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Purposefully Coaching Middle School Teachers: The Case of an Exemplary Mathematics Specialist

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Abstract

In this paper, we share results from a large-scale, mixed design study that describe the work of mathematics specialists in middle schools and their impact on teacher learning and student achievement. Within the context of the larger study, we highlight the practices of one exemplary mathematics specialist and how her collaborations with teachers in her building contributed to the practices that they engaged in to achieve the common goals of growing as professionals and supporting their students' learning. We use a coaching moves-heuristics model that is based on West and Staub's (2003) framework for lesson design and analysis to characterize the types of moves that this specialist made that contributed to and supported the productive and effective community of practice in this school building.

Introduction

Over the past decade, research has shown that when mathematics specialists work successfully with teachers, everyone benefits. Schools benefit as teachers have the opportunity to redesign or refine the school's mathematics program so that it aligns with best practices (Feiler, Heritage & Gallimore, 2000; Hopkins, 2017; Knapp, 2017). Teachers benefit when they have the opportunity to observe exemplary lessons modeled by a specialist and reflect on their own teaching practice (McGatha, 2008). Students benefit from new instructional strategies that support their learning and teachers benefit by working with a specialist to collaboratively develop activities and lessons for this purpose (Feiler et al., 2000; Knapp, 2017; McGatha, 2008). Campbell and Malkus (2011) found that over time mathematics specialists had a statistically significant positive influence on student achievement in third, fourth, and fifth grades. Scores of students whose teachers worked with a mathematics specialist were on average ten or more points higher on mathematics achievement tests as compared to the scores of students in schools without a mathematics specialist. The impact of the specialist's work was evident after two years on the job. And when the mathematics specialist gained more experience, students' test scores increased as the specialist collaborated more frequently with those responsible for students' mathematics learning.

One aim of this paper is to continue this discussion by making a case for mathematics specialists, also known as mathematics coaches, in school buildings. West and Staub (2003) stress that because coaching is a complex and specialized undertaking, specialists are thought to be most effective when co-planning, modeling, observing the lesson, and debriefing with the teacher following the lesson. We make an argument for the important ways specialists, in our case, middle school mathematics specialists, provide "ongoing, in-house expertise to teachers who are striving to improve their teaching and their students' learning" (Feiler et al., 2000, p. 66).

In our discussion, we report findings from a large-scale, mixed design study that characterized the role that specialists played in supporting teacher learning and how

these supports, in turn, correlated with student learning as measured by state achievement assessments (SAA). These findings are part of a data corpus that coordinates findings from a 2-year large-scale research project of middle school mathematics specialists with case studies of 3 middle school mathematics specialists. Mathematics specialists in our study, like those in Campbell and Malkus (2010, 2011), were placed in individual school buildings and did not have regular classroom teaching responsibilities. Finally, we share data and narratives from the case study of one specialist who excelled in teacher engagement to understand and account for the practices that were intact in this school building.

The research questions guiding this work were:

1. How did the mathematics specialists spend their time in middle schools?
2. What is the nature of the coaching relationship between teachers and specialists?

To address our research questions, we report results from our large-scale study to describe how teachers' beliefs and students' learning were positively affected because of their work with mathematics specialists. Against this backdrop, we highlight the interactions of an exemplary mathematics specialist with the teachers in her school building. We share their collaborative interactions and the communities of practice that emerged as they engaged in this work. By doing so, we argue for how particular practices sustained and contributed to a community that both supported and engendered teachers' professional learning.

First, we outline the framework that informed our interpretive stance and research.

Interpretive Framework

Professional Learning Communities

Mathematics teacher leaders have the important task of helping to establish and sustain learning communities in which they and classroom teachers collaborate together (NCSM, 2008). NCSM's Essential Actions Framework (2019) further refines the mathematics teacher leader's role as one of advocating for student learning, designing and implementing "structures that support high-quality mathematics teaching", as well as empowering and nurturing a "culture of productive professionalism," and monitoring and acting on "evidence of student learning" (p. 2). NCSM's notions of empowering teachers by establishing a culture where teachers can collaboratively and purposefully reflect on their practice and supporting students' meaningful learning is particularly relevant in our discussion. These documents are not prescriptive, but, rather, provide specific standards that outline what constitutes the mathematics specialists' ongoing, purposeful and relevant work with teachers.

Educational researchers have different ways of interpreting and implementing reform recommendations made by professional organizations. Fullan (2006), for instance, makes an argument that school reform efforts need to meet teachers where they are—in their classrooms. In order for leaders to effectively influence school, district and statewide instructional practices, they cannot ignore the settings where change is more likely to occur and have a lasting effect. Additionally, teachers need to be participants in professional learning communities.

> …teachers [need to] engage in *continuous and sustained learning about their practice* in the setting in which they actually work, observing and being observed by their colleagues in their own classrooms and classrooms of other teachers in other schools confronting similar problems of practice (Elmore, cited in Fullan, 2006, p. 12, italics not in the original).

This idea aligns with the NCSM's recommendations for leadership (NCSM 2008, 2019). It is also one of the underlying assumptions of our work. To support the daily work of teachers, we maintain that it is important for the mathematics specialist to engage teachers in continuous and sustained learning about practice in their own classrooms. Hence, leadership activities such as observing and co-teaching lessons with the classroom teacher are a necessary part of the mathematics specialist's work. That is, the mathematics specialist may use coaching (e.g., pre-lesson conference, observe/teach/co-teach the lesson, post-lesson conference) to engage teachers in learning about and further developing their instructional practice (e.g., West & Staub, 2003).

Coaching Moves

Mathematics coaching, whether content-focused coaching, cognitive coaching or some hybrid of these approaches, has gained impetus over the last decade, both as a way of structuring the specialist's work with teachers and as a research lens for understanding the mathematics specialist work (e.g., Campbell, Ellington, Haver, & Inge, 2013;

Fennel, Kobett & Wray, 2013; Gibbons & Cobb, 2016; McGatha, 2008; West & Staub, 2003). We, too, draw on the coaching cycle by using its components of learning, observation, and reflection to guide our analyses of the mathematics specialists' work.

West and Staub (2003) discuss in detail how the specialist can facilitate productive and purposeful conversations around supporting students' mathematical learning as well as teachers' professional expertise. The specialist focuses conversations around *what* content the students will learn, *how* the teacher will address these content ideas during the lesson as well as *why* the teacher plans to teach this content in a particular way—what the authors refer to as guiding heuristics. For West and Staub, the third heuristic, *why*, is particularly important. By asking questions about why the teacher plans to teach specific content purposefully, the specialist encourages teachers to be reflective about their practice. That is, "when teachers are encouraged to be thoughtful professionals who do more than follow their intuition based on experience and traditions, then they *deliberate about and debate* why they choose particular content of methods" (West & Staub, p. 7). The notion of deliberating and debating ideas seems particularly important when developing consensus about how the specialist and teacher will work collaboratively or what West and Staub refer to as "openings for constructive collaboration" (p. 20).

