences and support transfer to practice.

A significant part of this role is being an effective presenter and facilitator of learning. Being a trainer and learning facilitator are highly visible situations in which the professional learning leader is "on the stage." The professional learning director who conducts or facilitates successful training, however, spends as much or more time behind the scenes preparing learning experiences that integrate research on human learning and change. To plan professional learning, learning designers apply the backward planning model that includes:

- Analyses of student, educator, and system data to develop educator outcomes;
- Selection of appropriate approaches and designs to achieve the desired outcomes;
- 3. Sufficient support for implementation; and
- 4. Evaluation of the learning experience, the results, and the return on investment.

The learning designer assesses participants' needs, designs learning experiences to meet those needs, creates a plan that honors learning theory and research, supports implementation of the learning, and adjusts the instruction and learning environment to ensure success.

The professional learning leader uses content analysis and instructional practices to engage learners and optimize learning while building rapport with learners, monitoring participants' responses to adjust the design or delivery, and evaluating learners' progress and success. Designers must constantly update their understanding of content and pedagogy appropriate for working with adult learners.

CHALLENGES

Learning system designers face large and small challenges. A large-scale challenge is gaining commitment from school system leaders to develop a comprehensive professional learning system that serves as the framework for all professional learning within the district.

Until recently, professional learning has not been viewed as an essential vehicle for improving student success and educator practice, and school systems have not sufficiently tracked, monitored, or evaluated the effectiveness of their professional learning efforts. Now, however, new federal policy within the Every Student Succeeds Act elevates the significance of accountability for effective professional learning.

As a designer and trainer, the professional learning director faces the challenge of simultaneously being an expert and a learner. As an expert, the professional learning leader maintains thorough, in-depth content knowledge and persistent attention to new and emerging knowledge and research about learning theories and models. The leader seeks deep understanding about the learners, their motivation, and generational learning preferences. She uses various data sources and methods to assess learning and applies technology to enhance learning and sustain support for implementation of learning.

One challenge for the learning system designer is building the leadership capacity of other administrators and teacher leaders to apply effective professional learning principles within their work. This requires constant attention to coherence within the system and walking the delicate line between monitoring and coaching others as they lead and facilitate professional learning.

PROGRAM MANAGER

School systems organize around two key bodies of work that support continuous improvement: operations and innovations. These two parts of the whole support school systems both to maintain the daily work of managing the system and continuously examine and implement improvement efforts.

The professional learning leader in the role of program manager focuses on the operational aspects of effective professional learning to ensure that routine professional learning services are efficient and effective. He also ensures that innovations dependent on professional learning for their success adhere to the school system's vision and standards for high-quality professional learning.

With smooth, efficient operations, the vision for high-quality professional learning is realized and aligned with federal, state, and local policy, and opportunities for learning are easy to access, monitor, assess, measure, and improve.

◆ CORE RESPONSIBILITIES

In this role, the professional learning leader is responsible for maintaining and improving the comprehensive professional learning system within the school system. This system includes a clear vision, professional learning standards, definition, assumptions, and well-orchestrated operational processes that include roles and responsibilities, decision-making authority, ongoing evaluation, and resource management (Killion, 2013).

The program manager leverages an in-depth understanding of the policy, research, and emerging trends to adapt and adjust the school system's professional learning services and shares this information with those who shape professional learning in schools and other departments. The program manager provides the leadership and coordination to manage the systemwide professional learning.

Within this role are coordination and supervision of specific programs designed to support staff — such as those for aspiring administrators, novices within induction and mentoring programs, school improvement facilitators, or instructional coaches — or implementation of new initiatives, such as curriculum or instructional improvements and school-university partnerships.

Program managers are responsible for effective, strategic, and equitable use of resources, including budgets and staff, and supporting and supervising personnel who serve in the role of central office professional learning staff, such as trainers, learning facilitators, or coaches.

Program managers are also responsible for aligning services to designated high priorities within the school system, managing data and information, and employing a variety of technology-based learning tools to meet the unique needs of individual educators.

Evaluating the systemwide effectiveness of the professional learning and assisting other leaders, including leadership teams at schools, to evaluate the effectiveness of local, school-based professional learning is essential for this role.

In addition, program managers are attuned to changes in the research and landscape within which they work. They stay abreast of current information and collaborate with colleagues and school leaders to analyze emerging trends and information to understand how they might be integrated into current professional learning practices, policies, and procedures. They use data from ongoing assessments and evaluation of the opportunity for, efficiency and effectiveness of, and return on investments in professional learning to adjust the comprehensive professional learning system.

To succeed with this extensive role, program managers depend on a skill set that includes project management, delegation, communication, analysis, assessment and program evaluation, resource management, advocacy, shared decision making, and personnel management, coaching, and supervision.

♦ CHALLENGES

The program manager faces a multitude of potential challenges and, if well-prepared, is able to avoid them altogether. Among the most complex challenges is managing a program without the benefit of a comprehensive professional learning system to support it. This leads to piecemeal decisions, inequities in services, and inefficiency in resource use. Another challenge is coordinating diverse initiatives and programs to ensure that all adhere to the vision and standards of the comprehensive professional learning system.

As responsibility and accountability for professional learning shift closer to the classroom and move to schools, maintaining quality requires diligent monitoring, ongoing development of leaders with primary responsibility for professional learning implementation, and continuous evaluation to have the necessary data to modify and adjust services and supports.

Other system issues — such as lack of sufficient resources, systemwide commitment to continuous professional learning, and fragmentation in oversight and authority for professional learning — become obstacles to effective professional learning. Multiple competing initiatives that work in isolation rather than in a coordinated way create strain on resources and cause a lack of focus and purpose.

To avoid these challenges, the program manager is an advocate for the comprehensive professional learning system, a teacher about effective professional learning, and a supportive colleague who coaches those with more direct responsibility for facilitating and implementing professional learning. This role requires the professional learning leader to develop relational trust with school leadership teams that fosters building their capacity to become leaders of professional learning.

COACHING CHAMPION

Coaching is an essential component of any professional learning system. The hard work of implementing new learning requires onsite and job-specific coaching over a sustained period of time.

Research from nearly four decades reinforces that coaching dramatically accelerates application of new learning in authentic work situations to solve problems related to practice (Joyce & Showers, 2002). Misty Sailors and Larry Price (2010) found that teachers who received classroom coaching following workshop professional development outperformed teachers receiving only the workshop on all measures of teacher observation and student achievement.

The coaching champion ensures implementation and sustainability of new learning within schools, classrooms, or school system offices and departments, often a major oversight of many initiatives' implementation efforts. The coaching champion serves as a thought partner, technical and expert coach, and motivator through differentiated, personalized, sustained supports that create a positive return on the investment in any learning-focused endeavor.

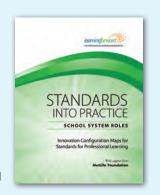
CORE RESPONSIBILITIES

Coaching champions have three major responsibilities: advocating for providing implementation support through coaching, coordinating coaching programs that support individuals and teams within schools and departments as they implement new learning, and providing direct coaching to individuals and teams.

As an advocate, the coaching champion addresses three aspects of effective coaching programs. The first is serving as a spokesperson for the integration of coaching within every initiative dependent on professional learning to refine, extend, and improve practice. The second is preparing those who provide coaching supports in roles such as mentors, teacher leaders,

LEARN MORE

Standards Into Practice:
School System Roles:
Innovation Configuration
Maps for Standards for
Professional Learning
(Learning Forward, 2013)
highlights the actions of
learning leaders in four
role groups: central office,
director of professional
learning, superintendent, and
school board.



School system staff are responsible for coordinating systemwide programs, professional learning, and resources needed to help each school achieve its goals for student achievement.

The book includes IC maps to make explicit how specific educators contribute to deep standards implementation, as well as introductory material that explains the concept and use of IC maps and their application to professional learning. Available at www.learningforward.org/bookstore.

principal coaches, instructional facilitators, and content-specific coaches. A third is sustaining and adapting coaching to address emerging needs.

Coaching champions coordinate and oversee specific coaching programs, such as instructional coaches, teacher leaders, and principal mentors. Once the coaching champion facilitates and contributes to the design of coaching programs in collaboration with others, the coaching champion serves as the coaching program manager, ensuring that the values, principles, and practices that undergird the coaching program are faithfully implemented and that the necessary supports and resources are available to guarantee the success of the coaching program. Another responsibility of coaching champions is continuously refining or adapting the coaching program so that it reflects emerging needs and trends.

The third key responsibility of coaching champions is providing direct coaching services to central office colleagues, principals, school leadership teams, teacher leaders, or other coaches. Being committed to providing coaching through onsite support as part of any initiative ensures a higher level of implementation and sustainability. As a part of this responsibility, the coaching champion, like other leaders throughout the school system, participates in coaching to improve his or her own practice and impact.

Central office professional learning leaders apply the values of a coach and excellent coaching skills, such as clear communication, deep listening, and probing for metacognition. Facilitating the feedback process and posing multilevel questions in their work with individuals and teams both in central office and schools ensure that coaching has the desired impact on learning. Modeling effective coaching practices and engaging in coaching are visible ways coaching champions acknowledge the value of implementation support.

CHALLENGES

Coaching champions, like all coaches, face a number of challenges. The first is making coaching a priority and finding the time to both coach and engage in coaching. Another challenge is helping colleagues recognize the necessity of implementation support that is personalized, sustained, and focused on the salient practices associated with new initiatives.

A third challenge is building and maintaining coaching competencies in others. It is easy to fall back into comfortable habits and practices, such as giving advice rather than coaching, if new skills are not sufficiently maintained. Coaching is not exempt from this challenge. Coaching champions allocate time and facilitate opportunities for all who provide coaching to practice, refine, and maintain their skillfulness as coaches.

