



Development and Research in
Early Mathematics Education

POLICY BRIEF

NOVEMBER 2022

BUILDING INFRASTRUCTURE TO SUPPORT COACHING PROGRAMS IN SCHOOL DISTRICTS

BY ABIGAIL STEIN AND
DEBORAH STIPEK

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School districts are increasingly employing instructional coaches to support teacher learning. This move is supported by research demonstrating that ongoing coaching that is embedded in teachers' practice can be an effective strategy for improving teaching, more effective than short-term methods (e.g., workshops) that are disconnected from teachers' day-to-day work (Stein et al., 2021; Correnti et al., 2021; Matsumura, Garnier, & Resnick, 2010). Research on the effects of coaching, however, is mixed, which indicates that coaching in and of itself is not necessarily productive (Kraft, Blazar, & Hogan, 2017). Rather, how and in what context coaching is implemented matters.

Districts almost always employ coaches as part of district-wide efforts to improve instruction. Our study of districts endeavoring to improve elementary mathematics instruction revealed that those efforts—what we call the *instructional infrastructure* (Cohen, Spillane, & Peurach, 2018)—shaped coaching practice. In this policy brief, we share four dimensions of the instructional infrastructure that mattered for coaches working in the district. Our conclusions are based substantially on a comparison of two districts that had very different instructional infrastructures within which coaches worked, and as a result, showed two very different images of coaching practice. The context of our study was mathematics instruction, but the findings apply to any subject area.

Both districts had full-time mathematics coaches who were content specialists and situated in the districts' mathematics department (i.e., not embedded in schools). In both districts, coaches worked at the district level on issues of capacity building, such as developing instructional resources, planning teacher professional learning sessions, and looking at data to inform support decisions related to specific schools. They also worked at the school level with individual teachers, groups of teachers, and school leaders on instructional improvement tasks. The work in schools included planning for lessons, co-teaching or modeling, facilitating professional learning sessions, or helping school leaders think holistically about mathematics instructional improvement in their schools.

Although the coaches held similar roles in the two districts, one of the districts, Almond Valley, stood out as having a stronger instructional infrastructure to support coaches. For clarity, we focus solely on the design of Almond Valley's infrastructure and how it mattered for coaches' practice. We outline four dimensions of Almond Valley's infrastructure that can serve as guideposts by which district leaders can design and evaluate their infrastructure, especially as it pertains to supporting the work of coaches: specificity, inclusivity, authority, and alignment (Cohen & Spillane, 1992; Cohen et al., 2013; Spillane, 2015; Stein & Coburn, 2008). We recognize that a particular district's strategies need to reflect its resources, capacities, and other characteristics, but we argue that these four dimensions are important for guiding leaders in all districts.

Dimensions of District Infrastructure and Coaching Practice

Almond Valley adopted a vision for students' mathematical learning aligned with the Common Core State Standards for Mathematics (CCSS-M). District leaders wanted students to develop an understanding of important mathematical concepts rather than memorize math procedures they did not understand. The goal was for students to be able to use multiple representations to think, reason, and problem solve. For teachers, goals were to elicit and make sense of student thinking and to orchestrate productive discussions that connected students' developing ideas to important mathematical ideas. To that end, Almond Valley promoted a vision of mathematics instruction aligned with that in *Principles to Action* by the National Council of Teachers of Mathematics.

To achieve these ambitious reforms, Almond Valley designed and implemented an infrastructure to guide and support school leaders and teachers as they tried to improve elementary mathematics teaching. Infrastructure included different support roles (including math coaches) and resources, materials, and tools to communicate the district's vision for elementary mathematics to staff across the district. The infrastructure also included opportunities for staff to gather and learn about the district's vision to improve mathematics instruction.

In the sections that follow, we define the four dimensions of Almond Valley's infrastructure that appeared to shape coaching practice, provide examples of the dimension as it played out in Almond Valley's infrastructure, and describe the ways these dimensions mattered for coaches working in the district.

Dimension 1: Specificity

Almond Valley provided clear and detailed guidance about what to teach and how to teach it through standards, instructional frameworks, curricular materials, and assessments. Almond Valley created and adopted four key resources to guide staff at all levels of the district:

- 1. Instructional framework in mathematics** articulated the district's vision for skillful mathematics teaching and learning consistent with the CCSS-M. It served as a rubric to measure teaching on five dimensions: classroom culture, lesson content, student engagement, access to content, and monitoring of student progress. The framework could be used for: 1) lesson preparation, 2) reflections on instructional practices in professional learning communities, 3) professional learning on standards-aligned practice, and 4) providing precise feedback and next steps on classroom practice.
- 2. Common math curriculum throughout the district**
- 3. Teachers' planner for productively utilizing the curriculum.** The planner specified the big mathematical ideas at play, essential questions students would investigate, and the models, tools, materials, and strategies to use in instruction. It also included relevant standards and

math practices, ways to engage students' prior knowledge, key academic vocabulary, and supports for developing academic language and math fluency.