Importantly, specialists also make decisions about how to facilitate and build on teachers' contributions during these discussions—what West and Staub (2003) refer to as different types of coaching moves. Specialists may encourage or invite teachers to offer ideas, make suggestions, offer different ideas, or even challenge others' ideas, to name a few. West and Staub refer to these types of enacted decisions as *invitational moves.* At other times, specialists might provide more direct guidance, say, about how the teacher might implement the lesson or why some activities would be more appropriate than others, and so on. These types of moves are called *direct guidance moves* because specialists directly and intentionally support teachers as they consider important aspects of teaching and student learning (West & Staub, 2003).

We used West's and Staub's (2003) constructs associated with these heuristics and coaching moves as part of our interpretive lens in order to better make sense of the specialist and teachers' daily work. As we made inferences about different interactions or events that occurred between the specialist and teachers, we tried to determine the type of coaching move and at the same time to identify the three heuristics associated with this exchange (what, how and when). By coordinating these two sets of constructs, we attempted to characterize the specialist's work as she worked with individual or groups of teachers (e.g., grade-level or vertical team meetings).

Table 1 (next page) illustrates a scenario using these different constructs. The columns represent the interpretive heuristics (what, how and why) while the rows represent the types of coaching moves. Reading along the first row, we notice that when the specialist directly guides the conversation during a planning session, she suggests ideas for the teacher to implement. By way of contrast, as we read along the second row, the specialist asks questions that are more open-ended and prompt the teacher to provide input. In this case, the specialist asks questions that are invitations for the teacher to offer ideas. It is also possible that some of the specialist's actions are a combination of coaching moves as shown in the third row. In this case, the specialist provides guidance with the intention of creating opportunities for the teacher to contribute to the collaborative enterprise.

This framework could be used to document a specific coach-teacher interaction or several interactions as well as to interpret a range of specialist-teacher interactions over time. By using this framework, we characterize and make inferences about these interactions that are grounded in the specialist's and teachers' daily collaborations. Over time we also might be able to identify possible shifts in how the specialist and teachers engage in their work.

Communities of Practice: Social Learning

Mathematics specialists play a key role in influencing the practices of the learning communities of which they are a part. We draw on Wenger's (1998) notion of communities of practice associated with his social learning theory to provide a theoretical lens for this aspect of the specialist's role. For Wenger, describing how individuals participate in and, from time to time, adapt or make shifts in those community practices, is a way of accounting for individual and collective learning. As Wenger states, "…as we define these enterprises and engage in their pursuit together, we interact with each other and with the world and we tune our relations with each other and with the world, accordingly. In other words we learn" (p. 45). For Wenger, learning is defined in terms of how participants competently work

Table 1: Interpretive Framework for Analyzing the Coaches' and Teachers' work

Coaching Moves	Interpretive Heuristics		
	What	**How**	**Why**
Direct Guidance	Let's use these materials to address the students' understanding of [math concept].	Why don't we ask the students to use this particular model to explore this concept?	This is a more appropriate activity that supports student learning about this concept because…
Invitational	What activity do you plan to use to explore these ideas?	How you would you like to introduce this activity?	This activity helps you accomplish your goals for the students because…
Invitational-Guidance	Here are several materials that cover different parts of [math concept].	How can these materials be modified or combined to fully address students' understanding of [math concept]?	This exercise will allow you to explore the different components in the materials and develop a complete activity that accomplishes your goals for the students because…

towards common goals with shared resources that enable and sustain their practice.

Learning, then, is defined in terms of how a community adapts and recasts its work to accommodate for new circumstances, situations or events. When there is a need for changing how individuals perform tasks, for instance, individuals provide suggestions, offer ideas or alternative approaches, and so on so that they can continue to pursue their common goal. When these new changes are incorporated and become shared ways of accomplishing a task or goal, the community is thought to make collective shifts in how it engages in its work. Learning occurs when the community makes these collective shifts in how it accomplishes its work or shared enterprises (Wenger, 1998).

What constitutes the work of the community may have different meanings for different individuals who participate in the same or various, overlapping communities. The individual's perspective is crucial and yet it is not treated independently from the practices in which the individual engages (Wenger, 1998). Members of a community of practice such as a school mathematics program, for instance, may have different views about how teachers view the goal of supporting, say, student mathematics learning. Or they may have different ways of engaging in activities around this common purpose. At the same time, as individuals participate in and contribute to these practices, they develop some shared understandings about what this joint enterprise is, how each participates and how the practices are a part of a "system." Participants (members and nonmembers) in a community work together to accomplish this enterprise, albeit, in different ways.

For Wenger (1998), communities of practice do not evolve in isolation but are connected to a broader network or what he refers to as constellations (i.e., interconnected communities of practice) or even "broader and broader configurations" (p. 131). To account for how these different communities of practice accomplish a shared enterprise, he uses the constructs of *boundaries* and *brokering*. Boundaries from this point of view are those "spaces" between different communities of practice—discontinuities that illuminate what it means to participate and not participate. Wenger's notion of brokering, then, refers to how an individual helps others connect to those persons who participate in different communities of practice. These individuals, or brokers as Wenger refers to them, are members of more than one community of practice. However, often times they may be viewed as neither "in or out" of a particular community. Nonetheless, brokers' roles are important because they help individuals to connect with others (and their associated practices) from different communities. And because communities of practice are thought to be permeable, with the help of effective brokering, we can imagine individuals engaging in activities that are associated with different communities of practice (Wenger, 1998).

The mathematics specialist often acts as a broker. The specialist participates in several communities of practice within the school building and works closely with other teacher leaders and school building leaders as they are mutually engaged in the enterprise of supporting the overall success for all students in all content areas in their school building. At the same time, the mathematics specialist is a member of a community of practice that works exclusively to support the school mathematics program with all teachers responsible for mathematics teaching and learning (including working with the principal, assistant principal and other stakeholders in the school building). Thus the specialist has the unique role of brokering or helping teachers make connections between various activities and policies. As a consequence of helping teachers make these connections, the practice can become mutually beneficial for teachers and administrators.

Methodology

In the following sections, we describe methods used in our large-scale research study, the study participants, and a software program the specialists used to record their daily school building activities. Then we outline the quantitative results as a backdrop for Specialist A's case study.

