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Supporting School Administrators With Math Observations and Feedback

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Supporting School Administrators With Math Observations and Feedback

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Education

by

Myeisha Phillips

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ABSTRACT OF THE DISSERTATION

Supporting School Administrators With Math Observations and Feedback

by

Myeisha Phillips

Doctor of Education

University of California, Los Angeles, 2021

Professor Megan Franke, Chair

This study examined the perspectives of school administrators regarding how the use of a focused math observation tool influenced their practice and their teachers' practice. The sample comprised six elementary school administrators across four elementary schools in a large, urban public school district. The research design applied qualitative methods in order to understand what the administrators valued about the tool and what they said they needed from a tool to support their practice of observation and feedback in mathematics. Patterns and themes regarding what the administrators valued about the tool and what they needed in a tool to support math observations and feedback were identified. The findings from the interviews with administrators affirmed that a focused math observation tool can support focused feedback for math instruction. The two main ways administrators reported that the tool supported focused feedback for math instruction included (a) the tool served to support shared expectations and (b) the tool's focus on only two or three elements made it comprehensible. In addition, administrators indicated that the support they needed to use the tool was collaboration across the process with other observers, specifically side-by-side support with the district math coordinator and opportunities to

collaborate with school leaders around observation and feedback. The findings suggest a focused math observation tool with support could be helpful to school administrators.

The dissertation of Myeisha Phillips is approved.

Christina (Tina) Christie

Tyrone Howard

Jody Priselac

Megan Franke, Committee Chair

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2021

DEDICATION PAGE

I give this manuscript as a gift to my mother in heaven and my father who provided the right support, opportunities, and foundation that has allowed me to be the first in my family to be reach this level of academic attainment. I also give this manuscript to my immediate family, Brooklyn Cerda, Guy Cerda III, and Guy Cerda Jr. who are my biggest supporters and cheerleaders. I also give this manuscript to my extended family, friends, mentors, and colleagues as so many people in my path whether the role has been large or small has contributed to me being able to accomplish this goal. An additional special shout-out to my Auntie Louise for standing in the gap for my mother who looks down from heaven. My steadfast character is a tribute to the belief that all those around me had in me, the love and support you have shown me, and the encouragement that you have provided to me on this journey called life. My passion to be a role model, to set an example, to push for the betterment of myself and others, and my desire to help others along the way is a reflection of all of the good that exists in my circle of family and friends.

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VITA

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CHAPTER 1: INTRODUCTION

To support the achievement of students in historically low-performing schools, the quality of math instruction must improve. School administrators, tasked with guiding teachers' instructional practices in the classroom, can be one of the major drivers of education quality improvement. By observing instruction and providing teachers with informed feedback, school administrators can both communicate expectations and hold teachers accountable for improving classroom instruction (Cobb & Jackson, 2011). One approach to math instruction improvement is the implementation of a common mathematics planning and observation tool. A common math observation tool aligns the way teachers and school administrators plan, observe, coach, and provide feedback regarding mathematics instruction, offering them a shared language and vision of strong math practices. To aid in the improvement of instruction, the feedback administrators provide from observations should be content specific, reflecting high standards for content and pedagogy in the subject area and consistent with instructional improvement initiatives in the school and/or district (Cobb & Jackson, 2011; Nelson & Sassi, 2000).

Current practices observed and experienced in the large, urban historically under-resourced school district, which I have used pseudonyms to keep the district and the district operator anonymous, Lots of Learning Unified School District (LLUSD) elementary schools under the umbrella of the Enhance the Learning Management Organization (ELMO) include both observations that incorporate the use of a tool or checklist and those that are more general. For example, some schools use a tool from the National Council of Teachers of Mathematics Math Coaches Guide (NCTM, 2014) that focuses on the math practice standards. Another school has created a checklist that is specific to the curriculum used and includes some elements of high-quality math instruction. Other schools use general templates where effective practices and

areas of growth are captured and left with the teacher immediately upon exiting the classroom observation. Other schools utilize checklists that are specific to a particular component of the math block (e.g. Number Talks, Word Problem-Solving Session). All of the practices observed are lacking in a comprehensive inclusion of practices that would be considered high-quality math instructional practices regardless of the component of the math block being observed.

Popular tools for classroom observation and feedback such as the Framework for Teaching (FFT; Danielson, 2014) and Classroom Assessment and Scoring System (CLASS; Pianta & Hamre, 2012) focus on general aspects of classroom teaching such as teacher questioning and teacher interactions with students (Nava et al., 2019). According to Hill and Grossman (2013), to fulfill the potential of leveraging observation systems to support teachers in improving practice, the system must make available subject-specific observation instruments that provide concrete guidance on desirable teaching practices and draw content experts within districts into the process of teacher evaluation, both for the sake of improving coherence in the messages transmitted to teachers and in order to leverage existing expertise around the improvement of instruction. Additionally, states and districts must design systems in which feedback from observations is both accurate and usable in the service of improving instruction. An observation tool called the UTeach Observation Protocol (UTOP) has a primary strength because of its relatively strong ties to the teacher value-added system, but it captures a wide array of content-specific and content-general indicators, which may allow it to paint a fuller picture of classroom factors that affect student achievement (Walkington & Marder, 2018). The UTOP tool includes 28 indicators that consider many different aspects of a lesson, which may result in professional development conversations that lack focus or that try to pull in too many different teaching behaviors (Walkington & Marder, 2018). Hill and Grossman (2013) discussed

getting the right grain size as a challenge for any observation instrument: The more specific the grain, the more specific the feedback for teachers can be.

Statement of the Problem

Most of the current research has used classroom observations only as evaluation. Some researchers have called for the use of observations more as supports for teachers, that is, using observation systems as "key levers for improvement of teaching" (Hill & Grossman, 2013, p. 3). To be best equipped to provide feedback after observations, administrators need sufficient knowledge of what constitutes high-quality instruction in the specific content area, specifically when attending to important aspects of instruction during classroom observations and providing beneficial feedback to teachers (Nelson & Sassi, 2000; Stein & Nelson, 2003). Beyond content knowledge, researchers have contended that administrators need a solid knowledge of effective pedagogy within specific content areas (e.g., McKenna & Robinson, 2006; Stein & Spillane, 2005), or "research-based best teaching practices that support meaningful student learning" (Steele et al., 2015, p. 3) in a given discipline (Boston et al., 2017). Cobb and Jackson (2011) discussed that by observing instruction and providing teachers with informed feedback, school administrators can both communicate expectations and hold teachers accountable for improving classroom instruction. Little is known about the feedback that school administrators provide to teachers following classroom observations or about how to train leaders to make that feedback more effective (Mihaly et al., 2018).

Research specific to math observations and leaders supporting math instruction has shown that there are specific needs around support for leaders and observing math. Boston et al. (2017) analyzed data from a study where administrators observed video of mathematics instruction after receiving professional development centered around identifying high-quality

math instruction. Administrators were identifying features specific to high-quality mathematics instruction, to mathematical content, and to students' thinking in the lesson featured in the video clip. This is not typical of what administrators are able to offer after math observations. Rigby et al. (2017) reported that most of the administrators' press, as reported by teachers, was not targeted toward specific teachers' mathematics instruction in ways that would likely lead toward improvement in those practices. The researchers also found that the press focused on content-neutral instructional practices or classroom management and organization. *Press* refers to the feedback provided to teachers that is intended to support movement of practice.

One approach to supporting administrators as instructional leaders in improving their math observations and feedback is the implementation of an observation tool. The research literature generally provides two lessons on how to focus an observation tool: Focus the observation tool on the instructional shifts or other aspects of the learning environment you most want to understand, and choose a grain size that allows the observation system to be simple enough to use and will result in data useful for its intended purpose (Perry et al., 2015). The literature offers both pros and cons to the use of a checklist for observations. According to Perry et al. (2015), checkbox/low-inference data may add consistency to the data collection, are easily quantifiable across classrooms, and may provide quick statistical information on instructional trends across teachers, schools, and a district.

In this study, school administrators reflected on the use of a math observation tool that was introduced during the 2019–2020 school year in kindergarten–sixth-grade classrooms that specifically targeted between one and three specific teaching practices used to focus math observations and professional development. School administrators' feedback was collected and analyzed to determine if the feedback provided was content neutral or math content specific.

School administrators shared insight into how the tool improves school administrators' abilities to provide teachers with feedback in mathematics using language that identifies key aspects of math instruction as defined by NCTM. In addition, school administrators shared insight into whether they felt the feedback provided using the tool was valuable in helping to improve teachers' instructional delivery in mathematics.