4. **Interim assessments** provided information on student progress toward meeting learning goals.

We found that coaches' work in Almond Valley was consistent, structured, and linked to district improvement initiatives. Specific guidance about teaching mathematics gave coaches a clear roadmap when working with school leaders and teachers. Equally important, specificity allowed leaders and teachers to anticipate and prepare for the work they would engage in with coaches. Specificity offered common resources, materials, and tools for everyone to work with and fostered a common language to talk about practices and goals for student learning. All of this is important because when district guidance is not clear, coaches may be left to interpret and establish their own goals. They can easily find themselves contradicting messages given by district or school leaders, which confuses rather than supports teachers.

However, balance must be struck because too much specificity can create problems. Almond Valley's infrastructure front-loaded specificity that sometimes led to coaches focusing on the "right way to do it" and how to use the instructional materials as opposed to deeper meaning-making. This precluded coaches from adapting to particular contexts.

Specificity provided clear guidance to coaches, teachers, and school leaders in Almond Valley. But creating the resources was not sufficient. The district also needed to design practices that encouraged their use. This connects with the second key dimension of Almond Valley's infrastructure: inclusivity.

Dimension 2: Inclusivity

Almond Valley provided regular opportunities for staff in different roles to interact around issues of mathematics instruction. Almond Valley designed many opportunities for different roles to interact around the resources, materials, and tools described in the previous section.

Opportunities for interaction included:

1. **Classroom walkthroughs.** Classroom walkthroughs brought together staff across various levels of the district, from school leaders and coaches to department heads and upper district leadership. The design of classroom walkthroughs involved visits to schools, where members of the walkthrough team visited several classrooms to observe instruction, sometimes debriefing with the teacher afterward. The walkthrough team used a rubric linked to the instructional framework to observe instruction. The expectation was that data from classroom walkthroughs were used to understand what was working and how to better support schools in their mathematics instructional improvement efforts.
2. **Leadership walkthroughs.** Leadership walkthroughs brought together small groups of school leaders (approx. 12-15) and their supervisors. Leadership walkthroughs were a special kind of classroom walkthrough designed to be the primary vehicle for school leader learning. They followed a similar routine each time. At the opening of every walkthrough,

the host principal talked about their school, usually presenting data from interim assessments and the current improvement goals to orient other principals. After the presentation, the supervisor led a 60-minute professional development session around content relevant to the specific group and district. After the joint learning, everyone walked classrooms to observe instruction using the instructional framework, focusing specifically on what the principal introduced as the school's areas of focus and what they learned about during their joint session. Once everyone returned from observing classrooms, the supervisor led a conversation to reflect and debrief on the observations, including planning potential next steps.

- 3. District instructional leadership team meetings.** These weekly meetings brought together principal supervisors and the curriculum and instruction managers from different departments, including the manager of the district math coaches. The purpose of these meetings was to coordinate and align improvement efforts.
- 4. Regional teacher professional learning.** This learning opportunity brought together three groups: coaches, teachers, and school leaders. Mathematics coaches designed a year-long learning progression and met 10 times across the school year for half-day trainings that closely followed the timeline the curriculum. During the trainings, teachers engaged in math tasks from the curriculum, learned about the key standards for each lesson, learned how to ensure their use of the curriculum met the standards, looked at student work, and shared with teachers from other schools in the district. Coaches often included school leaders as either co-facilitators or active participants in these professional learning sessions with teachers.
- 5. Coaching.** Coaching brought together coaches with teachers or school leaders. Coaches typically assisted teachers in small-group (grade-level team) or whole-school settings. The focus of this support was based on analysis of student data, ongoing classroom walkthroughs, and conversations among the elementary mathematics manager, math coaches, school leaders, and principal supervisors. Math coaches also provided support to school leaders either through discussions during classroom walkthroughs or in one-on-one meetings.

For Almond Valley coaches to be effective, everyone in the district needed to be on the same page about goals and implementation. Resources helped, but coaches also needed time and space to communicate directly with district leaders, school leaders, teachers, and one another. Without purposefully designing opportunities for interaction, it would be difficult for coaches to broadcast the district vision for mathematics teaching and learning. Time together also provided opportunities to assess progress toward meeting instructional goals and share information on which to base decisions about future support and interventions. Perhaps most importantly, opportunities for interaction allowed staff at all levels of the district to learn from and with one another and reach consensus regarding high-quality instruction and learning in mathematics.

