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Building Capacity for Improving California Mathematics Teaching and Learning

How the Math in Common Districts Leveraged Three Types of Expertise

Rebecca Perry
Stacy Marple
Frances Reade

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WestEd's Evaluation of the Math in Common Initiative

Math in Common® is a seven-year initiative (2013–20), funded by the S. D. Bechtel, Jr. Foundation, supporting diverse California school districts as they implement the Common Core State Standards for Mathematics (CCSS-M) across grades K–8. Ten districts received Math in Common grants: Dinuba, Elk Grove, Garden Grove, Long Beach, Oakland, Oceanside, Sacramento City, San Francisco, Sanger, and Santa Ana. Collectively, these districts serve almost 300,000 K–8 schoolchildren and serve 9 percent more low-income students and 6 percent more English learner students than the average for schools statewide. Two districts, Garden Grove and Long Beach, concluded their grants in summer 2018; the others continue in the initiative's second phase, which is ending in 2020.

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 evaluation in the first five years of the initiative centered around the following four central themes, which attempted to capture the major areas of work and focus in the districts as well as the primary indicators of change and growth:

- 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
- Development and sustainability of the Math in Common Community of Practice (CoP)

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., advising on data-collection instruments, conducting independent data analyses, participating in team meetings to support leadership reflection). Another organizational partner, California Education Partners, works with the CoP by offering time, tools, and expertise for education leaders to work together to advance student success in mathematics. Together, California Education Partners and WestEd develop learning opportunities for district participants, including Leadership Convenings three times per year, "opt-in" conferences on high-interest topics (e.g., supporting English learners), and cross-district visitation opportunities.

Beginning in the 2018–19 school year, the CoP entered a second phase, in which funding continued to enable districts to sustain their work as a community. The remaining eight districts chose to continue working with their cross-district colleagues to sustain and scale the elements of their district-specific improvement work that got the most traction during the initial five years of the initiative. In these last two years of the initiative, WestEd's evaluation aims to identify and describe the factors that support and challenge the ability of the Math in Common districts to continue their math improvement efforts, and document the ongoing impact of these improvement efforts on teaching and learning in these diverse district systems.

Introduction

Imagine a school district administrator in the fictional California district of "Rosewood," who is concerned about her 5th grade students' proficiency in math. Fifth grade math achievement scores have been static in the district and teachers say that many 5th graders are struggling with multiplication, even though it was supposed to be introduced in 3rd grade through the California Common Core State Standards: Mathematics (CCSS-M). Rosewood's district math team has tried to address principals' and teachers' concerns with multiplication, but those efforts don't seem to be moving the needle for students. The Rosewood administrator is ready to dedicate more resources toward improving 5th grade student math learning, and wants to be efficient in seeking technical assistance (TA) to help solve this district challenge. How might this administrator go about identifying and obtaining relevant and appropriate technical assistance?

Under California's funding structures, districts have autonomy to purchase technical assistance in prioritized need areas.[1] That freedom can be both a blessing and curse, as there are thousands of consultants, nonprofits, and resources available in the multimillion-dollar technical assistance marketplace — almost all of which promise to help districts solve their problems, but very few of which have been vetted by any authority.

The 10 districts in the Math in Common (MiC) community of practice regularly faced the kind of scenario unfolding in Rosewood. That is, they often needed to seek out TA to help them address issues related to implementing the CCSS-M — ranging from improving the alignment of their textbooks' lessons, to supporting better standards-aligned instruction for English learners, to reconfiguring teacher professional learning communities (PLCs) to help teachers effectively implement the standards. But unlike most California school districts, MiC participants received significant support on making TA decisions through MiC's community of practice. Their experience highlights a major issue in standards implementation across the state: Districts need to be thoughtful, and well supported, in identifying and accessing TA that will help them bring standards to life in their local contexts and ultimately improve student achievement.

As MiC's evaluator, WestEd examined districts' experiences with standards implementation in a comprehensive series of formative and summative evaluation reports spanning 2013–2019. This brief summarizes our learning from these reports on the successes and challenges that districts encountered when drawing on support from the following three sources of TA:

- Outside providers
- WestEd evaluators
- Community of practice district colleagues

These TA sources were available to MiC districts through their participation in the MiC community of practice. We share this information to help policymakers understand how the state can better support districts in identifying and collaborating with TA providers that meet their local needs for improving standards-aligned teaching and learning. We think that this information will go far in adding to the current discussions within California's policy community about how best to build district capacity for improving teaching and learning.