The research questions that guided this study were as follows:

1. What do school administrators say is the impact of a focused math observation tool on their practice and their teachers' practice?
2. What do school administrators report about the support they needed to use the tool?

Significance of the Study

This study has the potential to provide school administrators with a way to observe teachers' classroom math practices that takes into account elements of high-quality math instruction alongside the instructional program that the school site uses. It also has the potential to help school administrators and teachers norm the language that is used to talk about math so that a common understanding around high-quality math instruction is developed. Implementing a math observation tool that fosters a holistic conversation about shared school site practices, rather than a quantitative evaluation of a single teacher, refocuses the intention of classroom observations. By engaging with a common math observation tool, teachers and administrators can begin to engage in a shared language that encourages a common culture of high-quality math practices, with the ultimate aim of elevating math instruction for historically underserved students throughout the school community.

CHAPTER 2: REVIEW OF THE LITERATURE

In a school building where administrators posit themselves as instructional leaders, they are likely to observe teachers' instruction and provide feedback to teachers based on the observation. While school administrators may have general expectations for all instruction observed regardless of content area, content-specific feedback can be helpful to support mathematics instruction (Blazar et al., 2017; Burch & Spillane, 2003; Lochmiller & Acker-Hocevar, 2016; Spillane, 2005). It is also likely that school administrators will vary in the amount of math-specific content knowledge they hold. Additionally, the professional development school administrators receive to provide feedback regarding math instruction as well as the professional development school administrators provide to their staff around math instruction expectations needs to be sequenced appropriately in order to have the power to positively influence math instruction (Desimone et al., 2002; Rigby et al., 2017). Because math achievement is low, and even lower for students of color, the need to provide feedback that can improve math instruction is crucial. To operationalize this, I drew from research on school administratorship and subject-matter content knowledge (Spillane, 2005), classroom observations and feedback (Cobb & Jackson, 2011; Hill & Grossman, 2013), and use of observation tools, protocols, and checklists for classroom observations (Perry, 2015).

This literature review first defines key terms used throughout the study and then outlines the conceptual framework that places types of administrator press on a continuum (Rigby et al., 2017) with named National Council of Teachers of Mathematics teaching practice behaviors identified along the continuum for purposes of organizing types of mathematical feedback that can be offered dependent upon the teaching practices observed or not observed. Second, it summarizes the research on professional development provided to school administrators to

support math instruction. Third, it reviews the research regarding teacher observation and feedback generally and then focuses on observation and feedback specific to math. Lastly, the review discusses the use of observation tools, protocols, and checklists that have been utilized to support teacher observation and feedback in math.

Key Terms and Definitions

Several terms were used throughout this study to describe instruction, observations, and feedback. The following are the definitions that should be considered to understand how the terms were used in the context of this study. Other definitions of these terms exist, but these are the ways these terms were described in this study.

High-leverage teaching practices: High-leverage teaching practices are defined as teaching moves that are research based, have the potential to improve student achievement, and support students in learning central academic concepts (Cohen, 2015).

High-quality mathematics instruction: High-quality mathematics instruction often contains the following components: (a) The teacher poses a cognitively demanding task that requires students to explore mathematical ideas and explain their mathematical thinking and reasoning, (b) the teacher provides time to work on the task individually or in groups, and (c) the teacher conducts a whole-class discussion in which students explain and justify their ideas, strategies, and solutions, with the goal of developing deep understandings of and connections to underlying mathematical concepts and/or procedures (Boston et al., 2017).

Observation and feedback routine: The observation and feedback routine consists of an administrator observing classroom instruction, taking notes, and providing either verbal or written feedback to teachers (Rigby et al., 2017).

Press: Refers to the feedback provided to teachers that is intended to support movement of practice (Rigby et al., 2017).

Conceptual Framework

Types of administrators' press include classroom management and organization press, general instruction press, and mathematics press, which fall on a continuum moving from what is considered non-mathematics press to mathematics press (Rigby et al., 2017). Non-mathematics press has the power to improve instruction, but it is more likely that press focused on mathematics will significantly reorganize teachers' practice in the ways needed to meet the learning demands of ambitious mathematics (Rigby et al., 2017). According to the National Council of Teachers of Mathematics, there are eight teaching practices named that need to be in place to ensure effective mathematics instruction. These eight practices are described in the book *Principles to Actions: Ensuring Mathematical Success for All* (NCTM, 2014). Two of the practices named include (a) facilitating meaningful mathematical discourse and (b) posing purposeful questions. Each of these practices is further described using sub-bullets. For my conceptual frame of the range of non-mathematical press to mathematical press, I have organized the NCTM sub-bullets on this continuum (see Figure 1).

Figure 1

Match Between Press and the Types of Mathematical Feedback That Can Be Provided Based on Teacher Needs

Supporting Effective Mathematics Instruction Non-Mathematical Press ←----------→ Mathematical Press		
Classroom Management, Routines, Procedures, Systems	General Press	Mathematical Press
• Helps students share, listen, and honor each other's ideas • Helps students consider each other's thinking • Questions make the math visible • Strategies are used to ensure that every child is thinking	• Helps students discuss each other's thinking • Helps students critique each other's ideas • Questions solidify students' thinking • Questions elicit student comparison of ideas and strategies	• Strategically sequences mathematical ideas and language • Uses student responses to highlight math ideas and language • Questions extend student thinking

I assert that if, according to NCTM, all of the sub-bullets identified are considered mathematical press, then it is possible to provide mathematical press regardless of where a teacher falls on the continuum, but identifying where they fall helps to determine the type of feedback that should be given. For example, if it is observed in the lesson that the teacher needs support with helping students share, listen, and honor each other's thinking, the type of press needed would fall under routines, procedures, and systems. A school administrator or observer might recommend that the teacher support the students in using discussion stems and establish discussion norms to support in this area. I also posit that if school administrators can learn to observe and provide feedback according to this framework, then it is possible to move the needle around elementary school administrators' mathematics leadership through observation and

feedback. I utilized this framework in my study to support school administrators' supervision of mathematics through observation and feedback, which is an identified area of need.

School Administratorship and Subject-Matter Content Knowledge

Research has suggested that of the many content areas that administrators supervise, math and science may be particularly illustrative of subjects that require administrators to have specific content-area expertise given the sequential nature of these subjects (Burch & Spillane, 2003; Nelson, 1999; Stein & Nelson, 2003). In particular, their actions should support teachers' professional development, shift instructional practice from solving problems to exploring mathematical processes, and create a departmental culture that recognizes all students' potential for mathematics (Lochmiller & Acker-Hocevar, 2016). To be best equipped to provide feedback after observations, administrators as instructional leaders need sufficient knowledge of what constitutes high-quality instruction in the specific content area, specifically when attending to important aspects of instruction during classroom observations and providing beneficial feedback to teachers (Nelson & Sassi, 2000; Stein & Nelson, 2003).

In a study that investigated how the structure of primary school administratorship looks different depending on the school subject, Spillane (2005) observed that school administrators talked about instruction in subject-matter-neutral terms (e.g., the objective was posted on the wall; classroom management). The practice of talking about instruction in "neutral" or "general" terms points toward the need for school administrators to be provided with professional development opportunities to equip them to talk about math instruction in content-specific terms, in this case, math-specific terms.

In a study investigating how administrators can be supported to develop the knowledge and skills necessary to support high-quality teaching and learning in mathematics, Boston et al.

(2017) argued that an essential component of knowledge and skill required by administrators is the ability to differentiate between high- and low-quality instruction within a specific content area. The design experiment incorporated a series of professional learning experiences intended to enhance administrators' capacity to serve as instructional leaders in mathematics. The results indicated that after the enactment of the professional development, school administrators improved performance in their ability to identify high-quality instructional tasks. Additionally, there was some improvement in administrators' ability to identify high-quality instruction as determined by administrators' analysis of a middle school mathematic video clip lesson. In the areas of engaging with mathematics and making student thinking visible, there were increases in the number of comments from pre- to posttest, but a decrease in lesson structure and student leaning possibility. When viewing videos of mathematics instruction and considering feedback, administrators began to make more comments about how teachers engaged students with mathematics and made student thinking visible instead of broader comments regarding lesson structure or general learning possibilities, which translates to the targeted concepts lending themselves more to features of high-quality math instruction.

