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**Sense-Makers,  
Messengers, and  
Mediators of the New  
Mathematics Standards  
Math Coaches in the Math in  
Common Community of Practice**

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## WestEd's Evaluation of the Math in Common Initiative

Math in Common® is a five-year initiative, funded by the S.D. Bechtel, Jr. Foundation, that supports a formal network of 10 California school districts as they are implementing the Common Core State Standards in Mathematics (CCSS-M) across grades K–8. Math in Common grants have been awarded to the school districts of Dinuba, Elk Grove, Garden Grove, Long Beach, Oakland, Oceanside, Sacramento City, San Francisco, Sanger, and Santa Ana.

WestEd is providing developmental evaluation services over the course of the initiative. The evaluation plan is designed principally to provide relevant and timely information to help each of the Math in Common districts meet their implementation objectives. The overall evaluation centers around four central themes, which attempt to capture the major areas of work and focus in the districts as well as the primary indicators of change and growth. These themes are:

- » Shifts in teachers' instructional approaches related to the CCSS-M in grades K–8.
- » Changes in students' proficiency in mathematics, measured against the CCSS-M.
- » Change management processes at the school district level, including district leadership, organizational design, and management systems that specifically support and/or maintain investments in CCSS-M implementation.
- » The development and sustainability of the Math in Common Community of Practice.

Together, the Math in Common districts are part of a community of practice in which they share their progress and successes, as well as their challenges and lessons learned about supports needed for CCSS-M implementation. Learning for district representatives is supported by WestEd team members who provide technical assistance related to goal-setting and gathering evidence of implementation progress (e.g., by advising on data collection instruments, conducting independent data analyses, participating in team meetings to support leadership reflection). An additional organizational partner, California Education Partners, works with the community of practice by offering time, tools, and expertise for education leaders to work together to advance student success in mathematics. California Education Partners organizes Leadership Convenings three times per year, summer Principal Institutes, "opt-in" conferences on high-interest topics (e.g., formative assessment), and cross-district visitation opportunities.



## Executive Summary

Faced with the formidable task of moving new math standards from the page to the classroom, many districts have turned to a class of educators called *coaches* to serve a crucial role in interpreting and supporting teachers' instructional shifts. However, what these coaches are asked to do, how they are trained, and the theories of action that underlie their work vary greatly from district to district (and sometimes from school to school or coach to coach). To learn more about the wide variety of activities and roles that districts ask coaches to engage in, WestEd interviewed district staff and coaches in the 10 Math in Common (MiC) districts.

The number of coaches per student in American schools increased by 107 percent between 1998 and 2013; California leads the nation in instructional specialist staffing, with three times more coaches than the national average (Domina, Lewis, Agarwal, & Hanselman, 2015). Significant time and energy is being put into coaching even though there is no definitive evidence linking coaching directly to improved student outcomes.

We wondered, then, what do the MiC districts ask their coaches to do and why? How do district systems and choices about resource allocation support or hinder coaches in this work? We found there is wide variation in the work coaches do to improve teaching and learning in individual classrooms and across systems as a whole. To

help understand and explain this work, we used Neufeld and Roper's (2003) model as a frame of reference. They divide coaching activities into two categories: *change coaching* and *content coaching*. While Neufeld and Roper describe these as expected duties of two separate coach positions, we found that MiC districts often ask coaches to take up elements of both roles. Have the demands of coaching changed since then, or have our common understandings about what works been modified? We wanted to understand this more.

Informed by the interviews we conducted with representatives from each of the Math in Common districts and the examples presented throughout this report, we offer the following recommendations that can help MiC

CHANGE COACH ACTIVITIES	CONTENT COACH ACTIVITIES
Help principals understand the importance of recruiting teachers to assume instructional leadership roles to drive whole-school change.	Help teachers transfer what they learn about new practices to their classrooms.
Act as strategists and assistants in building capacity for shared decision-making.	Help establish a safe environment in which teachers can strive to improve their practice without fear of negative criticism or evaluation.
Model leadership skills for principals as well as for teachers.	Help teachers develop leadership skills with which they can support the work of their colleagues.
Assist in scheduling blocks of time for teachers to work together.	Provide small-group professional development sessions for teachers.
Help principals organize their time so that they are able to visit classrooms regularly to observe instruction and offer feedback to teachers.	



districts, as well as others across the state and country, focus their limited resources on coaching activities that will work best in their context.

## Recommendations for district leaders

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- » **Ask the big questions about the value and impact of coaching in your district.** Do you feel coaching has enough leverage and impact to justify the time and resources needed for a robust program?
- » **Check your coaching plan against your theory of action.** If you believe coaching is important to reaching your goals for student achievement in math, are the specific actions you want your district's coaches to take outlined in your theory of action and, more specifically, in the strategic plans you have put into place?
- » **Ensure that different stakeholder groups all hear the same message about coaching.** If district administrators and other school staff do not have a shared understanding of the coaching goals, coaches may struggle to provide coherent support to teachers.
- » **Check assigned coaching responsibilities against real-time coaching logs.** Coaches are asked to do a lot of different activities, and some are a more valuable use of their time than others. District staff should use coaching logs to monitor time allocation and check against priorities. But it's important to have a plan for understanding and using what can be extensive data on coaching.
- » **Think about the purpose of individual coaching time.** Some coaches may focus a lot of time on traditional one-on-one coaching activities like co-planning and co-teaching. This kind of work can be most helpful when it's used to build relationships early in the year. Once relationships are strong, coaches can move into working with groups of teachers in order to spread the limited resource of coaching time further.
- » **For elementary school content coaches, start small to build math confidence, then scale up.** Many elementary school coaches come to coaching as English language arts experts and need support to take on math coaching. Instead of asking coaches to take on the entire math content area at once, consider supporting coaches to initially focus on specific strategies such as math talks or working with small groups of receptive teachers.
- » **Get principals on board with coaching by making your case to their supervisors or other district administrators.** Allies in the district office can be an important source of support for helping principals understand the rationale for math coaching at their site.
- » **Think about how you will define and monitor success for a coaching role.** In an activity that is so based on relationship-building, coaches and administrators often rely on stories and anecdotes to explain successful coaching. Think about how data, especially teacher observation data, can support the stories you know. And think about how data can help tell you whether coaching is having the effect you want, given the time and resources you are investing.