Dimension 3: Authority

Almond Valley designed practices to encourage school leaders and teachers to adhere to the district's student learning goals and instructional vision in mathematics. Specifically, Almond Valley designed five primary practices:

- 1. Tracked student learning through interim assessments three times per year.** Leaders at multiple levels of the district were encouraged to base improvement efforts in part on the results of these assessments.
- 2. Regularly collected instructional data to track teaching practice.** Teachers' instruction was observed regularly for alignment with the instructional framework. Teachers were encouraged to use the framework in their planning, and school and district leaders used it when observing instruction during classroom walkthroughs. Data from these observations were entered into a system-wide database which all district and school level administrators had access to in order to make decisions about support.
- 3. Mandated use of the *Go Math* curriculum.** School and district leaders also encouraged its use.
- 4. Encouraged district math coach support.** Based on walkthroughs and analyses of data, principal supervisors regularly encouraged school leaders to bring district math coaches into their schools to support teachers.
- 5. Encouraged teachers to implement what they worked on with coaches through "cycles of support."** During a cycle of support, coaches observed teachers' instruction after working with them in some capacity (either in a professional learning session or community, or through one-on-one work) to look for instructional shifts that the teachers learned about. The school principal often joined coaches during these observations.

Almond Valley's clearly defined vision of effective instruction—combined with practices that encouraged implementation of the vision—supported coaches' focus on the district's vision for high quality teaching. District math coaches had no difficulty accessing schools to work with school leaders and teachers, in part, because they were backed by authority and their support for the school was based on metrics that the district monitored. Coaches were also given license to use district instructional resources aligned with the vision (e.g., instructional framework, curriculum). We found, however, that coaches' interactions were more likely to be around the district-promoted reform agenda than the needs of individual teachers or schools. Like with specificity, this suggests that balance must be struck between goals of the district and needs of the schools.

Dimension 4: Alignment

There were coherent connections among different components of Almond Valley's infrastructure, such as standards, instructional materials, and professional development. By aligning different elements of instructional policy, teachers received clear and consistent

messages about how to focus and deliver instruction, along with the materials and professional learning opportunities to do so. In Almond Valley, teacher and school leader learning were well-aligned with the district's instructional framework. Learning structures consistently supported teachers and school leaders to implement the district's vision for mathematics instruction laid out in the instructional framework.

But alignment was not perfect. A deeper analysis of the alignment of resources demonstrated the importance of examining both the content and cognitive demand of curriculum and assessments. The content of Almond Valley's instructional materials and assessments were well-aligned with the CCSS-M, but the cognitive demand of the tasks was not. Tasks in the curriculum and assessments did not provide students with opportunities to engage in the kinds of mathematical thinking and problem solving called for in the CCSS-M (e.g., strategic thinking such as reasoning, planning, using evidence or making connections or relating ideas within or between content areas).

Because teacher and school leader learning structures aligned well with the district's vision for mathematics instruction, coaches were well-integrated into these learning systems. For instance, coaches enacted classroom walkthroughs with school leaders and principal supervisors and provided monthly professional learning to teachers. Without this alignment, coaches may have been pulled in multiple conflicting directions because their roles and responsibilities did not match other improvement levers. Without alignment, coaches may also have spent time helping teachers and school leaders navigate misaligned policies. Indeed, we observed this in Almond Valley as coaches contended with the fact that the cognitive demand afforded through the tasks in the curriculum misaligned with the CCSS-M. To their credit, coaches recognized this weakness in the curriculum and worked with teachers to implement the curriculum in ways that better aligned with the rigor called for in the CCSS-M.

Getting the Most Out of Coaching

Coaching has emerged as a popular strategy in school and district efforts to improve instruction. District leaders across the country spend thousands of dollars each year designing and implementing large-scale coaching initiatives. Our analysis found that the district's overall improvement system (i.e., instructional infrastructure) within which coaches are embedded fundamentally shapes coaching practice. Specifically, we showed how one district, Almond Valley, designed an infrastructure that provided clear guidance about what to teach and how (specificity); connected staff at all levels of the system to interact and learn from one another (inclusivity); designed mechanisms to encourage adherence to the instructional vision (authority); and ensured that all components cohered around the vision (alignment). These dimensions mattered for coaching, shaping who coaches interacted with, how coaches broadcasted the district vision, and the consistent, structured nature of their work. The four dimensions outlined in this brief are important for all district leaders to consider as they think

about how their coaching program fits into and interacts with the rest of the instructional improvement system.

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Author Biographies

Abigail Stein recently received her PhD from Northwestern University. She focuses on the relationship between education policy and equitable instruction, including the role district and school leaders play in policy implementation. She is currently a Research Data Analyst at Northwestern.

Deborah Stipek is professor emeritus of the Graduate School of Education at Stanford University. She focuses on early childhood education policy and practice and school reform. She currently works with California Education Partners, which supports P-3 alignment initiatives in small and medium size districts.