FACILITATOR

Central office professional learning leaders serve as facilitators who assist groups with common objectives in completing tasks, planning how to achieve these objectives, and deepening their capacity to collaborate. School systems committed to distributing leadership often bring together teams of representatives to engage in decision making about strategy and tactics to achieve desired goals. Skillful facilitators support all types of teams to accomplish their work effectively and efficiently by guiding them with process or task support or both.

CORE RESPONSIBILITIES

The two primary responsibilities of a facilitator, often combined, are to serve as a task or process facilitator. A *task* facilitator orchestrates a project or assists a group in completing a defined task by mapping out the steps and providing the tools and resources that allow group members to accomplish the work rather than directing them to achieve what someone else wishes. This significantly increases the group's ownership and sense of responsibility and accountability for the success of the work.

A process facilitator focuses on the quality of interactions among group members, supporting them to identify their assumptions and creating a safe space for them to speak their truths, have difficult conversations, manage conflicts, monitor self-interests, and build trust among members. Process facilitation helps build a culture of collaboration and collective responsibility. Often a facilitator provides both task and process support to teams.

The goal of the central office professional learning leader as a facilitator is to ensure that the group achieves its desired outcomes, whether those desired outcomes are about relationships or tasks. Task facilitators are responsible for initiating the group, working with the group to determine how to accomplish its task, and reaching closure with the group.

Unlike a committee chair, supervisor, or director, the central office professional learning leader in the role of a facilitator holds no vested interest in or bias about the group's outcome, other than it meets its defined purpose. A facilitator may not necessarily have expertise in the content of the group's work, yet he or she does have substantial expertise in group process, meeting planning, task clarification, and monitoring the progress of the work. The facilitator also has a wealth of practical processes to use to advance the group's work.

Process facilitators help groups with collaboration, communication, and conflict. Process facilitators work to create a productive, healthy, and safe environment for open and honest interaction among participants. They also help individual members identify and adjust behaviors that interfere with relationships and productivity. Process facilitators focus primarily on relationships and how they support or interfere with the team's productivity. In most instances, central office professional learning leaders assume both task and process facilitation simultaneously.

Facilitators draw from a wide repertoire of processes, tactics, and strategies. They help groups clarify their purpose and task; gather, organize, analyze, and evaluate needed data; determine a course of action; identify and solve problems; generate and evaluate solutions; make decisions; communicate with the larger community they represent; and assume responsibility for the outcome of the team's work.

They build community within the group by establishing norms or agreements about how members will work together, contract with the group about the roles and responsibilities of the facilitator, and clarify the group's purpose and nonpurpose. They may begin their work by structuring meetings, planning agendas, and preparing written notes about the meeting, gradually releasing responsibility to group members over time.

Task facilitators also rely heavily on skills for organizing, listening, planning, anticipating, observing, making decisions, and intervening appropriately. The facilitator is careful to attend to what is happening in the group at the moment, focusing on the many dimensions of the group's work while making a constant stream of decisions about how to help the group take the next logical step.

♦ CHALLENGES

As a facilitator of either task or process — or both — the facilitator's chief responsibility and goal is to support rather than direct the group to reach its own outcome. Because facilitators remain neutral and unbiased, they may cross the line between

Shifting the roles

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changes in the field of

professional learning.

and responsibilities

professional learning

facilitator to director when a group is struggling.

Sometimes facilitators are stuck in the middle between the person who is the originator of the group's work and the group. This often happens when the facilitator, in seeking to understand the group's expectations, meets with the originator to help him or her clarify the purpose and expected outcomes of the group. As a result, the originator may expect the facilitator to be his or her advocate or spokesperson.

When a facilitator attempts to interpret for an outside party, the facilitator runs the risk of intentionally or unintentionally imparting a bias or interpretation that may differ from the originator's. This may require, for example, bringing in the superintendent responsible for defining the group's task and purpose to

interact directly with the group so that the group can ask clarifying questions until it fully understands its purpose, outcomes, expectations, parameters, and the scope of its decision-making authority.

Facilitators must be able to give nonjudgmental feedback and develop the group's capacity to handle its own relational issues over time. This includes walking the delicate balance between enabling the group by intervening too quickly or often or allowing the group to solve its own problems. Facilitators model and teach group

members salient communication and group process skills and use gradual release to decrease the group's dependency on the facilitator for productivity and relational issues.

Chief among the challenges for facilitators is maintaining neutrality. The facilitator must be especially careful to maintain a focus on facilitating the group rather than becoming involved with the task and on ensuring safety for every member of the group. Central office professional learning leaders who serve as facilitators often benefit from this work by cultivating and maintaining a high level of relational trust with all employee groups. In turn, this trust prompts greater desire for collaboration and requests for facilitation support.

CHANGE AGENT

All change, regardless of how large or small, depends on the capacity of humans to act in accordance with the change. This means that change requires learning new behaviors. Because continuous improvement requires continuous refinement of practice, it is dependent on learning. School systems then must become learning organizations that engage in learning to lead transformation to survive and excel in a rapidly changing environment.

A learning system needs a supportive learning environment

with concrete learning processes and practices and leadership that supports learning. According to Stephanie Hirsh, Kay Psencik, and Frederick Brown (2014), an effective education-based learning system:

- 1. Values adult learning as much as student learning;
- 2. Aligns practices to student learning outcomes;
- Shares a collective commitment to continuous improvement;
- 4. Thrives on precise feedback;
- 5. Establishes conditions that scale and sustain effective teaching and learning;
- 6. Commits to innovation; and
- 7. Celebrates and honors success.

CORE RESPONSIBILITIES

Change agents have two core responsibilities: promoting and guiding continuous improvement that includes gathering data in multiple forms and from multiple sources, analyzing it, reflecting on current practices, and initiating refinements and improvements to current practices.

Change agents commit to bringing members of the organization new perspectives, ideas, and suggestions to stimulate and provoke others to engage continuously in inquiry, assessment, analysis, and innovation for continuous improvement and results.

To fulfill these responsibilities, the professional learning leader exercises courage and is comfortable with ambiguity and dissonance. Success in this role depends on one's status within the organization as a respected and trusted leader. With the confidence of their peers, change agents are better able to listen deeply for what is unspoken and engage others in dialogue to examine the "truths" that shape what they say, think, and do.

They model continuous improvement in their own work by searching for ways to improve, seeking feedback by inviting critical friends to work with them, listening to suggestions for change, and viewing their work through the perspectives of their clients. They facilitate collaborative inquiry that leads to new practices, programs, or processes.

Change agents read avidly and widely within and outside the field of education to develop and maintain current research about individual and organization change and consider the implications for school system and school initiatives.

They leverage policies and resources to support change efforts, identify barriers to change, seek appropriate strategies for interrupting the barriers, advocate and facilitate continuous improvement efforts in all district functions, assess progress toward goals, and celebrate success. They network with colleagues in a variety of local and worldwide communities to inquire about others' approaches and perceptions regarding similar tasks or projects.

Change agents ask powerful questions in provocative, persistent, yet gentle ways that promote ruthless analysis and

broad-based consideration of possibilities. Some questions they ask may include: How did our current practice come to be this way? Whose needs are being served by our current practices? What do our current practices convey to our community about what we value? What impact do our current practices have on student learning and meeting the needs of all students?

In addition, they use skills in needs assessment; data gathering, analysis, and interpretation; planning; evaluation; resource acquisition; and forecasting to plan, initiate, implement, and assess change efforts.

CHALLENGES

Change agents face a number of challenges. One challenge is accepting that not every idea for change reaches fruition and not every change initiative succeeds. Skillful change agents help others ruthlessly examine their current practices and proposed changes and consider the positive and negative side effects before undertaking their course of action.

They understand that change is a long-term process and occurs most successfully when those responsible for implementing change have a significant voice in shaping the course of action related to the change and have the will, capacity, and resources to succeed. As a result, they advocate broad engagement and sufficient resources for all change initiatives.

Another challenge change agents face is walking the delicate line between top-down and bottom-up change, and they are able to adjust their practices to build willingness for change regardless of its source. Change agents understand the context within which change occurs and how the conditions and circumstances influence how to lead, facilitate, or support change. Sometimes the change agent plants seeds that will mature over time into a later change initiative or support others as they craft and take ownership of a change without directing their course.

Most challenging to change agents is being the person who intentionally disrupts the status quo by promoting inquiry and continuous improvement, seeking to understand and reshape mental models that interfere with achieving goals, and shifting the culture of a school system to one as a learning organization. Change agents boldly question, challenge, probe, and assess feasibility of both current practices and proposed change. While these bold actions may frustrate others, change agents do not shy away from these practices.

CATALYST FOR TRANSITION

Shifting the roles and responsibilities of central office professional learning leaders is not an indication of a less significant need for the position. Rather, it reflects the changes in the field of professional learning.

The new roles are possible only when concomitant changes in the roles of others occur. Principals and teacher leaders particularly are on deck to accept greater responsibility and accountability for designing, implementing, and evaluating professional learning so that it more tightly aligns with school improvement efforts and student learning (Jensen, Sonnemann, Roberts-Hull, & Hunter, 2016).

The transition cannot be a light-switch change, but rather must occur over time through a thoughtful and deliberate process. As a result, the central office professional learning leader becomes the catalyst for the transition and taps into the five new roles to plan for and build the capacity of principals and teacher leaders to undertake their new responsibilities.

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GRASSROOTS MOVEMENT

WITH TEACHERS TAKING THE LEAD, A DIVERSE DISTRICT TACKLES LITERACY

"Every day, every student will come to school and be met with learning opportunities at his/her personal developmental level in all subject areas. He/she will leave school having been challenged, feeling successful, and looking forward to tomorrow."

— Vision statement for Aptakisic-Tripp School District No. 102, Buffalo Grove, Illinois

By Julie A. Brua and Matthew K. Moreland

he Aptakisic-Tripp School District No. 102 in Buffalo Grove, Illinois, serves a community where more than 46 languages are spoken. In 2011-12, the district unpacked, powered, scaled, and paced the English Language Arts Common Core State Standards and created student learning targets.