School Administrators' Professional Development to Support Teachers' Math Instruction

In 2008, Chicago Public Schools launched a time- and resource-intensive 2-year pilot study designed to drive instructional improvement by providing teachers with evidence-based feedback on their strengths and weaknesses using the Charlotte Danielson Framework for Teaching (Sartain et al., 2011). The pilot consisted of training and support for administrators and teachers, administrator observations of teaching practice, and conferences between the administrator and the teacher to discuss evaluation results and teaching practice. While the observations were tied to evaluation, the effort to revamp the evaluation system grounded the

observations in providing teachers with meaningful feedback on their instructional practices or guidance about what is expected of them in the classroom.

Current research in school instructional leadership has provided contradictory guidance on what administrators need to know and do in order to be effective instructional leaders in mathematics (Cobb & Jackson, 2011). In one study, Goldsmith and Reed (in preparation) simulated administrator feedback on instruction by asking 430 administrators to comment on a scenario in which a teacher encouraged student debate over whether 5 can be divided by 39; in written comments, 40% of administrators did not remark on the mathematics in the scenario, and another 25% made only cursory reference to the topic (Hill & Grossman, 2013). In another study conducted across four districts, administrators used observation tools for mathematics classroom observations, but once the study ended, it was conjectured that administrators might revert back to providing content-free feedback (e.g., the objective was posted on the wall; classroom management) because the observation form did not include indicators of high-quality mathematics instruction highlighted during the professional development (PD) workshops (e.g., cognitive demands, students justifying their solution strategies) (Boston et al., 2017).

Desimone et al. (2002) identified key features of professional development that could be hypothesized as effective in improving teacher practice:

1. reform type (study groups, teacher networks, mentoring relationships, committee or task force, internship, individual research center, or teacher research center)
2. duration (total number of contract hours that participants spend in the activity as well as span of time during which activity takes place)
3. collective participation (groups of teachers from same school, department, or grade level)

4. active learning (opportunities for teachers to become actively engaged in the meaningful analysis of teaching and learning)
5. coherence (consistent with teachers' goals, aligned with state standards and assessments)
6. content focus (the degree to which the activity is focused on improving and deepening teachers' content knowledge)

The first three are categorized as structural features (characteristics of the structure of the activities) and the last three as core features (characteristics of the substance of the activity).

Aligned with these identified key features, administrators' professional development around use of the focused math observation tool in this study included the features reform type, duration, collective participation, active learning, coherence, and content focus. The feature reform type was incorporated as a network of administrators across multiple sites utilizing the tool who had opportunities to learn from each other. Duration was included as use of the focused math observation tool spanned a particular time period and school administrators had increased opportunities to improve use of the tool over time. Collective participation occurred as the school administrators and teachers at the school site were involved in the process together. Active learning was enacted as both school administrators and teachers at a school site learned about the tool alongside each other. Because the observation tool is math focused, the feature of content focus was captured.

Classroom Observations and Feedback

Although observations were initially conceived of as tools for evaluation, such protocols are now seen as key levers for improvement of teaching (Hill & Grossman, 2013). Beyond content knowledge, researchers have contended, administrators need a solid knowledge of

effective pedagogy within specific content areas (e.g., McKenna & Robinson, 2006; Stein & Spillane, 2005), or "research-based best teaching practices that support meaningful student learning" (Steele et al., 2015, p. 3) in a given discipline (Boston et al., 2017). Cobb and Jackson (2011) discussed that by observing instruction and providing teachers with informed feedback, school administrators can both communicate expectations and hold teachers accountable for improving classroom instruction.

Research specific to math observations and leaders supporting math instruction has shown that there are specific needs around support for leaders and observing math. One such need is administrators' ability to provide feedback specific to teachers' math instruction that would lead to improvements in practice. In one study, Rigby et al. (2017) reported that most of the administrators' press, as reported by teachers, was not targeted toward specific teachers' mathematics instruction in ways that would likely lead toward improvement in those practices. Teachers were more likely to change their practice if they received more specific feedback. Rigby et al. also found that the press focused on content-neutral instructional practices or classroom management and organization.

In a 2011 teacher evaluation study conducted with Chicago Public Schools, administrators indicated that using the Charlotte Danielson Framework to evaluate teacher practice structured their conversations with teachers, allowing them to identify specific areas for instructional improvement (Sartain et al., 2011). Popular tools for classroom observation and feedback such as the Framework for Teaching (FFT; Danielson, 2014) and Classroom Assessment and Scoring System (CLASS; Pianta & Hamre, 2012) focus on general aspects of classroom teaching such as teacher questioning and teacher interactions with students (Nava et al., 2019). According to Hill and Grossman (2013), to fulfill the potential of leveraging

observation systems to support teachers in improving practice, the system must make available subject-specific observation instruments that provide concrete guidance on desirable teaching practices.

Another aspect of observations that must be considered is related to how the feedback is communicated. Feedback conversations between teachers and administrators can be viewed as threatening. According to a study done by the Carnegie Foundation, threatening feedback conversations include the following features: evaluations are based on a "thin slice," unclear expectations were established, feedback seems like something done to them rather than for them, and there was a lack of concrete feedback that helped to improve their practice (Myung & Martinez, 2013). In addition, the observation process is commonly considered to be an accountability-oriented activity, with the main purpose of feeding data back to the administration to inform decisions about hiring, firing, development, or promotion (Myung & Martinez, 2013). Given the need to support leaders with math observations and providing feedback, a tool could be used to support this effort.

Observation Tools, Protocols, and Checklists

The research literature generally has provided two lessons on how to focus an observation tool: Focus the observation tool on the instructional shifts or other aspects of the learning environment you most want to understand, and choose a grain size that allows the observation system to be simple enough to use and will result in data useful for its intended purpose (Perry et al., 2015). The literature offers both pros and cons to the use of a checklist for observations. According to Perry et al. (2015), checkbox/low-inference data may add consistency to the data collection, are easily quantifiable across classrooms, and may provide quick statistical information on instructional trends across teachers, schools, and a district.

An observation tool called the UTeach Observation Protocol has a primary strength because of its relatively strong ties to the teacher value-added system, but it captures a wide array of content-specific and content-general indicators, which may allow it to paint a fuller picture of classroom factors that affect student achievement (Walkington & Marder, 2018). The UTOP tool includes 28 indicators that consider many different aspects of a lesson, which may result in professional development conversations that lack focus or that try to pull in too many different teaching behaviors (Walkington & Marder, 2018). Hill and Grossman (2013) discussed getting the right grain size as a challenge for any observation instrument: The more specific the grain, the more specific the feedback for teachers can be.

The Reformed Teaching Observation Protocol (RTOP) is an observational instrument that can be used to assess the degree to which mathematics or science instruction is "reformed," embodying the recommendations and standards for the teaching of mathematics and science that have been promulgated by professional societies of mathematics, scientists, and educators (Piburn & Sawada, 2000). The tool consists of 25 items divided into three subsets—Lesson Design and Implementation (5), Content (10), and Classroom Culture (10)—of which the second and third subset are each divided into two smaller groups of five items (Piburn & Sawada, 2000). Similarly to the UTOP tool, the RTOP tool includes a large number of indicators, and the indicators are more content general rather than content specific. Although the RTOP was developed to apply to mathematics and science, the RTOP focuses the observer's attention on general features of reform-oriented instructional practices and is not content specific (Boston et al., 2015).

The Instructional Quality Assessment (IQA) toolkit has been designed to evaluate instructional quality based upon four Principles of Learning that are evident and observable in

classrooms that promote students' learning: academic rigor, accountable talk, clear expectations, and self-management of learning (Boston & Wolf, 2006). The tool consists of approximately 20 rubrics accompanied by rater-training materials, which are used to evaluate a direct lesson (one per teacher); collections of assignments (four per teacher) and student and teacher interviews are conducted to provide supplementary information about the observed lesson. To measure academic rigor in mathematics, a 4-point scale is used to measure four indicators of students' opportunities to learn mathematics with understanding, which include tasks, task implementation, mathematical discussions, and teachers' expectations (Boston & Wolf, 2006). Similar to the UTOP and the RTOP, the IQA tool includes a large number of indicators. Unlike the RTOP, which focuses on more general instructional practices that can be observed in any content area, the IQA draws observers' attention to specific aspects of reform-oriented mathematics instruction, namely cognitively challenging instructional tasks, task implementation, and discussion (Boston et al., 2015).

The Mathematical Quality Index (MQI) includes 13 items that have a theoretically driven design. The tool articulates more than 10 subject-specific competencies (e.g., linking between representations, providing mathematical explanations, exploring patterns and generalizations) and provides examples on how observers should score each (Blazar et al., 2017). Similar to the aforementioned tools, the MQI tool includes a large number of indicators. Although the MQI does not privilege reform-oriented instructional practices, it does assess the rigor and richness of the mathematics throughout a lesson (Boston et al., 2015).

