SCHOOL LEADERSHIP FOR DATA USE:

EXPLORING HOW PRINCIPALS SHAPE THE FUNCTIONING OF DATA TEAM MEETINGS

A Capstone Project

Presented to

The Faculty of the School of Education and Human Development

University of Virginia

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

---

by

Jane N. Patrick, B.A., M.Ed.

May 2021

Jane N. Patrick
Curriculum, Instruction, and Special Education
UVA School of Education and Human Development
University of Virginia
Charlottesville, VA

APPROVAL OF THE CAPSTONE PROJECT

This capstone, *School leadership for data use: Exploring how principals shape the functioning of data team meetings* has been approved by the Graduate Faculty of the School of Education and Human Development in partial fulfillment of the requirements for the degree of Doctor of Education.

_____
Tonya Moon, Ph.D., Chair

_____
Catherine Brighton, Ph.D., Committee Member

_____
Natasha Heny, Ph.D., Committee Member

_____ Date

Abstract

The expectation that teachers will engage in data-driven decision making has become widespread in both research and practice. Alongside this expectation, school administrators such as principals have been cast as responsible for supporting the organizational and political factors that can foster data use at the school level, such as by establishing norms and policies for data use. One such organizational factor is ensuring dedicated time for data use through, for example, structured data team meetings. Though principals often attend data team meetings, relatively little is known about how they actually shape what happens during these meetings. In this capstone, I highlighted macro- and micro-problems of practice focused on developing a deeper understanding of how school-level administrators direct data use at the school level. Specifically, I explored how school principals shaped the functioning of data team meetings. To support this exploration, I conducted a comparative case study of two rural elementary schools engaged in data use. Using archival data including field observations of data team meetings and interviews with principals, this study's findings revealed notable similarities in the data use that occurred during both schools' data team meetings and in the organizational and political factors that informed the functioning of these meetings.

Keywords: data-driven decision making, data use, data teams

Table of Contents

LIST OF FIGURES

LIST OF TABLES

DEDICATION

To my parents and my sister, for always believing.

ACKNOWLEDGEMENTS

I give thanks to you, O Lord my God, with my whole heart,

and I will glorify your name forever (Psalm 86:12).

There are many people whose support, encouragement, and guidance made this degree possible. I am deeply grateful for all of them.

Dr. Moon, from the beginning of this program, you challenged me to be my best self. Thank you for offering me opportunities to grow and for providing me the support I needed to experience success. Your guidance through this capstone process was invaluable to me, and I am grateful to have worked closely with you throughout this process.

Dr. Brighton, thank you for your unwavering support for my growth and development as a student, a researcher, and a person. I am grateful for the constant encouragement and enthusiasm you showed for my education. Thank you for all the ways you helped see me through this journey.

Dr. Heny, your passion for English education inspires me to be a better educator. Thank you for modeling how to blend research and practice to meet the needs of all students.

Dr. Mintz, you were the first person to ask me if I had considered pursuing a doctorate. Thank you for inspiring me to begin this journey and for the many lessons you taught me during my M.Ed. program.

To past and present members of the **Project Kaleidoscope** research team: I am grateful for all the lessons I learned working with you. *Kerri Mahoney*, thank you for all the guidance you provided to me throughout this program. *Alicen* and *Leighann*, you have been a source of strength and solace to me in every step of this journey. Thank you for your feedback and your friendship.

To **Sam**, who was always ready with cups of coffee or pints of ice cream: you embodied 1 Corinthians 13:4-8 throughout this process. Thank you for everything.

Manuela, you believed I could do this before I did. Thank you for being my person.

Marley, thank you for marathon FaceTime calls. You were always willing to listen to my half-formed ideas, my frustrations, and my fears. I am so grateful for your friendship.

Finally, thank you to **my family**. *Mom and Dad*, you were my first teachers, and you instilled in me a love of words. This capstone would not exist without your unflagging love and support. *Mary*, throughout my life you have modeled bravery, integrity, and humor. Your influence in my life is on every page of this capstone. I love you all.

Chapter 1: Introduction

Background of the Problem: Enacting Data-Driven Decision Making

Data use for instructional improvement has become a focus of educators and policymakers across the United States (Farrell, 2015; Jimerson, 2014; Jimerson & Wayman, 2015). With the advent of the school accountability movement No Child Left Behind in 2001, teachers experienced an increased emphasis on data-driven decision making (DDDM) (Datnow & Hubbard, 2016). Defined as the use of student data to make instructional decisions (Gummer & Mandinach, 2015), DDDM calls on school systems to collect and interpret a wide variety of student data in order to inform their instruction. In subsequent years, the Every Student Succeeds Act of 2015 further codified DDDM expectations, expounding on the roles of school leaders to support teachers' data use (Williams & Welsh, 2017). In sum, as Jimerson (2014) explained, the question is no longer *whether* teachers will use student data, but *how* they will use it.

Ample research supports the use of student data to inform instructional decision making. A primary motivator for data use has been that DDDM can improve student learning outcomes and narrow the achievement gap (Mei Kuin Lai et al., 2014; Schildkamp, 2019). Yet the benefits of DDDM are not limited to improving test scores. Rather, DDDM supports equitable learning opportunities in which the needs of all students can be carefully considered and accounted for throughout a teacher's instructional decision making (Gummer & Mandinach, 2015). For example, Park and Datnow (2017) found that data use can shape teacher decisions regarding differentiation, particularly related to flexible grouping of students according to their learning needs. Further, data use – especially data use that includes myriad forms of data on all students –

can lead teachers to uncover misconceptions and address potential deficit beliefs they themselves may hold about students (Datnow & Park, 2018). Additionally, data use can function as a tool for curricular improvement (Schildkamp & Kuiper, 2010) and can support long-term instructional change (Jimerson & Wayman, 2015). Thus, research suggests that data use is ultimately an issue of equity, not merely an approach to improve student performance outcomes.

The widespread emphasis on data use has been met with both challenges and concerns. At times, unclear state or local policies around data use have allowed its purpose to be obscured, resulting in its misuse as a potentially punitive approach for accountability rather than a process supportive of equitable teaching and learning (Dunn et al., 2013; Means et al., 2009). Compounding this concern is the complexity of DDDM (Coburn & Turner, 2011; Gummer & Mandinach, 2015; Schildkamp & Poortman, 2015). Analyzing, sense-making, and forming instructional decisions based on student data calls on significant teacher knowledge and skill (Gummer & Mandinach, 2015). Yet many teachers have not had sufficient opportunities to develop their capacity for DDDM (Farrell, 2015; Jimerson, 2014; Jimerson & Wayman, 2015; Lasater et al., 2019). As a result, teacher engagement with student data may be limited (Dunn et al., 2013; Jimerson & Wayman, 2015; Means et al., 2009), and the promise of DDDM may be obscured.

Macro-Problem of Practice

Across the United States and globally, researchers and policymakers have worked to understand how best to support teachers' data use (Hubbard et al., 2014; Jimerson & Wayman, 2015; Schildkamp & Poortman, 2015). To that end, many DDDM initiatives include establishing protected time for collaborative data use, most often enacted in the form of data team meetings or professional learning communities [PLCs]. A number of procedural models for data use (e.g.

Coburn & Turner, 2011; Gummer & Mandinach, 2015; Schildkamp et al., 2016) include an iterative process of inquiry, analysis, and interpretation, and action. During data team meetings, this process is taken on via a collaborative effort, often by some assortment of content-area or grade-level teachers, instructional specialists, school-level administrators, and others (Schildkamp & Poortman, 2015). Ideally, this team is constructed purposefully in order to support all members' during the process of DDDM. For example, Schildkamp et al. (2016) described the ideal PLC as being established around the following criteria: "shared values and visions, collective responsibilities, engagement in reflective professional inquiry, collaboration, promoting both group and individual learning, mutual trust, inclusive membership, and openness" (p. 229). Data team meetings can provide participants the opportunity to engage in collaboration around the analysis of student data and the instructional decision making that follows (Farley-Ripple & Buttram, 2015). Further, during these meetings, modeling of DDDM practices may occur (Huguet et al., 2014; Marsh et al., 2010, 2015), and principals or other school leaders can set expectations and guidelines for data use that support teacher engagement with DDDM (Hubbard et al., 2014; Schildkamp & Poortman, 2015). Yet as much as data team meetings may support DDDM initiatives (Bolhuis et al., 2019; Schildkamp et al., 2016), they also may hinder them. For example, data team meetings can become spaces in which participants spread misconceptions regarding data use (Farley-Ripple & Buttram, 2015) that ultimately can deter participants' engagement with DDDM initiatives (Lasater et al., 2019).

Despite well-established research about the potential benefits of data team meetings (Bolhuis et al., 2019; Farley-Ripple & Buttram, 2015; Huguet et al., 2014; Lasater et al., 2019; Schildkamp et al., 2016), comparatively little is known about the role of the school principal in shaping the functioning of these meetings. Though principals are expected to be instructional

leaders (National Policy Board for Educational Administration, 2015) and to support teachers in their data-use practices (Williams & Welsh, 2017), the degree to which principals actually fulfill these expectations during data team meetings is less clear. Rather, among studies that examine the enactment of DDDM initiatives, the role of school-level administrators is often portrayed as establishing organizational structures to support data use, such as providing formal training or establishing data-use policies (Anderson et al., 2010; Hubbard et al., 2014). This vision for the role of school-level administrators to support data use is accurate but incomplete, overlooking principals' potential place in directing the data team meetings they often attend (Bolhuis et al., 2019; Schildkamp et al., 2016; Schildkamp & Poortman, 2015). Therefore, it is essential to understand more regarding how school-level leaders inform the functioning of data team meetings.

Micro-Problem of Practice

Considerations regarding the functioning of data team meetings are particularly important for rural schools for several reasons. First, rural districts make up over half of all U.S. school districts and serve 20% of all public school students (Showalter et al., 2019). Yet rural schools are often underrepresented in education research (Player, 2015). Moreover, what is known regarding the circumstances of many rural school districts is troubling: challenges including recruiting and retaining qualified teachers, providing ongoing professional learning opportunities for teachers, and ensuring appropriately challenging coursework for students plague rural schools (Chuong & Schiess, 2016; Player, 2015). Finally, given the expectation that principals will be instructional leaders (National Policy Board for Educational Administration, 2015) and will support teachers in their data-use practices (Williams & Welsh, 2017), more needs to be known about whether and how principals in rural schools fulfill these expectations.

To that end, a research team at the University of Virginia set out to explore how elementary school leaders in one rural school district shaped the use of data. This research project, *Leading Data Use in Schools: Exploring How Rural School Leaders Make Data-Informed Decisions*, was conducted within the participating school district during the 2018-19 school year. Due to a district-wide emphasis on data-driven decision making, team members were able to observe regularly scheduled data team meetings at all four elementary schools in the district. Additionally, team members interviewed school- and district-level leaders regarding their approaches to data use. These data allowed researchers to explore how and to what degree rural school leaders informed data use during data team meetings.

As a member of the aforementioned research team, I had the opportunity to observe Blue Ridge Falls Elementary School[1] – one of the four participating schools – particularly closely, conducing all field observations at this school site. During those observations, I noted that the data team meetings that occurred did not appear to align to existing best practices around PLCs generally (Schildkamp et al., 2016) or regarding collaborative data-use specifically (Bolhuis et al., 2019; Schildkamp & Poortman, 2015). For example, meeting attendees were often determined based on grade-level responsibilities or scheduling availability rather than being purposefully chosen. Furthermore, meetings often appeared to lack purposeful direction or include systematic data analysis to support data-informed decisions. Instead, data use was superficial at best and rarely yielded concrete instructional plans. Based on these observations, I concluded that more needed to be known regarding whether this school was representative of the other participating elementary schools' data-use practices.

[1] Pseudonym

Study Purpose

The localized problem of practice that anchors my capstone study is built around my observations that Blue Ridge Falls Elementary School did not appear to be following best practices for healthy or productive data team meetings (Bolhuis et al., 2019; Schildkamp et al., 2016; Schildkamp & Poortman, 2015). However, less clear is whether this issue represented a single case in the district or a more systemic problem. Therefore, for my capstone, I decided to conduct a comparative case study to better understand how DDDM was realized within the participating school district. To that end, I identified Piedmont Elementary School[2] to serve as a potential contrast for Blue Ridge Falls Elementary School. Within the district-wide emphasis on data use, district leaders identified Piedmont Elementary School as the site of the most successful example of data-use among the four elementary schools. Therefore, through a comparative case study using Blue Ridge Falls Elementary School and Piedmont Elementary School, I explored similarities and differences among how DDDM is enacted within the district and examine how two rural school principals approach their role as instructional leader or data-use facilitator (National Policy Board for Educational Administration, 2015; Williams & Welsh, 2017). The following research questions informed my study:

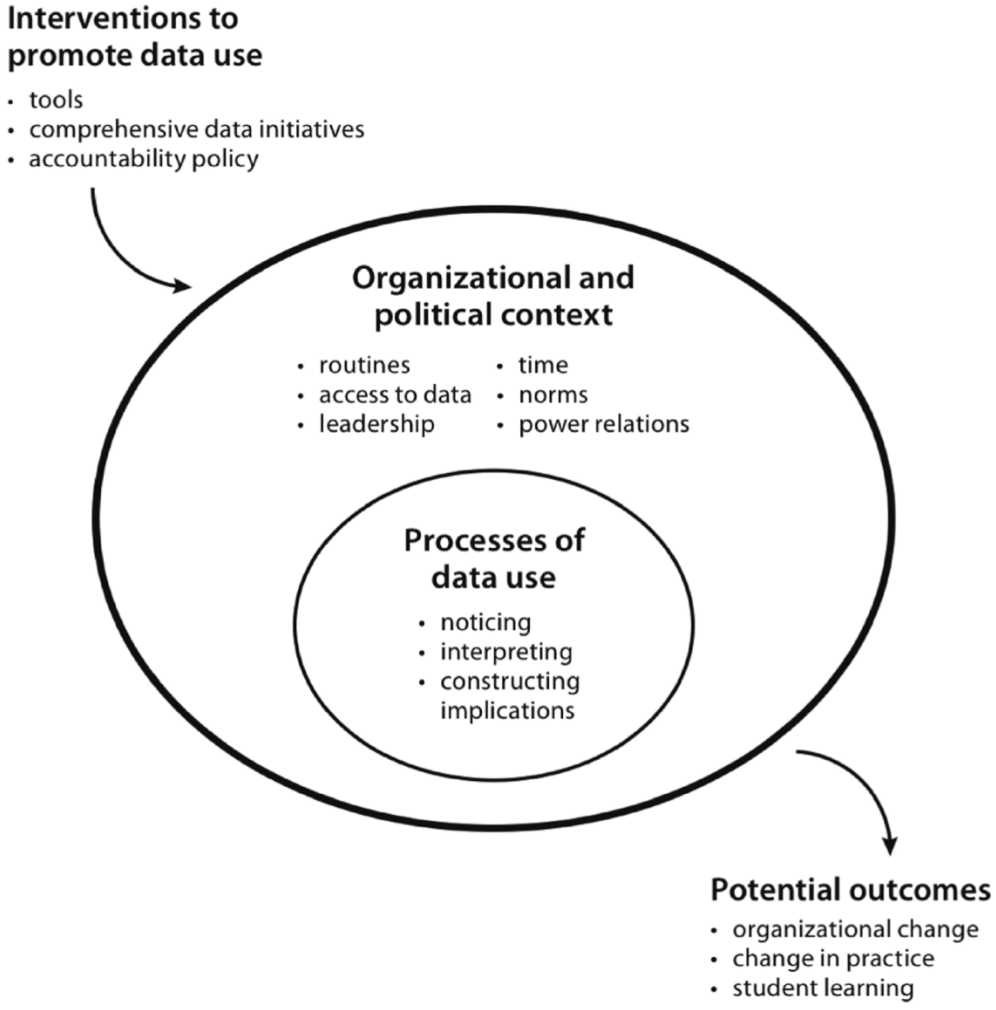
> *To what degree does the school's leadership support engagement in data use within the context of data teams?*
>
> *To what degree do common patterns occur in data team meetings across two different schools?*

[2] Pseudonym

Conceptual Framework: A Framework for Data Use Research

In an effort to organize the ever-growing body of research on data use, Coburn and Turner (2011) developed a conceptual framework "to identify key dimensions that we should attend to if we want to understand the process and outcomes of data use in the context of data use interventions, and provide a way to understand how these dimensions might interact" (p. 175). This framework provided a valuable lens through which to understand my study, not only by illustrating the data-use practices I expected to see during data team meetings, but also illuminating the broader contextual considerations in which these practices took place.

Figure 1.1
Coburn and Turner's (2011) Framework for Organizing Data-Use Research



Process of Data Use

Coburn and Turner's (2011) framework begins by centering the processes of data use, defined by the authors as "what actually happens when individuals interact with assessments, test scores, and other forms of data in the course of their ongoing work" (p. 175). In this framework, data-use processes are described as interactive, iterative and interpretive. Said processes are interactive in that assorted data users, from teachers to school- and district-level leaders, are viewed as being involved in the DDDM process (Coburn & Turner, 2011). Furthermore, data-use processes are iterative because they represent ongoing efforts for systemic improvement. Finally, these processes are interpretive in that they require individuals to notice and draw conclusions from observed patterns in the data. Coburn and Turner (2011) acknowledged this noticing and interpreting can be highly influenced by individual characteristics. For example, they explain, "people tend to search for and see aspects of the data that support their beliefs, assumptions, and experiences and do not even notice data that might contradict or challenge these beliefs" (Coburn & Turner, 2011, p. 117). Additionally, organizational and political conditions can inform data-use processes.

Organizational and Political Context

The next component of Coburn and Turner's (2011) framework is to identify the organizational and political contexts in which data-use processes occur. To that end, Coburn and Turner (2011) identified several factors that can shape the enactment of DDDM including data-use routines, leadership for data use, and data-use norms or procedures. Furthermore, Coburn and Turner (2011) suggested these factors exist on a continuum from proximal to distal influence. That is, some factors have a more immediate impact on data-use processes while

others are somewhat removed from directly shaping data use. Coburn and Turner (2011) describe this proximal to distal continuum thusly:

> Data use routines structure who teachers and others interact with, around what data, in what ways. These routines are influenced by the configuration of time, access to data, and organizational and occupational norms that guide interaction. Leadership plays a role in all these organizational dimensions. Finally, these dimensions of context are intertwined and influenced by relations of power and authority (p. 175-76).

By acknowledging both proximal and distal contextual considerations for data use, Coburn and Turner's (2011) framework allows me to consider the myriad influences on data-use during data team meetings.

Interventions to Promote Data Use

Organizational and political contexts for data use themselves do not exist in a vacuum. Rather, they are often influenced by intentional efforts to support or advance data use in a school or district (Bolhuis et al., 2019; Hubbard et al., 2014). To that end, the next component of Coburn and Turner's (2011) framework aimed to organize commonly-used interventions for data use. Therefore, they identified three categories under which these interventions fall. The first is tools for data use, such as a data-use protocol. The second is what Coburn and Turner (2011) call comprehensive data initiatives, or "initiatives that bring together multiple tools, processes, and technology and strive for systemic improvement" (p. 176). The third and final category is accountability policies, such as federal or state policies that promote DDDM. Together, these categories suggest potential influences on the organizational contexts which inform data-use practices.

Potential Outcomes

Finally, Coburn and Turner (2011) posited three distinct but related potential outcomes of data use: "(a) outcomes related to student learning; (b) those related to changes in teacher and administrative practice; and, (c) those related to organizational or systemic change" (p. 117). These components of Coburn and Turner's (2011) framework shows how data-use outcomes can be wide ranging and can themselves inform the context in which data use occurs. Thus, this framework ultimately represents the iterative and complex cycle of data use that may be enacted within schools and provides a useful tool through which to understand my capstone.

Definition of Terms

In this section, I define relevant terms that are used throughout this capstone:

- Capacity for Data Use – Teachers' ability to use student data to make instructional decisions or modifications (Datnow & Hubbard, 2016)
- Data – "Information [that] is systematically organized and analyzed to represent some aspect of schooling" (Schildkamp & Poortman, 2015, p. 2)
- Data-driven decision making - Within education, this term refers to the systematic collection, analysis, and interpretation of myriad forms of student data to make instructional decisions (Gummer & Mandinach, 2015).
- Data team – "Teams of 4–6 teachers and 1–2 (assistant) school leaders who collaboratively use data to solve a certain educational problem within the school using a structured approach" (Schildkamp & Poortman, 2015, p. 3)
- Data use – This term is often used interchangeably with data-driven decision making to refer to the process of collecting, interpreting, and analyzing data to inform instructional decisions (Gummer & Mandinach, 2015)

- Depth of inquiry - The degree of depth teachers bring to their data use. This umbrella term includes three possible levels of inquiry: no depth, average depth, and high depth (Schildkamp et al., 2016).
- Organizational and political context - The routines, access to data, and leadership that inform a data team meeting (Coburn & Turner, 2011). This term is defined further in my codebook (Appendix C).
- Student data – A broad term that encapsulates formal and informal assessment data, school attendance records, behavioral observations, and any other form of data that may be collected on a student or group of students (Gummer & Mandinach, 2015)

Summary

In this chapter, I described how data-driven decision making has been increasingly emphasized in both research and practice. Dedicated time for data use, often realized via PLCs or data team meetings, can support or constrain DDDM initiatives. Specifically, data team meetings can shape DDDM initiatives within a localized context, such as the rural school district in a mid-Atlantic state in which this study was set. My research project was therefore established in the macro-context of data use initiatives as well as the micro-context of the functioning of data teams within two elementary schools in one rural school district. Coburn and Turner's (2011) conceptual framework for organizing data-use research provided a lens through which I understood this research. In the next chapter, I will provide a review of the relevant literature that informs the direction of my capstone.

Chapter 2: Literature Review

In the previous chapter, I situated this study within several contexts: the broad landscape of teacher data use in U.S. public schools, the role of the school principal to shape various organizational structures that support teacher data use, the localized emphasis on data use during data team meetings, and the larger research project that informed the development of my proposed study. The micro-problem of practice being addressed in this study is to explore how a school's organizational and political context supports or hinders engagement in data use within the context of data team meetings. As such, the following review of the literature explores rationale for data use, explores organizational and political factors that can shape data use at the school level, and describes how data use often functions in practice, including the ways in which teacher capacity for data use can be supported.

Potential Outcomes of Data Use

DDDM is a valuable tool that can be leveraged in schools to support student achievement (M.K. Lai & McNaughton, 2016; Poortman & Schildkamp, 2016; van Geel et al., 2016). When teachers and other school-level faculty members engage in data use, they take part in an iterative process of noticing, interpreting, and constructing implications based on student data (Coburn & Turner, 2011). An immediate outcome of data use is that, when done appropriately, can help teachers identify and address student needs in their classrooms. Sustained data use can also inform curriculum development (Poortman & Schildkamp, 2016; Schildkamp & Kuiper, 2010) and lead to long-term instructional change (Curry et al., 2016; Poortman & Schildkamp, 2016), both outcomes that ultimately can advance equitable learning opportunities for all students

(Datnow & Park, 2018; Park & Datnow, 2017). In the following sections, I will explore these outcomes of data use in order to present a rationale for supporting DDDM in schools.

Data Use for Student Achievement

When teachers and faculty engage in DDDM, student learning outcomes can improve (M.K. Lai & McNaughton, 2016; Poortman & Schildkamp, 2016; van Geel et al., 2016). As mentioned previously, an immediate effect of data use is that teachers identify patterns in student learning and understand what these patterns mean for student learning. Through this process, teachers are better able to plan instructional approaches to meet student needs (Gummer & Mandinach, 2015). For example, van Geel et al., (2016) examined the effects of a two-year DDDM intervention on student achievement. Throughout the intervention, teams of teachers together with school-level leaders engaged in training around "implementing and sustaining" DDDM (p. 366). The training focused on building data-use knowledge and skill as well as uncovering and addressing beliefs and attitudes toward DDDM. Initially, the intervention targeted data use in content-area mathematics classes before offering participants the opportunity to broaden their focus toward other subjects. Participants also had opportunities for trainers to observe their classroom practices and coach them in data use. At several points before and during the intervention, students standardized assessment scores in mathematics were collected. van Geel et al. (2016) found that student learning outcomes improved throughout the intervention, particularly among participating schools with large populations of students from low SES backgrounds. Supporting these findings, Poortman and Schildkamp (2016) found the majority of data teams who participated in a DDDM intervention were able to solve the educational problem they had identified as an area of focus. Notably, this DDDM intervention shared several similarities to the one described in van Geel et al.'s (2016) study: participants received both

formal training and "just-in-time support" (p. 426) such as modeling of data use by the leaders of the professional development. Taken together, these studies underscore the role DDDM can play in supporting student achievement through informing curriculum development, shaping teachers' instructional decisions, and ultimately leading to more equitable learning experiences for all students.

Data Use for Curriculum Development

One way DDDM supports student learning is through facilitating curriculum development and reform. In this context, data use functions as a tool to understand the impact and efficacy of curriculum on student learning, allowing teachers and school leaders to see when curricular modifications are needed. For example, Schildkamp & Kuiper (2010) explored DDDM initiatives in Dutch schools and found that data use resulted in, among other changes, a schoolwide overhaul of their curriculum. Teachers and school leaders worked together to examine myriad forms of data such as school performance data and student enrollment and transfer records. Through their analysis, they decided to create a new curriculum "with a focus on independent learning, activating teaching methods, [and] attention for language development in all subjects of the curriculum" (p. 488), all qualities of curriculum that can support a high degree of student engagement and student learning (Tomlinson, 2014; Wiggins & McTighe, 2005). Similarly, Poortman and Schildkamp's (2016) study examining a data-use intervention found that teachers and school leaders who participated in the intervention adopted an increased focus on curricular alignment to deliver developmentally appropriate literacy instruction for secondary students. Taken together, these studies indicate the potential benefits of using data to inform curriculum development, reaching beyond an individual classroom to function as a lever for positive schoolwide change.

Data Use for Long-term Instructional Change

Data use also supports student achievement by leading teachers to adopt lasting and positive change in the instructional practices they choose and use (Curry et al., 2016; Poortman & Schildkamp, 2016). For example, Curry et al.'s (2016) qualitative case study situated within a mid-sized public school district explored the results of a "teacher-centered approach" to data use in which DDDM was enacted at the classroom level "to enhance instructional practices and student performance outcomes" (p. 92). Findings suggested that teachers in this intervention became more reflexive in their teaching practices, regularly evaluating their instructional approaches and the degree to which these approaches supported student learning opportunities. Further, both Curry et al. (2016) and Poortman and Schildkamp (2016) found that teachers who participated in DDDM interventions appeared to demonstrate a greater commitment to using formative assessments to support their instructional decision making. In both studies, teachers increased their use of formative assessments to uncover students' learning needs and to adjust their instructional approaches accordingly (Curry et al., 2016; Poortman & Schildkamp, 2016). Thus, while teachers can use student data to inform their immediate instructional decision making, sustained engagement with data use can lead teachers toward developing and refining their craft as teachers. These studies therefore add to the evidence that DDDM can have myriad positive outcomes for student learning.

Data Use for Advancing Equitable Learning Opportunities

Finally, data use can support student achievement by advancing equitable learning opportunities for all students. These equitable learning opportunities come about when teachers and school leaders regularly use DDDM to inform their choices regarding curriculum and instruction. Park and Datnow (2017), for example, explored teachers' data use to inform

decisions regarding instructional grouping. They found that "teachers in our sample frequently referenced a variety of data to inform their logics and their decisions about grouping" (p. 301). As a result, teachers' decision-making provided equitable learning opportunities for students according to their individualized learning needs. As Park and Datnow (2017) explained:

> Homogeneous groupings tended to occur for targeted skills intervention and shared reading discussions, and heterogeneous grouping tended to occur when a teacher aimed to incorporate peer support. Sometimes the groupings were deliberately homogeneous by skill area, and other times they were heterogeneous (p. 299).