As assistant superintendent for curriculum, instruction, and multilingual education and building principal for Pritchett Elementary School, we faced the dual task of implementing the standards while also supporting our staff with its work in reading with a range of diverse learners.

Our goal was lofty. How can a district leader and building principal create a professional learning environ-

ment that has a grassroots feel yet empowers teachers to embrace the new standards while also learning instructional strategies that lead to improved literacy achievement within a district where more than 58% of families speak a native language other than English?

This is the problem of practice we addressed as members of the Learning Forward Academy Class of 2014. Working with Academy coaches Nikki Mouton and Lisa Castro and our Academy classmates, we sought to enhance our understanding of how to support our staff in making professional learning decisions that would result in increased student achievement in literacy.

HOW WE BEGAN

The impetus for the project came from a strategic design process that put teachers at the forefront. The English language arts subject-area leadership team crafted student-



Photo by VICKIE WALTER

From left, teachers Tatyana Santamaria, Nicole Holmes, and Sara Jang organize the 12 systems of strategic actions in *The Continuum of Literacy Learning* by Irene Fountas and Gay Su Pinnell.

friendly learning targets and writing rubrics that emerged from the English Language Arts Common Core State Standards.

As a result of these new learning targets, teachers began to ask for strategies that would support their knowledge in literacy instruction. We surveyed staff about their teaching strategies and solicited feedback from focus groups on teacher knowledge of best practices in literacy.

On district-level surveys, more than 66% of teachers said that they would like to learn strategies in close reading, and 82% said they would like to learn strategies in guided reading. A building-level survey showed that 71% of teachers would like professional development on close reading with students, while 67% would like professional development on the close reading continuum — how to

establish the purpose of a close read with students, weave in new vocabulary development, provide opportunities for children to turn and talk, and guide students through textdependent questions.

From there, we set goals for district and building level:

- District goal: To support staff to develop knowledge
 of self-selected reading strategies by demonstrating the
 skill to match the reading content with the appropriate
 strategy.
- Building-level goal: To work with staff on learning and using the close reading strategy.

To support staff in assessing strengths and weaknesses in teaching strategies in the area of reading, we used exit slips and surveys to help us determine if the professional development was effective.

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At the building level, we collected data through staff surveys on teacher needs for the school year on close reading. Another survey gauged the staff's comfort level in teaching the close reading strategy. At the end of the school year, we used the same survey, much like a pre- and a post-test.

We created a student achievement goal for reading at the building level: improved student reading scores as measured by Measures of Academic Progress assessments or gains in guided

To learn more about the Learning Forward Academy, visit www. learningforward. org/learning-opportunities/ academy or contact Kristin Buehrig, programs associate, by phone at 972-421-0900 or email kristin.buehrig@learningforward.org.

reading levels as measured by Fountas & Pinnell. These SMART (specific, measurable, attainable, relevant, and time-bound) goals focused on ensuring that 50% of students reach growth targets in reading from fall to spring.

Kindergarten and 1st grade used Fountas & Pinnell levels to measure student growth through three letter jumps from fall to spring. Measures of Academic Progress measured student growth in reading for 2nd- through 4th-grade students.

The school district set a goal of 50% of students meeting their reading growth target. The close reading strategy was a key action step for all grade

levels, and that was the focus for professional learning.

DISTRICT-LEVEL ACTION STEPS

Through this process, English language learner, special education, and regular education teachers were integral in determining the district's English language arts learning targets. While supporting teachers and students with the new Common Core learning targets, we needed to be cognizant of how district and building leaders balance developmentally appropriate learning levels for these diverse populations while at the same time assisting them with strategies to support the academic rigor.

We determined four action steps to support teachers with their understanding of literacy.

Use surveys to capture feedback from staff on their teaching strategies.

Reading specialists helped create a district-level survey that would pinpoint staff needs in teaching strategies in reading. When asked, "Which literacy topics would you be interested in learning more about during the school year?," staff responses showed an interest in understanding strategies of guided reading and close reading.

A guided reading design team, made up of general education teachers, reading specialists, English language learner teachers, and special education teachers, taught sessions on running records and finding appropriate texts through research-based materials. The team also suggested opportunities for teachers to

incorporate close reading into small-group instruction.

As a result of the survey and focus group data, the elementary schools set aside time during faculty meetings, professional learning days, and team meetings to build capacity and understanding of close reading and guided reading topics. The English language arts subject-area leadership team focused its work and meetings on academic vocabulary and close reading strategies.

2. Create common assessments for grades 1-8 that focus on key reading and writing strategies.

The district goal was to assist teachers in their understanding of close reading by creating common assessments for grades K-8 that focused on key reading and writing strategies. Throughout the school year, teacher teams studied the work of Robert Marzano and Norman Webb to craft common, summative assessments that linked to the English language arts learning targets through an assessment design process.

The learning targets selected for the assessments were correlated with those teachers used to set the purpose for close reading. This document was housed in a central location so all staff could have access when backward mapping their instruction to the assessments.

3. Bring in professional speakers to address instructional topics and model instructional strategies geared toward practical classroom applications.

Professional speakers helped us build our understanding of best practices in student literacy and achievement in reading. We studied the work of several experts in close reading, including Nancy Frey, Douglas Fisher, and Sunday Cummins.

In addition, Timothy Shanahan, a local author of the English language arts Common Core State Standards, shared his model of close reading. This model became our ticket toward a common language and strategy with close reading and showed us how this strategy increases student growth and achievement in reading.

Louisa Baddeley, 1st-grade teacher, noted the impact on her practice: "Dr. Shanahan challenged me to think differently about how to teach reading."

Incorporate exit slips and evidence of completion after workshops to analyze feedback.

These surveys included questions related to assessment of strengths and weaknesses in teaching styles. As a result of follow-up sessions, teachers piloted these new strategies and discussed impact on student achievement. They embedded close reading into their reading lessons once a week.

We included strategic sessions for special education teachers, English language learner teachers, and reading specialists to focus on their understanding of guided reading and close reading strategies. These teachers worked on integration of content and the creation of close reading passages.

English language learner and special education teachers who pulled out students for specific support created close reading passages that aligned directly with the English language arts learning targets and literary content that general education teachers were using during their weekly lessons.

This support smoothed the way for implementation. Patricia Eliopoulos, an English language learner teacher, said, "The support I received on close reading over the year really helped me understand its purpose and how to actually implement it with my students."

BUILDING-LEVEL ACTION STEPS

Reaching out to teachers for their feedback created a focus for assisting them with their ability to embrace the new practices of the standards. As the building principal did walkthroughs and assisted during team meetings, we discussed assessment results to improve teacher knowledge of close reading and student achievement.

At the building level, we created two action steps to support staff and implement the building-level initiative on literacy and close reading.

- Provide extended time to model and learn key instructional strategies.
- Create extended time for staff to practice strategies.

Teachers engaged in professional learning on close reading during faculty and team meetings. Teacher teams used half-day released time and extended plan time to work on mapping out lesson plans.

We worked with staff at any possible time available, including a close reading workshop for staff at lunchtime we called "Lunch/Laugh/Learn." Attendance was voluntary, and sessions drew teachers open to learning.

Teachers had multiple opportunities to practice the strategy. We offered to model or team teach with staff members. Depending on the teacher's needs, he or she could either watch the facilitation in the classroom or co-teach a lesson. Co-teaching a lesson proved to be highly effective, allowing teachers to make a smooth transition to a new close reading model of instruction.

Through the support of a new instructional literacy coach, we have assisted teachers in creating close readings using rigorous, integrated texts across K-4 classrooms. English language learner teachers, reading specialists, and some special education teachers are also able to model close reading strategies through guided reading small-group work to embed this important strategy into their work with students.

DATA OUTCOMES

As a result of this work, staff had much greater clarity about English language arts learning targets for students and teachers. Teachers asked for help in understanding specific strategies and engaged in professional learning designed to suit their needs.

Exit slips and surveys showed the impact: At the beginning

of the school year, teacher ratings on the effectiveness of professional learning averaged 3.5 on a 5-point scale. At the end of the school year, the overall average increased to 4.0.

At the building level, staff members completed the same survey that had been given at the beginning of the school year. A comparison of the two surveys showed a strong decline in the need for continued professional development in close reading.

Additionally, grades 1 to 4 met their SMART goal of having 50% of students reaching growth targets in reading. During the second year of implementation, kindergarten made a 7% jump in growth as a result of some work with the curriculum, and every other grade level met its SMART goal from fall to spring. During the third year of implementation, every grade level met its SMART goal from the fall to winter benchmark.

LESSONS LEARNED

In the quest to foster a family-oriented community where members can grow professionally, we learned several lessons.

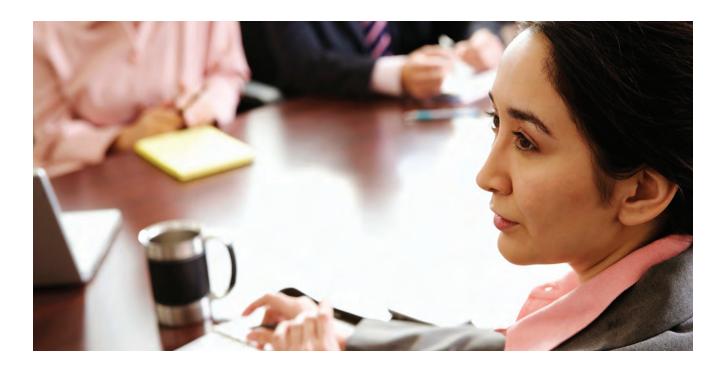
Joining the Learning Forward Academy while serving in a school community where teacher voice is highly valued provided us with the academic resiliency to tackle the goals of staff awareness of strategies and student achievement in literacy.