Affordances and constraints in using an observation tool to support improving teacher practice as identified in a study that compared three mathematics classroom observation protocols (RTOP, IQA, and MQI) include the requirement for live and/or videotaped

observations, the requirement for rater training, the explicitness of each rubric in providing descriptions of score levels, and the scale of the research project and the usability of the rubrics (Boston et al., 2015). What is needed for administrators to become adept at utilizing these tools for observations is unrealistic in terms of both time and resources. There is a need for a math observation tool that is much easier to use and requires much less professional development to learn to implement.

Based on the features of the tools presented and the constraints identified, there is a need for a tool that is better positioned to support school administrators with math observations and feedback. The focused math observation tool that was studied as a part of this research includes features that could have the power to support school administrators in the area of math observations and feedback. As a part of this study, school administrators were trained to utilize a focused math tool that supports them with the language to describe mathematics instruction being observed using math-specific terms. This training of school administrators uses less time and resources compared with the professional development and tools highlighted in the current research.

Conclusion

Closing the math achievement gap is tied to the success of mathematics for students in low-income urban schools. A way to support closing the math achievement gap is to focus on effective teaching practices. The literature offered several recommendations focused on effective teaching practices. One study indicated that observation systems must draw content experts within districts into the process of teacher evaluation, both for the sake of improving coherence in the messages transmitted to teachers and in order to leverage existing expertise around the improvement of instruction, and states and districts must design systems in which feedback from

observations is both accurate and usable in the service of improving instruction (Hill & Grossman, 2013).

Children who attend schools in low-income urban areas deserve to receive high-quality mathematics instruction. According to Goldberger (2008), one of the largest and most persistent inequities in the modern American education system is the math achievement gap along income and race lines. According to the California Assessment of Student Performance and Progress 2018 math test results, 29% of students across California are proficient in mathematics. When disaggregated by race, White students score 54% proficient, African American students score 20% proficient, and Latino students score 27%. When disaggregated further by race and economically disadvantaged versus not, White students who are considered economically disadvantaged score about the same as African American and Latino children who are considered not economically disadvantaged. More than ever, school districts in the United States are under immense state and federal pressure to improve student achievement and reform failing schools (Boston et al., 2017).

In some districts, leaders envision that school administrators will achieve improvement in teaching and learning through supporting teachers' development of classroom practices that provide rigorous learning opportunities for students (Boston et al., 2017). While the importance of administrators' role in supporting teachers' development of high-quality instructional practices is well documented (Coburn, 2003; Elmore, 2000; Fink & Resnick, 2001), less attention has been given to the knowledge and skills administrators need to effectively promote teachers' learning and instructional change in specific content areas (Boston et al., 2017). In addition, little is known about the feedback that school administrators provide to teachers following classroom observations or about how to train leaders to make that feedback more

effective (Mihaly et al., 2018). A tool that has a focused number of indicators, supports school administrators in providing content-specific instead of content-general feedback, and ease of training and implementation to support its use would serve school administrators in being able to conduct observations and feedback related to mathematics instruction. This study sought to add to the literature by exploring the use of a focused math observation tool to support school administrators with math content-specific knowledge and skills as a way to promote teacher learning.

CHAPTER 3: METHODS

Improving K–12 education requires a focus on making math classrooms better places for students. Students should learn math with understanding, see themselves as math students, and embody what is described in the NCTM math practices. Due to the disparities in math achievement between low-income urban schools and more affluent areas, there is work to be done, specifically focused on supporting the improvement of mathematics teaching and learning. The purpose of this study was to support administrators' math observations and feedback through use of a focused math observation tool, with the ultimate aim of improving teachers' classroom math practices and increasing the quality of math education for students.

In some districts, leaders envision that school administrators will achieve improvement in teaching and learning through supporting teachers' development of classroom practices that provide rigorous learning opportunities for students (Boston et al., 2017). This project sought to use the following as a frame: school administratorship and subject-matter content knowledge; classroom observations and feedback; and the use of observation tools, protocols, and a checklist during observations. First, for school administratorship and subject-matter content, I drew on the work of Spillane (2005). Second, to frame classroom observations and feedback, I utilized the work of Cobb and Jackson (2011) and Hill and Grossman (2013). Lastly, to frame the use of observation tools, protocols, and a checklist, I drew on the work of Perry et al. (2015).

The research questions to be addressed were the following:

1. What do school administrators say is the impact of a focused math observation tool on their practice and their teachers' practice?
2. What do school administrators report about the support they needed to use the tool?

Research Design and Rationale

The research questions were studied by using a qualitative data method, gathering data from school administrators regarding the impact of a math observation tool. The study sought to understand how the tool supported the administrators in providing teacher feedback and what support they needed to use the tool. The study collected school administrator data on the impact of use of the tool and to understand the support they reported they needed to utilize the tool.

A qualitative study (Creswell & Creswell, 2018) was appropriate for investigating the research questions because it allowed me to understand school administrators' perceptions of feedback provided to teachers through the open-ended questions that were incorporated into the interviews. It was helpful to look at school administrator data across different schools to see how similarly or differently the school administrators responded in regard to the usefulness of a math observation tool and feedback received. A qualitative data study was the best way to answer the research question because it provided an opportunity to gather school administrator responses in order to increase understanding regarding whether the use of a math observation tool had a positive impact on teaching practice. For this study, I did not choose to do a quantitative study, because it would have given the broad lens of how administrators view the tool, but it would have lacked the more specific lens to understand "in what ways" and "how."

Methods

Site and Population

The location for my study was Lots of Learning Unified School District (LLUSD), which serves under the umbrella of Enhance the Learning Management Organization (ELMO). I chose this site because the schools had been working to improve math instruction and the school

administrators within these schools had expressed interest in receiving help with supporting math instruction at their sites.

The participants I selected for my study came from four schools that generally serve the same population of students, were within the same community, and had school administrators who were within their first 5 years of being a school administrator. All school administrators at these schools varied in how they identified their level of comfort with math content. The schools also varied in terms of the average number of years that the teachers had been teaching. The reason I targeted these schools was to capture a wide range of years of teaching as well as variance in how comfortable the school administrators were with math content.

These schools were chosen because the network serves as a pilot hub to the district where innovations can be tested and potentially be used to influence the broader Lots of Learning Unified School District. During spring 2019, action research was conducted in these schools when the math observation tool used as a part of this study was originally created. The tool was piloted at a few schools, feedback on the tool was obtained from school administrators, and improvements of the tool were identified and planned to be implemented during the 2019–2020 school year. The math observation tool was developed as a part of my action research project during the 2018–2019 school year. This study extended the research because during the action research, the purpose was to develop a tool that focused on elements of high-quality math instruction that could be used to help school administrators norm around math observation look-fors. During the 2019–2020 school year, the math observation tool was used to drive school site math focus areas and became a functional tool for the purposes of goal setting, professional development planning, observations, and coaching at some school sites.

Data Collection Methods

The data collection strategy was administrator interviews. Both school administrators and teachers received training to use the math observation tool through network-wide trainings, school site professional development, and school site math observation cycles during the 2019–2020 school year. Classroom observations were conducted during the 2019–2020 school year, and data collection regarding impact of the tool was conducted during the 2020–2021 school year.

Data were collected through administrator interviews (n = 6). This involved a 30- to 60-minute interview with each school administrator. The types of questions on the school administrator interview protocol sought to collect information regarding the following: what administrators remember about use of the tool, strengths and limitations of the tool for them and teachers, whether the tool helped them in crafting feedback, and what teachers were saying about the tool. As a part of the interview process, I shared with school administrators feedback that they provided to teachers using the tool during the 2019–2020 school year to serve as a reminder of the type of feedback that was generated using the tool. The feedback that was shared was identified as feedback the school administrators crafted on their own or feedback that was co-crafted by the school administrator and the math coordinator (I served in the role of district math coordinator). I analyzed administrator interview data by trying to understand if and how the math observation tool supported them in generating teacher feedback. I did this by asking administrators questions to help understand this.

Positionality and Role Management of Researcher

I had worked with nine of the 10 LLUSD elementary schools under the umbrella of the ELMO for more than 11 years and had worked closely with the school administrators at these

schools around math observations and feedback. For several years, the administrators had asked for support when observing and providing feedback around math. Typically when we would observe math instruction alongside each other, as the resident elementary math expert for the ELMO, I assisted administrators with the language to use in the feedback that they provided to teachers. Given the expressed interest of the school administrators, I was confident that my study would be received well at the ELMO elementary schools.