1 While districts generally have autonomy, if the district is identified under the state's accountability and continuous improvement system for help implementing state academic standards, they may be required to work in partnership with the local county office of education (COE) to try to address their identified challenge areas. Varying capacity within California's COEs means that these institutions also sometimes look to outside technical assistance providers for support.

Technical Assistance from Outside Providers

While many California school districts contract with TA providers for some kind of support for mathematics teaching and learning, the character and depth of districts' relationships with external TA providers can vary greatly. In some cases, external providers offer districts generic services designed to be broadly applicable to a broad range of recipients — for example, a specific half-day training, following a pre-defined protocol that is applied in consistent ways from district to district. Other times, providers and district staff enter into partnerships that are more targeted and responsive to specific local contexts and needs. In these latter instances, district staff take a more active role in defining what the support will look and feel like, and they work with the provider to align the services to the district's vision for instruction.

Math in Common provided participating districts with significant funding to support their CCSS-M implementation. All districts used some of that money to contract with outside TA providers, including universities, COEs, private firms, and individual consultants. Our 2019 report, *Educators Collaborating to Improve Mathematics: Three Structures that Mattered in Math in Common Districts* (2019), examines the successes that MiC districts found when they worked collaboratively with outside providers and adapted TA offerings to their own needs, instead of accepting off-the-shelf services.

Developing a "vision" to guide math implementation

The MiC initiative supported districts to develop their own "visions" for mathematics implementation, which involved getting clear, over time and through discussion with colleagues from all levels of the system (and across district systems), about the specifics of local CCSS-M implementation for teachers, students, and administrators. These math visions often ended up guiding the collaborations between districts and their outside providers. Developing the math visions required districts to ask themselves a variety of key questions: Which instructional practices should be prioritized? What new classroom roles should teachers and students be growing toward? What structures should be strengthened or developed for powerful professional learning? What roles should administrators be expected to play in creating change?

Perhaps because of districts' deepening investment in these individualized math visions, when they contracted with people outside the district for technical assistance, they were likely to work with providers to adapt their services to the district's existing priorities and ways of working, rather than simply purchasing an off-the-shelf service. And we saw that districts had the most success making use of TA when all parties adopted an approach of collaborative inquiry, thinking together about how to fit and adapt outside ideas into the mathematics vision already being enacted.

Building internal capacity to sustain the work

Because MiC grant funding would only last a few years, in most cases, MiC participants wanted more from their TA providers than a fixed-term delivery of services. The MiC districts wanted these external partners to help build the districts' own internal capacity to better lead standards implementation moving forward. This internal capacity building was pursued in three main areas:

1. Professional learning about the standards and aligned instructional shifts for teachers, coaches, and administrators
2. Careful review of instructional materials and/or the development of district materials or scope and sequence guidelines
3. Districtwide adult learning strategies and systems, including PLCs and lesson study

Districts' capacity-building took various forms over time. In some districts, TA providers helped staff understand differences between old and new standards, and what needed to change, or remain the same, about the district's approach (this work also often included helping districts understand the reasons *why* an approach might be useful in a given situation). For example, one district worked closely with a university partner to understand how their curriculum was falling short on building conceptual understanding, and to create conceptually focused lessons to augment the more procedural ones in the textbook.

Providers also assisted participants with examining and using data (e.g., student assessments, teachers' reflections) to inform ongoing standards-implementation efforts. For example, one provider who worked with a few MiC districts recommended that teacher PLCs develop or identify common unit assessments for the PLCs to study together to understand student math progress.

Districts also sought capacity-building support related to their internal processes for learning and collaborating, revising ideas and decisions over time, and building capacity for self-reflection within the district. For instance, several districts had multi-year partnerships with providers who helped them develop more mathematically powerful teacher PLCs and who trained district and site staff to lead the PLCs after the TA contract ended.

For a more detailed look at how a district might engage with an external partner to build their internal capacity, see the sidebar on page 4, "Garden Grove's Partnership with UC Irvine," for an example from MiC.

Learning from experts

Collaborative engagement with experts came to be an important feature of the MiC community of practice. As described in our report *What Accelerates a Community of Practice: Inflection Points that Changed the Course of the Math in Common Initiative* (2019), in planning the early years of the initiative, the community of practice's convening organization California Education Partners (Ed Partners) interviewed district leaders about which education experts they were most interested in hearing from. Ed Partners then brought in many of the top picks to speak at community convenings and other events.