We made professional development accessible and available to all teachers within the grade level. The use of feedback allowed teachers to ask relevant questions and see exactly how new strategies worked. We allowed teachers to be safely vulnerable by creating room for modeling in their classrooms and providing necessary resources to see an effective strategy in action. We heard comments by students such as "Do we get to do close reading today?"

By sustaining professional development so that teachers could reflect and revisit new models with each other and with experts, we were able to see continuous, improved student achievement.

We listened to teachers through feedback, goal setting, and reflection so they could help us understand what motivates them to learn about close reading and guided reading, creating a collaborative, instructionally charged balance between the needs of our teachers and higher student achievement in reading — and helping us to fulfill our vision statement every day for every student.

Julie A. Brua (jbrua@d102.org) is assistant superintendent for curriculum, instruction, and multilingual education in Aptakisic-Tripp School District No. 102 in Buffalo Grove, Illinois, an adjunct professor at the University of St. Francis in Joliet, Illinois, and a graduate of the Learning Forward Academy Class of 2014. Matthew K. Moreland (mmoreland@d102.org) is principal at Pritchett Elementary School in Aptakisic-Tripp School District No. 102 and a graduate of the Learning Forward Academy Class of 2014. ■



WHAT IS MY ROLE IN GREAT PROFESSIONAL LEARNING?

s more educators and policymakers embrace Learning Forward's Standards for Professional Learning (Learning Forward, 2011) for planning, implementing, and evaluating professional learning, they may be ready to ask: Now what do we do?

Learning Forward has created Innovation Configuration (IC) maps for educators in 12 roles, from teacher leaders and school leaders to superintendents and school board members. IC maps are useful tools for getting a specific picture of what changes or innovations, such as the standards, look like in practice.

"An IC map is a way to precisely define quality and measure fidelity" of implementation (Learning Forward, 2013, p. 7). The maps detail a spectrum of variations of implementation, with the ideal on the left side of the map, decreasing incrementally along the continuum to the right.

When educators consider their learning leadership responsibilities, the IC maps offer actions tied to outcomes. In the ideal variation, educators see all the actions they would take and the outcomes they would achieve if they were supporting a particular component of the standards.

So when educators wonder what they should be doing to implement the elements of the Learning Designs standard, they

can turn to the IC maps and read the details.

The IC map on pp. 57-62 outlines the actions of those serving as a director of professional learning. By this title, Learning Forward means any educator who has primary responsibility for all aspects of professional learning in a school system. This person might be serving as an assistant superintendent or lead a department of professional learning with several employees. He or she might work with other areas such as human resources or curriculum and instruction.

Educators can use IC maps to plan their own work, discuss the roles and responsibilities of others in a school district or professional learning system, or monitor the day-to-day implementation of standards.

Visit the Learning Forward bookstore at **www.learning forward.org/store** to purchase any or all of the three volumes of IC maps for the Standards for Professional Learning.

REFERENCES

Learning Forward. (2013). Standards into practice: School system roles. Innovation Configuration maps for Standards for Professional Learning. Oxford, OH: Author.

Learning Forward. (2011). Standards for Professional Learning. Oxford, OH: Author. ■

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Desired outcome 5.1.1: De	Desired outcome 5.1.1: Develops and shares a knowledge	e base about theories, research	base about theories, research, and models of adult learning.		
Develops own, staff, system and school leader, and participant knowledge and skills related to research, theories, and models of adult learning. Develops and maintains a searchable repository of reviewed print and electronic materials on professional learning.	Develops own, staff, and participant knowledge and skills related to research, theories, and models of adult learning. Develops and maintains a searchable repository of reviewed print and electronic materials on professional learning.	Develops own and staff or participant knowledge and skills related to research, theories, and models of adult learning. Develops a searchable repository of reviewed print and electronic materials on professional learning.	Studies research, theories, and models of adult learning. Develops a repository of print and electronic materials on professional learning.	Studies research, theories, and models of adult learning.	• Fails to add to own or others' knowledge base about learning theories, research, and models.
Desired outcome 5.1.2: Ac	Desired outcome 5.1.2: Acquires knowledge about multiple designs for professional learning.	ole designs for professional lea	rning.		
Develops staff, system and school leader, and participant knowledge about, skills to facilitate, and expertise to implement multiple learning designs useful in each step of the seven-step cycle of continuous improvement Develops own, staff, system and school leader, and participant knowledge and participant knowledge about essential features of high-quality learning designs (e.g. active engagement, reflection, metacognition, ongoing support).	Develops own, staff, and participant knowledge about, skills to facilitate, and expertise to implement multiple learning designs useful in each step of the seven-step cycle of continuous improvement. Develops own, staff, and participant knowledge about essential features of high-quality learning designs (e.g. active engagement, reflection, metacognition, ongoing support).	Develops own and staff or participant knowledge about, skills to facilitate, and expertise to implement multiple learning designs useful in each step of the seven-step cycle of continuous improvement. Develops own and staff or participant knowledge about essential features of high-quality learning designs (e.g. active engagement, reflection, metacognition, ongoing support).	Develops knowledge about, skills to facilitate, and expertise to implement learning designs throughout the seven-step cycle of continuous improvement.	Fails to develop knowledge about multiple designs for professional learning.	

Source: Learning Forward. (2013). Standards into practice: School system roles. Innovation Configuration maps for Standards for Professional Learning. Oxford, OH: Author.

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Desired outcome 5.2.1: Acq	luires and shares knowledge a	Desired outcome 5.2.1: Acquires and shares knowledge about the multiple factors influencing the selection of learning designs.	encing the selection of learnin	ng designs.	
Develops own, staff, system and school leader, and participant knowledge about factors that influence how adults learn. Develops own, staff, system and school leader, and participant capacity to delineate and sequence learning objectives, including knowledge, skills, dispositions, and practices, to design learning. Models learning designs that align with desired changes in practice.	Develops own, staff, and participant knowledge about factors that influence how adults learn. Develops own, staff, and participant capacity to delineate and sequence learning objectives, including knowledge, skills, dispositions, and practices, to design learning. Models learning designs that align with desired changes in practice.	Develops own and staff or participant knowledge about factors that influence how adults learn. Develop own and staff or participant capacity to delineate and sequence learning objectives, including knowledge, skills, dispositions, and practices, to design learning. Models learning designs that align with desired changes in practice.	Develops own knowledge about factors that influence how adults learn.	share knowledge about factors that influence selection of professional learning.	

Applie	Level 2	Level 3	Level 4	Level 5	Level 6
	wledge to the selectio	n of appropriate learning des	signs.		
and system professional and system professional and system professional and system and school leaders, and appropriate in-person, blended, and online individual, teaming designs for individual, teaming designs for the presence of essential features, including active engagement, reflection, metacognition, ongoing	Selects appropriate in-person, blended, and online learning designs for individual, team, school, and system professional learning. Coaches staff and participants to select appropriate in-person, blended, and online learning designs for individual, team, school, and system professional learning. Reviews, with staff and participants, selected learning designs for the presence of essential features, including active engagement, reflection, metacognition, ongoing support, etc.	Selects appropriate in-person, blended, and online learning designs for individual, team, school, and system professional learning. Coaches staff or participants to select appropriate in-person, blended, and online learning designs for individual, team, school, and system professional learning. Reviews, with staff or participants selected learning designs for the presence of essential features, including active engagement, reflection, metacognition, ongoing support, etc.	Supports system or school leaders to select learning designs.	Fails to apply knowledge to the selection of learning designs.	

Source: Learning Forward. (2013). Standards into practice: School system roles. Innovation Configuration maps for Standards for Professional Learning. Oxford, OH: Author.

Desired outcome 5.2.3: Develops and shares, with staff system and scriptions, system and scriptions, system and scriptions, system and scriptions, system and school leaders, and and participants, the benefits and limitations of technology-enhanced learning designs. - Establishes and applies, with staff, system and school leaders, and professional learning designs conclused by the staff system and effectiveness of professional learning designs to increase the efficiency and effectiveness of participants, or technology-enhanced professional learning designs to increase the efficiency and effectiveness of professional learning designs to increase the efficiency and effectiveness of participants, circle and engaging technology enhanced professional learning designs to increase the efficiency and effectiveness of professional learning.		
Develops and shares, with staff and participants, knowledge about available and emerging technology-enhanced learning designs. Examines, with staff and participants, enhanced learning designs. Examines, with staff and participants, and system and school leaders, the benefits and school leaders, the benefits and shorticipants and spolies, benefits and applies, of technology-enhanced learning designs. Establishes and applies, with staff and participants, criteria for selecting technology-enhanced professional learning designs to increase the efficiency and effectiveness of professional learning. Develops and shares, with staff and selecting designs. Establishes and applies, criteria for selecting technology-enhanced professional learning designs to increase the efficiency and effectiveness of professional learning.	Level 5	Level 6
with staff and participants, knowledge about available and emerging technology-enhanced learning designs. • Examines, with staff and and school leaders, the benefits and system and school leaders, the benefits and limitations of technology-enhanced learning designs. • Exablishes and applies, with staff and participants, criteria for selecting technology-enhanced professional learning designs to increase the efficiency and effectiveness of professional learning.	gns.	
	Develops knowledge about available and emerging technologyenhanced learning designs. I dentifies the benefits and limitations of technologyenhanced learning designs. I dentifies the benefits and limitations of technologyenhanced learning designs.	share knowledge about technology-enhanced learning designs.