## Introduction

Faced with the formidable task of reorienting math education toward the new California state standards, many districts have asked their instructional coaches to take a leading role in supporting teachers to enact the necessary instructional shifts. After hearing from Math in Common (MiC) participants that many wanted to know more about how math coaches support standards implementation across the 10-district MiC community of practice, we conducted a series of interviews with district representatives and with the coaches themselves to find out (see the Appendix for our interview methodology).

One coach, who we'll call Amy,<sup>1</sup> told us a story that reflects the great promise of, and the serious challenges confronting, math coaches who serve as roving messengers of their districts' math vision. (In this paper, we use the term *math vision* to describe the priorities and practices district and school site leaders have chosen to emphasize for their rollout of standards-aligned mathematics.)

Her district, Fairview, had developed a new program in which elementary school coaches were paired with two sites and their respective principals. From district leaders' viewpoints, these principals were to develop a strong and specific vision for math instruction at their schools, with support from various principal professional development structures offered in Fairview. The principals would welcome the coach into a close partnership to help implement this vision and to create deep and lasting improvements in math teaching and learning. The coach would provide one-on-one support for teachers, plan professional development offerings, and support site-based professional learning communities (PLCs) to deepen teachers' math work, creating a coherent system of supports united under common goals.

However, Amy found that her initial experience at one school did not align with this ideal. At one of Amy's sites, the principal had worked with other coaches in the past, and based on this experience she was not convinced of the value of having a math coach. "She held me at arm's length," Amy said. "She wanted to do the professional development herself." Amy still did

her best to make headway on building relationships with the teachers. However, in those early days, it was clear to her that she and the principal were working on parallel tracks instead of uniting to form a powerful instructional team to make meaningful shifts in math instruction.

Fortunately, Amy's story ends happily for her and her site (see the case study *Fairview: From a rocky start, a shared vision blossoms at a school site*), but if we freeze and look closely at the initial period of disconnection and discomfort between Amy and the principal, we can see many elements that can make coaching such a precarious role. Without the support and cooperation of site leadership, coaches can be limited in the scope of change they can accomplish with teachers at a site. If instructional leaders at different levels of a system are not synchronized, teachers can get muddled messages about instruction from different directions. If districts do not successfully communicate to principals the importance of working with a coach to enact a math vision, coaches may not have the access and clout they need to do their best work. Even in districts that deploy coaches to sites and communicate messages about coaching and math in a standardized way, there can be tremendous variation in the way sites take on support from the coach and in the strengths each coach brings to a site. This is especially true for elementary school coaches, who were often generalist elementary school teachers themselves without specific training in mathematics.

1 Names of staff as well as districts have been changed to preserve anonymity.



## Coaches' evolving roles in districts' systems of support for deep change

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We know that as teachers take up the deep instructional changes that California standards call for, the extent to which they are able to shift their practice depends on many different supports provided – different people across the district bringing different materials and strategies, and providing different learning contexts.<sup>2</sup> For meaningful and lasting change, all of these elements have to come together under a clear vision of how mathematics instruction is expected to shift. But often districts do not have a clear path for sharing their mathematics vision with school sites; the vision can be blocked or dropped in the face of roadblocks in sites and classrooms dealing with many competing priorities. The clarity and enactment of the vision is also subject to different interpretations by each administrator, educator, and stakeholder in the district.

Many districts, especially large urban ones, have turned to a class of instructional specialists, often called coaches or teachers on special assignment (TOSAs), to take a leading role in engaging teachers in their mathematics vision and in mediating the adoption of standards. (In this paper, we use *coach* as a catch-all term to describe these positions, though the exact title varies across districts). The number of instructional specialists (i.e., coaches) per student in American schools increased by 107 percent between 1998 and 2013; California leads the nation in instructional specialist staffing, with three times more coaches than the national average (Domina, Lewis, Agarwal, & Hanselman, 2015). The correspondence in timing between increased resource allocation toward coaching and the adoption of new standards may indicate that districts adopting these standards, especially in California, see coaches as a crucial lever for supporting standards implementation and have ramped up their staffing to bring the standards into focus.

Domina et al (2015) described standards implementation as a large-scale, collective sense-making process, with everyone in the district tasked with coming to a shared understanding of what the new standards require; what shifts in classroom practice are then necessary to meet the standards; and how strategies, tools, and curriculum have to change in support of the new goals. Coaches can and do take on a pivotal intermediary role in helping staff across the district engage in this sense-making around standards, brokering ideas across different levels of the system and contributing to an understanding of what reforms mean shared by teachers, administrators, and coaches (Woulfin & Rigby, 2017).

And yet, the specifics of what a coach does – why, with whom, and how – vary from district to district, site to site, and coach to coach, creating a multitude of definitions and job roles that can be unclear to those outside of the specific contexts in which coaches do their jobs. Sometimes the specifics of coaching can also be unclear to those within the districts themselves if they are not able to monitor coaching activities closely. Studies show that working to improve teacher pedagogy can result in better outcomes for students (Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009). But, reflecting the general difficulty of directly correlating any individual improvement activity with student achievement outcomes, there is, as yet, no widespread evidence that coaching is effective for increasing student achievement (Neufeld & Roper, 2003). As one district math administrator pointed out, “tying student performance to the effectiveness of a [coach] – how is that different from trying to tie it to the effectiveness of a teacher?” Districts continue to invest both resources and hopes in their coaches, oftentimes on the basis of historical uses of coaching within the district, despite a scarcity of hard evidence about the impact of coaching.

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<sup>2</sup> See previous Math in Common evaluation cycle reports examining these sorts of supports: Perry, Reade, Heredia, & Finkelstein, 2017; Perry, Reade, Sobolew-Shubin, & Heredia, 2016; and Seago, Perry, Reade, & Carroll, 2016.