Study Participants

The project participants were selected from twelve school districts in our state. Forty-six teachers from these districts completed a 3-year, 39 graduate credit hour, preparation program in which they conducted an in-depth study of K-8 mathematics content and instructional strategies and worked to develop the skills necessary to be effective mathematics teacher leaders (Inge & Haver, 2016). From eleven pairs of middle schools, one school was randomly selected to serve as the treatment school, the other as the control school. Eleven of the participants who completed the preparation program served as mathematics specialists in treatment schools during this 2-year study (2012 – 2014). They were released from full time classroom responsibilities in order to support the professional growth of their colleagues and promote enhanced mathematics instruction and student learning throughout their schools. They worked to strengthen the classroom teachers' understanding of mathematics content and helping them develop more effective mathematics teaching practices (Campbell, et. al, 2013). No mathematics specialists were placed in the control schools during this time.

Instructional Specialist Activity Manager

Project mathematics specialists recorded their daily activities and interactions with teachers using a menu-driven software application designed by Campbell and her colleagues (see Campbell & Malkus 2010, 2011) called the Instructional Specialist Activity Manager (ISAM). The program has two separate components, the Daily Activity Log and the Weekly Activity Log, each of which is described below.

Daily Activity Log. Through ISAM's Daily Activity Log option, the specialists chronologically recorded the amount of time (in minutes) they spent engaged in a particular type of activity. To document each activity, they chose from a list of activities in a dropdown menu (e.g., coaching, preparing to coach, participating in grade level team meetings, or working with the school's assessment program). Once they made a selection, they could select additional subcategories from a submenu to provide further details about how they spent their time. For example, when selecting coaching, the specialists could then select one of the following submenu options: observing a teacher, modeling a lesson, co-teaching a lesson or meeting with a teacher.

Weekly Activity Log. Specialists used the ISAM's Weekly Activity Log option to document their interactions when working individually with a teacher (e.g., coaching and planning sessions) or with groups of teachers (e.g., grade-level or vertical level meetings). They used a menu of options to characterize the extent to which they worked with each teacher. They reported two types of interactions: (a) individual interactions between a teacher and the specialist and (b) interactions with a group of teachers during team planning meetings. Under each category, the specialist could also select from one of the submenu options that further characterized each type of interaction. For example, for the individual teacher interactions option, they could then select more specific categories like seeks out the specialist, supports other teachers, or avoids the specialist. For the team meeting interactions specialists could choose from categories like fully participates in the meeting, contributes only when asked, or passively attends the meeting.

Results of Large-Scale Study

ISAM Results of Specialists' Time

The average length of the specialists' contract day was 7 hours and 23 minutes or 36.9 hours each week during the school year. As shown in Table 2 on page 19, on average

the 11 specialists spent 15.29% of their time (approximately 5.66 hours each week) coaching teachers (observing, modeling, co-teaching or meeting with the teacher). They spent 4.87% of their time (approximately 1.83 hours each week) attending grade level meetings. And they spent 40.87% of their time (approximately 15.13 hours per week) preparing to coach (e.g., searching for teaching ideas, reviewing lesson plans, or developing or gathering teaching activities and materials) or coaching teachers. Interestingly they spent 9.50% of their time (about 3.52 hours per week) on assessment-related activities (e.g., developing assessments, analyzing data, or diagnosing students' mathematical needs or strengths). The specialists spent very little time (0.97% of their time per week) delivering workshops to teachers or administrators.

The Effect of Teacher Engagement

Specialists also reported the types of interactions they had when they worked with individual or groups of teachers. Teachers might work with the specialist in various ways. For instance, the teacher may seek out the specialist to ask questions about content or they may request that the specialist visit their classrooms, or observe and plan a lesson. By way of contrast, teachers might avoid working individually with the specialist or perhaps only periodically contribute during team planning sessions. More generally, we referred to these different interactions as types of engagement.

A *highly engaged* teacher has regular, positive interaction with the mathematics specialist during coaching sessions and team planning meetings frequently throughout the school year (Campbell, et al., 2010). More specifically, we defined a teacher to be *highly engaged* with the building specialist when 75% or more of their interactions with the specialist were labeled as positive interactions (e.g., seeks out the specialist, supports other teachers, fully participates in team meetings, or organizes colleagues). Out of the 201 teachers engaged in mathematics instruction in treatment schools, 40.5% were highly engaged with the specialist (Ellington, Whitenack, & Edwards, 2017). This said, there was a high degree of variability in the number of highly engaged teachers per building with percentages ranging from 6.7% to 70.6% across the 11 schools.

In our large-scale study, teachers who were highly engaged with the mathematics specialist made shifts in their beliefs about teaching mathematics and how students best learn mathematics (Ellington, et al., 2017). The most significant shift they made related to their views about student learning—their beliefs changed over the two years that the specialists worked in their buildings. They began to see the importance of students working through problems that they found challenging in order to make sense of and to develop a deeper understanding of these ideas. We also found that students performed significantly better on standardized state assessments (SSA). Grade 6 and grade 7 students benefited the most when teachers were highly engaged with the building specialist, and they outperformed the students of teachers who were not highly engaged with the mathematics specialists (Ellington, et al., 2017).

Case Studies

In this section, we focus our discussion around Specialist A's case study as we provide examples to describe the nature of her coaching relationship with teachers. The examples we use are part of the data corpus that we collected during our school on-site visits during 2012 – 2013 and 2013 – 2014 including observations, digital recordings of individual and group interviews (before and after observing different activities), field notes of observations, artifacts and transcriptions of the interviews. During this two-year period, each case study participant was working as a specialist in one of the treatment school buildings.

Case Study Data Collection/Analysis

Data Collection. During the on-site school visits, we observed grade-level and vertical team meetings and made classroom visits to observe the mathematics specialists' work with individual teachers. Usually, we conducted interviews with the specialist prior to and after making observations. During these interviews we also debriefed about the specialist's work in the building to date. We also made field notes of the meetings with teachers and digital audio recordings of interviews. Interviews were transcribed so that we could conduct a micro-analyses using our interpretive framework.

We usually made 6 to 8 on-site school visits each year of the study for each of the case study participants. We made three visits to Specialist A's school building during the spring of the second year of the study.

Data Analysis. We analyzed the transcriptions for each of the interviews using the coaching moves-heuristics model (see Table 1). We identified instances when the specialist talked about her interactions with individual

teachers, groups of teachers, the principal, assistant principal or fellow colleagues in the same or other school districts. Once we identified this information, we used the coaching moves-heuristics model to classify each of these interactions. Through this process, we began to develop more general ways to classify the information. We also coordinated these findings with our expanded field notes to corroborate, clarify or in some cases, refute conjectures. As we continued this process, we developed a narrative account of the specialist and teachers' work and how their collaborations contributed in part to the practices that they engaged in to meet their common goals of growing as professionals as well as supporting their students' learning.