Desired outcome \$ 2.4: Implements appropriate learning designs. Uses appropriate in-person, blended, and online learning designs online learning designs on implement learning designs on implement professional learning. To chair sealing yested and online learning designs on the learning designs on the learning designs on the learning designs of the learning goals. Desired during meetings and online learning designs of the learning goals. Learning goals. Learning goals. Learning goals. Learning goals.	The state of the s	Level 2	Level 3	Level 4	Level 5	Level 6
Uses appropriate in-person, blended, and online learning designs during meetings and professional learning. Coaches staff and participants to implement appropriate in-person, blended, and online learning designs to adrieve personalized, team, school, and system learning goals. Coaches staff or participants to implement appropriate in-person, blended, and online learning designs to adrieve personalized, team, school, and system learning goals. In Uses appropriate in-person, blended, and online learning designs to adrieve personalized, team, school, and system learning goals. In Uses appropriate in-person, blended, and online learning goals. In Uses appropriate in-person, blended, and online learning goals. In Uses appropriate in-person, blended, and online learning goals. In Uses appropriate in-person, blended, and online learning goals.	Desired outcome 5.2.4; in	nplements appropriate learning	y designs.			
	• Uses appropriate in-person, blended, and online learning designs during meetings and professional learning. • Coaches staff, system and school leaders, and participants to implement appropriate in-person, blended, and online learning designs to achieve personalized, team, school, and system learning goals.	Uses appropriate in-person, blended, and online learning designs during meetings and professional learning. Coaches staff and participants to implement appropriate in-person, blended, and online learning designs to achieve personalized, team, school, and system learning goals.	Uses appropriate in-person, blended, and online learning designs during meetings and professional learning. Coaches staff or participants to implement appropriate in-person, blended, and online learning designs to achieve personalized, team, school, and system learning goals.	Uses appropriate in-person, blended, and online learning designs to achieve personalized, team, school, and system learning goals.	- Fails to implement appropriate learning designs for professional learning.	

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Tevel I	Level 2	Level 3	Level 4	Level 5	Level 6
Desired outcome 5.3.1: Ma	Desired outcome 5.3.1: Models active engagement in prof	ofessional learning.			
Participates actively in individual, team, and school, and systemwide professional learning.	Participates actively in individual, team, and school, and systemwide professional learning.	Participates actively in individual, team, school, and systemwide professional learning.	Participates actively in individual, team, school, and systemwide professional learning.	Participates actively in individual, team, school, and systemwide professional learning.	Fails to model and promote active engagement.
Engages participants in practices delineated in learning outcomes. Models and shares, and school and system leaders, strategies and protocols for active engagement in individual, team, system, and school professional learning.	Engages participants and others in practices delineated in learning outcomes. Models and shares, with staff and participants, strategies and protocols for active engagement in individual, team. system, and school professional learning.	Engages participants and others in practices delineated in learning outcomes. Models and shares, with staff or participants, strategies and protocols for active engagement in individual, team, system, and school professional learning.	Shares strategies and protocols for active engagement in individual, team, system, and school professional learning.		
Desired outcome 5,3,2: Pro	Desired outcome 5.3.2: Promotes active engagement in the learning process.	the learning process.			
Sets and explains expectation that staff, participants, and system and school leaders engage actively in individual, team, school, and systemwide professional learning. Coaches staff, participants, and system and school leaders to embed and monitor active engagement in learning processes.	Sets and explains expectation that staff and participants engage actively in individual, team, school, and systemwide professional learning. Coaches staff and participants to embed and monitor active engagement in learning processes.	Sets and explains expectation that staff or participants engage actively in individual, team, school, and systemwide professional learning. Coaches staff or participants to embed and monitor active engagement in learning processes.	Sets expectation that staff or participants engage actively in individual, team, school, and systemwide professional learning. Coaches staff or participants to embed active engagement in learning processes.	Fails to promote or support active engagement in professional learning.	

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When teachers learn to use technology, students benefit

WHAT THE STUDY SAYS

niversity faculty led a three-year teacher professional development initiative to integrate technology into instruction in two rural, high-poverty middle schools in the Southeast.

The study demonstrates that schoolwide professional development sustained over two to three years improves efficiency and effectiveness of instruction and produces significant increases in end-of-grade assessment scores, with the greatest gain after three years.

In addition, gains in student achievement as measured by standardized achievement tests in math and science are especially great for African-American students who have long-term exposure to teachers engaged in professional learning.

Study description

The study builds on past research about the relationships between teacher practice and beliefs, teacher practice

Joellen Killion (joellen.killion@ learningforward.org) is senior advisor to Learning Forward. In each issue of *JSD*, Killion explores a recent research study to help practitioners understand the impact of particular professional learning practices on student outcomes.



At a glance

Teacher professional learning on technology integration improves efficiency and effectiveness of instruction and produces significant increases in end-of-grade assessment scores, particularly for African-American students in math and science.

THE STUDY

Blanchard, M., LePrevost, C., Tolin, A., & Gutierrez, K. (2016). Investigating technology-enhanced teacher professional development in rural, high-poverty middle schools. *Educational Researcher*, 45(3), 207-220.

and student achievement, the nature of teacher professional development in technology use, the role of reflection in teacher professional development, and the availability of technology in schools with underrepresented or high-poverty students.

A university-based research team designed a professional development program to increase teachers' content knowledge, pedagogical content knowledge, and integration of technology into their classroom instruction.

The professional development program occurred over three years in two middle schools in neighboring districts. The program included 2,320 students in grades 6-8 and 20 teachers, mostly of math, science, and technology. Researchers used end-ofgrade assessments in grades 6-8 math and grade 8 in science to measure changes in student achievement.

Questions

Researchers posed four research

WHAT THIS MEANS FOR PRACTITIONERS

Researchers provide evidence that sustained, content-specific professional learning aligned with student content standards and accompanied by resources to support implementation of learning does improve student learning.

Professional learning in this study aligned strongly with four of Learning Forward's Standards for Professional Learning (Learning Forward, 2011): **Resources,**

Learning Designs, Implementation, and **Outcomes**. While other standards may have been integrated into the overall initiative, they were not discussed.

Over the three years of the study, each school received \$81,000 for the purchase of technology tools, \$39,000 for teacher stipends, and workshop materials (Resources). The professional learning employed multiple designs in authentic settings to support teacher learning and use of the technology (Learning **Designs**). The three-year initiative sustained implementation support with monthly online sessions and increased access to technology tools. Teachers reflected on their application lessons throughout the initiative (Implementation). Both teacher curricula and the application of the technology tools aligned with state content standards in math and science, and teachers had flexibility to apply the technologies to their own lessons (**Outcomes**).

As researchers noted, teacher professional learning "is more effective in increasing standardized assessment scores if it is done schoolwide and takes place over two to three years, with the most significant gains after three years" (p. 217). These gains are most effective, they say, when students have more years with teachers experiencing technology-enhanced professional development rather than more teachers over less time.

Researchers say that the study provides evidence that a long-term, schoolwide, technology-enhanced teacher professional learning program can impact teachers' beliefs about teaching and its effect on students, which can positively influence student achievement (p. 217).

The study highlights the effects of sustained experience with teachers who are learning and growing in their subject areas within well-designed, sustained, content-specific teacher professional learning on students who are most in need of substantive academic gains.

Reference

Learning Forward. (2011). *Standards for Professional Learning.* Oxford, OH: Author.

questions to guide their investigation.

- Do teachers engaged in technologyenhanced professional development change their beliefs about teaching and their practice?
- 2. How do teachers reflect on the lessons they carry out before and during technology-enhanced professional development participation?
- 3. Do the mathematics and science assessment scores of students in classrooms where teachers
- participate in technology-enhanced professional development differ from students in nonparticipating teachers' classrooms? Does it matter how many technology-enhanced professional development teachers a student has?
- 4. Do the mathematics and science assessment scores of African-American students in classrooms of teachers participating in technology-enhanced professional development differ from those

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of Caucasian students in those classrooms (p. 210)?

Methodology

The professional development program included three face-to-face summer institutes, each lasting three weeks, and three years of monthly online, synchronous collaboration sessions. Teacher curricula aligned with state content standards.

Teachers developed subjectarea knowledge in math and science and subject-specific instructional practices and engaged in sustained practice within their subject areas with student-centered, inquiry-driven, hand-on investigations using handheld technology within time periods that represented the typical class length within the middle school.

After the first year, researchers adapted the summer curriculum to allow for more customization by teachers within different content areas. Researchers introduced new technology each year to expand teachers' familiarity and use within their classrooms. To support new instructional practices, schools received funding to purchase classroom and school equipment.

Teachers experienced a mean amount of 103 hours of professional development over the three years, with the range between 57.5 and 134.25 hours. Teachers represented a cross-section of teachers within the two schools in years of experience, gender, and age.

Students of participating teachers served as the treatment group, and students of nonparticipating teachers were the comparison group. Two-thirds of the students in one school were African-American and received free or reduced-priced lunch, with the number of students in poverty over 80% in the other school.

Analysis

Researchers applied a mixedmethod design to answer the study's questions. They examined six teacher constructs using a variety of pre- and post-participation data collection tools. Teachers completed four instruments pre- and post-participation: subject-specific self-efficacy beliefs survey, pedagogical discontentment, teaching beliefs, and comfort with technology.

Video lessons, coded by two raters using a protocol, captured teachers' reform-based teaching practice before and during each year of the study. Teacher reflections and observer notes for a pre- and post-video lesson, coded by two raters using three categories of technology use (transformation, amplification, and replacement), measured technology integration.

Scores on end-of-grade state standardized assessments for grades 6-8 in mathematics and in grade 8 for science measured student achievement.

Students were divided into six groups based on the number of participating teachers they had (from zero to five) during their school experience. Slightly less than a quarter of the students had either no participating teacher or only one, with about 30% of students having two participating teachers during three years.

Results

At the end of the initiative, teachers had significantly higher student-centered beliefs, with a stronger focus on teacher-student relationships, than they did before their participation, when their beliefs focused more on teacher decisions.

After the study, teachers had a significantly higher familiarity and comfort with technology, particularly those used during professional development, than before participation. Teachers' use of technology moved along the continuum from replacement to transformation.