**Table 1. Coaching Activities to Support School Change and Improve Content-Area Instruction**

CHANGE COACH ACTIVITIES	CONTENT COACH ACTIVITIES
Help principals understand the importance of recruiting teachers to assume instructional leadership roles to drive whole-school change.	Help teachers transfer what they learn about new practices to their classrooms.
Act as strategists and assistants in building capacity for shared decision-making.	Help establish a safe environment in which teachers can strive to improve their practice without fear of negative criticism or evaluation.
Model leadership skills for principals as well as for teachers.	Help teachers develop leadership skills with which they can support the work of their colleagues.
Assist in scheduling blocks of time for teachers to work together.	Provide small-group professional development sessions for teachers.
Help principals organize their time so that they are able to visit classrooms regularly to observe instruction and offer feedback to teachers.	

Source: Adapted from Neufeld and Roper (2003).

## Defining the coaching role: Content coaching and change coaching

In interviews with district staff and coaches across the Math in Common network, we learned that the network’s coaches are often tasked with transmitting the district’s vision for implementing the standards and working to make collective sense of the standards with teachers and principals. Because they are mobile and often able to form close relationships with teachers and principals, coaches can become messengers and evangelists of a vision for change that districts may otherwise struggle to communicate clearly and directly to all stakeholders.

As we thought about how MiC districts conceptualize coaches’ roles in both carrying out the district’s vision and helping teachers and principals make sense of it, we looked at Neufeld and Roper’s (2003) model of two common coaching roles: *content coach* and *change coach*. Each of these roles comes with a complex and substantial mandate for work to be done at sites, and in our interviews with coaches and district staff, we

heard about the many ways that elements of each of these positions were being taken up and blended. We use these two common coaching roles as a framework to help make sense of the many different ways that the scope and responsibilities for coaches are defined across the network. Table 1 lists the key activities, identified by Neufeld and Roper (2003), carried out by change coaches and content coaches.

In order to rise to the challenge of implementing the California math standards, and to allocate available resources, MiC districts are in some cases asking math coaches to fulfill aspects of both of these roles simultaneously. Districts may not have much of a choice in having to place multiple demands on their coaches. Effective standards implementation likely cannot be accomplished through content coaching alone. To thoroughly implement new standards across an entire district, districts must enact systems-level change as well as teach new content and pedagogies — and in many places coaches have been asked to mediate both types of change.

This need for coaches to be skilled in both change management and content-area learning raises the question



of how a person can be prepared and supported to fulfill the expectations of both of these roles – and whether this might be too much to ask of one person. Additionally, the design and definition of coaching roles can greatly affect the efficacy of a coach's activities (Coburn & Russell, 2008).

Even when the role of content coach can be clearly delineated from the role of change coach, the work of many content coaches has expanded since the introduction of the new California math standards. Now, instead of mainly demonstrating lessons and strategies in individual classrooms, content coaches often are asked to focus on deeper types of collaboration with teachers to think through the standards and how to bring them to life in the classroom (Cobb & Jackson, 2011). Furthermore, if district structures allow it, coaches' work also involves moving beyond individual classrooms to convey ideas about instruction to large groups of teachers across the district.

Using the framework outlined in Table 1 (i.e., *change coach* versus *content coach*) to guide our analysis of our interviews with district representatives and coaches, we were interested in identifying the variation in coaches' roles from district to district. We found that, across districts, coaches were assigned different elements from each column, resulting in a distinct set of both content- and change-related responsibilities for working with principals and teachers. We saw that coaches' roles were also affected by the stability of coaching programs over time, the length of time a particular professional learning or coaching structure had been in place, and resource allocation. Everywhere, we saw deeply committed educators working within complex, changing, sometimes uncertain environments.

The meaning of the word *coach* (and the fact that districts often referred to individuals in the coaching role by different names such as *teacher on special assignment* or *math specialist*) was another source of variation. In most districts, coach can describe both the person who does site-based coaching and the person who does the district-level work to support the site-based coaches. The line between these roles can

disappear as resources for coaching shrink – in some districts there are dozens of site-based coaches working with a team at the district office, while in others a few people play both roles simultaneously. Sometimes there are separate coaching structures led by different district departments, each with its own definition of coach.

In the paper, we use the word coach to describe both site- and district-based coaches. The majority of this report focuses on examples of coaching at the elementary school level because we saw that the challenges for these coaches were even more complex, given that there are (often many) more elementary school sites than middle school sites in each district. In addition, the role itself is often more complex at the elementary school level, given that coaches often must support each teacher in all content areas.

## Report structure

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We focus in this report on three mini-cases highlighting the ways that districts and coaches push against systemic and interpersonal limitations, and whether and how they choose to blend aspects of content coaching and change coaching. We chose these three examples to provide snapshots of the decisions district staff and coaches make throughout the evolution of their coaching programs. Within these decision points we see a microcosm of the ways coaches push against, or are supported by, structural conditions in the district, and a sense of what the outcomes can be.

The first section, *Partnering with Principals to Build Capacity for Teacher Learning*, examines how two districts' coaches are building relationships with principals in order to support a robust emphasis on math at the sites where they coach. The relationship between coaches and principals can be "make-or-break," determining coaches' access to classrooms and whether and how the district math vision is understood and enacted at sites. The first story in this section expands on the vignette at the beginning of this report, describing how Amy, a site content coach, built a relationship with



her principal after a rocky start in the first year of a new coaching program. The second story is about how coaches' creative deployment of their resources and connections to leadership is allowing them to lay a foundation for both change coaching and content coaching.

The second section, *Leveraging Coaches to Build Teacher Capacity*, considers the issue of what sort of lasting impact a content coach can make. In some districts, funding for coaching positions changes significantly from year to year. In others, funding is stable but insufficient to regularly put a coach in every classroom or

alongside every collaborative teacher learning group. How can districts leverage their content coaches' time and expertise to build learning and deep instructional change that continues with or without the coach? We learn about one district's well-established program for scaling professional learning led by coaches.

Throughout the report, sidebars offer more information provided by districts, especially about the ways districts respond to the unique challenges of content coaching at the elementary school level.