They also note that these groupings were flexible rather than static, helping ensure students were not 'boxed in' to a given ability group with little to no opportunity for growth. Rather, "teachers supported mixed-ability grouping because they saw the value of students of varied abilities engaging in critical thinking and complex problem solving together" (p. 301). Supporting these findings, Datnow and Park (2018) synthesized over a decade of research to examine how data use can support equitable learning experiences for students. They found that data use can influence equitable learning opportunities by leading teachers to challenge their preexisting beliefs about students and to adopt flexible grouping strategies that support student learning. In sum, enacting DDDM can improve teaching and learning for all students.

Organizational and Political Structures for Data Use

While DDDM can be a powerful tool to support student learning, data use does not occur in a vacuum. Rather, a variety of school-level factors inform whether and to what degree teachers engage in data use. In the following sections of this literature review, I explore organizational and political structures that can lead teachers to engage regularly in data use (Coburn & Turner, 2011).

Data Leadership

School and district leaders play an important role in the organizational and political structures that shape DDDM initiatives (Anderson et al., 2010; Farrell, 2015; Hubbard et al., 2014; Lasater et al., 2019; Schildkamp & Poortman, 2015). At the school level, for example, principals can establish data-use routines (Anderson et al., 2010), ensure protected time for data use (Coburn & Turner, 2011; Jimerson & Wayman, 2015), and express data-use policies and norms (Cosner, 2011; Huguet et al., 2017). All of these considerations inform how DDDM initiatives are actualized, from the types of student data used for instructional decision making to who is involved in the process of data use (Coburn & Turner, 2011; Hubbard et al., 2014; Lasater et al., 2019). For example, research shows that norms school or district leaders establish regarding data use influence teachers' willingness to engage with student data (Jimerson, 2014; Jimerson & Wayman, 2015). Some leaders position data use as a tool to support teaching and learning, advocating for teachers to consider myriad forms of student data in their decision making (Hubbard et al., 2014). In these instances, teachers appear more likely to adopt DDDM as a tool to support student learning (Datnow & Park, 2018; Park & Datnow, 2017). Yet other leaders may frame data use as a high-stakes measure of teacher effectiveness and accountability (Schildkamp & Poortman, 2015) or may lead teachers to rely primarily on standardized assessment data in their decision making (Farrell, 2015; Lasater et al., 2019). When leaders propagate these norms regarding data use, teachers tend to approach expectations for DDDM with uncertainty or anxiety that can limit their engagement with data use (Dunn et al., 2013; Means et al., 2009). As two principals noted, "they needed to spend several years building up an atmosphere of trust and a 'blame-free' culture before their teachers could look at data together

honestly" (Means et al., 2009, p. 49). Therefore, it is clear that school and district-level administrators' data leadership informs how and to what degree DDDM is realized.

Data-Use Routines

Data-use routines are "the modal ways that people interact with data and each other in the course of their ongoing work" (Coburn & Turner, 2011, p. 181). These routines may be highly organized or largely informal (Coburn & Turner, 2011). For example, data team meetings can follow specific protocols for data use (Bolhuis et al., 2019; Schildkamp et al., 2016) that are facilitated by school-level administrators or instructional coaches (Coburn & Turner, 2011; Huguet et al., 2014; Marsh et al., 2015). These protocols can support systematic inquiry and analysis, helping teachers arrive at new and valuable insights from the data (Bolhuis et al., 2019; Schildkamp et al., 2016). In contrast, data-use routines may also be far less structured, shaped not by protocols but rather by in-the-moment needs or interests (Coburn & Turner, 2011). In either case, routines serve to bring together data users, including teachers and school administrators, around the practice of DDDM.

Data routines inform who interacts with data, what data are brought to the table, and how these data are understood (Coburn & Turner, 2011). In the context of data team meetings, for example, a data routine may inform who attends a meeting, be it an entire department or grade level, or a more selective group of faculty (Bolhuis et al., 2019; Schildkamp et al., 2016; Schildkamp & Poortman, 2015). As Coburn and Turner (2011) explained, "different people come to the table with different beliefs and knowledge, which shapes how they interpret data and the level and kind of negotiations they have over the implications of the data for action" (p. 181). Additionally, data routines regularly determine which data are discussed, with many emphasizing standardized assessments as a focus of DDDM (Farrell, 2015; Lasater et al., 2019).

These routines tend to frame data use as a high-stakes measure of teacher effectiveness and accountability (Schildkamp & Poortman, 2015). Not only can these types of data-use routines contribute to teachers' reticence to engage in data use (Dunn et al., 2013; Means et al., 2009), they also constrain the potential of DDDM itself to support student learning (Schildkamp et al., 2016). In contrast, other data-use routines support noticing of a variety of student data, including informal and formative assessment data (Datnow & Park, 2018; Hubbard et al., 2014; Park & Datnow, 2017), leading data team meeting participants to deeper understanding of student learning and greater instructional change (Datnow & Park, 2018; Schildkamp et al., 2016). In sum, data routines are an organizational structure that shapes how DDDM is actualized.

Protected Time for Data Use

In addition to leadership and routines, protected time for data use contributes to how DDDM takes shape. As Coburn and Turner wrote, "It takes time to collect and analyze data and collectively debate implications for decision making" (p. 182). Research indicates that time can be a factor in teachers data-use practices (Cosner, 2011; Hubbard et al., 2014; Means et al., 2009). Put simply, teachers often feel they have insufficient time to engage in the in-depth process of DDDM (Means et al., 2009). These time constraints can influence how and to what degree teachers engage with data-use routines (Coburn & Turner, 2011). Furthermore, while school or district leaders have the ability to ensure protected time for data use (Schildkamp et al., 2016; Schildkamp & Poortman, 2015), they degree to which they do so varies (Coburn & Turner, 2011; Huguet et al., 2017). Thus, protected time for data use is an important consideration when examining the organizational structures that inform data-use processes.

Access to Data

Finally, whether teachers have access to student data and the types of data to which they have access inform data-use processes. As Coburn and Turner (2011) explained, "organizations collect certain kinds of data and not others. This data is available to some people and not to others. Data is available on a range of different time scales—some immediately, some not until months later" (p. 182). Research suggests teacher access to data can be constrained by the technological infrastructure on which the data us housed (Hubbard et al., 2014; Means et al., 2009). For example, some teachers may not be able to access certain forms of student data (Means et al., 2009; Schildkamp & Poortman, 2015). Or, teachers may not be trained to use their school or districts' data system (Jimerson & Wayman, 2015). Taken together, these factors inform whether teachers have timely access to the student data they need to make instructional decisions during data-use processes (Coburn & Turner, 2011).

Data Use in Practice

Despite the aforementioned potential benefits of DDDM (M.K. Lai & McNaughton, 2016; Park & Datnow, 2017; Poortman & Schildkamp, 2016; van Geel et al., 2016), some educators and policymakers continue to emphasize a very narrow view of data use that can constrain the potential of data use (Booher-Jennings, 2005; Datnow & Park, 2018; Schildkamp, 2019). In this view, teachers primarily – if not exclusively – make instructional decisions informed by students' standardized assessment data (Schildkamp, 2019). Through this model of data use, teachers rarely plumb the depths of what may be known about their students. Rather, this approach frames DDDM as a form of "educational triage" (Booher-Jennings, 2005) to identify and focus on students who are "on the bubble" between passing and failing a high-stakes standardized assessment (Datnow & Park, 2018) – in other words, those students who are

perceived as optimal targets for interventions that may improve their test scores. Teachers who employ this approach to DDDM may adopt a deficit-based view of students, largely focusing on students who are deemed "underperforming" and viewing data use as a tool to close the "achievement gap" (Datnow & Park, 2018). The resulting decision making that takes place often does little to address the learning needs of the whole child and omits entirely many students who may benefit from additional support or extensions to their learning.

Data-Use Initiatives

To support teacher engagement with data use, many schools and districts have adopted DDDM initiatives (Bolhuis et al., 2019; Hubbard et al., 2014; Poortman & Schildkamp, 2016; van Geel et al., 2016). Generally, these initiatives operate at either the individual or the organizational level ((Datnow & Hubbard, 2016). For example, at the individual level, teachers may participate in formal training to build their data literacy (Coburn & Turner, 2011; Gummer & Mandinach, 2015; Jimerson & Wayman, 2015). Or, at the organizational level, principals or district leaders may establish data-use policies and norms to inform teacher understanding of the purpose and practice of data use (Bolhuis et al., 2019; Coburn & Turner, 2011; Lasater et al., 2019). At both the individual and organizational level, many DDDM initiatives aim to support teacher capacity for data use, or their ability to use student data to make instructional decisions or modifications (Datnow & Hubbard, 2016)

Supports for Data Use

As discussed previously, teacher engagement with data use often varies due in part to teachers' capacity for data use. Many teachers reported feeling anxious, uncertain, or even fearful regarding data-use expectations in ways that limited their engagement with DDDM (Coburn & Turner, 2011; Gummer & Mandinach, 2015; Jimerson & Wayman, 2015). Research

suggests that these feelings arose largely from two areas. The first was that many teachers reported having had insufficient opportunities to develop their capacity for data use (Dunn et al., 2013; Jimerson & Wayman, 2015; Means et al., 2009). For example, teachers often identified infrequent professional development or formal training in data use (Dunn et al., 2013; Means et al., 2009). In Means et al.'s (2009) nationwide survey, only 43% of teachers reported receiving some training on data use, and the majority of respondents (58%) identified a need for more professional development in the practice. Furthermore, Jimerson and Wayman (2015) conducted interviews with 110 teachers and found that formal training around DDDM tended to focus narrowly on using a data-management system rather than on how to interpret student data and make instructional decisions accordingly (Jimerson & Wayman, 2015). In addition to insufficient opportunities for professional development around data use, school or district-wide explicit policies and implicit messaging around DDDM can limit teachers' data use (Anderson et al., 2010; Dunn et al., 2013; Means et al., 2009). For example framing DDDM as a high-stakes accountability measure can lead to a "hyperfocus on test score data, sometimes in ways that minimize other, useful forms of data" (Jimerson & Wayman, 2015, p. 7). At times, this emphasis on accountability can even cause teachers to disavow responsibility for student outcomes, instead stating that "poor assessment and final examination results were the result of unmotivated students and not a result of their teaching" (Schildkamp & Kuiper, 2010, p. 491). Together, extant research emphasizes the importance of cultivating a school environment in which individual supports as well as organizational and political structures exist to advance teacher engagement with DDDM.

Formal Training in Data Use

One approach to support teachers' data literacy for teaching is to provide opportunities for formal training in the practice through, for example, schoolwide professional development. Jimerson and Wayman (2015) found that teachers identified several areas in which they felt a need for formal training in data use, including how to access student data in a data system, how to make sense of student data once they have accessed it, and how to move from making sense of data toward long-term instructional change. Additionally, Jimerson (2014) found that teacher beliefs regarding data can be shaped by formal training in data use. As teachers came to understand data use through formal training, their beliefs toward data use became more positive or optimistic. Supporting these findings, other research suggests that much of teachers' anxiety or confusion regarding data use stems from their lack of professional development for data-driven decision making (Schildkamp & Kuiper, 2010). Together, these studies illustrate the importance of professional learning for developing data literacy for teaching and to support teacher capacity for DDDM.

Collaborative Data Use

Research also suggests that teachers build data literacy for teaching through collaboration with one another (Jimerson, 2014; Lasater et al., 2019). Frequently, these collaborative opportunities occur in the form of Professional Learning Communities [PLCs] or data teams that meet on a recurring basis (Datnow & Hubbard, 2016). In these meetings, teachers can discuss the student data they have gathered and the instructional decisions they can garner from said data. Therefore, these meetings afford teachers the opportunity to benefit from each other's professional expertise. For example, Farley-Ripple and Buttram (2015) explored how elementary teachers may build capacity for data use through a "social network approach" (p. 5).

Participating teachers (n = 42) taught at an urban elementary school that had enacted data-driven initiatives to address concerns regarding student performance. The school had seen an increase in student learning outcomes during the initiative, and the time of the study 85% of students surpassed the state benchmarks for math and reading. The teachers at this elementary school regularly met to discuss and plan with student data. During their study, Farley-Ripple and Buttram (2015) found that these meetings were spaces in which teachers both engaged in data-driven decision making and developed their capacity for the practice through the social interactions that occurred. In sum, these meetings appeared to lead teachers to build data literacy.

Data Teams. The degree to which teachers engage in DDDM can become particularly notable during structured time for data use, such as data team meetings (Bolhuis et al., 2019; Farley-Ripple & Buttram, 2015; Lasater et al., 2019; Schildkamp et al., 2016; Schildkamp & Poortman, 2015). Data team meetings are often described as teachers' primary opportunity to engage in dedicated time for data use (Bolhuis et al., 2019; Schildkamp et al., 2016). Yet research suggests the enactment of these meetings varies widely. For example, Schildkamp et al.'s (2016) case study exploring the functioning of data teams at six secondary schools found that the depth of data use notably differed across cases. While some data teams repeatedly arrived at new knowledge and insight from student data, others did not go beyond basic understandings of student performance (Schildkamp et al., 2016). In sum, while some data teams can result in teachers gaining data-use skills and developing more positive attitudes toward DDDM (Bolhuis et al., 2019), others function to limit teacher engagement with data use (Farley-Ripple & Buttram, 2015; Schildkamp et al., 2016).

Summary

In this chapter, I focused on select themes in the literature around DDDM: a rationale for data use in schools, a discussion of how data use may be actualized in schools generally and within data teams specifically, and an exploration of the individual and organizational structures that can support teachers' data use. Through this literature review, I provided context for my proposed study, which is to explore how schools' organizational and political context support or hinder engagement in data use within the context of data teams. Specifically, this literature review connected the conceptual framework described in chapter one to my study's focus on data teams in specific school contexts. In the following chapter, I describe the methods I used in this study.