One teacher used technology as replacement, without change in classroom practice, student learning, or goals. More than half of the teachers' use of technology was coded as amplification, using technology to be more efficient and effective with no actual change in the learning or teaching task. More than a third of the teachers used technology in transformational ways, altering the teacher role and instructional practice to change how students learn.

All teachers noted positive effects of their technology integration. No teacher noted negative effects. There were no significant pre-post differences in teachers' pedagogical discontentment, self-efficacy, or use of reform-based teaching practices.

Researchers applied linear regression analysis to 96% of the total student achievement scores from both schools. The number of participating teachers a student had made a significant impact on 8th-grade math and science scores. In short, the more participating teachers students had, the higher their scores. In math, the increase for all students was 0.07 in math and 0.08 in science. For African-American students, this increase was even more significant: 0.14 in math and 0.19 in science.

Parallel analyses to examine separate effects on Caucasian students or student gender yielded no significant effect. Researchers applied statistical analyses to examine the relationship between ethnicity and the number of participating teachers students had. They report a significant main effect for the years of participating teacher by ethnicity.

At the end of years one and two, Caucasian students scored significantly higher than African-American students. This held true if they experienced zero, one, or two years of participating teachers. At the end of year three, for students who experienced three years of participating teachers, there were no significant differences between the scores of African-American and Caucasian students.

Researchers discuss the paradoxical results. They acknowledge that teachers

did not make substantial changes in their instructional practices. This suggests that changes in teaching using technology may not be observable using the Reformed Teaching Observation Protocol (an instrument for measuring changes in teaching practices) or may occur without shifting to reform-based teaching practices.

Teachers did not experience pedagogical discontentment, yet their students benefited from increased use of technology. In fact, the benefits are cumulative.

Teacher reflections did reveal

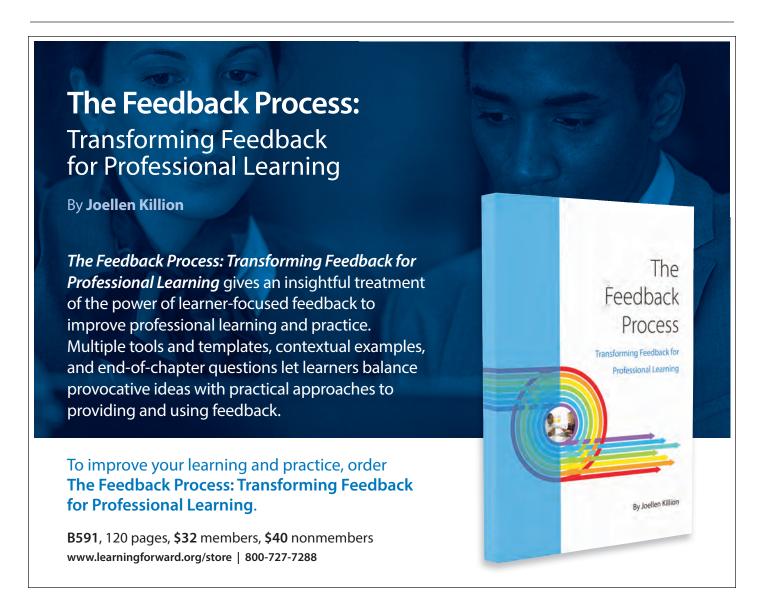
changes in teacher technology practices, although the observation protocol doesn't note those changes. While not measured, researchers noted student motivation and excitement about learning during observations and teacher reflections.

Limitations

Researchers noted several limitations. First is the specific context of the study — rural, high-poverty middle schools in the Southeast. The second is the small population of teachers and students.

Researchers also noted that four of the 20 teachers included in the study did not teach math or science. One taught language arts and three others taught technology. They acknowledged using a single measure of student achievement.

Another limitation, not mentioned by researchers, is the likely spillover effect of the treatment on other teachers within the school, especially given the size of the faculty within each math and science department and the schoolwide availability of technology for use by all teachers and students.



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Photos by ANTHONY ARMSTRONG
Fellows present their proposals at

Team Impact from Prince George's County Public Schools in Maryland, left, and Massachusetts Teacher Policy Fellows present their proposals at the Agents for Learning Competition in Chicago.

TEAMS OUTLINE PLANS FOR ESSA FUNDS

earning Forward and the National Commission on Teaching & America's Future (NCTAF) hosted Agents for Learning Competition finalists July 21-22 in Chicago. The 12 finalist teams presented their plans for the best use of federal funding for professional learning under the Every Student Succeeds Act (ESSA) to a panel of judges.

Finalist teams included 55 educators representing 12 states. Teams had four minutes to present their plans to the judges panel, then received four minutes of feedback from the judges. Competition judges included Stephanie Banchero, program director for the Education Program at the Joyce Foundation; Jahana Hayes, 2016 National Teacher of the Year; Chris Minnich, executive director of Council of Chief

State School Officers; and Rachel Wise, chair of the Nebraska Board of Education.

Finalists' presentations included an educator-informed theory of action around how to leverage professional learning to advance teaching and learning and specific recommendations for states, districts, and schools to consider as guides to their Consolidated State Plans and/or state and district Title II plans, a requirement of ESSA, and the design of effective professional learning in their systems.

"We're so grateful to all of the educators who participated in the challenge," said Stephanie Hirsh, executive director of Learning Forward. "We were proud to offer an opportunity to amplify teachers' voices in advocating for the professional learning that will make a difference for educators and students."

- Full list of the finalist teams, p. 69
- 4 themes in proposals, **p. 70**
- Individual team presentations at www.
 learningforward.
 org/get-involved/ agents-forlearningcompetition/essavideos

FINALISTS IN THE AGENTS FOR LEARNING COMPETITION

Trey Ferguson, Leesville Road High School, Raleigh, NC

Cassie Reding, Stevenson Elementary, Russellville, KY

Carly Baldwin, Boyd County High School, Ashland, KY

Natalie Coleman, Shafer Middle School, Gallatin, TN

Debbie Hickerson, Cason Lane Academy, Murfreesboro, TN

••••• Kelley Cusmano, Rochester High School,

Rochester, MI

Sarah Giddings, Washtenaw Alliance for Virtual Education, Ypsilanti, MI

Heather Gauck, Grand Rapids Public Schools, Grand Rapids, MI

Matt McCullough, Schoolcraft Community Schools, Schoolcraft, MI

Clara Carroll, Harding University, Searcy, AR

Nancy Fancyboy, Beebe School District, Beebe, AR

Lori Martin, Otter Creek Elementary, Little Rock, AR

Leslie Sharp, Carnall Elementary School, Fort Smith, AR

Deb Walter, Rogers New Tech High School, Rogers, AR

Rebecca Wattleworth,

Warrensburg-Latham High School, Warrensburg, IL

Jennifer Smith, Monticello Middle School, Monticello, IL

Jacob Carlson, Civic Memorial High School, Bethalto, IL

Virginia Valdez, Minnie Mars Jamieson Elementary School, Chicago, IL

Joseph Fatheree, Effingham High School, Effingham, IL

Christina Jusino, Spark Academy, Lawrence, MA

Jennifer Langdon, Hurley K-8 School, Boston, MA

Desiree Darling, Spark Academy, Lawrence, MA

Emily Banta, Lawrence Family Development Charter School, Lawrence,

Tuyet Dinh, Mather Elementary, Dorchester,

Michael Macchi, Phineas Bates Elementary, Roslindale, MA

Alicia Serafin, Whittier Elementary School, Everett, MA

. Cheryl Corpus, Center for Excellence in Teaching & Learning, Mount Pleasant,

Gina Wilson, Early College Alliance @ EMU, Ypsilanti, MI

Tina Harma, Kent Lake Elementary, South Lyon,

Carrie Mattern, Carman-Ainsworth High School, Flint, MI

Steven Fouts, Douglass Academy, Chicago, IL

Lani Luo, Howe School of Excellence, Chicago, IL

Gabrielle Pike, Burr Elementary, Chicago, IL

Lynn Osborne-Simmons, Curie Metropolitan High School, Chicago, IL

DeJernet Farder, Morton School of Excellence. Chicago, IL

Ashley Karlsson, Washburn High School, Minneapolis, MN

Amy Fettig, Ubah Medical Academy, Hopkins, MN

Susan Boen, Washburn High School, Minneapolis, MN

••••• Maureen Torrez, La Mesa Elementary School, Albuquerque, NM

Laura Burns, Kirtland Elementary School, Albuquerque, NM

Kimberly Chavkin Moreno, George I. Sánchez Collaborative Community School, Albuquerque, NM

Andrea Quintana, George I. Sánchez Collaborative Community School, Albuquerque, NM

Stephen Rountree,

Frederick Douglass High School, Upper Marlboro,

Sonia Matthew, High Bridge Elementary School, Bowie, MD

Kisha Dorch, Frederick Douglass High School, Upper Marlboro, MD

Rodney Lewis II, Barack Obama Elementary School, Upper Marlboro, MD

Julie Hughey, Prince George's County Public Schools, Upper Marlboro,

• • • • • • • • • • Daniel Chu, Murray Hill Academy, New York, NY

Christopher Nielsen, Murray Hill Academy, New York, NY

Michael Lubing, Murray Hill Academy, New York,

Miyilyn Parra-Innocent, Murray Hill Academy, New York, NY

• • • • • • • • • • Shelly Moore Krajacic, **National Education** Association, Madison, WI

Amy Mizialko, Milwaukee **Teachers Education** Association, Milwaukee, WI

Ingrid Walker-Henry, Milwaukee Teachers Education Association, Milwaukee, WI

Chauna Perry Finch. Milwaukee Teachers Education Association, Milwaukee, WI

Heather Sattler, Milwaukee Teachers Education Association, Milwaukee, WI



Matt McCullough is a member of the Michigan Catalysts for Teacher Leadership team.