The school sites and school administrators whom I asked to be a part of this study expressed interest. I made sure that they had a clear understanding of the study, the process of how the study would be carried out, and the steps I would take to ensure confidentiality. The school district had a process to get approval for studies within the district, and I followed the process and met the requirements.

I had preexisting relationships with the participants of the study, as I had worked with both the school administrators and the teachers in previous years. Because of the preexisting relationships, I was very intentional in managing my role as researcher for this study. I was transparent with participants that this study would be connected to my dissertation for my doctoral program. As the lead researcher, I was clear with participants that my role was to support school administrators in providing observations and feedback related to math instruction.

Because of my role, which had no positional power, both teacher and school administrator participants would defer to my ideas and influence. For the purposes of this study, my lack of positional power served well and allowed for the focused math observation tool to be placed at the center of the study. This helped to neutralize opinions and ideas and allowed for language used for observation and feedback to be grounded in the tool. As lead researcher, I regularly encouraged participants to remain grounded in use of the tool and encouraged

participants to use concrete evidence observed in lessons to discuss the presence of the elements specified in the focused math observation tool.

Ethical Issues

An ethical issue that I addressed in the proposal of my study was that I was the district math coordinator who supported the sites and the lead researcher of this project. Fortunately, my position did not hold any positional power, as I was not in a position to evaluate the teachers or the school administrators. In addition, I was not employed by the same entity, as both the teachers and the administrators were employed by the district and I was employed by the outside nonprofit organization that managed the schools. To address this issue, I reiterated to all participants that the purpose of the study was to support math observation and feedback through use of a focused math observation tool, so their honesty was highly valued in trying to support this area. For the purposes of this study, I kept the district, the management organization, and the school administrators anonymous by assigning pseudonyms.

Credibility and Trustworthiness

The credibility threat that I considered in regard to my study was the small sample size because I collected data from school administrators across only four school sites. To address this concern, I was transparent regarding the number of participants involved in the study. I also sought identifiable trends across the responses from all six school administrators to determine findings. Additionally, I was concerned about my own bias; I believed in the tool and have used it many times to further develop it and try it out with school administrators. To address this concern, I did member checks to see if others interpreted the data the same way I did.

Study Limitations

The limitations of this study included a small population size and the variance in the training that school administrators received around use of the tool. As a part of the interview questions, I did include questions that helped to determine how comfortable administrators felt using the tool, if they felt they had sufficient training in using the tool, and if there were instances in which the tool did not work well. To make the study manageable, the population site was only four school sites, which can limit the generalizability of the data collected. The six administrators received training to different degrees, so this could have affected how the tool was used.

Summary

This study sought to determine how the use of a math observation tool supported school administrators in providing teachers with feedback related to math instruction. Ultimately, the study was intended to identify key connections in feedback provided through use of a math observation tool and its overall impact in supporting the improvement of math instruction, in order to address the math achievement gap that exists in U.S. education.

CHAPTER 4: RESULTS

This chapter reports the findings of a qualitative research study that focused on six school administrators who used a common math observation tool to support observation and feedback of elementary teachers in mathematics. Interview data were collected during February and March 2021. Pseudonyms have been used to protect the anonymity of the participants in the study. All school administrators were asked the same set of interview questions to gain a deeper understanding of their experiences using a specific tool for observation and feedback of mathematics. I sought to address the following two research questions:

1. What do school administrators say is the impact of a focused math observation tool on their practice and their teachers' practice?
2. What do school administrators report about the support they needed to use the tool?

The qualitative analysis provided insight about a focused math observation tool leading to focused observations and feedback. Analysis of the data produced two principal findings in response to my original research questions. First, participants affirmed that a focused math observation tool can support focused feedback for math instruction. Second, participants shared that the support they needed to use the tool was collaboration across the process with other observers. In the following sections, I discuss my findings in greater depth.

Findings for Research Question 1

Research Question 1 was "What do school administrators say is the impact of a focused math observation tool on their practice and their teachers' practice?" School administrators reported that the impact of a focused math observation tool on their practice and their teachers' practice was supporting focused feedback for math instruction. The two main ways they reported that the tool supported focused feedback for math instruction included (a) the tool served to

support shared expectations and (b) the tool's focus on only two or three elements made it comprehensible.

A Focused Math Observation Tool Supported Shared Expectations

First, the tool served to support shared expectations. Joseph shared, "I'm a strong proponent of having some clear expectations so that we're all having the same understanding, the same language, the same, um, ability to connect the practices." Joseph indicated that having clear expectations allowed for developing shared understandings and ways of doing things. Lorrel spoke more specifically about the look-fors and how that also supported the feedback given:

> And so I think that what was really cool about the tool was that we went in specifically looking for specific skills or specific, uh, strategies that teachers utilize, and that would allow us to be able to give them actionable feedback on those areas that we were looking at. 'Cause we had already prefaced this observation tool with that. This is what we were going to be looking for. We had gone over the math practices with them and told them that we would be looking for them and that they would be getting feedback from the observation team.

In this example, the administrator shared that they knew specifically what they were going to be looking for going into the observation, that they had gone over the math practices with teachers prior, and that they knew they would be getting feedback around those specific areas.

Other administrators similarly described how the shared expectations being established within the tool allowed the observer not to focus on looking at so many things at one time. Naema said,

> It just made it really easy to craft when I'm only looking at certain things right, I get stuck if you tell me okay look at all this and now come up with one thing you think the teachers . . . can elevate on but with this it is like . . . I have two things to choose from you know, right, that whatever I didn't see or I felt like they could be better at or elevate at. To me, that was easy to pull out, then. I like it just because it narrows my thinking.

Naema noted that the tool looks at only certain aspects, and that it was helpful to have fewer items to choose from to provide feedback about. Kalim stated,

> We use that very same tool to, um, provide feedback to teachers after each observation. I also remember that this tool was used to allow us to have the same language, you know, we could talk about the observations with the same lens and from the same lens.

In this example, the administrator acknowledged that the tool allowed those using it to have the same language and observe using the same lens.

Focusing on Two to Three Elements Made the Tool Comprehensible

The second finding was that the observation tool's focus on only two to three elements made it comprehensible. All administrators stated that the narrow focus allowed the observer to home in on smaller chunks and a couple of practices at a time. Sara stated,

> I think eight would be a little, a lot overwhelming, too overwhelming for me as an observer and for the teachers as the receiver of feedback. Um, so I definitely think that's helpful [referring to the tool's focus on only two or three teaching practices]. Um, I don't see it as limiting because I think, you know if you want to be effective, you just have to, um, you know, kind of support people in smaller chunks. You can't improve them [teachers] in every area all at once. So you kind of . . . have to take pieces and say, "We're gonna start with these teaching practices, these math teaching practices. And then as we kind of, um, you know, continue to develop and master it then we'll move on and go to the next one or two."

Sara indicated that focusing on eight teaching practices at one time is too much and that focusing on only two to three allowed the teachers to continue to develop and master those first before moving on to the other teaching practices. Joseph stated,

> So this is my perspective, um, that is that there can be 20 math practices, um, and if you try to implement them all, no one makes progress, right? So when you focus on less, um, you are able to actually leverage that information to then, uh, bleed into, um, the other, um, areas.

According to Joseph, if you focus on too many practices at one time, no one makes progress. The administrator also observed that as teachers get good at the few practices that they are focusing on, it will eventually lead to improvement in other areas.

One unique response from an administrator was that the tool allowed him to identify common practices across classrooms because the tool focused on observing particular areas.

Joseph described how he was giving feedback to his fifth-grade team and how he "ended up being able to copy and paste the feedback because they did very similar things" when using the tool to describe what was observed and "where you all need to grow." The administrator identified that this "made the feedback even easier for me" because feedback provided to one teacher could be utilized for another teacher. The administrator acknowledged, "I may have tweaked it just a little here and there because there might be a little difference from what I was seeing in the classrooms," but said that the tool still made crafting feedback easier.