Case Study Participants

Case study participants had 6 or more years of teacher experience and were endorsed to teach K-8 and/or algebra. Specialist A had 13 years of teaching experience and had earned three endorsements: PK–6 and 6–8 endorsements along with an Algebra I add-on endorsement. She worked in urban edge middle school with an enrollment of 1,311 students that employed 79 teachers. During the second year of the project, Specialist A worked with 24 different teachers that were involved with the school's mathematics program.

Specialist A's Case Study

To describe how specialists collaborated with individual or groups of teachers, we begin by briefly describing the types of activities specialists engaged in during and after the workday—how they spent their time. We then provide examples to illustrate some of the different ways Specialist A engaged in this work, paying particular attention to activities associated with coaching and working with teams of teachers.

How Specialists Spent Their Time

Table 2 provides the percentage of time specialists spent on average engaged in each activity (coaching, work with/teach students, prepare to coach/teach, etc.). To provide some context for Specialist A's work, we provide the averages for all 11 specialists (i.e., Specialist Average) and Specialist A's percentages for various activities that they engaged in as part of their daily work.

Notice that in Table 2, there are a few activities for which Specialists A's averages were similar to or only slightly different than the average of all 11 specialists (e.g., deliver workshops, attend meetings). There are also noticeable differences in how the specialists spent their time. Specialist A spent more time meeting with grade-level teams. That is, she spent an average of 3.90 hours per week in grade-level team meetings—two additional hours meeting with grade-level teams when compared with the average of all of the specialists (1.80 hours per week). She also spent approximately 9.24 hours weekly, much higher than the average time all the specialists spent, coaching (approximately 5.66 hours per week). Specialist A also spent much less time engaged in assessment-related activities when compared with the average amount of time spent by all 11 specialists (2.13 hours as compared to 3.52 hours per week).

Table 2: Percent of Time Specialists Engaged Weekly in Different Activities

Activities	Specialist Average	Specialist A
Coaching	15.29	24.95
Work With / Teach Students	8.12	7.49
Grade Level Team Meeting	4.87	10.52
Prepare to Coach / Teach	25.58	18.52
Assessment / Data Analysis	9.50	5.76
Attend Meetings	7.05	6.89
Deliver Workshops	0.97	2.07
Non-Job Duties	7.58	6.78
Non-Ed Activities	9.62	8.85
Personal Professional Development	11.42	8.17

Note — 1% is equivalent to 2.7 hours

Table 3 provides information about the amount of time the 11 specialists coached individual teachers. Notice that all the specialists spent more of their time co-teaching and meeting with teachers before or after classroom instruction than they did observing or modeling lessons. Notice, too, that Specialist A spent considerably more time modeling

Table 3: Percent of Time Specialists Engaged Weekly in Coaching Activities

Coaching Activities	Specialist Average	Specialist A
Observe a Teacher	3.34	3.49
Model a Lesson	0.93	6.49
Co-teach a Lesson	5.88	5.87
Meet with a Teacher	5.14	9.10
Overall Coaching	**15.29**	**24.95**

Note — 1% is equivalent to 2.7 hours

lessons (2.40 hours per week versus 0.34 hour per week) and meeting with individual teachers before or after coaching sessions (3.37 hours per week versus 1.90 hours per week).

Table 3 illustrates important differences between Specialist A and other specialists. Specialist A spent more time coaching than did all the other specialists, and, interestingly, the percentages were more evenly spread across the different coaching activities. As such, we might infer that she engaged in all components of the coaching cycle perhaps on a more regular basis. In the next sections, we provide accounts from our school visits that support this inference. These accounts may also explain trends from the ISAM results regarding teachers' engagement with the mathematics specialist. For instance, 48.1% of the mathematics teachers in Specialist A's building were highly engaged whereas across the 11 treatment schools, 40.5% of teachers were highly engaged with the specialists in our study.

Working with Teachers

In this section, we address four key features that contributed in part to the quality and nature of Specialist A's and the teachers' work: capitalizing on the daily school schedule, providing ready-to-go lessons, collaborating with teams of teachers, and adjusting assessment practices. Although some of these features were evidenced in other school settings, these features, together, contributed to how Specialist A's and the teachers' work collaboratively shaped and reshaped that school building's emerging mathematics program. We now turn to the first of these features, capitalizing on the daily school schedule.

Capitalizing on the Daily School Schedule

From the ISAM data, we know that Specialist A regularly engaged in various coaching activities with individual teachers, more so than most of the other project participants (see Table 3). As we made school site visits and observed her work with teachers, it became clear that Specialist A made full use of the school building daily routines. Although Specialist A—like other specialists with whom we had worked with over the years—observed, modeled and co-taught lessons as well as planned and debriefed with teachers, how she and the teachers engaged in this work was different.

To accomplish her coaching goals, she capitalized on the school building's bell schedule and teachers' individual schedules. Each week one class period (bell) each day was allocated as "enrichment" instruction. During this class period, students rotated from teacher to teacher, a different teacher each day, to engage in enrichment activities associated with addressing core concepts related to different subject areas. Those teachers responsible for mathematics instruction, for instance, met with a different group of students each day of the week and taught the same lesson or worked on the same enrichment-focused content during each of these classes.

Teachers regularly approached Specialist A with requests for her to help with planning for and implementing activities during this enrichment class period. Some teachers who had never worked with students who might struggle with mathematics (e.g. they only taught algebra to advanced students) were particularly motivated to collaborate with Specialist A, so Specialist A had numerous and regular opportunities to work with individual teachers.

In addition to collaborating with teachers during this enrichment class period, Specialist A capitalized on the school building schedule in other ways (personal communication, June 17, 2016). Because teachers often taught the same subject (Grade 6 math, Grade 7 math, Grade 8 math or Algebra I) several times each day, they might teach the same (or similar) lesson several times to different groups of students. As a consequence, Specialist A, upon a teacher's request, could implement the coaching cycle as she worked with the teacher for several back-to-back class periods. She might model the lesson (one that she and the teacher usually discussed previously) during the first two class meetings. As she modeled the lesson during the first class, she asked the teacher to "listen as if they were the learner and to evaluate how they thought the lesson went." During the second class, she asked the teacher to consider herself in the role of the teacher as they followed the specialist's lesson plan (and accompanying teacher notes). During the third class period, the teacher co-taught the lesson with the Specialist A, and during the fourth class period, the teacher taught the lesson "without interference" from the specialist. By the fourth lesson, Specialist A and the teacher completely switched roles.

During each of our school visits, Specialist A and a teacher engaged in the coaching cycle as we have described above, and this approach kept her very busy. As she said during one of our conversations, "I teach all day long." After observing various activities she engaged in throughout the school day, we understood what she meant by this

statement. She often modeled, co-taught, observed and debriefed with the teacher about the lesson—all on the same day. If a teacher did not teach the same content to four different classes on a given day, the specialist would invite the teacher to observe the second lesson modeled by the specialist in another teacher's classroom. By doing so, the teacher could teach the lesson without the specialist's help during the final class period on the same day. And, our observations also corroborated the descriptive statistics (presented earlier in Tables 2 and 3). We were able to provide evidential support for our inferences about Specialist A's coaching activities, and more generally, explain in part why nearly half of the teachers responsible for teaching mathematics in this school building were highly engaged.