Chapter 3: Methods

As I described in depth in chapter 1, my capstone project was situated within a larger research project, namely a mixed-methods study that sought to explore the ways in which school-level leaders shaped data use in their schools. Specifically, the larger project focused on school-level leaders' roles in informing the functioning of data team meetings. Through my study, I expanded on that work by focusing on how faculty at two of the participating elementary schools engaged in data use during data team meetings. Through this focus, I was able not only to examine how both schools' data teams engaged in data use, I also was able to explore the how organizational and political context of these meetings informed the teams' data use processes. To that end, the following research question directed my study:

> *To what degree does the school's leadership support engagement in data use within the context of data teams?*
>
> *To what degree do common patterns occur in data team meetings across two different schools?*

In chapter 1, I explored the background, macro- and micro-problems of practice that informed the focus of my study. In chapter 2, I situated my study within a broader corpus of literature on data use. In this chapter, I explain my research design and describe the setting, participants, data sources, and data analysis that informed my research.

Study Design and Reasoning

For this research project, I conducted a descriptive case study focused on two of the four elementary schools in one school district that was the research site for the aforementioned larger study. Conducting a case study was appropriate for several reasons. First, studies that explore

data-use practices are limited yet "stand to make a much-needed contribution to a program of research on data use and school improvement" (Little, 2012, p. 114). Following the call for more robust research on data use (Little, 2012; Schildkamp et al., 2016), I planned a descriptive case study design to allow for close exploration of the organizational and political structures which informed this practice. Additionally, this research design aligned with my paradigm as a researcher. I am, at my core, a pragmatist: what drives my research is to focus on practical solutions or approaches to understand the questions at the core of my research. To that end, I believe in using the research design best suited to developing a rich understanding of a given environment (Creswell & Creswell, 2018). According to Creswell and Creswell (2018), case studies allow for the researcher to develop an "in-depth analysis of a case, often a program, event, activity, process, or one or more individuals" (p. 14).

For my study, I aimed to explore the organizational and political contexts that informed data use during the event of recurring data team meetings, necessitating the use of a case study. Through this research design, I developed rich descriptions of data use at each school site, drawing on the data collected at both schools to arrive at greater understanding of how data use was enacted across the district. Finally, the use of a case study design helped me acknowledge the highly contextualized nature of school environments, which are likely to vary widely from district to district and even within a particular district. Rather than striving for generalizability, my use of a case study supported the development of rich pictures of particular cases. For all of these reasons, this research design yielded a thick description (Creswell & Creswell, 2018) to understand how organizational structures supported or constrained data use at both participating schools.

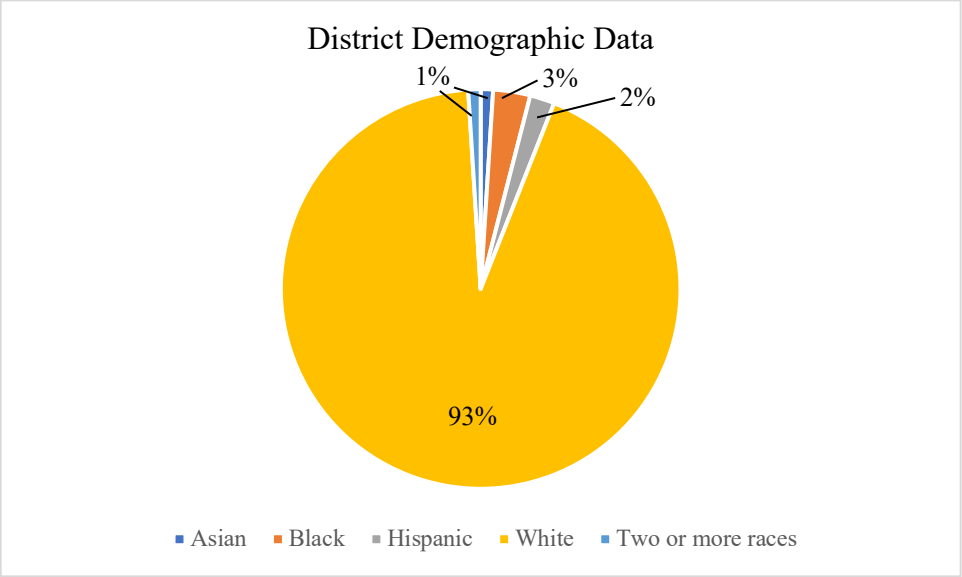
Overview of the Larger Study

The larger research project from which my study was drawn set out to explore how school-level administrators informed the functioning of data team meetings. Specifically, this study focused on the role that school-level administrators played in directing how data were analyzed, interpreted, and used during data team meetings. For this research project, the research team – of which I was a part – conducted a small scale mixed-methods study in four elementary schools in a largely rural school district located in the mid-Atlantic region of the United States. Throughout the study, the research team conducted field observations during recurring data team meetings and semi-structured interviews around how data use was enacted and supported at participating schools. A survey on teachers' data use (Wayman et al., 2016) was administered and used to supplement case study findings. The purpose of this research project highlighted the importance of understanding how school-level leaders can contribute to the functioning of data team meetings to advance or limit schoolwide DDDM initiatives.

Setting and Context

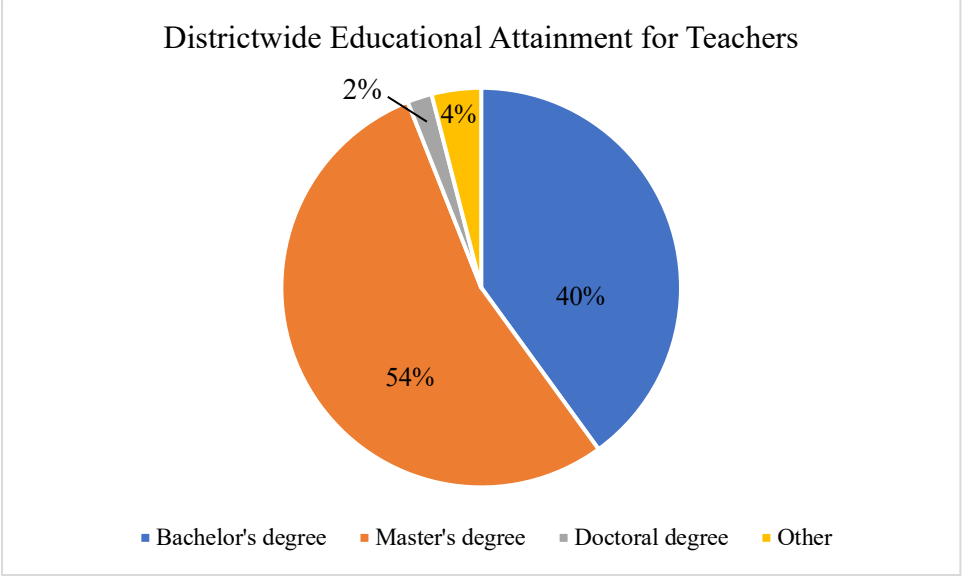
The county in which the school district is situated is approximately 598 square miles with approximately 37 people per square mile. The median income at the time of data collection was approximately $54,000, with 12% of the population living below the poverty line. This district serves approximately 2,800 students in grades K-12 who attend one of its four elementary schools, one middle school, or one high school. As shown in Figure 3.1, the demographic makeup of the district is as follows: 1% of students identify as Asian, 2% as Hispanic or Latino, 3% as Black, 93% as White, and 1% as two or more races. Of the 2,800 students enrolled, 1% were English Learners, 4.8% were students with disabilities, and 18.4% were economically disadvantaged.

Figure 3.1
District Demographic Data



The school district has a teacher/student ratio of 12:1. Teachers' educational attainment is shown in Figure 3.2: 40% possess a bachelor's degree, 54% a master's degree, 2% a doctoral degree, and 4% some other type of degree.

Figure 3.2
Districtwide Educational Attainment for Teachers



As mentioned in chapter 1, rural schools and districts often struggle to attract and retain qualified teachers (Player, 2015). Of the teachers who work in the district, 1.1% teach out of field or are not fully endorsed for their content area and 3.3% of teachers have less than one year of classroom experience.

Table 3.1
Teacher Quality All Schools

Teacher Quality All Schools				
	Poverty Level	Out-of-field Teachers	Inexperienced Teachers	Out-of-field and Inexperienced Teachers
District	All Schools	1.1%	3.3%	0%
State				
	All Schools	3%	6.2%	0.6%
	High Poverty	4.3%	8%	1%
	Low Poverty	2.2%	4..8%	0.4%

As previously discussed, the larger study was conducted within all four of the district's elementary schools. All but one of the participating schools were designated "rural: distant" or "rural: remote" according to the National Center for Education Statistics (NCES). The one school not designated rural was categorized as "town: distant." Student enrollment in each school ranged from over 500 to less than 125. Total school enrollment is shown in Figure 3.3. Demographic data in all four elementary schools are shown in Table 3.2.

Figure 3.3
Total Student Enrollment by School

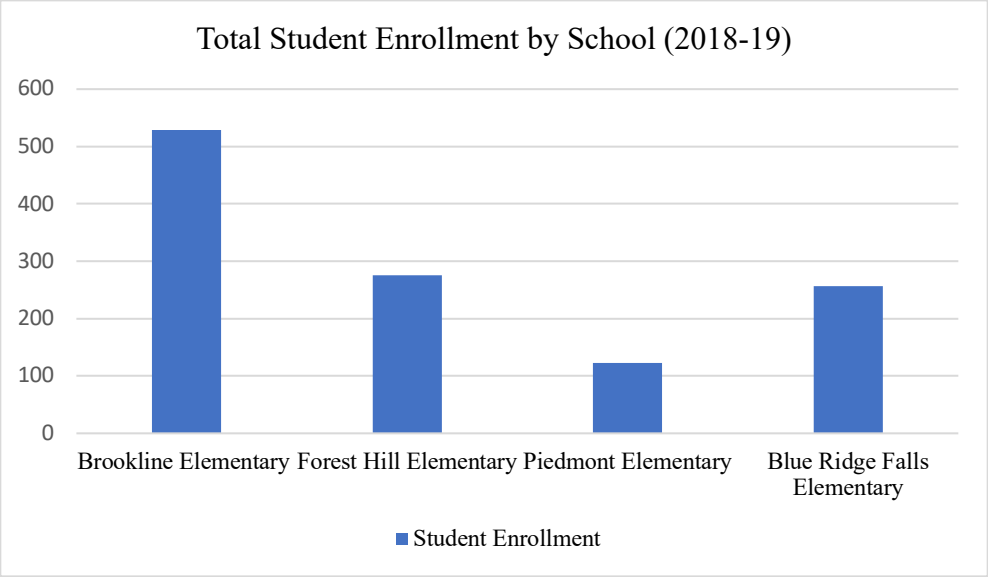


Table 3.2
Demographic Data By School

	Brookline	Forest Hill	Piedmont	Blue Ridge Falls	Total
American Indian/ Alaska Native	0 (0%)	1 (>1%)	1 (>1%)	0 (0%)	2
Asian	3 (>1%)	0 (0%)	2 (1.62%)	0 (0%)	5
Black	23 (4.34%)	5 (1.81%)	1 (>1%)	9 (3.27%)	38
Hispanic	15 (2.83%)	18 (6.54%)	1 (>1%)	16 (6.22%)	50
Native Hawaiian/ Pacific Islander	2 (>1%)	0 (0%)	0 (0%)	0 (0%)	2
White	470 (88.84%)	242 (88%)	116 (94.30%)	214 (83.26%)	1042
Two or more races	16 (3.02%)	9 (3.72%)	2 (1.62%)	18 (7%)	45
Total	529 (100%)	275 (100%)	123 (100%)	257 (100%)	1184

Current Capstone Project

My capstone study focuses on two of the four elementary schools participating in the larger research project. In the following section, I describe the approach to sampling and the participant demographics relevant to my proposed study.

Sampling

I used typical case sampling (Hays & Singh, 2012) to identify Blue Ridge Falls Elementary School and Piedmont Elementary School on which to focus during my study. Through typical case sampling, I identified both participating schools as prioritizing data use. For example, in a conversation with the Blue Ridge Falls Elementary School principal, I was informed that she was brought into the school specifically to help support the district's data-use initiatives. This emphasis in many ways reflected the district-wide attention to data use in all elementary schools. Furthermore, district leaders identified Piedmont Elementary School as representing the best example of data use among the district's four elementary schools. These schoolwide emphases on data use should support my arrival at rich, thick descriptions regarding both school's data teams processes of data use and how each school's organizational and political context informs data use therein. Furthermore, according to Hays and Singh (2012), "an advantage to using typical case sampling is that the researcher can study a complex phenomenon on a more individual basis" (p. 168).Given the complexity of DDDM and the various organizational structures that can inform data use, this sampling approach was appropriate. Finally, my familiarity with Blue Ridge Falls Elementary School and the data collected therein informed my sampling. Because I knew I would largely be using archival data for my study, I wanted to ensure I was familiar with the data that had already been collected. Having worked on the aforementioned larger research project, I was responsible for much of the data collection that

occurred at Blue Ridge Falls Elementary School. For example, I conducted all of the data team meeting field observations at this school. This familiarity with the research site helped me during every stage of data analysis and supported the trustworthiness of my position as a researcher.

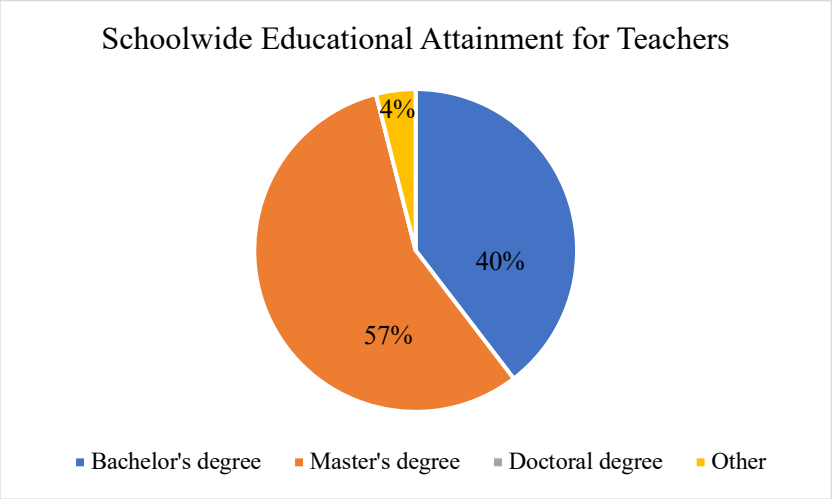
Capstone Study Sites

As mentioned previously, two of the four elementary schools in the district formed the focus of my study. In the following sections, I describe those schools' demographics.