Initially, it was difficult for any of these experts' ideas to gain traction with participants because there were so many ideas on offer, and their presentations were not necessarily tailored to reinforce one another or integrate easily with the ongoing work of the districts. Two factors helped refine the ways in which the community of practice participants engaged with the information these external experts had to offer. First, MiC leadership teams spent time within the initiative studying districts' improvement efforts and discussing these ideas with cross-district colleagues. This work enabled MiC leadership teams to develop their own expertise about improvement efforts that had been tried within and across the district, so that they could better integrate the new information being provided from the experts. Second, when MiC participants let Ed Partners know that they wanted the experts to have a deeper, and less broad, focus, the organization was immediately responsive. Ed Partners dialed back the number of experts and narrowed the focus to a few ideas that had developed over time as more centrally important to the community participants. With the more targeted approach to inviting in outside experts to speak, a few ideas that were introduced by experts blossomed into defining characteristics of the community's learning about implementation, including supporting student mathematical discourse, strengthening teacher professional learning communities, and implementing formative assessment.

Garden Grove's Partnership with UC Irvine

Garden Grove Unified School District leaders pride themselves on low administrative spending and on developing their own knowledge in-house. They hadn't considered bringing in a third-party TA provider to support their math standards implementation until the idea was recommended by their MiC program officer from the S. D. Bechtel, Jr. Foundation. The resulting partnership with the California Math Project at the University of California at Irvine (also known as the Irvine Math Project, or IMP) became a key resource for the district's math implementation, even beyond the five-year MiC funding period.

Their engagement with IMP followed a long period of procedural math teaching in the district. IMP was initially asked to provide support for a wide range of activities to help district staff make the switch to CCSS-M–aligned teaching. Of central importance to all their support was helping district staff understand the equal importance of the three CCSS-M instructional shifts: conceptual understanding, procedural skills and fluency, and application. IMP's specific support that helped to convey this understanding to teachers included helping the district adopt new curricula, design and revise a unit-pacing plan, model and provide feedback on classroom instruction, and identify formative and summative assessments.

Building internal capacity to sustain the work. Each of these supports provided by IMP required significant knowledge to implement, and it was helpful to the district at first to bring in educators to share their expertise. However, knowing that there was a limited period of funding from the MiC initiative, Garden Grove asked the IMP staff not only to help the district achieve what it needed to accomplish, but to also build their broad internal capacity to do similar work for themselves in the future. To build the district's internal capacity to continue the work after the funding ran out, IMP worked with administrators and with the entire team of teachers on special assignment (TOSAs) four times per year, particularly helping them think about how conceptual lessons were different from procedural and application lessons, and how the TOSAs could convey those differences to teachers.

IMP staff also collaborated with TOSAs to facilitate the district's summer institute for teacher professional development. In this process, TOSAs were able to learn from IMP colleagues about ways to clearly communicate the district's central mathematical ideas to teachers in different formats. To conserve resources as the work progressed, district staff leaned less on IMP for support for the summer institutes once they felt they had built the capacity of the district's TOSAs to lead the work.

The examples from districts' experience and the program design of the community show that in education reform, "expertise" must be integrated with and adapted for specific local contexts. The imaginary Rosewood administrator introduced earlier, for instance, might want to work with district colleagues to take stock of and summarize the various district and school initiatives designed to improve multiplication that had been tried in the past several years (i.e., becoming more "expert" in her knowledge about her district context) before engaging new external assistance.

Evaluation as Technical Assistance

While program evaluations can sometimes add burden to busy educators by requiring them to participate in evaluation activities like interviews, when evaluations are framed formatively, they can ideally provide educators with tailored, practical information that can inform and benefit their work. Over time, WestEd's formative evaluation expanded to include many elements of technical assistance, creating a hybrid model that we believe was valuable to the community of practice.

Assigning WestEd liaisons to collaborate with districts

Among other activities, WestEd's evaluation plan for the initiative included releasing formative evaluation reports three times a year on topics of interest to the MiC community. The goal was to provide rapid responses to questions and problems of implementation as they arose, tied closely to the work underway in the MiC districts.

But as the initiative unfolded, program designers thought WestEd staff could provide even closer feedback by pairing up with districts. Accordingly, a liaison was assigned to pair with each district in order to provide expert guidance on specific district-identified problems of practice. These liaisons provided support that blended elements of technical assistance and formative evaluation. An additional external WestEd liaison was also brought on to provide formative feedback and guidance to all the districts in the initiative on the ways in which the community of practice as a whole was supporting participants' learning and capacity building for standards implementation.