## Partnering with Principals to Build Capacity for Teacher Learning

Across the network and across the state, principals are increasingly being asked to serve as instructional leaders in all content areas, in addition to the many other instructional and managerial requirements of their jobs. MiC district leaders have told us about some of the things they believe their districts need to do for principals to support mathematically powerful classrooms, including:

- » Understand and interpret the district math vision and be able to identify it in classrooms.
- » Understand the instructional shifts required to implement the new standards.
- » Communicate to teachers the importance of effective standards implementation in every classroom.
- » Be familiar with the professional learning in which teachers participate, in order to provide follow-up and guidance as needed.
- » Pave the way for site-based learning structures, like PLCs, to thrive.
- » Build shared accountability to achieve the vision by distributing leadership roles and responsibilities among staff and community.
- » Use evidence (including, but not limited to, student achievement, attendance, behavior and school climate data, research, and best practices) to shape and revise plans, programs, and activities that advance the vision.<sup>3</sup>

At the same time, many districts struggle with finding the most effective way to communicate the districts' math vision to all teachers and to provide the change coaching needed to support teachers in making sense of and enacting it. At sites where principals do not take ownership of this vision, do not confidently communicate that math is a priority, and do not back that messaging up with actions throughout the year, math

may not become a priority at that site. Additionally, if principals are not confident enough in their understanding of the new math standards and are not convinced that math must be a priority for their sites, it will be difficult for them to provide clear feedback and instructional support that teachers need to enact the math instructional shifts required by the new standards.

Knowing about the disparities in principals' experience with and interest in mathematics instruction, and knowing that district math departments often have limited access to principals, some districts have turned to their coaches to prepare principals through a trainer-of-trainers model of coaching. In this model, coaches work with principals to help them understand and bring the district's math vision to every classroom at a site. Because principals have often been out of the classroom since before the current standards came into effect, they also need similar content coaching that teachers do in order to understand how mathematics learning is conceptualized today.

It's clear that principals can be a crucial lever for instructional change, but they sometimes need certain coaching supports to be able to do so. In our interviews, we asked MiC districts whether, how, and why their coaches interact with principals and serve as emissaries of the district's math vision. We explored how districts can build coaching systems to adequately train and support principals to lead mathematics change efforts at

<sup>3</sup> Many of these district activities align with the California Professional Standards for Education Leaders (2014). In a follow-up report, we hope to touch on, in more detail, some of the efforts districts are taking to support their principals and build their capacities for instructional leadership.

their sites, and how coaches can help bring principals on board to making the district's math vision a priority.

Below, we share two stories that highlight the ingenuity, creativity, and flexibility involved in creating strong

instructional and change-management partnerships between coaches and principals, even in less-than-ideal climates for their work.

## Fairview: From a rocky start, a shared vision blossoms at a school site

Fairview<sup>4</sup> is in its second year of an evolving program in which site coaches work in close partnership with principals, taking up elements of both change coaching and content coaching at a site. In this section, we further explore Amy's story from the introduction to this paper to understand how a strong relationship between coach and principal, built on a shared vision for math instruction, can be leveraged to build coherent and powerful professional learning supports for teachers.

Using the framework we introduced earlier, Table 2 lists the key *change coaching* and *content coaching* activities that were referenced in our interviews with district representatives and coaches. We include this table in each of our three case studies as a frame of reference for how different districts are incorporating elements of both change coaching and content coaching in various ways. The shaded boxes represent the coaching activities that interviewees indicated were taking place in their district.

Fairview's coaching program supports principals to serve as mathematics instructional leaders by crafting and upholding a vision of mathematics instruction for their site. Previously, the district encouraged the coaches and principals to collaborate, but provided limited structure for this shared work — some sites had a Title I coach, while others had coaches who autonomously offered afterschool professional development for teachers. In both cases, according to a district representative, there wasn't necessarily a clear model for how coaches and principals should work together.

The district's coaching program centers on the principals' site-specific vision of standards-aligned mathematics instruction, with site content coaches tasked with helping teachers make sense of and carry out

this vision. As the district Math in Common lead from Fairview said, "It's the principal having the leadership to say: 'This is where math is going at this site,' and the coach being the implementer, the boots on the ground in the classroom," providing ongoing instructional support. Principals develop their site's mathematics vision through what they have learned in various forums, including Math in Common principal institutes, presentations on math instruction from outside experts, and trainings on the district's own math program for principals (coaches also attend the latter, to be familiar with what is being asked of teachers and be better prepared to support them.) These common experiences give principals foundational information from which to construct their own site visions, ensuring that there will be common elements taken up across sites.

Prior to the 2016–17 school year, coaches were funded through Title I, so only Title I schools had coaches. In 2016, the district expanded its coaching program to all sites using Local Control and Accountability Plan (LCAP) funds. The district asked principals to "opt-in" to the coaching program by filling out a form specifying how the coach would support the goals of their LCAP and benefit the site. Principals were also asked to lead a discussion with site staff about including and utilizing

4 District names have been changed to protect anonymity.



**Table 2. Selected Change Coaching and Content Coaching Activities in Fairview**

CHANGE COACH ACTIVITIES	CONTENT COACH ACTIVITIES
Help principals understand the importance of recruiting teachers to assume instructional leadership roles to drive whole-school change.	Help teachers transfer what they learn about new practices to their classrooms.
Act as strategists and assistants in building capacity for shared decision-making.	Help establish a safe environment in which teachers can strive to improve their practice without fear of negative criticism or evaluation.
Model leadership skills for principals as well as for teachers.	Help teachers develop leadership skills with which they can support the work of their colleagues.
Assist in scheduling blocks of time for teachers to work together.	Provide small-group professional development sessions for teachers.
Help principals organize their time so that they are able to visit classrooms regularly to observe instruction and offer feedback to teachers.	

Source: Adapted from Neufeld and Roper (2003).

Note: Shaded boxes represent elements of coaching we heard about in interviews with coaches and/or district representatives.

the support of the incoming coach, with the hopes of increasing buy-in.

The program then kicked off with a coach-principal institute at the beginning of the 2016–17 school year.

### Overloading the coach with outside responsibilities

Several district representatives mentioned site-based challenges that sometimes keep coaches from being able to work directly with teachers on instruction in or out of the classroom. These challenges typically involve assigning the coach to other roles not directly related to teacher learning, including making the coach responsible for student- and/or family-focused activities such as moderating a math club, coaching a spelling bee team, preparing a family STEAM night, and, in a few cases, even being asked to assist with discipline issues.