Discussion. The specialist seamlessly moved between directly and indirectly (or implicitly) guiding teachers as they co-planned, modeled, co-taught or observed lessons, and she moved in and out of these different components of the coaching cycle as she worked with teachers. For instance, the specialist might shift from co-teaching to observing the teacher (and providing feedback) during the third or fourth iteration of a lesson. Or, she could shift between coaching roles (spontaneously) during the lesson if the teacher needed and/or asked her to help with the lesson. By moving between these different roles, Specialist A was able to support the teacher in different ways as the teacher met her goals for her students.

Providing Ready-to-go Lessons

Ready-to-go lessons were a very important part of the Specialist A's and teachers' work together, both collectively and individually. These lessons, which were initially developed by Specialist A during the first year she was placed in this middle school, were available to all the teachers. She introduced these lessons during team meetings, modeled or co-taught these lessons during the enrichment class periods, and so on. How important were these lessons? Specialist A stated that teachers would not have had opportunities to explore, refine and make changes to their practice if these lessons had not been available:

> "So what I do is I lay out the activities and they determine when they want to do something in their classroom…but if I didn't have them laid out I don't think they would ever ask me to do anything [in their classrooms]...[and] at first, none of them, none of them would do anything" (personal communication, March 19, 2014).

Here we note that Specialist A's comment "I don't think they would ever ask me to do anything…" is likely not a criticism. We take her comments to mean that providing these lessons became a critical part of her work as she began working in this school building. For her, these instructional materials (that aligned with the state's learning goals) served as entry points, creating opportunities for her to work with teachers in their classrooms. These lessons also provided opportunities for her and teachers to engage in commonly shared goals using resources that either she and/or teachers developed.

Typically, when working with an individual teacher, Specialist A would observe, model or co-teach one of the lessons on a given day, make changes as needed, and then she or the classroom teacher would share their experiences during the upcoming team meeting to elicit feedback or suggestions from the other teachers, and so on.

"Ready-to-go" was an accurate description of these lessons, too. The lesson packets contained copies of student handouts, a sample lesson plan and any other materials the teacher might need to implement the lesson. Packets were tailored so that they could be implemented for a given grade level. Teachers could "check out" the packets whenever they requested them. In fact, during our on-site visits, we noticed a variety of ready-to-go lesson packets displayed around the periphery of the mathematics resource room—a common space about the size of a large classroom that was designated as the workspace for the specialist and all the mathematics teachers. Teachers could sign out and use any packets that were displayed. Specialist A, and sometimes in collaboration with teachers, introduced new lessons every few weeks that covered different concepts related to the state department's curriculum framework.

Discussion. Developing ready-to-go lessons in collaboration with teachers was one of the established practices in this school building by the end of the second year. Initially the specialist developed these packets and made them available for teachers to use. Over time, the specialist, in concert with different teachers, developed or tailored these packets so that they could be implemented at each of the grade levels.

How the teachers used the packets was important. Teachers might closely follow the enclosed instructions, lesson notes, and additional materials without making any

adaptations. Or the teachers might choose to make changes or additions that made these activities more appropriate for their students or to highlight specific concepts they wanted to cover. And as the specialist and teachers used these packets, over time, these packets took on a life of their own and both contributed to and helped sustain this practice. In fact, these packets, or artifacts using Wenger's (1998) term, were one of the centerpieces of the specialist's and teachers' work.

Working with Grade-level (and Vertical Teams) of Teachers

Grade-level and vertical team meetings were commonplace at least in form, across the school buildings in our study. Teachers usually had planning periods that lasted anywhere from 50 – 90 minutes each day. These blocks of time presented ideal opportunities for mathematics specialists and teachers to work collaboratively.

The mathematics specialists scheduled grade-level or vertical team meetings regularly. During these meetings, the specialist and teachers addressed similar issues or topics (making and administering weekly or quarterly tests, analyzing student test scores on state assessments or quarterly tests, accessing the district or state website information, developing and implementing activities for students, scheduling, and other logistical matters). The mathematics specialist (sometimes along with one or more teachers) also used these meetings to share new activities, engage teachers in discussions about different instructional strategies or provide opportunities for teachers to engage in mathematical explorations. Based on our observations, some mathematics specialists had more success than others in challenging teachers to explore topics and issues not related to teachers' immediate concerns about students' performance on quarterly assessments, and more generally, how students would perform on the SAA.

Scheduling meetings during teachers' common planning time could be advantageous. The specialist could expect all teachers to attend, even those teachers with whom she did not regularly work. She could use this common meeting time to address a range of issues and draw on her work with different teachers to guide discussions. Specialist A, for instance, asked teachers that she regularly worked with to lead parts of a meeting, particularly if they had an activity that they had tried that worked well or they had adapted to meet students' needs.

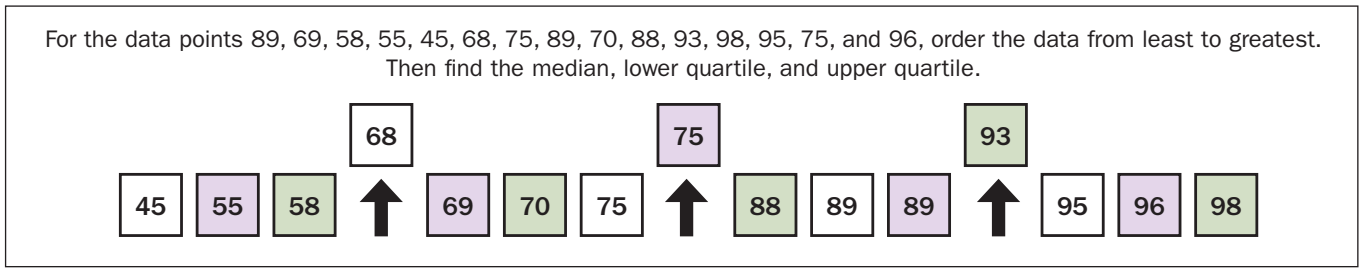
For Specialist A, these team meetings were one of the important ways she collaborated with teachers in order to accomplish their goals for the school mathematics program. She met regularly with teams of teachers. She and teachers had team meetings twice each week throughout the school year.

We observed several team meetings during our visits. The example that we provide here is a summary of one of the team meetings that we observed in early May. It is representative of the kinds of meetings that Specialist A and teachers engaged in during the second year she worked in this school building. At this point in the school year, teachers sometimes shared ideas and activities during the meeting or led an entire meeting.