Blue Ridge Falls Elementary School

Blue Ridge Falls Elementary School is categorized as "rural: distant" according to the National Center for Education Statistics. As shown in Figure 3.2, demographic makeup was largely similar to the demographics districtwide: of its 257 students, 6.2% identify as Hispanic or Latino, 3.3% as Black, 83.3% as White, and 7% as two or more races. None of the students were identified as English Learners, 16% were students with disabilities, and 75% were economically disadvantaged. Blue Ridge Falls Elementary School has a teacher/student ratio of 11:1. Figure 3.4 illustrates teachers' educational attainment: 40% possess a bachelor's degree, 57% a master's degree, and 4% some other type of degree.

Figure 3.4
Schoolwide Educational Attainment for Teachers at Blue Ridge Falls Elementary School



Of Blue Ridge Falls Elementary School's 23 teachers, none taught out of field or were not fully endorsed for their content area and 6.1% of teachers had less than one year of classroom experience. Table 3.3 shows how Blue Ridge Falls Elementary School's teacher quality compared to that of the district and the state.

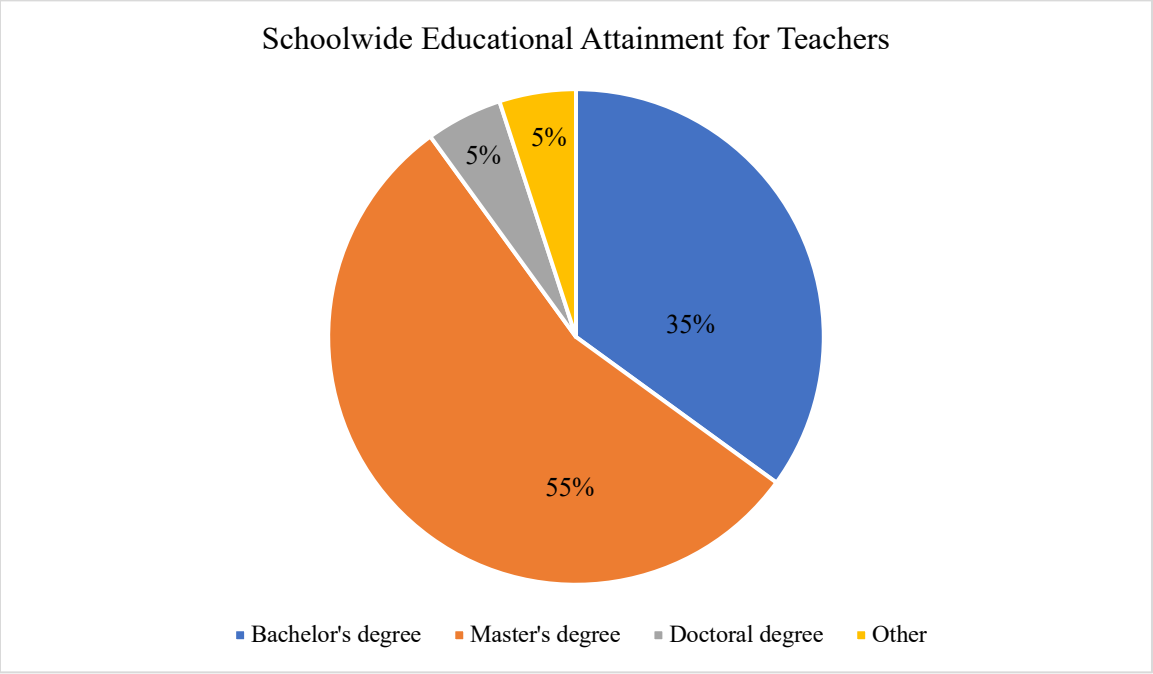
Table 3.3
Teacher Quality Blue Ridge Falls Elementary School

Teacher Quality Blue Ridge Falls Elementary School				
	Poverty Level	Out-of-field Teachers	Inexperienced Teachers	Out-of-field and Inexperienced Teachers
This School	Medium Poverty	0%	6.1%	0%
District	All Schools	1.1%	3.3%	0%
State				
	All Schools	3%	6.2%	0.6%
	High Poverty	4.3%	8%	1%
	Low Poverty	2.2%	4..8%	0.4%

Piedmont Elementary School

Piedmont Elementary School is categorized as "rural: fringe" according to the NCES. As shown in Figure 3.2, the student demographic makeup at the time of the study was as follows: of its 123 students, less than 1% identified as American/Indian or Alaskan Native, 1.6% as Asian, less than 1% identified as Hispanic or Latino, less than 1% as Black, 94.3% as White, and 1.6% as two or more races. None of the students were identified as English Learners, 16% were students with disabilities, and 63% were economically disadvantaged. Piedmont Elementary School has a teacher/student ratio of 10:1. Figure 3.5 illustrates teachers' educational attainment: 35% possess a bachelor's degree, 55% a master's degree, and 5% a doctoral degree, and 5% some other type of degree.

Figure 3.5
Schoolwide Educational Attainment for Teachers at Piedmont Elementary School



Of Piedmont Elementary School's 12 teachers, none taught out of field or were not fully endorsed for their content area and 5.6% of teachers had less than one year of classroom experience. Table 3.4 shows how Piedmont Elementary School's teacher quality compared to that of the district and the state.

Table 3.4
Teacher Quality Piedmont Elementary School

Teacher Quality Piedmont Elementary School				
	Poverty Level	Out-of-field Teachers	Inexperienced Teachers	Out-of-field and Inexperienced Teachers
This School	Medium Poverty	0%	5.6%	0%
District	All Schools	1.1%	3.3%	0%
State				
	All Schools	3%	6.2%	0.6%
	High Poverty	4.3%	8%	1%
	Low Poverty	2.2%	4..8%	0.4%

Participants

A variety of school-level faculty members including principals, grade-level teachers, instructional specialists, special education teachers, and school counselors or psychologists participated in the observed data team meetings and responded to the aforementioned survey. These teams were primarily defined according to grade-level teacher participation, with one comprised of kindergarten to second grade teachers and the other of third to fifth grade teachers. Though individual meetings occurred for individual grade levels (i.e. all kindergarten teachers, then all first grade, then second), a given team's meetings would all occur on the same day (see Table 3.7). Tables 3.5 and 3.6 represent the grade-level teacher participants belonging to Blue Ridge Falls Elementary School's data teams and Piedmont Elementary School's data teams respectively.

Table 3.5
Blue Ridge Falls Elementary School's Data Team Participants

Blue Ridge Falls Elementary School's Data Team Participants						
		Years Teaching				
		5	6	7	19	35
Role	Classroom Teacher	1 (16.67%)	2 (33.33%)	1 16.67%)	1 (16.67%)	1 (16.67%)
		Highest Degree Obtained				
		Bachelors		Masters		
		2 (33.33%)		4 (66.67%)		

Table 3.6
Piedmont Elementary School's Data Team Participants

Piedmont Elementary School's Data Team Participants							
		Years Teaching					
		10	21	23	24	28	31
Role	Classroom Teacher	1 (16.67%)	1 (16.67%)	1 (16.67%)	1 (16.67%)	1 (16.67%)	1 (16.67%)
		Highest Degree Obtained					
		Bachelors			Masters		
		4 (66.67%)			2 (33.33%)		

Data Sources and Instruments

Data sources for this research project included field observations of data team meetings and semi-structured interviews with school. In the paragraphs that follow, I describe in detail those data sources.

Field Observations (Archival)

Throughout the 2018-19 school year, field observations (Appendix A) were conducted during recurring grade-level data team meetings at both Blue Ridge Falls Elementary School and Piedmont Elementary School. It is important to note that, as a member of the larger study's research team, I was responsible for conducing several data team meeting observations, including all of the observations at Blue Ridge Falls Elementary School. Initially, the administration intended to hold these data team meetings monthly; however, some meetings were postponed for a variety of reasons from inclement weather days to scheduling conflicts. These meetings were never rescheduled. The meetings that did go on as planned were at times scheduled during a teacher work day. At other times, teachers would use their planning periods to be able to attend. In all instances, separate meetings were held for different grade-level teachers, with individual meetings ranging from 20 minutes to an hour and a half. In total, as

Table 3.7 shows, just under 18 hours of data team meetings were observed over the course of 20 data team meetings.

Table 3.7
Data Team Meeting Observation Overview

Blue Ridge Falls Elementary School Data Meetings Overview		
Date of Observation	Grade Level Data Team Meeting Observed	Duration of Observation
11/09/18	2nd grade	1 hr 13 minutes
	1st grade	1 hr 8 minutes
	Kindergarten	1 hr 29 minutes
1/25/19	3rd grade	1 hr
	4th grade	1 hr 3 minutes
	5th grade	1 hr
3/29/19	2nd grade	1 hr 13 minutes
	1st grade	1 hr 10 minutes
	Kindergarten	1 hr 10 minutes
Piedmont Elementary School Data Meetings Overview		
Date of Observation	Grade Level Data Team Meeting Observed	Duration of Observation
10/15/18	Kindergarten	37 minutes
	1st grade	20 minutes
	2nd grade	1 hr 18 minutes
	3rd grade	1 hr 2 minutes
	4th grade	23 minutes
	5th grade	25 minutes
	3, 4, and 5th grade Math	35 minutes
12/20/18	Kindergarten	40 minutes
	1st grade	15 minutes
	2nd grade	25 minutes
	3rd grade	55 minutes

Throughout the field observations, observers adopted the role of nonparticipants (Creswell & Creswell, 2018), striving not to inform the data meetings in any way but rather to capture, to as complete a degree as possible, the contributions of data team meeting participants. After each observation was completed, observers reviewed the observation for accuracy and add additional

details in the form of observer reflections either in-line with the observation or at the end of the observation. Once observations were finalized, they were uploaded to a secure file hosting account used by the research team.

Semi-structured Interviews (Archival)

In addition to field observations, two interviews were conducted with participating schools' principals (n = 2) during the 2018-19 school year. For the interviews, a semi-structured protocol (Appendix B) was used which was developed by the larger study's research team. During interviews, participants were asked to describe the structures and supports they themselves provide or have experienced via the school- or district-wide emphasis on DDDM. The interviews lasted approximately 40 minutes and were recorded with participants' permission. The interviews were then professionally transcribed and uploaded to a secure file hosting account to which I had access.

Data Analysis

Data analysis is an "iterative and sequential" process which includes: "(1) fully knowing the data (immersion), (2) organizing these data into chunks (analysis), and (3) bringing meaning to those chunks (interpretation)" (Rossman et al., 2017, p. 2). For this study, qualitative data analysis occurred in two phases. The first phase involved coding all observations and interviews using the qualitative data analysis software MAXQDA. Coding, or organizing data into related categories, represents an important step during data analysis that can lead to meaningful interpretation (Rossman et al., 2017). The second phase involved using tables to facilitate close examination of the coded data to identify patterns. Patterns were recorded in the tables, then collapsed into themes. In the following sections, I describe the coding approach and analysis I employed during data analysis.

Descriptive Coding

As an initial step in my data analysis, I engaged in a round of descriptive coding using a codebook of *a priori* codes (Appendix C). During this initial round of coding, the codebook was limited primarily to what Creswell and Creswell (2018) refer to as "expected codes," or the codes one "would expect to find based on the literature and common sense" (p. 195). Codes were based primarily on Schildkamp et al.'s (2016) study examining the functioning of data teams for school improvement as well as on Coburn and Turner's (2011) framework for data-use research. Prior to beginning coding, I recruited a critical peer to review and provide feedback on my codebook to limit redundancy of codes and to ensure code definitions were clear and specific (Creswell & Creswell, 2018). I then coded all interviews and field observations via the qualitative data analysis software MAXQDA, using codes to organize the data into meaningful categories. As I coded, I maintained analytic memos to record salient observations identify nascent patterns which informed the next step data analysis.

Within-case Analysis

After coding was complete, I engaged in within-case analysis by focusing on each of the four overarching data teams in turn. To facilitate this process, I first created tables (Table 3.8) for each team and each parent code in my codebook (Appendix C). Within each table, I recorded patterns I saw emerging from the data, supporting these patterns with excerpts from the data (Bazeley, 2013). I also used these tables to record contemporaneous notes and to capture any questions or developing ideas I had during within-case analysis.

Table 3.8
Sample Table Used for Within-case Analysis

Data team: Team B
Code and definition: Depth of Inquiry involves the degree of depth teachers bring to their data use and includes three possible levels: No depth – "Only storytelling, retelling (known) information and personal anecdotes, not based on systematically collected data" Average depth - "Basic data use and basic understanding and explanations based on data, such as 'the percentage of students that pass is too low'" High depth - "Data team members developing new knowledge based on data, focused on taking action in their classroom. This refers to analyzing, interpreting, comparing, summarizing, and drawing conclusions based on data, to create new knowledge to solve the data team's problem" (Schildkamp et al., 2016, p. 236).
Theme: 1-2 sentences Team B's depth of inquiry was characterized by little to no depth. Often, team members did not even mention specific data on students, choosing instead to indicate whether a student "did well" or "did not pass" an assessment, for example. At other times, students were reported on in context of their peers, such as saying a student is "right in the middle" (of what? – not sure) or "She's the top one in the low [reading] group". Teachers also talked in vague terms about student growth or performance, saying "he's come a long way" or "he holds his own" without providing the data to support these conclusions. Anecdotal information was common and most often related to student behaviors, teachers' general impressions of students, or students' out-of-school circumstances. Few changes were made to the RTI supports students received, and when changes were discussed they appeared to have already been decided on and were simply reported on during the meeting. It's unclear what, if any, data informed these changes – often, teachers did not cite data to support why these changes would be made. Additionally, according to this team's own databased guidelines for how to determine which RTI supports a student would receive, some students should have changed tiers (often removing rather than adding supports) but these changes were decided against for no clear reason. Teachers appeared to place significant emphasis on anecdotal information and their own assumptions as sources of data, often saying "I think…" and sharing their impressions of how a student will perform without sharing reasons – data-informed reasons or even anecdotal ones – for why they think that. As is proving typical, student data on students who are at/above grade level is not inquired into at all.