However, as described in three external evaluation reports (Bugler, 2015, 2016, and 2018) as well as our report, *What Accelerates a Community of Practice: Inflection Points that Changed the Course of the Math in Common Initiative* (2019), districts initially did not understand the role that WestEd played in the initiative. The insights from early formative evaluation reports did not gain traction in the community of practice, and liaisons generally were not considered important resources to MiC teams. When these concerns were surfaced by the initiative's external evaluator, WestEd and Ed Partners worked together to better leverage and connect WestEd's formative evaluation as a form of technical assistance. Two approaches in particular helped:

- First, time was built into MiC convenings to hold learning sessions organized around the topics of the formative reports.
- Second, WestEd also offered standalone events ("opt-ins") on specific topics that we felt would support the districts' implementation efforts (e.g., data analyses of the California Assessment of Student Performance and Progress [CAASPP]).

In addition to these two approaches, WestEd liaisons worked harder to build strong relationships with their district teams, resulting in researcher–practitioner partnerships on projects of interest to the district teams. These projects were unique to the districts and included small studies focused on strengthening principal feedback to teachers, making math instruction more responsive to the needs of English learners, and designing professional development according to Universal Design for Learning principles. This work was not about WestEd experts delivering knowledge, but about district staff forming trusting relationships with knowledgeable outsiders who posed informed questions about implementation, helped tie district goals to measurable data to understand progress, and connected practitioners with research and other examples and best practices from the field.

Using classroom observation to understand implementation efforts

One consistent area of support from WestEd, in response to districts' needs, was on the use of classroom observations to understand implementation progress. WestEd's initial support in this area began in the first summer of the initiative, when district leaders were invited to a workshop to learn about the Mathematical Quality of Instruction (MQI) rubric, a common observation instrument. While this instrument did not fit district staff members' needs at the time, it became an anchor for a discussion about the importance of observation tools — how to create them and how to train staff to implement them and use data from them. The MiC participants began to think about how to develop their own observation instruments, and a WestEd workshop on developing valid and reliable observation instruments was well attended and received by the community.

Analyzing student achievement data to inform policy and practice

Another contribution that WestEd made to the discussion about implementation was to provide an annual statistical analysis of how schools within each MiC district were performing on the CAASPP (this began after 2016, when there were two years of state summative achievement data available to use in the statistical analysis). The district-specific data displays revealed variation in school-level performance that district leadership teams could use to identify particular programs, policies, and practices that were employed in higher- and lower-achieving schools, and then use that information as a basis for discussing how to adapt, adopt, or abandon these policies or practices.

In these multiple capacities, WestEd positioned evaluation as a type of technical assistance. Our technical assistance involved mutually reinforcing periods of collecting data, teaching data-collection methods, reporting results, diagnosing areas in need of attention, learning about implementation from districts, and growing district participants' knowledge of different implementation strategies. The technical assistance depended on the trusting relationships that WestEd staff developed with district staff over many meetings, site visits, phone calls, and interviews. Unfortunately, the Rosewood administrator and others like her often have limited knowledge about or access to the organizations like WestEd that are conducting evaluation work throughout the state. Thus, the Rosewood administrator would probably not be in a position to engage with program evaluators for any kind of support. Based on our MiC experience, and as explained more deeply in the concluding section below, we wonder if there might be ways to build stronger linkages between evaluators and practitioners in order to share expertise more broadly.

Peer-Based Technical Assistance

According to WestEd's Center for Teaching and Learning (2016), peer networks are the first source district administrators are likely to turn to for advice when considering contracting with technical assistance providers. Math in Common provided districts not just with new colleagues to turn to for input about outside providers, but positioned the districts to become important sources of learning for one another.

Site visits. From the beginning of the MiC initiative, the district participants themselves were positioned as critical sources of information and guidance to the community of practice. District leadership teams were supported to share their experiences during convenings and "site-visit consultancies," which were opportunities for MiC participants to visit one another's districts to see and discuss CCSS-M implementation. Participants reported that these visits provided some of their most valuable learnings, because they offered rare opportunities to see real implementation of the standards in action.