In our example here, prior to this particular meeting, Teacher L had worked with Specialist A on a statistics activity (part of a ready-to-go lesson) that she planned to share with fellow teachers. Teacher L's students had difficulty finding quartiles, a topic that they needed to know for the SAA. So she and Specialist A had developed this ready-to-go lesson to address these concepts. As the meeting began, Teacher L shared the quartile tasks with the teachers asking them to work through the same tasks that she had used with her students. Below we provide a sample of our expanded field notes that recounts part of the discussion that occurred during this grade-level meeting with eighth grade teachers (some who were also algebra teachers).

> *The 8th grade teachers entered the room chatting with one another and with Specialist A. They took their places around a large meeting table. Specialist A began the meeting by asking one of the teachers to share a measures of variation activity (i.e., finding the maximum, minimum and quartiles) she used with her students—a new activity she and Teacher L developed to address an area in which students did not perform well on last year's state test. For this activity, each pair of teachers was given a set of colored tiles, a dry erase marker, and a list of 15 data points to organize (see Figure 1). All the teachers immediately started working through the activity. They used the tiles to record the data points. They organized the data to find the median and easily pulled out the first and third quartiles. After a few minutes when the teachers had finished the task, a lively discussion ensued about why this activity might help their students explore these ideas in a meaningful way.*

FIGURE 1. *Quartile Model of Fifteen Data Points.*



As the meeting continued, Specialist A asked the teachers what would happen if they had an even number of data points. How would they use the tiles to find the median? The teachers immediately went back to work solving a second problem with 14 instead of 15 data points (see Figure 2). To model the quartiles with the tiles, this time they had to add a tile to the original data that was the average of the two middle data points in order to find the median. So, Specialist A's follow-up question prompted teachers to consider how this activity could address both odd and even numbers of data points. At the end of the discussion, one of the teachers asked to take the lesson packet (i.e., a class set of colored tiles organized in sandwich bags each with a dry erase marker and mini-eraser, as well as worksheets, and an answer key) so that she could use it during her next class. Another teacher, who was also the chair of the mathematics department, requested to use the lesson packet the following day.

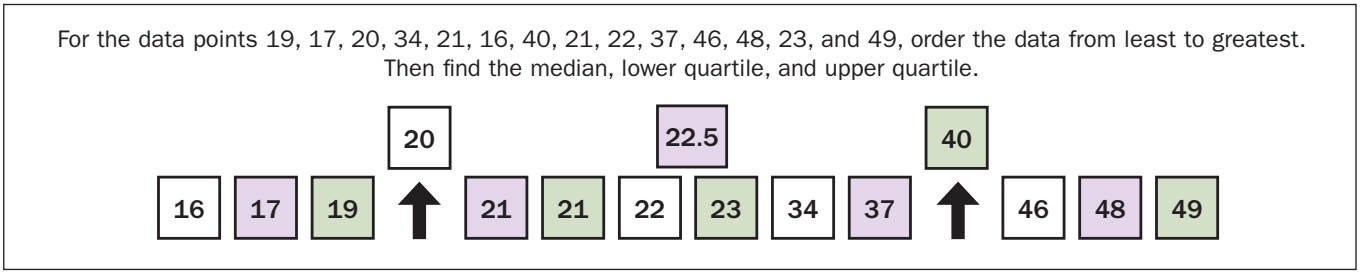
conversation as co-leader and Teacher L continued to facilitate the meeting.

During this meeting, teachers also had the opportunity to further explore these activities and some of the underlying mathematics associated with these activities. At the same time, they could also imagine how they might use these activities to facilitate a discussion about key ideas about medians and quartiles. Specialist A's question during this discussion about these tasks, was particularly important and shifted the discussion so that they could further explore several related ideas.

Importantly, Specialist A and Teacher L had planned in detail for this meeting. During our follow-up interview with Specialist A, she explained that because of numerous interruptions during the afternoon planning session, they had continued to plan later in the evening for this meeting. In fact, Teacher L had phoned Specialist A to discuss these activities; she had questions about how to develop the tasks that were part of the statistics ready-to-go lesson. Specialist A recounted part of their phone conservation during our interview, recalling how they designed the tasks. Notice in the next excerpt how Specialist A made suggestions to Teacher L about using the numbered tiles:

> I told her, "If it were me and I was going to [solve this task], the way that I would do it, is I would take those little tiles….I would put those tiles in there and I would

FIGURE 2. *Quartile Model of Fourteen Data Points.*



In the above example, notice that Teacher L led the teachers through this exploration. Rather than lead, Specialist A participated along with the other teachers as they engaged in the activity. After the teachers reconvened and discussed their answers, only then did Specialist A comment when she asked teachers what would happen if they worked with an even number versus an odd number of data points. Once she posed this question, the teachers went back to work thinking about this new task. And as they began working on this new task, Specialist A stepped back out of the

> arrange the first set of data that I come up with….We know that we want an odd number. So let's just start with the 5 [random] points [maximum, minimum, median, lower and upper quartiles]. Where can I add two more bits of data so that I'll end up with the same thing [5-number summary]?"… So that's when we put those in there. "Just slide those [number tiles] in there" (personal communication, May 14, 2014).

Specialist A then explained that they developed the first two tasks together:

> So we did that [first task], and we did that [second task] together...So once we did those first two [problems], then [Teacher L] said, "I want to do the rest of those just to try that out" (personal communication, May 14, 2014).

Notice that as Specialist A helped Teacher L design these mathematical tasks, she suggested how Teacher L might reason through this process (e.g., "If it were me…", "The way that I would do it…" and "Let's just start with the 5 points…"). She modeled how she would go about this process, thinking out loud, as they worked step by step through this process, and after completing two tasks together, Teacher L decided to develop several more tasks, independently, to "try it out." We suspect that as Teacher L crafted these other tasks, she also had opportunities to explore these mathematical ideas more deeply.

Discussion. Specialist A supported Teacher L as Teacher L began to design the statistics tasks, a topic that their students needed to review since they did not perform well on this portion of the SAA the previous year. As our example above illustrates, Specialist A guided Teacher L through this process of designing tasks for the team meeting so that Teacher L could facilitate the meeting. During the meeting, teachers also had the opportunity to become familiar with the materials in the ready-to-go lesson packet.

This meeting also is an example of one of the qualitatively different ways that Specialist A and teachers frequently worked together. During team meetings, from time to time, teachers explored the activities that were part of "ready-to-go" lesson packets that Specialist A (and teachers) developed. In fact, prior to this meeting, Teacher L had already used this packet with her students and had made a few changes to the activities before presenting the activities during the team meeting.