How Administrators' Knowledge of Mathematics Supported Use of the Tool

Although the findings provide some insights into nuances and issues around a focused math observation tool, there were also some differences in administrators' responses in relation to how their knowledge of mathematics supported them with using the tool. Administrators who considered themselves to have a lot of knowledge in mathematics reported that their knowledge helped them to better use the tool. Administrators who considered themselves to have limited knowledge of mathematics reported that the tool was still accessible and that they could speak to the mathematics observed despite their limited knowledge. Sara said the tool "deepened my knowledge of how math should be taught and what to look for as an administrator, which is important when observing and providing feedback." Kalim said, "It stretched me, it challenged me to become more familiar with the mathematical practices and the standards" by seeking professional development opportunities "like the trainings that the teachers were going through." This administrator particularly stated that it made them want to seek out opportunities to better understand the mathematics. Math content knowledge building takes a lot of work over time, and the tool served as a vehicle to support content knowledge growth. For example, Naema shared that "it helped immensely when it came time to now look at the math practices," because "if a

person doesn't get like some true math training," it makes it difficult to understand what is being observed.

Challenges With Use of the Tool

Administrators did report that some elements made using the tool challenging. Sara stated, "To make the tool even better would be maybe having examples of what the items mean or something." Naema said one area of improvement was related to how teachers and administrators engaged with the tool with each other together when debriefing after an observation: "Maybe if they [teachers] know there's an opportunity to disagree or agree, but in a collegial manner because we're speaking to exactly what happened," it would create space for teachers to more explicitly offer their opinions. Deon also talked about teachers' debrief conversations: "Maybe an area to strengthen would be where if we give them this feedback, or even if I sit down with them [teachers] they have an opportunity to have a copy [of the tool and the observation notes captured] and then an area to write in . . . to be able to note take or think about how they can push their thinking to push their students in the future." Joseph described a situation where "I'm going in just to do a quick visit" and trying to use the tool for the observation, but "I may not always be able to use the tool or it might be difficult to find a practice that they use within that quick visit" because the practices being observed did not occur in that particular observation segment. The administrator questioned whether the tool could be used in this type of situation. Kalim highlighted a limitation in capturing notes during an observation:

> In terms of trying to jot down evidence of everything that I saw, that was probably the challenge, that I had. Trying to focus and create notes around everything that I saw first, and then going back to categorize where it was landing . . . where each of my evidence was landing. So, until I started doing it more and more, then I got more, uh, familiar with it.

Kalim described challenges with capturing notes on everything, knowing how to connect the evidence to the practices with the tool, and being unfamiliar with the tool. Joseph focused on another challenge, which was "not understanding each of the elements and what that actually looks like in practice," which can make it difficult to conduct observations using the tool. Connected to note-taking challenges, Lorrel said one limitation "might be if someone's not used to scripting, they might not use the tool effectively," which could affect evidence collection during an observation. Lastly, Joseph named a challenge related to not observing the practices at all:

> Um, the only time I think is limiting or difficult to craft feedback is when you can't find the practice to match the element and you're like, wait, what did they do? Um, I have one of those, but then I was able to actually still find a piece of an element that was evident in the classroom and then just lead from there. So it still gave me a place to give feedback, but I think that's the most challenging. It's not necessarily the tool, but again, if I was only in there for maybe 5 to 10 minutes, and none of that, none of the practices were yet done. Um, how do I pull information and get feedback there?

This limitation is important to consider, as it would affect being able to talk about the observation through the lens of the shared expectations and outcomes established within the tool and it would affect the feedback provided to the teacher regarding the observation.

Summary

What do school administrators say is the impact of a focused math observation tool on their practice and their teachers' practice? Administrators said that the focused math observation tool supported focused feedback because the tool served to support shared expectations, which guide the feedback that teachers are provided. In addition, the grain-size focus of only two to three teaching practices made it comprehensible. While the administrators reported ways that the tool supported them, administrators are still looking for ways to support their conversations with teachers and note taking during an observation.

Findings for Research Question 2

Research Question 2 was "What do school administrators report about the support they needed to use the tool?" School administrators reported that collaboration across the process with other observers supported them with use of the focused math observation tool. More specifically, the support they needed to use the focused math observation tool was side-by-side support with the district math coordinator and opportunities to collaborate with school leaders around observation and feedback.

All administrators stated that the math district coordinator helped them to use the tool. Sara highlighted classroom visits, which were part of the professional development, as a valuable part of the learning experience. She particularly pointed out the just-in-time moment "whispers" on "discussions and conversations we should be seeing" were extremely helpful. Similarly, Kalim shared the value of discussion right after classroom observations: "Each classroom observation supported" her because using "the same tool to provide feedback" allowed her to "see if we were seeing the same thing."

In addition to articulating the value of classroom observations, the administrators spoke about the elevation process as a critical component of increasing teacher efficacy. For example, Naema pointed out "it was extremely helpful because I don't know that right off the bat, because I second guess myself a lot" when observing math lessons specifically. The district math coordinator "walked us through" the process of crafting elevation opportunities, and it was helpful "to hear and see" how the district math coordinator processed the elevation opportunities. Having the process structured in this way "made it so it wasn't too scary."

Another way that the district math coordinator was helpful to administrators was that the district math coordinator helped them to identify missed opportunities. Lorrel stated that the

district math coordinator "called something out when I was not recognizing a certain strategy" and this "lends for a more critical eye on something that they might've caught that I missed, or vice versa." This particular administrator noted that "just observing with someone else" was helpful.

Lastly, in addition to missed opportunities, the district math coordinator helped the administrators set a focus for their observations. Deon stated, "[The district math coordinator] really helped us see and focus around what our observations were going to be" before going into the classrooms to observe." Setting the focus for observation "especially in seeing a lot of trends across classrooms" helped them to "be more intentional" when using the tool.

Collaboration With School Leaders

Administrators reported that opportunities to collaborate with school leaders around observation and feedback supported them in use of the observation tool. More specifically, administrators valued discussions with other school leaders about the observation and feedback. Lorrel stated,

> Being able to co-observe with [the district math coordinator] or with another administrator and being able to debrief afterwards on the use of it. Maybe even cross-reference each other's notes, who caught what then, you know, and I think that's always helped me when I'm observing things also. So I learned from my peers. And, I learned, and then also, um, sometimes my note taking might not have captured everything I wanted to, so this allows me to focus on taking more copious notes so that I'm able to later on reference to exactly what I saw.

In this example, the administrator named co-observing, co-debriefing, and comparing observation notes as specific ways to collaborate with school leaders about observation and feedback. Joseph also referred to conversations about the tool with others:

> So our conversations, our practice and using the tool, right? Let's go in, let's use it, let's dialogue about it. Um, let's debate about it 'cause we didn't always agree but we were like, "Well, let's talk about it, right?" So it's just the conversations. And I think the more

> that you use it, the easier it becomes to actually use it as a beneficial tool for the whole school.

Joseph highlighted conversations by describing them as dialogue, debate, and the opportunities to have conversations about what they agreed and disagreed about. The administrator also identified that the tool becomes easier to use with practice over time.

Additional Findings

A few other nuances shared by administrators related to professional development and practice crafting feedback. Sara specifically referenced professional development opportunities that focused on use of the tool:

> The [district math coordinator] professional development—the ones . . . where before we would go into the classrooms, [the district math coordinator] would say, "Okay, we're looking for this." And then we would come out [of the classroom] and [the district math coordinator] would say, "What did you see for these areas?"

Sara said she valued professional development that included classroom observations where discussion of the look-fors occurred prior to observing the classroom. Kalim shared that it was helpful for the administrators to craft feedback on their own first and then come together with the district math coordinator to identify common trends and to see if they saw similar things in the observation:

> I would also say the fact that we gave feedback . . . . We did the feedback by ourselves and then we met in order to discuss—to see if we can come up with some common trends . . . or we would see if we came up with the same feedback.

What the administrator was describing related to the value of calibration. All administrators did not explicitly call out professional development and calibration, but these nuances are worth considering because both described processes that involved having conversations with others about the observation and/or the feedback.

CHAPTER 5: DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS

To aid in the improvement of instruction, the feedback principals provide from observations should be content specific, reflecting high standards for content and pedagogy in the subject area and consistent with instructional improvement initiatives in the school and/or district (Cobb & Jackson, 2011; Nelson & Sassi, 2000). My study used interviews conducted with administrators to understand how a focused math observation tool could be used for observation and feedback to ultimately influence administrators' and teachers' practice. In addition to understanding the impact of the tool on administrators' and teachers' practice, the study also sought to understand the supports administrators needed to be able to use the tool. This study builds on previous studies that explored how to support school leaders in math observations and feedback as well as others that explored the use of checklists, protocols, and tools for classroom observations. In this study, the administrators who participated affirmed that a focused math observation tool supports focused feedback, and they said that the support they needed to use the tool was collaboration across the process with other observers.