At this event, district staff presented their vision for the coach-principal relationship, along with opportunities for coaches and principals to get to know one another, plan for the year ahead, and read and discuss some of Elaine Aguilar's book *The Art of Coaching*, particularly a section on developing a shared understanding of what content coaching is and is not. The pairs also examined the site LCAP and reflected on the role of the coach in supporting it. Ahead of the institute, the principal supervisor sent a letter to principals making the importance of their participation in the institute clear, and most principals attended (the few sites that declined a site coach entirely instead received consultation coaching from district coaches).

### Building a strong partnership between principal and coach to increase impact

We spoke to Amy, an elementary school coach in Fairview, to better understand how this program is playing out, and heard about some of the challenges and successes of their model — in which a content coach can also take on the role of change coach, if the conditions

are welcoming. This is the story we began in the introduction to this paper. When we left off, Amy was working on her own to develop relationships with teachers through one-on-one coaching, while the principal led the work of implementing her math vision alone.

As Amy was having clear success in the beginnings of her content coaching and relationship-building work with teachers (she was getting invited to PLC meetings and classrooms for co-teaching and demonstration), the principal asked for Amy's support in starting an invite-only math discourse group at the site for PLC leaders and a few interested teachers. This was the beginning of a shift from each of them working somewhat independently on math at the site to becoming more of a partnership that could co-plan the process of moving instruction toward a shared vision developed by the principals. Through this shift, Amy was able to step into the role of change coach because she'd already been successful as a coach providing support with mathematics content — by gaining teachers' trust and buy-in to work on math across the site, she gave the principal confidence in working with her on deeper changes.

They planned a monthly program for teachers to use "struggle" problems to go deeper on student discourse. These struggle problems became increasingly popular with teachers, and the effort culminated in the core group participating in the program making an end-of-year video to share across the district, highlighting their success with struggle problems and student discourse. In the end, the principal came to trust Amy, to invite her into thinking through the site's math vision together, and to see Amy as a vital resource in implementing the principal's vision for the site.

Both Amy and the district representative we interviewed emphasized the delicate line coaches must walk in

### Boosting buy-in with number talks

To support elementary school coaches in their math coaching role, one district's coaches' training included a book study on *Principles to Actions* (NCTM, 2014) and training on number talks. After observing demonstration lessons using number talks, coaches were expected to work in pairs to plan a number talk to implement in a classroom at their site, and then come back to the coaches' group to debrief, including sharing student results. As the coaches did more of these number talks at their sites, the word got around, and more teachers started asking the coaches to come teach a lesson in their classrooms. By focusing on a single, manageable math routine, this district was able to build coaches' confidence and focus their work as well as reach more teachers and increase teacher buy-in through word-of-mouth.

order to be successful in their work. Principals need to trust coaches with the work of change coaching and allow coaches to enact and even co-construct the site math vision with clarity and fidelity. Teachers need to trust that the coach is not serving as a "go-between" who reports evaluations of their teaching (gained from their content coaching work together) to the principal. Ultimately, in Fairview, instructional leadership is distributed, with the principal setting out a strong vision, and the coach supporting teachers to enact it. Reflecting on her successful year at the site, Amy said, "[The principal] is the instructional leader, but she said she couldn't have done it without me, or without the PLC team — we all had a piece of the leadership pie."



## Greenville: Carving out time to bring the math vision to principals

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In Greenville, the district math department has three district math coaches to serve 43 elementary and intermediate schools. (There are separate coaching structures based out of other offices, some of which also support math.) The district coaches work with teachers, but do not have the capacity to work as closely or with as many as they would like. Another challenge we heard is the sense that math is often not a top priority at sites.

Using the resources available, and with support from influential administrators, the coaches are working with principals to pave the way for a future in which there may be more demand and capacity for math content coaching to teachers. From this foundation, the coaches hope to deepen the learning next year and to continue building math as a “hot-button” focus for sites.<sup>5</sup>

When we asked about the importance of coaching in the district, Laura, one of Greenville’s district coaches, told us, “We know the need is there. But there’s also the issue of funding ... There are a lot needs, and then there are decisions about what gets prioritized. Coaching as a priority has been a bit touch-and-go in the past.”

Due to past decisions about funding and priorities, math coaches are spread thinly across the district’s many sites — three district math coaches work with around 1,250 K–8 teachers at 43 schools. At the moment, while coaches do as much content coaching with teachers as they can, they do not have the resources to work closely on content with most teachers, let alone to form deep change-coaching relationships with principals. For example, Laura works with about eight teachers twice per month with a focus on co-teaching and lesson demonstration.

Additionally, our interviewees noted that literacy is an important focus for the district and many principals do not emphasize math as heavily. In fact, when asked to choose a site focus as part of a separate teacher effectiveness coaching program, only 3 of 36 elementary school principals chose math. As Laura put it, “In our district, if you don’t continue to make math a hot button, it fades to the background.” Driven by this sense of

urgency to make math a hot button, she and her coaching colleagues thought about the things they needed to be put in place in order to get math prioritized at sites, and principal buy-in was at the top of the list.

### Coaching principals on math instruction

In trying to communicate their district math vision broadly, Laura and her coaching colleagues were feeling frustrated, like they were “shouting a powerful message into a paper cup,” instead of the megaphone they needed. They appealed to the assistant superintendent with a plan to discuss math at the district’s monthly principal meetings starting in September 2017.

Laura and the other coaches designed math modules for these meetings, which help principals understand the district’s vision on key math topics (e.g., student math discourse, mathematical rigor, and connecting CAASPP claims to instructional work). Since many principals are not experienced in teaching to the current standards, the coaches felt they needed to be quite explicit in detailing everything the principals should be seeing at their sites. As a result, the modules are designed to provide “messaging of what math instruction looks like, sounds like, and feels like in a classroom,” said Laura.

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<sup>5</sup> We will continue to examine this structure in an upcoming paper on district-provided training opportunities for principals, highlighting the program’s effects from administrators’ perspectives.