Adjusting Assessment Practices

This particular school had performed quite well in the past on state assessment tests so there appeared to be less "visible" evidence that teachers were primarily focused on student performance on these assessments. Preparing students for this test was an important part of all the specialists' work with teachers. For Specialist A, however, focusing her work around preparing students for the test did not motivate her daily work with teachers. Her goal was to help teachers engage in ambitious teaching, and she viewed changing how students and teachers perceived themselves as learners of mathematics as part of her job (per the Principal's request). So, preparing students for the state test was important but not the sole focus of their work.

Along with this issue, another contributing factor that influenced decisions about preparing students for the SAA was the result of the school building's unforeseen technological challenges. It became nearly impossible for this school building to complete computer training so that they could administer the SAA online. So midway during the second year, Specialist A approached Principal A with an alternate plan that involved teachers developing their own quarterly practice tests rather than using the district's online tests. Principal A agreed that Specialist A and the teachers could develop their own assessment practice tests and procedures as long as they adequately prepared students for the state test, maintaining the focus on mathematical rigor. These two situations helped to create an environment in which preparing students for the state assessment was part of, but not the sole focus, of the school's mathematics program, and it was quite apparent that this was the case. Recall that the team meeting we reported in the previous section occurred late in the school year. This type of meeting was atypical of the types of team meetings that we observed in other school buildings during the school year and certainly towards the end of the school year before the SAA was administered.

Against this backdrop, Specialist A and teachers had much more flexibility in how they focused their work around preparing students for the SAA. To illustrate this point, we return to part of an interview when Specialist A discussed this issue. In this excerpt, she recounted an incident in which she and Teacher R discussed the process of developing an appropriate test, and more specifically, appropriate test items. Specialist A talked about the type of test Teacher R had presented her initially and how they adapted the test to make a more appropriate test. As Specialist A recalled,

Teacher R's original test had 55 questions but after they organized and spread the test items around the mathematics resource room by literally by cutting and separating the 55 different questions, they determined that there were actually nearly 100 items that students needed to address. Specialist A then explained the process she and Teacher R devised to adapt and condense the number of test questions:

> Teacher R looked at me (humorously), and said, "Is this a little too many?" [And I said...] Let's go in and cut [the number of questions] by half. So every one of these things, let's cut it by half. So we did that. And then there almost 20 [test questions]" (personal communication, March 14, 2014).

Specialist A then discussed how she guided Teacher R to identify and adapt items so that the items assessed student learning—provided information about the students' thinking:

> "So here is what I want you to think about. Only keep multiple choice questions…if the distractors are going to teach you something about their answer. So if choosing [part] b tells you something that they didn't learn, then let's keep that. So we can analyze how they chose [part] b then we know what we didn't do well, but if it doesn't tell us that then we probably want to think of another approach. Maybe? Let's start with that, with weeding them" (personal communication, March 14, 2014).

This example illustrates how Specialist A and one of the teachers developed assessments. In this case, with the specialist's help, Teacher R separated and categorized the test items, displaying them around the mathematics resource room. By engaging Teacher R in this activity, Specialist A provided this teacher with the opportunity to revisit the number of test items, the relevance of particular items, and so on. Recall for instance, Specialist A's comment to only keep a question or distractor "...if it tells you something they didn't learn." Her comment seems a critical one that prompted the teacher to carefully consider each item, whether or whether not teachers would gain additional information about the students' understanding.

The specialist's work with Teacher R (and possibly other teachers) seemed productive. For instance, Specialist A noted during the interview that "[Teacher R] is so proud of herself. The test she came up with is amazing." In fact, Teacher R was very excited about the types of items that she crafted: "Oh, I want to show you this question. It says to solve for y—this one doesn't solve for y…" (personal communication, March 14, 2014).

This example provides a glimpse into some of the work around assessment in which Specialist A and teachers engaged. Specialist A engaged in other types of assessment-related work with teachers. For instance, she stored all the results from the quarterly assessments in a spreadsheet on a drive that was available to all of the mathematics teachers. Teachers would add information from their classes to the spreadsheet. Teachers accessed the spreadsheet to view the assessment results for different grade levels, used them to make informed decisions about instruction, reviews and so on. This approach, too, seemed different from the approaches that we observed elsewhere. In other school buildings that we visited, results from quarterly assessment results were sometimes the primary focus of team meetings as the year progressed. Teachers might raise questions or concerns about particular test items or the specialist and teachers would spend much of the team meeting discussing student errors, common misconceptions, or perhaps voicing their frustrations. This is not to say that similar discussions did not occur at Specialist A's team meetings. This issue was not the focus of the team meetings that we observed.

Discussion

We suspect that Teacher R had very good intentions in developing assessments. However, the quarterly assessments would likely have unintended consequences such as lack of clarity about how to interpret students' performances, if the testing procedures contributed in part to students' lack of success. So, by working with individual teachers, Specialist A could help teachers create efficient and effective tests.

Again we see an example of how the specialist guided the teachers, sometimes more explicitly during this process—particularly at the onset of her work with Teacher R. As Teacher R engaged in this process of developing a more appropriate test, she had opportunities to identify and create new test items that better served her purposes and her students. There is a point where Specialist A could become less engaged in this process so that Teacher R could develop a test that followed some of the guiding principles that Specialist A had articulated during the outset of this activity. Importantly, Teacher R did develop a more appropriate test, and also shared these ideas with other teachers with whom she worked.

Characterizing the Specialist's Work

In the above sections we have provided several examples that are representative of the kinds of situations we observed in this school building. These features were in place during the second year that Specialist A worked in this middle school. Although we had observed some of these features in other school buildings, these four features taken together in this particular setting, contributed in part to the specialist's and teachers' rich collaborations, and helped to shape their purposes for the school's mathematics program.

In the next part of our discussion, we recast the specialist's work using our interpretative framework to develop a landscape that further clarifies her work in collaboration with teachers. By doing so, we characterize the types of moves that the specialist made that contributed in part to the community of practice in this school building. Recall that our interpretive framework (see Table 1) coordinates heuristics (what, how, why) with types of coaching moves (direct guidance and invitational moves) to explain and understand the nature and quality of the specialist's work. In the previous sections, we have described in some detail Specialist A's work. Here we use the interpretative framework to provide a more general analytical approach to characterize her work (see Table 4).

Applying the Interpretive Framework

As we will illustrate, we have found it useful to use guiding heuristics and the types of coaching moves as constructs to frame the different activities that she engaged in her daily work. To better describe the specialist's work, we have also found it necessary to create a third, hybrid construct to describe Specialist A's moves, what we refer to as invitational-guidance moves. Invitational-guidance moves are ones in which the specialist provides direct guidance at different times during an activity or situation in order to create opportunities for the teacher to contribute more fully to the activity at hand. These moves provide "openings for constructive collaboration" (West & Staub, 2003, p. 20). In a sense, the specialist creates "rich spaces... presenting opportunities for" the specialist to facilitate teachers' participation (e.g., offer suggestions, invite teachers to provide expertise about how they might proceed, what course of action to take, why this might be the best course of action, and so on) (Remillard & Geist, 2002, p. 13).