In order to understand how the tool is positioned as it connected to the findings, it is important to note that the math observation tool used in the study was developed as a part of an action research project during the 2018–2019 school year. This study extended the research because during the action research, the purpose was to develop a tool that focused on elements of high-quality math instruction that could be used to help school leaders norm around math observation look-fors. During the 2019–2020 school year, the math observation tool was used to drive school site math focus areas and became a functional tool for the purposes of goal setting, professional development planning, observations, and coaching.

Both school leaders and teachers received training to use the math observation tool through network-wide trainings, school site professional development, and school site math observation cycles during the 2019–2020 school year. Classroom observations using the tool were conducted during the 2019–2020 school year, and data regarding impact of the tool were collected during February and March 2021. In addition, classroom observation notes of school leaders collected during the 2019–2020 school year were used as a reference during the interviews conducted.

The math observation tool was built using the eight National Council of Teachers of Mathematics teaching practices. These teaching practices were the backbone of the tool. The tool brings various frameworks together to aid teachers and school leaders in seeing the direct connection with a variety of frameworks that they may have worked with in the past. The various frameworks connected were the Teaching and Learning Framework (Danielson, 2014), the Standards for Math Practice (Common Core State Standards Initiative, 2010), Math Quality Index (Hill et al., 2011), and curriculum-specific language. The tool included language to describe the teaching practice as well as example evidence to further define what the practice looked like. The language was designed to help teachers know what it looks like in practice to support delivery of math and instruction and to assist observers of math instruction with naming and describing the practice. The hope was that the common language used around the mathematics teaching and learning throughout planning, coaching, observation, feedback, and professional development would lead to improvements in how math instruction was supported in school buildings in an effort to improve the teaching and learning of mathematics in the schools that were being served.

This chapter first discusses the findings that support recommendations administrators, schools, districts, and school leadership entities might consider when designing structures to support administrators with observations and feedback. The recommendations for each of the findings are based on what was understood from the study participants who elevated some of the nuances and issues involved in using the tool. Next, the chapter addresses limitations of this study. Lastly, the chapter offers possible future research opportunities to build upon this particular study.

Discussion

The observations based on the findings from this study are as follows:

1. District math coordinators could be a support to help administrators with math observations and feedback.
2. A focus on a few look-fors can make math observations easier.
3. In-classroom professional development might be a way to provide administrators with concrete examples of what certain practices look like "in the moment" while conducting teacher observations.
4. Post-classroom professional development that includes collaboration between administrators might help administrators make sense of the math observations.
5. Space provided to identify missed opportunities can be a helpful part of the observation and feedback process.

The findings are discussed in more detail in the following sections.

District Math Coordinator Support

First, the findings indicated that the district math coordinator plays a critical role in supporting administrators with the observation and feedback process. The administrators

interviewed regularly identified the supports they received from the district math coordinator and how the support helped them to use the tool. This is consistent with the literature, as highlighted in a study by Boston et al. (2017) that focused on supporting principals as instructional leaders in mathematics in middle school; it identified the importance of school leaders engaging math coaches and department chairs as part of the organization structure as a potential way to sustain change over time. It is important, however, that district math coordinators have not only math content knowledge but also instructional expertise. If math coordinators do not offer a strong perspective and approach to math instruction coaching, they may not be able to provide an effective level of support.

Narrow Focus on Specific Observations

Administrators said they appreciated focusing on a few look-fors as a way to ease the load of observations. Having a narrow focus is a way to establish clear expectations and outcomes and keep what is being observed narrow enough to aid in being able to see it, understand how to see it, and provide feedback regarding it. Prioritizing the critical features of the observation tool is important, and the narrowness of breadth (i.e., grain size) of the observations should be dictated by the overall purpose (Hill & Grossman, 2013). Hill and Grossman also discussed getting the right grain size as a challenge for any observation instrument: The more specific the grain, the more specific the feedback for teachers can be. The feedback provided by administrators was consistent with the literature in that the administrators discussed the language of the tool in terms of its ease of use, the small number of areas that are focused on, and how it supports connecting practices. Grain size is an issue in many of the tools referenced in the literature because they look at many areas instead of a small grain size.

In-Classroom Professional Development

In-classroom professional development provides administrators with concrete examples of what the practices look like "in the moment" while conducting teacher observations. This finding is important and worth paying attention to because a feature of the tool was that it provided examples of certain practices principals might see. The fact that multiple principals still identified concrete examples as something that they needed speaks to the importance of the real-time in-the-moment examples as something that would be helpful in supporting administrators with understanding what certain practices look like. According to Hill and Grossman (2013), to fulfill the potential of leveraging observation systems to support teachers in improving practice, the system must make available subject-specific observation instruments that provide concrete guidance on desirable teaching practices. The administrators identified the tool's use of common language and look-fors on specific skills and strategies. This is consistent with the literature's identification of concrete guidance on desirable teaching practices.

Additionally, in a study that investigated how principals can be supported to develop the knowledge and skills necessary to support high-quality teaching and learning in mathematics, Boston et al. (2017) argued that an essential component of knowledge and skill required by principals is the ability to differentiate between high- and low-quality instruction within a specific content area. The tool's focus on mathematics teaching practices supports the essential component of knowledge and skill described in the literature.

Post-Classroom Professional Development

Post-classroom professional development that includes collaboration between administrators helps administrators make sense of the math observations. Again, multiple principals identified that having conversations about the observations afterward was helpful for

their processing. The post-classroom professional development opportunities should include support around (a) identifying evidence to support practices observed and (b) crafting teacher feedback. Boston et al. (2017) proposed that principals need to be able to (a) identify the differences between high-quality and low-quality curriculum and instruction, (b) communicate expectations for high-quality instruction to teachers, and (c) put on press for high-quality instruction, for example through feedback that provides support and accountability for high-quality instruction.

Space to Identify Missed Opportunities

Lastly, the space to identify missed opportunities is a helpful part of the observation and feedback process. Administrators said that it was helpful to talk through the observations with others because it helped them to know if what they were looking at was correct and to identify when they missed something. Such conversations can happen during post-classroom professional development opportunities for administrators that include collaboration with other administrators.

Recommendations

Two main recommendations emerged from the findings in this study: (a) Use tools that focus on a few practices, and (b) include concrete examples of practice. These recommendations are discussed in more detail in the following sections.

Use Tools That Focus on a Few Practices

The first recommendation, to use math observation tools that focus on only a few practices at a time, is connected to ensuring that the administrators in charge of math have a deep understanding of effective math instruction. Deep understanding of effective math instruction is separate from deep understanding of content knowledge. As argued by Fink and Resnick (2001),

principals should have enough content knowledge to enable them to judge the quality of instruction, without needing to be content specialists (Boston et al., 2017). Math content knowledge is something that can be built over time and should be built over time for observers of math instruction, but deep understanding of effective math instruction can occur with tools provided to administrators that support the look-fors. This can be developed by using observation tools that focus on observing only two to three practices at a time, to allow administrators to strengthen their observation and feedback practices in specific areas.

The use of tools that have only two to three practices being observed to support administrators with observations and feedback practice can help to deepen understanding of effective math instruction. Teachers should also be involved in this process. Having teachers engage with the tool and pay attention to what makes for strong math discourse in the classroom ultimately improves their lesson planning and increases the quality of instruction. The more both administrators and teachers engage with same tool, the more the teachers' practice overall is likely to improve. In this way, the training moves both administrators and teachers in the same direction and supports their conversations—they can hone in on specific areas for improving practice.

Include Concrete Examples of Practice

The use of concrete examples of practice can be incorporated through (a) in-classroom professional development opportunities for administrators that include "in-the-moment" identification of practices that align with agreed-upon look-fors to be observed, (b) post-classroom professional development opportunities for administrators that include collaboration with other administrators, (c) space in observation and feedback processes to include the identification of missed opportunities aligned to the specific practices being observed, and (d)

inclusion of an observer who has math expertise in district and school site approaches to support administrators with math observation that provides a gradual release structure.

Administrators repeatedly identified in-classroom professional development opportunities as being an essential part of making the math observation tool useful. The "in-the-moment" identification of practices that aligned with agreed-upon look-fors strengthened the administrators' understanding of high-quality math instruction and demonstrated how the math observation tool can be used effectively in a classroom setting. Administrators also identified post-classroom professional development conversations as opportunities to support their use of the math observation tool. Collaboration with supportive colleagues such as the district math coordinator and other administrators builds a community of learning in which administrators can share with and learn from one another, instead of functioning as independent silos of authority with little input. An additional component of providing concrete examples can be including space in the observation and feedback processes to both align around practices observed and also identify missed opportunities aligned to the specific practices being observed.