Description/Summary of interpretation (Patterns)

Lots of loose reporting of data by saying either a student "did well" or "didn't pass" an assessment [most often reported about the benchmark assessment]

Students are talked about in terms of how they did compared to other students (on the benchmark) – "i.e., right in the middle" or "She's the top one in the low group"

Lots of "he's come a long way" or "he holds his own" in this team's discussion of students.

Uneven chances actual data is going to be mentioned/noticed. Lots of anecdotal information or vague sense of the data (like saying did well/didn't do well, etc. without giving scores)

Anecdotes are often behavioral or general impressions of the student (they're sweet, they can't focus…) or their home circumstances.

Decisions that were/are made are not based in the data, and sometimes defy their own rules (i.e. a student is technically a Tier 2 but receives Tier 3 services because "I'm hesitant of her coming out. I think this is what has keep her above water.")

Notes

Note how the principal framing of this meeting limited the depth of inquiry.

How do these "did well" or "didn't pass" comments limit data use?

I don't understand the real reluctance to even provide supports for students. Where does this "wait and see" tendency come from?

Keep thinking about the role of in-school/out-of-school supports. Where are the in-class instructional supports?

E1 Excerpt	*E1 Explanation for choosing*
Student 2 – Math: 32 on benchmark, 74% class average. Teacher: she's good. Principal: She's fine right? Teacher: She's good. she's a good little worker. JNP_2018.10.15_DataMeetingObservation (2), Pos. 19	E1 is a typical example of the lack of depth in inquiry when data were mentioned. Note teachers simply report of scores and say something like" she's good" before moving on.
E2 Excerpt	*E2 Explanation for choosing*
Student 4 – Teacher brings up 23% on benchmark and below grade level on PALs.	E2 is another typical example of how data are/are not discussed Note how teachers

Teacher: She's worked so hard I think she's going to be ok I really do. Principal: Did she end up with a 3 or a 2? T: A two. But she didn't have pre-school she came in with nothing. She's stubborn. Principal says to monitor until end of semester and then make a decision. T: Mom asked what if she doesn't know anything? She's made a lot of progress. JNP_2018.10.15_DataMeetingObservation (2), Pos. 21-26	share their impressions of students but don't give data to back these up. Also note how students PALS' is cited as "below grade level" with no further inquiry.
E3 Excerpt	*E3 Explanation for choosing*
Next student: 2 in math – teacher wants to monitor. He will be referred for speech services. Teachers have a hard time understanding him. In the process of recommending him for speech therapy. Has learned letters and numbers, mom works with him on sight words. JNP_2018.10.15_DataMeetingObservation (2), Pos. 27 Next student: Are you having problems with him? T: I moved him down to a lower reading group because he needed more practice – PALs score indicated he could handle the higher group, but his behavior was bad, so he got bumped down. P: Attendance is potentially a problem. T1: 61% PALs. Was with her last year. T: Doesn't need extra help but wasn't ready for the more independent reading group. JNP_2018.10.15_DataMeetingObservation (2), Pos. 82	E3 has two examples of teachers making decisions (data-informed? Maybe) outside of the data-team meeting and simply using the meeting as an opportunity to report on these changes. I wonder if/when the data inquiry occurs and who engages in it. Still, note that changes are more about external supports than in-class instruction.
E4 Excerpt	*E4 Explanation for choosing*
A student is discussed who has already missed nine days of school She scored well on the benchmark (82%) but has a low average in the class. The teacher and principal are	When decisions are made in the meeting, they often function like this: reporting

concerned about absences. They decide to monitor her in math and provide services in reading. JNP_2018.10.15_DataMeetingObservation (2), Pos. 35	out of data and quick triage of services. No real inquiry into what the services are or why the student has a mismatch between benchmark and in-class average.
E5 Excerpt	*E5 Explanation for choosing*
Principal brings up another student attendance issues. Teacher dismisses this concern and says she's only a couple minutes late in the mornings. The student stays in at recess to make up work she misses because of being tardy. T: He's fine. He's in the higher reading group. P: Last year we were concerned about him. JNP_2018.10.15_DataMeetingObservation (2), Pos. 84 Next student – T: She's good. Top of the middle pack – 67%. P: That surprised me because she wasn't always there last year. JNP_2018.10.15_DataMeetingObservation (2), Pos. 86	E5 has two examples of how team members often talk about students in context to how they perform against others, i.e. "he's in the higher reading group."
E6 Excerpt	*E6 Explanation for choosing*
Next student - His scores showed he should be with the higher reading group, but he's not independent enough to handle it. T notes that the lower group is more structured than the higher reading group. JNP_2018.10.15_DataMeetingObservation (2), Pos. 87	E6 shows how teachers drew conclusions not based in data. It seems they came to this meeting with their minds made up about the supports students do/do not need and often used this meeting simply to affirm and share those conclusions with the principal.

After completing these sections of the table, I reviewed the emerging patterns and collapsed them into a descriptive theme. I repeated this process for each team and parent code. I then compiled each team's tables into a single document and used these documents to finalize my within-case findings. Through this step, I built rich depictions of each case that supported subsequent cross-case analysis.

Cross-case Analysis

Following within-case analysis, I conducted a cross-case analysis to compare findings per code and per case. In this stage, I continued to use tables to facilitate cross-case comparisons (Table 3.9). Comparisons occurred in two stages. First, I compared findings per code across data teams within a particular school, as shown in Table 3.9.

Table 3.9
Sample Table Used for Cross-case Analysis

	Depth of Inquiry	
	Team A	Team C
No Depth *Only storytelling, retelling (known) information and personal anecdotes, not based on systematically collected data"*	Record patterns and themes from within-case analysis here.	Record patterns and themes from within-case analysis here.
Average Depth *Basic data use and basic understanding and explanations based on data, such as 'the percentage of students that pass is too low'*	Record patterns and themes from within-case analysis here.	Record patterns and themes from within-case analysis here.
High Depth *Data team members developing new knowledge based on data, focused on taking action in their classroom. This refers to analyzing, interpreting, comparing, summarizing, and drawing conclusions based on data, to create new knowledge to solve the data team's problem.*	Record patterns and themes from within-case analysis here.	Record patterns and themes from within-case analysis here.
Notes/Questions/Emerging Patterns		
Record patterns and themes from cross-case analysis here.		

Finally, I used the same table format to compare data teams across participating schools. As I did during my within-case analysis, I identified patterns throughout these comparisons, and I used the aforementioned tables to record these patterns and collapse them into themes.

Triangulation

Triangulation "involves including several perspectives or participant voices during qualitative inquiry" (Hays & Singh, p. 207). For the purposes of this study, I triangulated the developing patterns that arose from my coding process via participant interviews. Triangulation occurred throughout data analysis and helped confirm or disconfirm developing patterns, solidifying my theme statements and supporting my trustworthiness as a researcher.

Researcher Positionality

As Patton (2002) acknowledges, in qualitative research, the researcher *is* the instrument. Given the ways in which qualitative studies are informed by the role of the researcher (Rossman et al., 2017), it is not only appropriate but necessary to discuss my own positionally in approaching this study. As a member of the research team working on the larger study, I developed a familiarity with the focal schools in my study. Furthermore, as someone who was reared in largely rural communities and who taught in rural schools, I felt a connection to schools such as the ones participating in this study. Indeed, I brought to this study the understanding that rural schools are often underrepresented in education research (Player, 2015) and the belief that the teaching and learning that occurs in these schools is worth exploring. Therefore, I took steps to ensure that this familiarity did not lead to potential biases which could impact the trustworthiness of my study. In the following section, I describe these steps.

Trustworthiness

Establishing trustworthiness as a researcher is vital to support the credibility and utility of one's research (Rossman et al., 2017). To that end, I took steps to ensure trustworthiness. First, I drew from various data sources, several of which I was responsible for collecting. This step not only helped me triangulate findings across the data set, it also ensured I had a good deal of familiarity with the research site in question. Furthermore, during data collection, I met with the research team regularly to discuss nascent ideas emerging from the data. I continually sought peer feedback not only from members of the research team but also from critical friends who were familiar with my capstone project and the ways in which my thinking around this study evolved from its initial conception. For example, I requested and received feedback from critical friends on my codebook, met with them to discuss emerging patterns and themes, and received feedback on several drafts of my manuscript. Additionally, I recorded analytic memos throughout the coding process to document my questions, concerns, and any developing ideas. I continued to maintain analytic memos during data analysis, using the *notes* section in my data analysis tables to document nascent findings. While finalizing my findings, I referred often to these memos to ensure I was capturing fully the patterns and themes I observed in the data. In writing my findings, I provided thick, rich descriptions including excerpts from the field observations and interviews to ensure I portrayed both schools' data teams completely (Creswell & Creswell, 2018) Throughout the data analysis process, I also maintained a methodological log as I worked on developing and refining my capstone research and findings.

Ethical Considerations

In addition to trustworthiness, a researcher must show that steps have been taken to ensure one's study is ethical (Rossman et al., 2017). An important step in this process is to acquire IRB-SBS approval, which for my study was already obtained as it fell under the umbrella of the aforementioned larger research project. Additionally, I maintained participant confidentiality by using pseudonyms for all participants, their school, and their district. Finally, all data sources related to this project were stored using secure file hosting account and a password protected computer.

Summary

In this chapter, I described the methodology used throughout this project to conduct a comparative case study at two participating elementary schools in a rural school district in a mid-Atlantic state. The study used archival data including field observations and semi-structured interviews and was set within the context of a larger research project that aimed to explore how school leaders shaped data use at their schools. To conduct my study, I used typical case sampling to identify two elementary schools within the participating district that reflected how data use was enacted across the district. During data analysis, I conducted a two-step procedure for coding, pattern finding, and theme interpretation, using tables to record patterns and synthesize findings. Throughout this process, I used feedback from critical friends, analytic memos, and a methodological log to ensure my trustworthiness as a researcher. In the following chapter, I present the findings that arose from my research.

Chapter 4: Findings

As discussed in Chapter 1, this study took place within a larger research project titled *Leading Data Use in Schools: Exploring How Rural School Leaders Make Data-Informed Decisions.* This project set out to understand how rural school leaders, particularly principals, informed data use at the school level. During this larger project, the research team conducted observations of data team meetings and interviewed school- and district-level leaders to understand how data use was enacted within their schools. As a member of this research team, I conducted all of the observations at one of the four participating schools, Blue Ridge Falls Elementary School. This close contact yielded a rich understanding of how data use was enacted at one school site and informed the direction of my capstone study. Namely, I saw that data use at Blue Ridge Falls Elementary School was limited and rarely, if ever, led to instructional changes within teachers' classrooms. Subsequently, I realized that more needs to be known regarding whether and to what degree data use at Blue Ridge Falls Elementary School was representative of how data use was enacted in elementary schools across the district. To that end, I conducted a comparative case study to explore how the data use practices among two of the schools participating in the larger study were alike and different. Specifically, I focused on the following research question:

> *To what degree does the school's leadership support engagement in data use within the context of data teams?*
>
> *To what degree do common patterns occur in data team meetings across two different schools?*

Within-case Analysis

To facilitate my within-case analysis, I turned to Coburn and Turner's (2011) framework, which established three primary processes of data use: noticing, interpreting, and constructing implications. Noticing involves individuals attending to the data to identify patterns and illuminate students' learning needs. Noticing then leads to interpreting, which occurs when individuals make meaning based on student data. This meaning making process is vital because it allows individuals to probe for evidence of student learning. Finally, interpreting supports individuals in constructing implications, or "taking the information derived from noticing and interpreting and making instructional decisions for student learning" (Coburn & Turner, 2011, p. 69). These data use processes, Coburn and Turner (2011) suggest, are all situated within a particular organizational and political context, such as a school's data team meetings or the dynamics at play among various faculty members.

In the following sections, I use Coburn and Turner's (2011) processes of data use – noticing, interpreting, and constructing implications – to organize findings from the within-case analysis conducted for each of the four data teams. Data analysis revealed notable similarities among each schools' respective teams; therefore, findings are broadly organized by school with distinctions made regarding a particular team when necessary. Before delving into the findings, I present a description of the context of these meetings, including the environment, the faculty members present, and an overview of materials team members brought to the meetings.

Data use at Blue Ridge Falls Elementary School

Blue Ridge Falls Elementary School's data team meetings took place in a conference room adjacent to the school's main office. The room was small but comfortable, with an oval table around which team members could sit. At the end of the room was a white board on which team members projected an Excel spreadsheet containing student names and a variety of systematically-collected data including benchmark and common assessment scores, PALS data, and state assessments. Team members referred to this spreadsheet as the data wall. Recurring team members included the school principal, an administrative intern, grade-level teachers, and reading and math specialists. Occasionally, special education teachers, the school counselor, and a speech therapist would attend. Many team members brought materials for notetaking to the meeting, and some brought paper copies of the same data that was projected on the data wall.

Noticing. Blue Ridge Falls Elementary School's data teams engaged in a process of data use centered around reporting out student data with a focus on discussing students about whom team members were "worried" or "concerned" (Team A observation, 11/9/2018; Team C observation, 1/1/2019). Team conversations tended to follow a recurring structure wherein a team member, most often the principal, would call out a student's name and list systematically-collected data they have on that student, often reporting on the student's benchmark assessments, common assessments, or reading levels. The excerpt below from a field observation demonstrates a typical conversation during data team meetings:

> One teacher calls this student worrisome. She doesn't want to work. Teachers say she can do it but she's stubborn. They review the student's reading data: Quarter 1 average [in ELA]: 80; benchmark: 40; common assessment: 27. [The Reading Specialist] is getting ready to move her to L reading level texts.

> Teacher: She doesn't give enough effort in math. They review scores: Quarter 1 average [in math] 60; Benchmark 36; common assessment 35% (Team A observation, 11/9/2018).