4 THEMES EMERGE IN ESSA PROPOSALS

Agents for Learning Competition (p. 68) revealed several themes that place teachers in leading roles in schools, professional learning leadership and advocacy. Here are a few trends identified across finalist team applications.

1. Teachers as leaders:

Many teams advocate for states and districts to develop career ladders or lattices to support increased teacher recruitment, retention, and satisfaction and a transformation of the profession. Teams suggest hybrid roles that allow teachers to serve both within and beyond the classroom.

2. Teachers as inquirers:

Many teams position teachers as researchers or inquirers, collaboratively and intentionally identifying and addressing their most pressing student needs. Several teams describe the importance of cycles of continuous improvement led by teachers at the school level as the primary means of making professional learning authentic, teacherdriven, data-oriented, and job-embedded.

3. Teachers as experts:

Within the roles and structures that teams describe, teachers are typically recognized for their expertise and called upon to share that knowledge with their colleagues. Schools will benefit when they create opportunities for teachers to observe each other teaching and reflect on and discuss what they see.

4. Amplify teacher voice:

Many teams stress the importance of consulting teachers on many aspects of school improvement and professional learning. Teachers have the best understanding of their own and students' learning needs.

Nebraska affiliate empowers change agents statewide

This year's winner of the Learning Forward Foundation's Affiliate Grant is Learning Forward Nebraska, under the direction of Chad Dumas.

The affiliate's three-year plan for professional learning proposes to expand Learning Forward's Executive Leadership Program to multiple sites

Learning Forward Foundation scholarships

The Learning
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www.learningforward.
org/foundation.

throughout Nebraska as a means to support education leaders who lack a critical understanding of change processes as well as effective facilitation skills for leading change.

To help bridge the implementation gap, the affiliate will develop a website to support "rigorous education designs of professional learning." In addition, the Learning Forward Nebraska board will build its capacity for advocating and supporting high-quality professional learning in order to empower

Nebraska educators to be change agents in their contexts.

As part of the grant, Learning Forward Nebraska will gather quantitative and qualitative data on participation in and implementation of learning from the Executive Leadership Program.

APPLY FOR THE SHIRLEY HORD TEACHER LEARNING TEAM AWARD

earning Forward is accepting applications for the 2016 Shirley

—Hord Teacher Learning Team Award.

The award honors a team of teachers that demonstrates excellence in professional learning. This annual award recognizes a school-based learning team that exhibits evidence of successful implementation of a cycle of continuous improvement that results in increased teaching effectiveness.

As part of the award process, applicants are asked to:

- Produce and submit a 10- to 12-minute video that shows evidence of the team implementing a cycle of continuous improvement.
- Include a letter of recommendation from the school principal that also describes how the principal supports the work of the learning team.
- Complete a brief, two-part essay describing the results the team hopes to achieve from its professional learning, the learning activities that help the team achieve these results, and evidence that the team is achieving results.

The winning team will receive a cash gift for its school to support collaborative professional learning, complimentary 2016 Annual Conference registrations to support team attendance at the conference, and a profile in *JSD* and on Learning Forward's website. In addition, the winning team will be honored at an Annual Conference general session.

Complete details on the application process, including the application form, are available at www.learningforward.org/get-involved/awards/hord-award.

The submission deadline is Oct. 7, 2016.



Intentional connections help bring rigorous content to life

n our district, we have realized the importance of creating intentional connections within and beyond our buildings so that everyone has the capacity to bring rigorous content to life and offer meaningful learning experiences for all students. These connections have served us well in achieving our goal of having every student experience STEM (science, technology, engineering, and mathematics) integrated throughout the math, science, and elective classrooms. Here are the connections we made and the lessons we learned along the way.

Bring key stakeholders together to construct a working definition and vision for STEM in your school or district.

Stakeholders must include teachers, administrators, school board members, students, and parents. It is important that the group reach consensus throughout the process and leverage numerous resources to build a deep understanding of how STEM should look once fully implemented.

Pay attention to the process of change.

Although the "S" and the "M" of STEM are firmly in place for school systems, using technology as a tool and bringing in the engineering design process can be a challenge.

• Provide professional learning

John Eyolfson is president of Learning Forward's board of trustees.

on board JOHN EYOLFSON

for teachers, administrators, and school board members.

School-based administrators need to have a working understanding of how bringing together the four components of STEM unfold within the classroom. This should include a focus on how teachers engage within a teaching and learning cycle. In our district, we use the cycle of plan, teach, monitor, and adjust. The intentionality of this cycle can help administrators work closely with teachers.

Teachers are the most critical element in achieving the integration of STEM. My district has created cohorts of teachers working closely with an instructional coach to accomplish this task. Teachers attend classes during the summer to deepen their understanding of both the content and the pedagogy of each of the disciplines.

It has been our experience that the greatest need is helping teachers with the engineering design process. Inherently, teachers have focused on the idea of success. The concept of using failure to improve a system may not be new, but it requires a new skill set for teachers. This new way of teaching the engineering process must be addressed as teachers acquire new knowledge, skills, and dispositions.

• Create community partnerships.

We have turned to local museums, conservation areas, state parks, and other informal education providers. Start by building relationships with these groups and look for opportunities where their expertise and resources intersect with your needs.

For instance, last year, the Denver Museum of Nature and Science worked with close to 100 middle school teachers on Saturdays to deepen teachers' content knowledge. There are community members who can provide expertise and serve as audiences for student presentations or guest speakers.

We are also fortunate to connect with a group of educators throughout Colorado know as the Colorado Science Education Network. This group, which includes K-12 educators, higher education, and other educational institutions, meets monthly to share, learn, and provide a sense of cohesion among the experiences for Colorado children. The opportunities from this type of collaboration are immense.

Continue to connect with all stakeholders.

Communicate regularly with parents, students, community members, school boards, teachers, and administrators about the challenges and successes of moving to STEM-centered instruction. Making this a priority early in the process will allow for opportunities to collect artifacts, testimonials, and data to monitor the changes and the implementation.



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Excellent teaching and learning every day.

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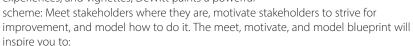
book club

COLLABORATIVE LEADERSHIP: Six Influences That Matter Most

By Peter M. DeWitt

What type of leadership do you practice? If your answer is transformational or instructional, you're not alone. Many of us rely on these tenets. But there are better advantages in applying a holistic angle including all stakeholders — an approach known as collaborative leadership.

Peter DeWitt unpacks six leadership factors in *Collaborative Leadership*, all framed through the lens of John Hattie's research. Adding insight, practical experiences, and vignettes, DeWitt paints a powerful



- Transform your leadership practice;
- Identify where you can make immediate changes;
- Build and empower your leadership team; and
- Incorporate all stakeholders into the conversation.

Designed to shape collective teacher efficacy and foster teacher voice,

Collaborative Leadership will leave you motivated to work together.

Through a partnership with Corwin Press, Learning Forward members can add the Book Club to their membership at any time and receive four books a year for \$69 (for U.S. mailing addresses). To receive this book, add the Book Club to your membership before September 15. For more information about this or any membership package, call **800-727-7288** or email **office@learningforward.org.**



TROUBLE LOGGING IN?

Learning Forward has updated the login process on the organization's website.

Members now sign in with their email address instead of member ID and will need to create a new password. To create a new password:

- Select "forgot/reset password" on the member login page.
- · Look for an email from Learning

Forward with instructions for resetting your password.

 Follow the instructions for resetting the password.

PETER M. DEWITT

Log in again using your new password.

Members only need to do this process once as part of this upgrade.

If you need help, contact the business office at office@ learningforward.org or 800-727-7288.

LEARNING FORWARD CALENDAR

Oct. 1: Last day to save \$50 off registration for the 2016 Annual Conference.
Oct. 7: Deadline for applications for the 2016 Shirley Hord Teacher Learning

Team Award.

Oct. 15: Deadline for the April 2017 issue of *JSD*. Theme: Measuring impact.

Dec. 2-4: Learning Forward Academy Class of 2018 meets at Annual Conference in Vancouver, British Columbia, Canada.

Dec. 3-7: 2016 Annual Conference in Vancouver, British Columbia, Canada.

learning forward.org

Learning Forward Team Grant awardees

Meet this year's winners of the Learning Forward Foundation Team Grant, given to a team of educators making an effort to advance Learning Forward's vision: Excellent



teaching and learning every day. This year's winners are from Northern Valley Regional High School District in Demarest, New Jersey, led by Supervisor of Professional Learning Kathleen O'Flynn, Linda Mayer, and Virginia Senande. Northern Valley has traditionally recognized its leaders to be the superintendent, principal, and high school subject supervisors. With the changing demands of instructional

leadership, new leadership groups have evolved within the region. Read about the challenges the district faces and the team's plan to address those challenges. www.learningforward.org/publications/blog/learning-forward-blog/2016/06/13/meet-the-team-grant-awardees

Redesign PD Community of Practice



Learn more about Learning Forward's Redesign PD Community of Practice, launched to support 20 of the nation's leading school districts and charter management organizations in addressing systemwide educator and student learning priorities. The community engages teams from these districts in identifying their local professional learning challenges and creating scalable solutions.

Collectively, systems participating in the community employ more than 160,000 certified teachers and enroll 2.3 million students, more than 5% of the public school students in the country. Learning Forward serves as the community's facilitator and coordinator and will capture and publish lessons learned and tools to share with the broader field of education.

www.learningforward.org/learning-opportunities/redesign-pd-community-of-practice

Standards Assessment Inventory

Assess the quality of your system's professional learning with the Standards Assessment Inventory. The 50-item, webenabled survey helps ensure professional learning increases teaching effectiveness and gets results for educators and students. States, regional service centers, and school systems use the tool to measure teacher perceptions of professional learning and guide the planning, facilitation, implementation, and evaluation of professional learning to maximize its impact and investment. Download the free info guide for more information, including sample questions and pricing.

www.learningforward.org/consulting/sai





Research underscores collaboration's impact

n this blog post, Learning Forward Executive Director Stephanie Hirsh expands on a Learning Policy Institute teaching effectiveness research review. The report draws

on 30 recent research studies to highlight key findings and make policy recommendations. Hirsh notes that the study comes as state and district educators are creating plans to use federal funds within the Every Student Succeeds Act (ESSA) aligned with the Department of Education's draft regulations for

and systems:
Ensure that professional learning aligns with the definition of professional learning in ESSA.