To support the administrators in the identification of high-quality practices both inside and out of the classroom, the inclusion of an observer who has instructional math expertise is recommended. In this study, the observer was the district math coordinator. This expert should have experience in district and school site approaches to support administrators with math observation. The observer can assist the administrators with identifying teaching practices and distinguishing between high- and low-quality math instruction. This process should include a gradual release to support building capacity over time.

Limitations

Limitations of this study included the population, varied training of use of the focused observation tool across administrators, COVID-19/pandemic, and the tool itself. The population size of this study was six administrators, all a part of the same network. The small sample size of this population provided insights into this topic, but a broader study that includes a larger population size would be needed to validate and confirm the findings identified in this study in order to make them more generalizable. In addition, the six administrators who were a part of this study all received the same baseline training in use of the tool but varied in how often the tool had been used at each site. Lastly, the COVID-19 pandemic that began in March 2020 shifted the data collection method of this study. Originally, the study would have included in-classroom observation using the tool, but this had to change due to schools being in remote instruction from March 2020 through April 2021.

Future Research

The future research possibilities emerging from this study include (a) studying the impact of simplifying "look-for" concepts, (b) studying the impact of different professional development structures to understand the range of efficacy on administrators' ability to provide productive feedback that influences practice, (c) identifying high-leverage strategies to increase efficacy of the observation feedback loop, and (d) exploring teachers' perspectives and experiences using the tool.

First, future research that studies the impact of simplifying "look-for" concepts can be critical to what administrators observe in math instruction and how administrators approach math observations. Tools reviewed in the literature all had many elements and practices that were being observed. If the tools were not being used in their entirety, portions of the tool were used

in an observation segment. Connected to this, the tool that administrators used as a part of this study focused on a subset of NCTM math teaching practices instead of all math teaching practices. In this study, principals identified that having a smaller number of look-fors made use of the tool comprehensible, and the research on various tools, protocols, and checklists identified that a drawback of the tools was that they had too many look-fors. Future research that studies the impact of simplifying "look-for" concepts can help administrators in being able to learn, practice, and build capacity around identifying high-quality teaching and learning in math. Simplifying may have both benefits and drawbacks, however, so future research could also examine the unintended effects of reducing the number of concepts being observed.

Second, future research that studies the impact of different professional development structures in order to understand the range of efficacy on administrators' ability to provide productive feedback that influences practice can be critical to what sorts of professional development opportunities are offered to administrators. Understanding the impact of structures such as video observations, live in-classroom observations, and rehearsals and which structures are more or less impactful will help administrators provide productive feedback that positively influences changes in teacher practice. There is a need to further develop understanding of the strategies that are high leverage that can increase efficacy as well. In addition, future studies may focus on intentional professional development design with sustained outcomes in the areas of math instructional delivery knowledge, content knowledge, and observation and feedback support. This will also help the field fine-tune the types of professional development opportunities that administrators should engage in.

Additionally, future research could consider the perspectives and experiences of teachers when administrators use the math observation tool in their classrooms. Such research could

evaluate whether teachers find the recommendations and feedback given to them useful and actionable. Future studies could also examine the extent to which the feedback generated by the math observation tool leads to meaningful changes in teachers' practices. Influencing change in classroom teaching practices is the ultimate aim of the math observation tool because improved instruction results in stronger educational outcomes for students, which is a major factor in reducing inequities in historically disadvantaged communities.

Final Remarks

The conversations that result from use of the math observation tool should not be primarily evaluative of teachers' performance. Rather, the conversations should lead to a shared understanding of effective instructional practices, both informed by and informing the school's culture of learning. This math observation tool can be used to create a shared language with a common set of understandings that ultimately result in a strong, collaborative learning community. Administrators are instructional leaders, but they should not be independent points of authority; they should have their own communities of learning that support them in this role. Expert support and collaboration were shown to be key components for school administrators using the math observation tool. Administrators identified conversations with the district math coordinator as well as conversations with other administrators as being critical to the efficacy of the tool. The collaboration opportunities included structured professional development, structured observations, and even unstructured conversations about the observation, feedback, and the tool. Regardless of the collaboration structure, practice and use over time are important to improve the observations conducted and the feedback crafted.

The intention of the math observation tool used in this study is to inform and improve conversations between administrators and the teachers being observed. The purpose of the tool is

not to focus change on a single teacher, but for educators to learn together to understand and implement strong math practices through a shared language developed in collaboration. Asking traditionally trained education leaders to look beyond objective evaluation is not simple; in using this math observation tool, administrators must pivot from traditional scripting evaluations to focusing on more holistic concepts of practice. But the potential to improve instructional practices, and ultimately address the education inequities affecting students in disadvantaged communities, makes the effort well worth it.

APPENDIX A: SCHOOL ADMINISTRATOR INTERVIEW PROTOCOL

(Revised-October 2020)

The research questions addressed are:

(1) What do school administrators say is the impact of a focused math observation tool on their practice and their teachers' practice?

(2) What do school administrators report about the support they needed to use the tool?

Introduction: I am conducting a study that seeks to support math observation and feedback. I record interviews because it's so much easier than trying to take written notes about our conversation. The audio file will be used for transcription. All data collected will be in support of the study. Do I have your permission to proceed with the audio recording?

Type of Question	Questions
Opening	Tell me your name and your role.
Introduction	Last year, we used an observation tool to observe math instruction. Here is a copy of the tool and an example of the feedback that was provided to a teacher at your site using the tool. The feedback here was either co-crafted by us together, was crafted by me only, or was crafted by you only. What do you remember about the use of the tool with teachers?
Follow-up	Now I will be asking about both strengths and limitations of the tool. What do you think the strengths and limitations of the tool were for you? If the school administrator only shares strengths, ask the following: Probing Question: Were there any limitations of the tool for you? If so, please describe.
Follow-up	What do you think the strengths and limitations of the tool were for your teachers?

	If the school administrator only shares strengths, ask the following: Probing Question: Do you think there were any limitations of the tool for teachers? If so, please describe.
Follow-up	Can you talk about how you used or didn't use the bullets listed under each math teaching practice?
Follow-up	What do you see as helpful or limiting about the tool's focus on two math teaching practices?
Follow-up	What do you see as helpful or limiting about the focus on note-taking during the observation?
Key	Did the focused math observation tool help you in crafting the feedback after conducting a math observation? If so, how? If not, why not?
Key	We don't expect administrators to be experts in all content areas. Most administrators do not consider themselves math people. In what ways did your knowledge of math play a role in your use of the tool?
Key	What supported you as you learned the use of the tool?
Key	What would you consider to be something that you still need help with in the use of the math observation tool and crafting feedback to teachers?
Key	What are you hearing from teachers about use of the tool?
Key	In what ways do you perceive teachers are changing or not changing their practice as a result of use of the tool?
Ending	Is there anything else you want to tell me about use of the tool?

APPENDIX B: ES MATH OBSERVATION TOOL

Math Observation Tool

Teacher: **School:** **Grade:** **Date:** **Time:**
Standard/Objective:

Framework Alignment: Delivery of Instruction

Math Teaching Practice-MTP (NCTM, 2014) Look Fors	Evidence
MTP4: Facilitate meaningful mathematical discourse. (SMP2, 3, 6, 7, 8) TLF-3b2 • Helps students share, listen, honor, and critique each other's ideas. • Helps students consider and discuss each other's thinking. • Strategically sequences and uses student responses to highlight mathematical ideas and language. Observed during: F A CD SD ***MTP5: Pose purposeful questions.*** (SMP1, 3, 7, 8) TLF-3b1 • Questions make the mathematics visible. • Questions solidify and extend student thinking. • Questions elicit student comparison of ideas and strategies. • Strategies are used to ensure every child is thinking of answers. Observed during: F A CD SD	*Example Evidence: Students presenting solution methods publicly, asking mathematical questions, describing the meaning of a term, offering an explanation, discussing solution methods, commenting on the reasoning of others*

F=Fluency, A=Application, CD=Concept Development, SD=Student Debrief
Timeframes of Math Block- F:5-15 min; A:15-20 min; CD:20-40 min; SD:5-10 min
Standards for Math Practice(SMP): Overarching Habits (1&6), Reasoning and Explaining (2&3), Modeling and Using Tools (4&5), Seeing Structure and Generalizing (7&8)
TLF=Teaching and Learning Framework

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