**Table 3. Selected Change Coaching and Content Coaching Activities in Greenville**

CHANGE COACH ACTIVITIES	CONTENT COACH ACTIVITIES
Help principals understand the importance of recruiting teachers to assume instructional leadership roles to drive whole-school change.	Help teachers transfer what they learn about new practices to their classrooms.
Act as strategists and assistants in building capacity for shared decision-making.	Help establish a safe environment in which teachers can strive to improve their practice without fear of negative criticism or evaluation.
Model leadership skills for principals as well as for teachers.	Help teachers develop leadership skills with which they can support the work of their colleagues.
Assist in scheduling blocks of time for teachers to work together.	Provide small-group professional development sessions for teachers.
Help principals organize their time so that they are able to visit classrooms regularly to observe instruction and offer feedback to teachers.	

Source: Adapted from Neufeld and Roper (2003).

Note: Shaded boxes represent elements of coaching we heard about in interviews with coaches and/or district representatives.

The meetings have allowed the coaches to build trusting relationships with principals. "This year," Laura said, the monthly meetings allowed her to "reach out to principals to say 'I want to be sure I'm in classrooms on a regular basis. I want to co-teach. I want to be on campus.'" Now, Laura says, principals are starting to reach out to her more for help at sites, and she tries to be responsive in order to help normalize the presence and utility of math coaches at sites. "When they ask for specific things, I jump on it."

And as principals build their own knowledge of the standards and instructional shifts, the coaches also support them in using the district's math reflection tool. The coaches do this with an assist from the district's director of elementary education and the deputy superintendent, who have made it clear that all principals should gather data using the tool in five classrooms this fall, and five this spring. In this way, both coaches and principal supervisors support principals to get into classrooms to better understand math instruction at their sites, and to build a foundation for better supporting teachers.

In addition to educating the principals about the instructional shifts, the math modules give principals a ready-made presentation of the material – a PowerPoint, and a ready-to-print packet with the information reconfigured for teachers' use – to use at site meetings with teachers to share details about the districts' vision for math instruction.

The coaches say it is too early to say whether this approach to coaching principals is working. But anecdotally, Laura says that at the beginning of the 2017–18 school year, when she'd ask teachers if their principals had presented a module to them, "no hands went up." But as of November 2017, she is starting to see hands in response to that same question. Laura is also starting to think about how she can again leverage support from the director of elementary education, who she will ask to do follow-up with principals on their use of the modules back at their site. Of course monthly modules are only a start to the kind of mathematics learning teachers need for the new standards, but in Greenville these principals' meetings are a thoughtful entree to building the district's math vision at each site.



### Targeted coaching cycles offer intensive support

To help site coaches prioritize their work with individual teachers, one district created a program in which coaches meet as a team and review information about teachers, focusing especially on those who are new to the district or to their grade level. From there, they develop a list of approximately 12 teachers on which they would focus their efforts. Next, the district lead and a coach meet with the principals at each site to learn more and potentially revise the list of teachers that will be coached. The coaches then begin a cycle with the teachers, starting with goal-setting, then co-teaching around the goal, until the coach feels the teacher is ready for "independence." The district is now considering expanding the supports in this program for teachers who might need additional coaching cycles or more frequent meetings with their coach.

With an English language arts (ELA) curriculum adoption coming up next year, Laura and her team plan to sustain this method of coaching principals on math instruction. With the district so focused on literacy, Laura feels that carving out this monthly time for math has been "impactful," putting a "spotlight" on math for the instructional leaders who must learn to support the subject for teachers. She plans to send out a needs-assessment survey to principals and teachers, gauging the support they want in math and generating needs data that can be given to district leaders in support of funding further coaching activity.

In this district, the coaches were faced with an uphill battle to get math on the radar at elementary school sites — and to get invitations to the sites from principals. They leveraged important allies in the district office to make time to share their vision monthly with principals and to provide more coaching to sites. The coaches also appealed to other allies to ensure principals would do math classroom observations in order to help make the math vision even more real. With this work, the coaches hope they are creating space and momentum for a future where math will stand with ELA at the forefront of the district.

## Leveraging Coaches to Build Teacher Capacity

Even in districts that have many more coaches to deploy than Greenville, it's unrealistic to expect coaches to give individualized support to every teacher who might want or need it. And while co-planning/co-teaching for classroom instruction (the most commonly mentioned form of coaching support to individual teachers in our interviews) is a traditional activity and often very useful for building relationships, it's unclear what lasting and standardized impact it can have on *all* teachers' practice. Some districts have had success with professional development models that rely on small groups, from PLCs to lesson study, which coaches often have a hand in designing and leading or supporting.

Since funding for coaches can change dramatically from year to year, with entire coaching programs disappearing or shifting to other funding streams, priorities, or departments in the district, we wondered what districts expected to "stick" from a teacher's contact with a content coach. That is, if the coaching support ceased suddenly, what learning and momentum for standards implementation would persist over time? If a district has enough coaches to make some regular contact with most teachers, how can a math department leverage coaches' time and expertise to make sure this contact leaves a lasting impact on teachers' practice?

For many MiC districts, one answer is to orient some of their coaches' efforts toward working strategically with groups of teachers in ways that could build teachers' own capacity to carry learning forward with their peers, outside of work with the coach. In addition, some MiC districts have invested carefully in developing coach-led professional learning structures that allow a coach to be in meaningful, ongoing contact with groups of teachers as they deepen their practice and make sense of the district's math vision.



## Springfield: A structure to deepen, streamline, and scale content coaches' work

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In many districts, we see a blurring of the distinction between content coaching and change coaching, whether by necessity or by design. But in Springfield, district staff wanted to preserve time and space for content coaches to do content coaching only, without "being pulled in a million directions." They carefully designed a scalable professional learning structure that content coaches lead, focusing and maximizing their math time with teachers. As the program rolls out, coaches reach more and more teachers with meaningful work on a key instructional component of the district's math vision. The district's coaching structure was deemed successful enough that it is now being repurposed to prepare for implementation of the Next Generation Science Standards.

An administrator told us that the district realized early on that coaches working individually with teachers, detached from other professional learning structures in the district, would not be sufficient to help teachers implement the new standards. "[Coaches] serve more and more as *facilitators of teacher learning* in the district," said the administrator. "We changed their role to help them see they would be facilitating and gathering groups," as opposed to the traditional but isolated and difficult to scale role of working one-on-one with teachers.