While data teams nominally discussed each student, they often passed over opportunities to reflect on students who were performing at or above grade level. Rather, team members would note that these students were "fine" or "good," and the discussion would proceed until team members came to a student who they decided warranted discussion. For example, below is an excerpt from an observed meeting in which teachers discussed four students in quick succession:

> Student 1 – Doing **fine**. No discussion.
>
> Student 2 – Doing **well**. Tested independent F [reading level]– needs to try G. Made good progress.
>
> Student 3- Instructional I. Doing **fine**.
>
> Student 4 – **Doing great**. Teachers like her. [She] is a leader in class (Team A observation, 11/9/2018, emphasis added).

This rapid and generic overview of students resulted in team members moving quickly through 13 students sequentially, none of whom were discussed beyond general comments about their performance.

As Coburn and Turner (2011) explained, noticing is not simply looking at student data; rather, it is closely exploring the data to identify patterns about student learning. The ability to identify patterns in the data requires a certain depth of inquiry, defined as "the degree to which team conversations express higher level thinking skills, such as analysis, synthesis, goal setting, and reflection" (Schildkamp et al., 2016). As the excerpts above suggest, Blue Ridge Falls Elementary School's data teams rarely attended to systematically-collected data with the depth necessary to identify these patterns. Rather, team members often focused on sharing anecdotal

information on students, often appearing to put more emphasis on these stories than on systematically-collected data:

> [Student name]: Discussion starts with student behaviors.
>
> Teacher: Last year he didn't speak to me at all, and this year he's calling out my name in Wal-Mart.
>
> Principal: Has his crying stopped?
>
> Teacher: It's better. He cries when he's told he's wrong, but it's better.
>
> Speech Teacher: For years he's cried about everything.
>
> Administrative Intern: But he's a U [reading level] so –
>
> Math Specialist: His math is good.
>
> Reading Teacher: His understanding is not always what it should be, I guess.
>
> They move on (Team C observation, 1/25/2019).

In the above excerpt, mention of the student's reading level was overlooked entirely, and the comment made by the reading teacher that the student struggled with "understanding" passed without comment. With no effort made to explain or generate new knowledge based on the student data that was mentioned, the data team's depth of inquiry into the data was very superficial.

Throughout their discussions of students, it became clear that team members held deep and personal knowledge of their student population, with many teachers having taught their current students' family members. This familiarity perhaps contributed to team members' tendencies to discuss, sometimes at length, a student's at-home circumstances:

> [Student Name]– Teacher immediately says this student is struggling. Other teachers agree and they start discussing seeing a decline in attitude/behavior. Questions: Is something going on at home? With dad's health? They talk about potential family issues

> for a while. The principal asks if parents have come in for a conference. The teacher says no. The principal recommends calling home and scheduling a meeting after school with teachers, the reading specialist, Title I coordinator, and siblings' teachers. [Observer Note: They discuss that this student is one of four children – all four attend Blue Ridge Falls Elementary School]. The principal says since stuff is going on with all four siblings, something must be going on at home (Team A observation, 11/9/2018).

As this excerpt suggests, the data team's conversations often proceeded with no mention of systematically-collected data. As such, team members rarely moved beyond superficial discussions of students into opportunities to develop new knowledge based on systematically-collected data. In fact, there was some evidence that deeper data use occurred *outside* of these meetings, such as when the principal instructed a reading specialist to "focus on those specific [literacy] skills after you've analyzed that data" (Team A observation, 11/9/2018). In any case, it did not appear that data team meetings were seen as opportunities to attend to systematically-collected student data.

Interpreting. When discussing students who team members identified as struggling, conversations would often turn to accounts of the student's in-class behaviors or out-of-school circumstances. Consistently, these anecdotal observations informed team members' meaning making more so than the systematically-collected data team members listed. While conversations regarding students' home lives were not recorded in detail in order to preserve the anonymity of students, the substance of these conversations were noted and tended to follow a similar structure. When discussing students' home lives, team members largely focused on how students' out-of-school circumstances informed their in-school behaviors or performance on a given assessment. For example, in a conversation about one student, team members discussed a

student's parental custody arrangement and "note[d] that [the student's] disruptive classroom behaviors are things he picked up at home" (Team C observation, 1/25/2019). While understanding students' out-of-school circumstances can be a vital part of meeting students' social-emotional needs, these discussions rarely yielded actionable in-school modifications or supports for the student. Rather, at most, team members would recommend holding parent/teacher conferences to discuss issues with student behavior or attendance. Often, after sharing these anecdotes, team members would simply proceed to the next student on their list.

Finally, Blue Ridge Falls Elementary Schools' data teams regularly relied on conclusions based on team members' opinions or feelings toward students rather than on sensemaking from student data. For example, in a conversation about a potentially gifted student, one reading specialist noted that she could see him as gifted but "he struggles with decoding and stuff like that. I bet you if he had his IQ tested. . . [Observer note: She points up to indicate it would be high]" (Team C observation, 1/25/2019). This team member's speculation about the student's IQ was not grounded in the data being discussed but rather on her opinion of the student. Furthermore, while this excerpt captured a positive view of the student being discussed, team members often reflected deficit-oriented opinions during their conversations. For example, team members repeatedly described students as "lazy" or "stubborn" (Team A observation, 11/9/2018; Team C observation, 1/25/2019). At times, they asserted that students were not successful because they didn't "want to put the effort in" (Team C observation, 1/25/2019). Conversations such as the one shown below were common:

> [Student Name] – Teachers start by discussing issues at home. One teacher says the student is showing progress but is "lazy."

> Teacher: I have to push him and make him use his [reading] strategies. The reading specialist agrees the student is progressing slowly. Reading at independent D [reading level]
>
> The teacher says the student gets frustrated easily [and] is stubborn and sneaky. They move on (Team A observation, 11/9/2018)

In nearly every instance, team members' interpretations were disconnected from systematically-collected student data and instead were rooted in teachers' views of students, be they positive or negative.

Constructing Implications. Blue Ridge Falls' data team members rarely arrived at decisive, actionable instructional changes to enact for students. In fact, team members never discussed providing in-class accommodations for students, and often avoided opportunities even to provide out-of-class supports that could meet student needs. Take, for example, the following discussion regarding a student who may have benefitted from gifted services:

> [Student Name] is doing well. Principal asks about recommending for gifted services.
>
> Teachers are on board if they can recommend for gifted in 2nd grade.
>
> Principal: You can refer as early as Kindergarten.
>
> There is some discussion among teachers of waiting on CoGAT scores as indicators. In the past, the Title 1 coordinator has been told to hold off until middle of 3rd grade for recommending gifted services.
>
> Teacher: Is [student] just a good student or is she actually gifted?
>
> Teacher: She's just a really good student.
>
> Principal: Keep an eye on her.
>
> They move on (Team A observation, 11/9/2018).

Team members repeatedly appeared hesitant to officially recommend gifted services for students, and their conversations about these students would move on with no planned changes to in-class instruction to support or develop the student's talent or potential (Team A observation, 11/9/2018; Team C observation, 1/25/2019). The same phenomenon occurred when team members discussed students who appeared to be struggling:

> Math specialist: [the student] is not as successful [in math] as she is in reading. [Her] class average is 70%, 52% benchmark, 50% common assessment.
>
> Principal: Make parent contact about grades, especially in math. The student's mom [needs] to commit to two days per week of extra math during the after school program to work on deficits.
>
> Teacher: The mom is aware that math is a struggle and said it always has been.
>
> The teacher sends home extra work to help with this.
>
> Principal: She still needs to commit to 2 days per week after school (Team A observation, 11/9/2018).

As this excerpt shows, team members consistently focused on out-of-class interventions such as sending home extra work rather than planning in-class instructional supports for students.

In the instances in which team members did arrive at clear plans to enact, these decisions often appeared disconnected from the student data being discussed. For example, when one teacher brought up a student who was reading below her grade level and whose IEP required her to have tests read aloud, the team suggested letting her listen to music while she worked as a reward or incentive for reading (Team A observation, 11/9/2018). In another instance, a math teacher noted that a student "was pretty good at counting money [in class], but then she got a 65 on that test." The principal then suggested calling the parent to come in for a parent/teacher

conference (Team C observation, 1/25/2019). Thus, team members often resisted enacting actionable instructional changes, instead focusing on out-of-class activities or behavioral incentives students. In sum, these findings indicate a process of data use that was often limited to listing student data by only reporting out data from the data wall. When team members did engage in meaning making, it was frequently rooted in anecdotal accounts of students or of team members' attitudes or beliefs regarding students rather than grounded in systematically-collected student data. Finally, team members rarely constructed instructional implications regarding student data, and when they did so these implications were limited to seeking out-of-class approaches to support students' needs.

Organizational and Political Context

As mentioned previously, Coburn and Turner's (2011) framework establishes that all data use processes operate in and are informed by their organizational and political context. Coburn and Turner's (2011) state that data-use routines, access to data, and leadership all inform individuals' processes of data use. Data-use routines are "the modal ways that people interact with data and each other in the course of their ongoing work" (Coburn & Turner, 2011, p. 181). These routines may be formal or informal and static or dynamic; however, they must represent a "recurrent and patterned interaction" (Coburn & Turner, 2011, p. 181) that informs how individuals relate to each other and the data. Access to data is shaped by data-use routines and involves not only what data are available but also to which data individuals attend. Finally, Coburn and Turner (2011) explain, leadership within a particular context informs both data-use routines and access to data. For example, school principals may establish norms for data use or instruct data teams to attend to some data over others. Taken together, these facets of organizational and political context informed my within-case analysis to facilitate findings

related to whether the organizational and political context in which these teams functioned supported or constrained their data use. In the following section, I will use these facets of Coburn and Turner's (2011) framework to organize my descriptive findings from the within-case analysis conducted for Blue Ridge Falls Elementary School's data teams.

Leadership. As mentioned previously, school leadership informs many aspects of teachers' data use processes (Coburn & Turner, 2011). From establishing norms and procedures for data use to ensuring protected time for the practice, school leaders can play an important part in advancing teachers' data use (Anderson et al., 2010; Farrell, 2015; Hubbard et al., 2014; Lasater et al., 2019; Schildkamp & Poortman, 2015). At Blue Ridge Falls Elementary School, the principal was consistently involved in data team meetings, directly informing how and to what degree teachers engaged with student data. Indeed, this involvement likely was purposeful, as the principal informed me she was brought into Blue Ridge Falls Elementary School in order to support their DDDM initiative. As the following sections demonstrate, the principal regularly directed data-use routines, access to data, and protected time for data use that informed the functioning of Blue Ridge Falls Elementary School's data team meetings.

Data-use Routines. Blue Ridge Falls Elementary School's data teams had norms, both spoken and unspoken, that governed their data team meetings and constrained team members' data use. The primary explicit procedure was the principal's instructions to talk about every student by moving alphabetically though the list of students projected on the data wall (Team C observation, 1/25/2019). As the principal explained in her interview, this norm had become an expected feature of data team meetings:

> We know how it works. We'll go down, and we'll talk about each student. If they are – I mean if everything's going well, if anybody needs to comment on any student, we just go

> down our list. And usually we start – we do break it by subjects. We'll talk about the reading needs and the math needs or vice versa. We'll talk about math first and then reading. So, that's kinda how we break it down (Blue Ridge Falls Principal Interview, 10/11/2018).

Though this organization did help achieve the principal's stated goal of discussing each student, it also reinforced the tendency of team members simply to read off student data from the spreadsheet without much if any discussion. Thus, though some routines for data use did exist, said routines did not support team members in analyzing systematically-collected student data.

Various unspoken norms also shaped the functioning of these meetings, and these norms often changed according to the meeting. For example, in one meeting, the principal mentioned the creation of a new "test-anxiety group" to support students who tended to feel anxious about their performance on state assessments. She encouraged teachers to think about students who may be a good fit for this group (Team C observation, 1/25/2019). She also repeatedly implied that certain students may have test anxiety without citing any systematically-collected data or even anecdotes to support her inquiry. Quickly, data team members adopted inclusion in the test-anxiety group as a "go-to" solution for any student who may be struggling even if there was little evidence the student actually suffered from test anxiety. In other meetings, the "go-to" solution was recommending students to stay in the after school program (Team A observation, 11/9/2018). In both instances, these decisions were disconnected from the student data being discussed and were not grounded in other systematically-collected student data brought to the meeting. Thus, the option of a test-anxiety group often limited team members' conversations about students: once the "go-to" solution was offered, the conversation would move on.

Occasionally, the degree to which team members held themselves to certain unspoken norms appeared to waver. For example, when one team member recommended a student for the test-anxiety group, the principal disagreed because the group was comprised of all girls at that point and the student – a boy – would not "like that" (Team C observation, 1/25/2019). In another instance, when discussing a struggling student, one team member noted that it was a "good thing that he's not in [the] after school [program] because he is a distraction" (Team A, 11/9/2018), despite the fact that many other students facing similar challenges had already been included in the after school program. In sum, the spoken and unspoken norms that governed the data team meetings did little to support team members' data use and often served to curtail it.

Access to Data. Blue Ridge Falls Elementary School's data teams had access to a variety of student data which could inform their data use. Largely, these data included state standardized assessment scores as well as PALS scores, common and benchmark assessments, and classroom grades. Additionally Child Study, a process used to screen, diagnose, treat, and follow-up with students who were experiencing learning or behavioral difficulties (e.g. struggles with reading comprehension, anxiety, or hyperactivity) was also referenced regularly. Social-emotional data was largely overlooked.

The format in which data were displayed appeared to constrain, rather than support, sensemaking of student data. As mentioned previously, student data were presented via an excel spreadsheet and projected on a wall in the conference room. In the spreadsheet, student names were organized alphabetically and by teacher. This organizational structure appeared to direct team members' data conversations: almost exclusively, team members discussed student data according to the order of student names in the list, precluding other organizational structures which could have better supported team members' meaning making (i.e. according to student

proximity to targeted learning goals or objectives). Additionally, team members repeatedly mentioned having to squint to see the student data, indicating that the format in which data were presented may have limited team member engagement with analysis of student data.