ESSA implementation. Hirsh offers

these recommendations to states

- Plan all learning to support a coherent vision for student and adult learning.
- Identify the intended impact of any learning along with the data and evidence that will help educators know if they are achieving their goals.

www.learningforward.org/ publications/blog/learningforward-blog/2016/07/16/ research-underscorescollaboration's-impact



Twitterpated:

I found my learning community. You can, too.

By Eric Celeste

Perhaps the most important reason networks are important to professional learning is this: By their nature, they create a sense of collective responsibility and mutual accountability for shared improvement. Groups that come together in whatever fashion — in social networks, via online video conferencing, or around conference tables — share in solutions to problems of practice and therefore feel collectively responsible for the success of all their students.

Bridging silos:

Novices partner with veteran teachers on the path to board certification.

By Erin Gilrein and Jennifer Wolfe

To stem the tide of new professionals leaving teaching, the Oceanside School District in New York created a program that sees teaching as a six-year career ladder beginning with an internship and ending with National Board Certification, with board-certified teachers supporting new interns and residents. The mentoring program provides leadership opportunities for seasoned teachers as well. Board-certified teachers and their accomplished colleagues enhance resident teacher practice through video reflection and peer support.

Open doors, open minds:

Empowered teachers work and learn shoulder to shoulder. By Marcia Hudson, Lauren Childs, and Cynthia L. Carver

The Avondale School District in Auburn Hills, Michigan, created a job-embedded form of professional learning called Teacher Lab. Using a full-day released time format, Teacher Lab combines preobservation dialogue and study with classroom observation and follow-up debriefing. Participating

teachers consistently report high levels of satisfaction with lab learning, and an internal evaluation linked Teacher Lab participation with improved student achievement. At the center of this success are teachers who see themselves as responsible for their own learning.

The virtual workroom:

Using social media, teachers reach beyond school walls to learn and grow.

By Jeffrey P. Carpenter, Torrey Trust, and Daniel G. Krutka

Unlike many traditional professional development options, educators can create professional learning networks tailored to their needs and interests. The authors surveyed 732 pre-K-12 teachers to better understand their perceptions of these networks as well as the impact on their teaching and student learning. Participants described unique combinations of people, resources, and digital tools, and appeared to be drawn to these networks for a variety of reasons. Several key factors shape success for teachers and administrators.

Cloud coaching:

Web-based learning holds promise, especially for districts with limited resources.

By Lindsay Clare Matsumura, Donna DiPrima Bickel, Dena Zook-Howell, Richard Correnti, and Marguerite Walsh

Designing a web-based literacy coaching program offers insights into the benefits and challenges of online professional learning. Web-based coaching shows significant promise for linking teachers to highly expert practitioners. This is especially important in districts that cannot afford to hire full-time school-based coaches or to train and support coaches to be experts in all content areas. Web-based coaching also offers special

affordances that may not be available in face-to-face coaching.

Algebra? There's an app for that:

Florida goes online with math support for teachers and students. By Joy Bronston Schackow and Stephanie Cugini

An online learning system for algebra teachers and students in Florida, called Algebra Nation, includes standards-aligned instructional videos that model Common Core practices, workbooks to accompany the videos, practice assessments that mirror the state's algebra test, and interactive homework assistance. A teachers-only area provides free, ongoing professional learning with activities that allow teachers to examine, analyze, and reflect on their teaching. Schools that were frequent users in 2014-15 report significant impact on student achievement in algebra 1.

What student writing can teach us about teaching.

By Nikki Holland, Ginney P. Wright, and Christian Z. Goering

Teachers in a small rural district in Arkansas meet once a month with Northwest Arkansas Writing Project staff to examine student work together and plan next instructional steps, providing a focus to the day's work based on the success and areas of further development identified by teachers in constructive conversations. The program aims to improve the teaching of academic writing with a focus on argument and, in doing so, increase student achievement. Three specific practices — constructivist coding, calibrating with anchor papers, and affinity mapping — would transfer easily to any professional learning community.

features

5 core roles of central office learning leaders.

By Joellen Killion and Cindy Harrison

The changing field of professional learning over the past 20 years has also led to changes in the role of central office director of professional learning. The authors outline the responsibilities and challenges of five core roles that fall within the portfolio of district learning leaders: learning system designer, program manager, coaching champion, facilitator, and change agent. The shifting roles and responsibilities reflect a move toward a school- and team-based, collaborative, personalized, just-in-time approach to professional learning aligned with educator performance and student outcome standards.



Grassroots movement:

With teachers taking the lead, a diverse district tackles literacy. By Julie A. Brua and Matthew K. Moreland

Learning leaders in the Aptakisic-Tripp School District No. 102 in Buffalo Grove, Illinois, faced a dilemma: How could they create a professional learning environment with a grassroots feel that empowers teachers to embrace new literacy standards while at the same time learning instructional strategies that lead to improved literacy achievement within a district where more than 58% of families speak a native language other than English? Working with their classmates and coaches in the Learning Forward Academy, they developed and implemented an action plan to meet their goals.

Share your story

Learning Forward is eager to read manuscripts from educators at every level in every position. If your work includes a focus on effective professional learning, we want to hear your story.

JSD publishes a range of types of articles, including:

- First-person accounts of change efforts;
- Practitioner-focused articles about school- and district-level initiatives:
- Program descriptions and results from schools, districts, or external partners;
- How-tos from practitioners and thought leaders; and
- Protocols and tools with guidance on use and application.

To learn more about key topics and what reviewers look for in article submissions, visit www.learningforward.com/publications/jsd/upcoming-themes.

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columns

Lessons from research:

When teachers learn to use technology, students benefit. By Joellen Killion

University faculty led a three-year initiative to integrate technology into instruction in two rural, high-poverty middle schools in the Southeast, which led to significant increases in end-of-grade assessment scores, particularly for African-American students in math and science.

From the director:

Turn your networking into powerful professional learning.

By Stephanie Hirsh

While we all have many ways to connect to others, there is a hierarchy of connections that can turn networking into powerful professional learning.



Write for JSD

- Themes are posted at www. learningforward.org/ publications/jsd/upcomingthemes.
- Please send manuscripts and questions to Christy Colclasure (christy.colclasure@learningforward.org).
- Notes to assist authors in preparing a manuscript are at www.learningforward.org/ publications/jsd/writersquidelines.



Turn your networking into powerful professional learning

love connecting people who care about the same thing or can help each other with a particular task or goal. So, as you can imagine, I love networking. However, you may be surprised to learn that I am an introvert. I tried to overcome this for years until I discovered that this is where I get my energy for networking. I enjoy meaningful networking, not superficial cocktail talk.

While we all have many opportunities to connect to others, there is a hierarchy of connections that can turn networking into powerful professional learning. When it comes to learning, I want our networking decisions to be intentional.

First and foremost, let's maintain our commitment to the colleagues with whom we work every day. In some schools, this may mean grade-level or subject-area colleagues. It could mean a particular department in the district office. It could mean colleagues with whom we share a long-term assignment.

Within every community, there is untapped talent and expertise. We become stronger organizations when we recognize this and use our time together to identify, elevate, and spread that expertise. We also become stronger when we are honest and acknowledge that we have problems for which the group does not have a solution

Stephanie Hirsh (stephanie.hirsh@learningforward.org) is executive director of Learning Forward.



and must look beyond the group for alternatives.

Beyond our immediate colleagues is the network of like-minded professionals with whom we share a common passion or interest. There are countless opportunities to engage with these networks. Typically we find them beyond our workplace — for example, in professional associations and, increasingly these days, online. These networks offer deep expertise in areas that we don't necessarily encounter in our daily surroundings. We find ourselves motivated and engaged by these opportunities to connect, learn, and act. These connections recharge and inspire us to take on the substantive challenges we face on a daily basis.

Finally, there are networks that we follow — some may say lurk or observe. We find it important to stay connected to these in case the subject turns to something that will benefit us. We listen in to occasional conversations or posts or retweet messages once in

a while. We don't define ourselves as members of these networks but perhaps as interested bystanders considering whether we want to invest more. These relationships allow us to watch for trends and listen for new, more fulfilling networking opportunities.

At Learning Forward, we try to serve all three purposes. We provide resources and support to ensure your closest daily networks perform at high levels and serve you well. We offer a professional home and support to a variety of networks for you to join such as the Academy and Affiliates. And, finally, we offer free weekly news updates and social media postings to capture your attention and give you a reason to invest more deeply with us.

If you have an idea for a network that you believe Learning Forward should offer, we want to hear from you. We aspire to be one of your primary professional networks to assist and support you to do your best every day.



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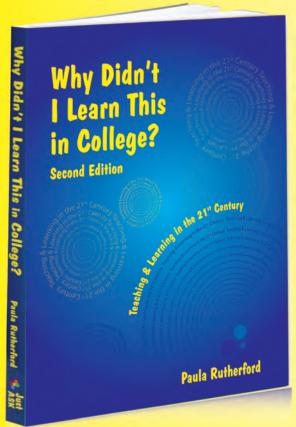






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While new teachers may say they need classroom management skills, what they really need to know is how to design rigorous and appropriately scaffolded lessons and how to create learning-centered classrooms where highlevel engagement and learning can occur. We must help new teachers learn that the end they should have in mind for their students is not that they are well-managed, but that they are well-educated.

- Paula Rutherford