The district now takes responsibility for mapping out coaches' work and ensuring that it fits in with the broader system of supports for teachers. This sense of responsibility for managing and distributing the work of coherent change stays constant for district administrators, even as the coaching structure (e.g., size of coaching staff, specific areas coaches are assigned to support) fluctuates over the years. "Whether it's 3 [coaches] or 100," the administrator said, "it's the district leadership's role to figure out how to make the best use of that resource."

For Springfield, this translates to having coaches work on projects that center teachers' experiences of implementing instructional shifts in their own classrooms and starting small, eventually leveraging word-of-mouth from those who participate in pilots of new professional learning programs to scale the work beyond the level of a single PLC or small group.

In Springfield, in addition to work at the district math office planning professional learning opportunities for all teachers in the district, elementary school coaches are assigned to two or three school sites, where they lead or support work through several interlocking professional learning structures. One structure is a three-year cycle used to roll out new ideas to all teachers. This structure was initially developed to explore and deepen classroom math discourse and is now being used to begin implementation of the Next Generation Science Standards (NGSS).

### Piloting and scaling a program to improve math discourse

During the district's 2015 summer math training, district math staff and coaches began a program for improving peer-to-peer academic discourse for mathematics, structured as an opt-in professional learning event requiring an application. The two-week training focused on student discourse and allowed teachers to try lessons with summer school students, then reflect and refine the work together. From the group of 40 teachers that participated in this summer training, 32 signed on to continue work with K–8 math coaches in a discourse study group, and 25 ultimately stayed with the study group. The work during the first year of the discourse study group consisted of three coach-led after-school trainings throughout the

**Table 4. Selected Change Coaching and Content Coaching Activities in Springfield**

CHANGE COACH ACTIVITIES	CONTENT COACH ACTIVITIES
Help principals understand the importance of recruiting teachers to assume instructional leadership roles to drive whole-school change.	Help teachers transfer what they learn about new practices to their classrooms.
Act as strategists and assistants in building capacity for shared decision-making.	Help establish a safe environment in which teachers can strive to improve their practice without fear of negative criticism or evaluation.
Model leadership skills for principals as well as for teachers.	Help teachers develop leadership skills with which they can support the work of their colleagues.
Assist in scheduling blocks of time for teachers to work together.	Provide small-group professional development sessions for teachers.
Help principals organize their time so that they are able to visit classrooms regularly to observe instruction and offer feedback to teachers.	

Source: Adapted from Neufeld and Roper (2003).

Note: Shaded boxes represent elements of coaching we heard about in interviews with coaches and/or district representatives.

school year, classroom visits by coaches focused on student discourse, coach and peer support in the form of collaborative planning and lesson demonstrations, and two rounds of data collection using a discourse-focused tool.

The following year, the discourse group grew by word of mouth to 68 teachers, continued similar learning opportunities led by coaches, and added a focus on math discourse for English learners. Principals also began attending the program, allowing the work of instructional leadership to be further distributed across the sites, as principals were better able to support teachers toward the vision of improving student academic discourse. From there, word of mouth around the discourse learning continued to build.

"It's like a wildfire," an elementary school coach told us. "The teachers that have been part of the discourse [group] go back to their sites and bring their peers in, and those new teachers are asking [their coaches] questions. We talk about discourse at staff meetings, [and discourse learning] comes into the ILT meetings [another professional learning structure in the district]."

She described the learning and questioning blossoming in a "natural way" toward broad participation, thanks to the care taken from the district math coaches to start with a small and enthusiastic group.

Because the structure of the discourse group relies on teachers' own capacity to bring the work and excitement around it to peers, district representatives felt that the district's vision for math discourse begins to have its own "pull." Thus, coaches were not required to expend excessive time, energy, and social capital on "pushing" teachers into signing on. Additionally, with principals learning alongside teachers, the learning can be further deepened and reinforced at sites.

For the NGSS work, the learning structure will be built out even further, to include 80 to 90 percent of all teachers in the third year of work on the new standards before participation becomes expected for all teachers.

This structure also preserves the capacity of Springfield's elementary school coaches, who are responsible for coaching all content areas. By concentrating a significant amount of the coaches' math work



### **Districts take various approaches to training math coaches**

Several districts noted that training for elementary school math coaches includes content-agnostic topics such as cognitive coaching, as well as general instructional and pedagogical strategies. But given that many elementary school coaches identify more as ELA experts, districts also have to structure learning so coaches gain an understanding of K–6 math curriculum, standards, and content, which is a tall order.

One district took the approach of starting small and manageably by training coaches to support teachers with just a couple of instructional routines, such as math talks. A district math leader told us this approach not only provides the coaches a useful strategy that they can help teachers learn to use in their classrooms, but also enhances the coaches' own conceptual understanding of important elementary math content. In another district, in order to not overwhelm coaches newer to the task of supporting new standards, site coaches are trained on supporting and assessing math fluency. Site coaches receive two full days of work with district coaches and a county representative. They then select two teachers to work with on math fluency (likely choosing classrooms where they feel they will have a friendly reception), and use this work as a base to build confidence before expanding to more teachers.

on a discrete, common focal area – math discourse – a district leader told us, “one [coach] who works with 50 teachers across their sites and in all content areas isn’t being pulled in one hundred different directions.” The clear, common focus on math discourse also provides coaches an opportunity to deepen their own content learning and to think together about how to better support teachers.

## Conclusion

When districts look for ways to promote their vision of math standards implementation, many look to coaches to serve as messengers. Coaches offer the promise of a connection between the district math office and the classroom. But local allocations of time and resources, as well as the combination of change coaching and content coaching that districts ask coaches to take on, can dictate what is possible for coaches to accomplish.

Talking to representatives from the MiC districts, we see coaches being asked to take on roles that blend different kinds of coaching. They work with teachers, in groups and individually, to make sense of the new standards and to understand what enacting the district's math vision can look like in their classrooms. They also work with principals to create the conditions for teacher learning at sites and to support principals' own understanding of the standards and the math vision.