The site-visit consultancies often focused on exploring a professional development structure (including professional learning communities) that the hosting district was using. For example, Oakland Unified offered a day-long event open to teams from the other districts, highlighting its approach to lesson study, a professional learning model of great interest to many MiC participants. Attendees learned what a typical lesson study cycle looked like in Oakland and learned from teachers and administrators what their implementation challenges were, how some challenges were overcome, and how the lesson study practice benefitted them. Attendees also observed classrooms implementing lesson study in real time — an event that district staff, unlike other external providers, were uniquely positioned to offer.

Ed Partners thoughtfully scaffolded relationship building and trust building as critical elements of the MiC community of practice, which bore dividends over time in two important ways. First, many participants reported that one of the initiative's top benefits was enabling them to "phone a friend" in another district to talk through a problem and get support and guidance from a peer who understood some details about their approach to standards implementation. Second, because of the trust that was built over time, district staff were able to "be real" about their implementation struggles during MiC events (e.g., regular convenings and opt-in experiences like WestEd's CAASPP data-analysis session). These real conversations further enhanced MiC participants' learning, problem-solving, and progress in CCSS-M implementation.

MiC participants reported that working with their peers from other districts — both through informal conversations and through formal opportunities to see other districts' data and practices — was one of the most valuable experiences in the initiative. However, many district administrators may not have the time or access to develop these sort of cross-district, peer-learning relationships. Our Rosewood administrator, for instance, might know administrators from other local districts (such as those affiliated with the same county office of education), but may not typically have time to engage these peers in discussions about the effectiveness of programs, policies, and practices that have been tried and tested in their locations. As we elaborate below, under the right conditions, and with funding to support them, cross-district peer learning communities could become an important resource for district educators.

Conclusion

California school districts face significant challenges in implementing the CCSS-M and improving standards-aligned teaching and learning. In taking on these challenges, districts — like the 10 districts in the MiC initiative — often need to draw on a range of expertise and supports from across the state.

Within California's current policy context, and informed by the successes and challenges of the MiC initiative, we envision the need to update and significantly expand the support provided to districts on engaging with technical assistance providers. We believe that districts would greatly benefit from being supported by the state through funding and infrastructure to help them better identify and access technical assistance that would be appropriate and effective in supporting standards implementation in their local context.

The following are some of the supports we believe will be required to help districts access and leverage technical assistance to continue improving teaching and learning in the CCSS-M era.

Build in opportunities, time, and support for district reflection about a local vision for standards implementation.

Math in Common illustrated the value of district leaders having the opportunity to assess where they have "been" in their implementation journey and to create a vision of where they would like to go. Their involvement in MiC allowed district leaders critical time, space, and support to think through standards and to plan for implementation — taking their own contexts into account and using data to understand how implementation was progressing.

We saw that time and support for district reflection in two areas can be particularly fruitful:

- First, district teams need time to get clear on where they are going — what is their vision or ultimate improvement aim?
- Second, there is value in district teams documenting previous district and school efforts (i.e., programs, policies, and practices), in order to move toward more informed subsequent efforts.

Districts working with their local COEs under differentiated assistance may already be receiving these opportunities for reflection. But, more broadly, without time and support for such reflection, it may be challenging for districts to make the most of outside providers by selecting appropriate collaborators and thinking through how to integrate outside providers' ideas deeply into their district visions.

Create opportunities for districts to learn from one another.

Math in Common illustrated the value of district staff having opportunities to meet, exchange ideas, and build relationships. We saw that district staff can gain invaluable information from the successes and challenges of peers doing the same work, including their uses of TA providers. These networks can potentially accelerate learning for everyone involved, and keep good ideas from being needlessly siloed.

The state could provide additional funding to support communities of practice similar to MiC, organized around specific problems of practice, in which educators can engage in deep conversation and learning together about how to support implementation.

Vet TA providers, provide recommendations, and enable cross-organizational connections.

The state could expend some additional resources to identify and evaluate existing TA providers currently offering support within California, helping

district educators understand which organizations and individuals might be helpful with particular sets of issues or challenges they face. Some research–practice partnerships already exist (particularly in the more urban areas of the state),[2] and these are perceived as valuable by participants because of the range of different people with different kinds of expertise involved in strategizing for improvement. We think there is room for more similar initiatives, organized to enable the sharing of diverse expertise and knowledge to solve common education challenges.

2 For example, the national nonprofit Strategic Education Research Partnership has worked with California school districts and a range of educational organizations and experts on addressing the districts' identified problems of practice. See https://www.serpinstitute.org/ for more information.

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