Notice that in Table 4 (next page), most of the examples we have highlighted in the previous sections align more closely with this hybrid move. To clarify what we mean by invitational-guidance moves, let us contrast this move with an example of direct guidance. In our assessment example (see row 1 of Table 4), for instance, Specialist A's moves could be characterized as directly guiding the teacher, particularly when she and the teacher began adapting the test to make a more appropriate one for the students. Specialist A suggested how they might go about cutting the number of items as well as suggesting the number of test items to include. After sorting the test items, as Specialist A continued to guide Teacher L through this process of making this test, her role seemed to shift to that of making invitational-guidance moves (see row 2 of Table 4). Notice that although she guided Teacher L ("If choosing "b" tells you something…"), she does not actually engage in the process of selecting and adapting test items. Her aim is to help Teacher L consider what information teachers needed in order to assess students' understanding ("if distractors are going to teach you something about the answer..."). Again, Specialist A does not give specific direction about how Teacher L might proceed. As such, unlike in the first situation, this second situation is an example of an invitational-guidance move. The fact that Teacher L, later, discussed the test items that she developed with Specialist A, further provides evidence that supports our characterization of this particular situation around creating assessment items.

Interestingly, how Specialist A implemented the coaching cycle is a more general example of an invitational-guidance move. Recall that Specialist A modeled the lesson during the first and second class periods whereas the teacher took on the role of the learner during the first lesson and then as an evaluator during the second lesson, following along with the lesson plan and notes that the specialist prepared. During the second pass as an observer, the teacher evaluated Specialist A's teaching, providing feedback and comments about the lesson—information that she and the specialist discussed as they met to debrief about the first two lessons. So although the specialist taught the lesson, we also infer a shift in her "locus of control" when she asked the classroom teacher to provide feedback. Thus, when implementing the coaching cycle, we would characterize Specialist A's coaching, particularly as she modeled the lessons, as invitational-guidance moves.

Invitational-guidance moves were an important approach that Specialist A engaged in as she worked with teachers. We also suspect that this approach contributed to the overall success that Specialist A had with teachers, where

Table 4: Interpretive Framework Analysis of Specialist A's Work

Coaching Moves	Interpretive Heuristics		
	What	**How**	**Why**
Direct Guidance	Create a new test that is much shorter and doable by the students	"Let's go in and cut [the number of questions] by half. So every one of these things, let's cut it by half"	Make a more appropriate student test
Invitational-Guidance	Making test items	"Think about...only keep multiple choice questions...if choosing "b" tells you that they didn't learn, then let's keep that..."	Craft "distractors [that] are going to teach you something about [students'] answer"
Invitational-Guidance	Lesson database for teachers	Created ready-to-go lessons–packets with all support materials that teachers could use	Provide teachers with opportunities to use innovative lessons and develop new or adapt existing lessons
Invitational-Guidance	Engaging in an adapted version of the coaching cycle	Implementing different components of the coaching cycle in back-to-back classes with the same teacher on the same day	Provide professional development opportunities for individual teachers
Invitational	Teacher L explores statistics ready-to-go lesson with teachers	Teacher L presents the lesson during the team meeting	Help students (and teachers) review concepts to prepare for the state test
Invitational-Guidance	Planning activities for the team meeting around a statistics ready-to-go lesson	Develops problems for teachers to explore to become familiar with the lesson	Provides teacher L with the opportunity to further develop leadership skills

it was fairly routine for them to develop and implement ready-to-go lessons, plan and co-teach together, develop and implement assessments, to name a few. More generally, these types of engagements contributed to a community that was intact with teachers fully participating (Wenger, 1998) in a range of professional activities with the dual aim of learning from each other and supporting their students' learning. These teachers were highly engaged in their work with the specialist for the school's mathematics program.

To close out this section, we return to one of the key features, the ready-to-go lessons. As we have alluded to in our discussion, ready-to-go lessons were a catalyst—common thread—that prescribed when and how the specialist and teachers engaged in their work together. We also know that Specialist A worked with teams of teachers more regularly when compared to the average of all 11 specialists (10.52% vs 4.87%, see Table 1). These types of collaborations were fairly routine for them to develop, explore and share resources that were adaptable and ready to use as teachers supported students' conceptual understanding. More generally, these ready-to-go lessons were shared products that contributed in part to the community of practice that defined and redefined the joint enterprise of co-constructing the school's mathematics program. Notably, because the specialist welcomed and valued teachers' contributions, teachers had opportunities to view themselves as full participants in this community—a community in which teachers could view their work as autonomous, productive co-constructors of these practices.

Conclusion

In this paper, we use examples from a case study to illustrate how we could use our interpretive framework to characterize the nature and quality of a specialist and

teachers' work. We have provided examples to unpack the types of practices that were in place when we began visiting Specialist A's school building. We also have used these examples to provide a glimpse into the collaborative working relationship that Specialist A and the teachers had established over a two-year period.

Different teachers participated in these practices in different ways and contributed in part to the collective shifts in how these meetings changed over time. The ways in which they engaged in this work varied, depending on the situation at hand. In our example above, Teacher L's work with Specialist A took different forms depending on if they were simply planning for the team meeting or if Teacher L was going to be leading the team meeting.

In our discussion we make a case for how we might use our interpretive framework to make sense of singular events as well as to make more general claims that are grounded in the specialist and teachers' daily work. We also envision using the framework to document to how the specialist's role might change over time as teachers emerge as leaders in the school building—one of the aims of the specialist's work (c.f., West & Staub, 2003). The hope is that over time, the specialist can provide less and less support. In our examples from Specialist A's case study, we see evidence that this shift had already begun to occur. For instance, Teacher L was one of several teachers that developed lessons, shared the activities during the team meetings, and made the lesson available in the database of ready-to-go lessons. Thus, Teacher L was establishing herself as one of the leaders in this school building.

Specialist A was aware that she would likely not be placed in this school building as a mathematics specialist for the subsequent school year. In fact, she mentioned that this was one, but not the only reason that she kept databases containing all of their work (the ready-to-go lessons, assessments, etc.). So pragmatically, this was one of the reasons that the Specialist A and the teachers' roles were changing during the second year. She was eager for teachers to take on leadership roles. This said, teachers were not "anointed" as leaders. As we have presented through this case study, the roles of the specialist and various teachers began to shift or become blurred as they established practices that would continue to evolve and, at the same time, sustain their shared purposes for themselves and their students. ✪

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