Everywhere, coaching is a complex activity, and coaches can easily be overwhelmed by too many conflicting responsibilities, too much content to cover, or too many sites to support. As funding and priorities change from year to year, many districts are in a constant process of developing new coaching programs. With MiC nearing the end of the five-year funding period, districts in the MiC network will be thinking very carefully about the ways in which they are allocating their resources to coaching to achieve the greatest impact possible on long-term improvement in math teaching and learning.

Informed by the interviews we conducted and the examples presented throughout this report, we offer the following recommendations that can help the MiC districts, as well as others across the state and country, to focus their limited resources on coaching activities that will work best in their context.

## Recommendations for district leaders

- » **Ask the big questions about the value and impact of coaching in your district.** Implementation is about striking a balance between high-leverage change activities and your district's resources and time. Do you feel coaching has enough leverage and impact to justify the time and resources needed for a robust program? What assumptions, experiences, and knowledge contribute to your assessment?
- » **Check your coaching plan against your theory of action.** If you believe coaching is important to reaching your goals for student achievement in math, are the specific actions you want your district's coaches to take outlined in your theory of action? Think about what elements of change coaching and content coaching they must enact in order to contribute to your goals.
- » **Ensure that different stakeholder groups all hear the same message about coaching.** Coaches benefit greatly when district administrators – from the superintendent to the principals – and other school staff (e.g., department chairs, assistant principals) understand what coaches are trying to accomplish for math implementation and why. Without shared understanding and parallel messages from all, coaches may struggle to provide coherent support to teachers.
- » **Check assigned coaching responsibilities against real-time coaching logs.** Districts must be realistic about the range and level of expectations they



place on coaches. No one person can do everything required to succeed at both change coaching and content coaching, yet many sites will need support in both of these areas. District staff may want to do an evidence-based study of coaches' time allocation on selected activities to determine how to better understand the time needed for coaching recipients to be successful in different areas.

- » **Think about the purpose of individual coaching time.** If coaches still focus a lot of time on traditional one-on-one coaching like co-planning and co-teaching, do you have a sense of how this activity fits into the coaches' larger goals for building capacity for all teachers at a site? For example, some coaches use co-planning/co-teaching as a means to build relationships for future work. Consider supporting coaches to start with more individualized support in the beginning of the year before scaling into working with teachers in groups, and lay out a clear timeline for this progression.
- » **For elementary school content coaches, start small to build confidence, then scale up.** Many elementary school coaches come to coaching as ELA experts and need support to take on math coaching. Instead of asking coaches to take on the entire math content area at once, consider supporting coaches to focus on specific strategies like math talks or specific elements of math learning

like fluency. Coaches may also benefit from working on math with only a few receptive teachers at first. Both of these strategies can be scaled up – to include more math strategies and more teachers, respectively – by using a clear timeline.

- » **Get principals on board by making your case to their supervisors or other district administrators.** Site coaches' work benefits immensely when everyone at the site understands the role, expectations, and importance of the coach. Help principals see math and math coaching as a priority at their sites by leveraging support from allies in the district office.
- » **Think about how you will define and monitor success for a coaching role.** In an activity that is so based on relationship-building, coaches and administrators often rely on stories and anecdotes to explain successful coaching. Think about how data, especially teacher observation data, can support the stories you know. Use observations to see how and how often the practices math coaches support (e.g., math talks) appear in classrooms. While it's difficult to tie any one intervention directly to improvements in student performance, it's still crucial to ask how you would know if coaching is having the effect you want, given the time and resources you are investing.

## Appendix: Methodology

In order to understand coaching in the Math in Common districts, as well as to prepare a set of mini-case studies, WestEd staff conducted a series of interviews over 8 weeks with Math in Common leads and district and site coaches (identified by district staff) in all 10 districts (in some cases, one person fulfilled more than one of these roles). After our initial interview using the protocol below, we conducted follow-up interviews with representatives from five districts to clarify points or to get more detail. We interviewed three additional site coaches from these five districts to learn more about their roles and experiences.

### Interview protocol for district leaders

#### Context/rationale

- » What teacher leader positions does your district utilize to support math instruction? (e.g., district-based math coach, site-based math coach, TOSA). Let's loosely call these people "coaches" and that the activities they are engaged in is "coaching."
  - What or who was influential in the development of your ideas about coaching? Experts, other districts, your previous experience?
- » How do you think coaching leads to improvement? What benefits does coaching provide over other improvement activities? In other words, why do you think coaching matters?
  - Has the way the district understands the value of coaching changed over time?
- » What are coaches asked to do to support improvement? [*Make sure you distinguish between district- and site-based coaches here.*]
  - Probe: Describe each activity in detail (i.e., don't leave it at "1:1 coaching" — find out what work happens in 1:1 coaching, if they know).
  - Probe: Individual vs. school-site capacity building.

- Has what coaches do (for schools? For teachers?) changed over the last few years? What prompted you to make course corrections?
- How does the district conceptualize the coach-principal relationship?
- » Can you tell me how coaches are selected and prepared for their positions?
  - District-based math coaches?
  - Site-based math coaches?
- » Coaching is an important resource. How are decisions made about with whom and how the coaches work with schools/teachers?
  - Do all schools and/or teachers have access to mathematics coaching?
- » What are the prospects for continuing this work and these positions in the future?

#### Professional learning for math coaches

- » What kinds of professional learning opportunities does the district offer math coaches?
  - How often are PD sessions held?
  - What is the focus of the PD sessions?
    - E.g., working with adult learners, building relationships with teachers/ principals, math content, instructional practices, using student work, supporting struggling students.



- Aside from PD sessions, what other resources do you offer to assist math coaches in their work?
- » What do you see as strengths/weaknesses of the professional learning support you've provided TOSAs/math coaches?

### Assessing outcomes

- » How do you assess and monitor the impact of TOSA/coach work?
  - On classroom instruction?
  - On student achievement?
- » If monitoring impact of coaching is a challenge, in an ideal world how would you like to monitor?

- » If a district came to you for advice about setting up a new coaching program, what would you tell them to do or not do?

### Wrapping up

- » After this first round of data collection, we may want to reach out for more detail. Would it be okay if we reached out to you again?
- » Also, for the same purpose, can you provide contact information for a couple of district- or site-based math coaches with whom we could conduct a short interview on their work?
  - Perhaps one elementary and one middle school
  - Get name and email address
- » Anything else?

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