Protected Time for Data Use. At the outset of the school year, Blue Ridge Falls Elementary School's data teams did appear to have protected time for data use. For example, they had built monthly data team meetings into the schedule and worked to ensure a variety of faculty members could attend. Yet, several factors outside and inside of the data team meetings ultimately limited the degree to which team members actually experienced *sufficient* time for data use. First, inclement weather days or other scheduling conflicts resulted in several data team meetings being cancelled. Cancelled meetings were never rescheduled. Furthermore, during the data team meetings that did occur, team members appeared to be highly aware of the time constraints and often had to rush through data conversations, as seen in this observer note from a field observation:

> It's now 9:15 – the administrative intern chimes in that there are seven minutes left for the meeting and they still have a few students to get through. They start to speed up discussions. (Team C observation, 1/25/19)

Finally, team members' discussions repeatedly digressed to casual conversations that were unrelated to data use. In fact, at one point, the administrative intern noted this issue and attempted to redirect the conversation as seen in this excerpt from a field observation:

> There is crosstalk discussion of student's home life/siblings and who lives with whom/who is/is not in school. This lasts for a long time.
>
> Administrative intern: We've digressed, we're down the rabbit hole.
>
> Crosstalk continues.

Administrative intern: Y'all are chasing Alice right down the hole.

Crosstalk continues about [a student's] family/father for almost eight minutes of conversation.

Principal: Alright we've got [student name] covered. (Team A observation, 3/29/19)

Together, these circumstances indicate that while data teams appeared to have protected time for data team meetings, the time was insufficient to allow for in-depth data use.

Data use at Piedmont Elementary School

Piedmont Elementary School's data team meetings occurred in a conference room adjacent to the principal's office. A large, rectangular table occupied most of the room. Most team members came to the meetings with notetaking materials and some form of student data such as classroom grades, benchmark and common assessment scores, or PALS data. Team members included the principal, grade-level teachers, reading specialists, a Title 1 coordinator, and a special education teacher.

Noticing. Piedmont Elementary School's data team meetings centered on identifying students who were struggling, often by listing the names of students who earned below a certain score on a benchmark or common assessment:

Principal: Ok so looking at those [students], tell me about kids that scored below 75% average on the common assessment since we've already gone through and talked about every kid [team members had already reviewed each student's performance in math].

Teacher: Lists student names who scored below 75%. She quickly runs down her list giving student names and scores: 72%, 54%, 72%, 53%.

Principal asks about a student – got a 90%, is that the benchmark?

Teacher: No, [the] common assessment.

Principal: Ok do the same with benchmark.

Teacher: 73 for two students (Team B observation, 10/15/2018).

In an interview with Piedmont Elementary School's principal, she described this structure thusly:

> So, we just do it for kids that are below certain levels that we've created for ourselves. So, I want to look at students, for example, that, in grades three, four, and five, who are performing below 75 percent on their common assessments. If they're average for common assessments is a 74, that would be a flag to indicate that they may be in need of some sort of intervention or intervention plan or modified intervention plan during our RTI [Response to Intervention] time that's built into every day (Piedmont Elementary School principal interview, 10/11/2018).

This structure frequently caused team members to report out student data and give incomplete references to student performance. For example, several team conversations during observed team meetings proceeded as follows:

[Student Name] – Math: 32% on benchmark, 74% class average (in math).

Teacher: She's good.

Principal: She's fine right?

Teacher: She's good. she's a good little worker (Team B observation, 10/10/2018).

As this excerpt shows, team members at times did not adhere to the "rule" that a 74% average indicated a need for intervention. Rather, the team quickly decided this student was "good" and the conversation moved on to the next student to be discussed. Yet even when the team appeared concerned about students' performance, team members' conversations were often limited, as this observation excerpt shows:

[Student Name]: 68% test average, 86% class average.

Teacher: He's got to have more confidence and more exposure to TEI (Technology Enhanced Item) questions. He failed the benchmark test, but he missed all the TEI questions.

Principal: He is not strong at all, but parents are supportive if you need then. Don't let him slip through because he's well behaved. He's not going to ask questions, so stay on him and make sure you're checking.

Teacher: Yeah, he plays school.

Principal: He needs to know he's on somebody's radar (Team D observation, 10/11/2018).

In this excerpt, even though systematically-collected data were mentioned, team members let these data pass without much notice. Instead, team members focused on recounting student attitudes and behaviors. Therefore, even though team members did spend time discussing students they felt were struggling, these conversations were often comprised of general comments about student performance rather than analysis or interpretation drawn from the collected data.

During their discussions, team members prioritized retelling of known information and sharing anecdotes about students. Comments about student performance were often vague, with team members stating that student did well on or did not pass a given assessment with no additional context, as shown in the following field observation excerpt:

[Student name]: Did well on benchmark.

Teacher: She's a hard little worker.

Title 1 Coordinator: She did well with the kindergarten screen.

Principal: Not worried about literacy skills?

Teacher: Not at all. (Team B observation, 11/15/2018)

Additionally, team members frequently talked in vague terms about student growth or performance, saying “she’s come a long way” or “he holds his own” without supporting these conclusions with systematically-collected data (Team B observation, 11/15/2018; Team D observation, 12/20/2018). In other discussions, team members would report on a given student’s data by couching their performance in the context of their classmates, such as saying a student is “right in the middle” (Team D observation, 11/15/2018) or “She’s the top one in the low [reading] group” (Team B observation, 11/15/2018). At no point were these statements supported by purposeful inquiry into or examination of student data.

Interpreting. Without noticing patterns or trends in systematically-collected data, Piedmont Elementary Schools' data teams tended to make meaning based on their own assumptions or beliefs, such as in the following conversation:

> [Student name] – Teacher brings up [this student’s] 23% on a benchmark and below grade level on PALS.
>
> Teacher: She’s worked so hard. I think she’s going to be ok. I really do. (Team B observation, 10/15/2018)

Though the teacher provided no rationale for her statement that the student was “going to be ok,” the rest of the team did not probe this conclusion or discuss what interventions could be enacted to ensure the student’s success. Furthermore, conversations relying on teacher intuition were also common when discussing interventions or supports a student may need, such as when the principal commented “I don’t think he is Title I material right now” (Team D observation, 12/20/2018) regarding a student who had been working with a Speech Pathologist. Despite no input from the Speech Pathologist – who was not in attendance – or any reference to systematically-

collected data, the data team concluded that the student's primary challenge was communication-based and as such would not benefit from additional supports from the Title 1 coordinator.

When teams did strive for interpretations based on systematically-collected student data, they expressed some doubt regarding what the data meant. For example, when discussing one student who scored an 83% on a math benchmark assessment, the principal and a math teacher had the following conversation:

> Principal: Have you seen her pick up on your instruction or not? Because the difference in reading is when she's getting it, she's getting it. (Here, the principal makes a conclusion regarding the student's performance in reading without citing any evidence for it. In fact, the student's performance in reading was not discussed in this meeting).
>
> Teacher: I don't know. I don't know what to tell you. I'd like to be able to say she's got it and is going forward but I don't know. She comes and goes. Every day is a new day. (Team D observation, 10/15/2018)

Thus, even when team members made an effort to attend to systematically-collected student data, teachers demonstrated uncertainty regarding the meaning behind the data, leading them to rely on instinct or intuition when constructing implications or to skip over opportunities for meaning making entirely.

Constructing Implications. Piedmont Elementary School's data team members also limited the degree to which they constructed instructional implications based on student data. In fact, few actionable responses to the data were even discussed. Those that were mentioned largely centered on changing the testing environment for students who underperformed on a given assessment. For example, one discussion observed during a field observation proceeded thusly:

The principal asks about a few students. She brings up one who gets anxious taking tests and says his language difficulties affect his testing.

Teacher: I've given him the squishy thing to squeeze for anxiety. I've put him in a testing situation where he's most comfortable.

Principal: Where did he go?

Speech Teacher: He's with me, and he will read the questions and answers aloud and sometimes he will talk himself out of correct answers.

Principal: That's his personality. (Team D observation, 10/15/2018)

Providing the appropriate testing environment can be a vital accommodation for students; however, at no point did the data team discuss how to make this student more confident in his content knowledge via in-class scaffolds or supports. Though at times team members discussed identifying students as needing Tier 1, Tier 2, or Tier 3 instructional supports according to the Response to Intervention (RTI) framework, these comments were often limited to reporting on students who may be "flagged" for a particular tier:

A student is brought up who scored 30% on the benchmark.

Teacher: She needs a lot of help.

Principal: So she's a [Tier] 2 and a recommendation [for additional supports]. I'm going to go ahead and put a note about attendance. She's getting ready to leave for a week – can't afford a week. Technically she's got enough [flags] to be a [Tier] 3. The speech teacher says her language screening results are concerning. (Team B observation, 10/15/2018)

Despite clear concerns from the team about this student's performance, at no point did they discuss how to modify in-class instruction to best meet her needs. Rather, the principal noted that

this student would be "pick[ed] up" by the Title 1 coordinator. Consistently, when the data team used the RTI framework, they focused on out-of-class supports provided by the Title 1 coordinator rather than on actionable, in-class scaffolds done by the classroom teacher to facilitate student learning.

Finally, at times the data team members themselves acknowledged that their conclusions did not align with the systematically-collected data discussed. For example, in one instance a team member noted that a student's PALS score indicated he was ready to move to a higher reading group. However, due to the student's behavior, the team member asserted the student was not ready for the increased independence of this group. As such, the team member concluded the student should stay in the "lower" and more structured reading group (Team B observation, 11/15/2018).

Organizational and Political Context

Examining how Piedmont Elementary school's data teams operated revealed that despite being positioned as a districtwide leader in data use, their process of data use was limited: team members often relied on anecdotes or instinct over deep inquiry into systematically-collected data. Furthermore, exploring the context in which these meetings were situated indicated that several aspects of Piedmont Elementary School's organizational and political constrained data team's data use.

Data-use Routines. Piedmont Elementary School's principal took an active role in the data team meetings, establishing explicit procedures that constrained team member's data use. For example, as mentioned previously, the principal often limited discussions about students by instructing team members to highlight students who had performed below a given score on a particular assessment:

Principal: Anyone below a C [average in class]?

Teacher: Oh yeah. [She names students and their grades] – three names, one D and two Fs.

Principal: And PALS?

Title 1 coordinator: Only one [student] didn't meet the benchmark (35%) with a 32%

(Team B observation, 11/15/2018).

This structure limited the time team members spent talking about the learning needs of who did not meet benchmark scores; in fact, rather than discussing these students, team members often reported out their names and then moved on. Additionally, this procedure limited the degree to which team members attended to students who did meet benchmarks, as this exchange shows:

Teacher: There's nobody in 5th grade [who did not meet the cut score].

Principal: Well let's record the numbers anyway.

Teacher: Ok. (Team D observation, 10/15/2018)

In other instances, the norms or procedures were less direct but no less constraining. For example, the principal often took the lead role in the structure and pace of the meetings:

Principal starts the same way as previous meetings. She starts reading names aloud from a list, starting with 3rd grade. They're quickly moving down the list. (At this point, most team members sat quietly and listened while the principal called out student names and the math teacher read aloud the data she brought to the meeting). (Team D observation, 10/15/2018)

Additionally, team members appeared to look to the principal for nearly all of the decisions made during the meetings. For example, when discussing one student, the principal and the Title 1 coordinator had the following conversation:

Title 1 coordinator: And on her running record even when you're giving the same feedback over and over it's not internalized. When I gave her time to decode the word she got it, but she's making errors that don't make sense a lot of the time. Even when you try to walk her through it's still, she can't juggle everything and it's kind of like Groundhog Day.

Principal: Call her mother today and send another one of those conference requests home. When you ask for one, make sure it's a time when she can come. If she says no that's different, but we should make the effort. (Team B observation, 11/15/2018)

As this excerpt shows, the principal was often the team member responsible for deciding on what, if any, course of action should be taken regarding a particular student. Yet, more often than not, the principal constrained the team's ability to arrive at any specific course of action. For example, in one meeting, a team member mentioned being concerned about a particular student. The principal simply replied, "She'll be ok, but she'll have to work twice as hard as the student next to her" before switching the conversation to another topic (Team B observation, 11/15/2018). The excerpt below captures a common occurrence in Piedmont Elementary School's data team meetings:

Principal: Anyone else you worried about?

Teacher: [Names a student] is my biggest concern in 3rd grade. If she doesn't get accommodations she's not going to make it. She gets just as much if not more [support] as others in her group, but they're working circles around her. (Observer note: This is the student from earlier who has a 504 plan but [the team members] are not sure what's in it.)

Principal: Let's just see what happens halfway through this next nine weeks. It may be that you need to refer for child study.

This discussion ends the meeting. (Team D observation, 11/15/2018)

The principal's guidance to "see what happens" was common; rather than pushing for immediate action to support a student, the principal often recommended teachers monitor a student for several weeks before making a decision. In sum, the principal often directed data team meetings via both explicit and implicit norms which constrained team members' data use.

Access to Data. Team member's access to data was also mixed. While the team mentioned having access to student data, these data were largely limited to benchmark or common assessments. Additionally, team members appeared to neglect purposeful data collection, instead collecting data to be discussed during meetings because it was convenient or accessible. For example, one team member noted that "In reading we took several tests because I was able to find them" (Team B observation, 10/15/2018). This team member then went on to report out the scores from these assessments without providing context regarding the content-area standards or learning targets to which these assessments were aligned.

Furthermore, some data team members averaged distinct pieces of data into a composite score that they would then share with the team. For example, when describing the data she had brought to the meeting, one teacher explained "We had one common assessment from the [school district], one I made and gave, and the benchmark. So I averaged those three to give an average score of big tests that are pertinent" (Team D observation, 10/15/2018). This practice prevented the teams from understanding student proximity to a given set of learning goals and indicated issues regarding team members' data literacy. In sum, the meaning behind the data to which team members had access was obscured through the ways in which the team handled the data. In turn, the team's ability to make instructional decisions based on data was limited.

Protected Time for Data Use. Data teams were constrained by the time allotted for their meetings. Specifically, the principal often seemed to feel pressure regarding the time the data team meetings were scheduled to take. For example, before beginning a meeting, the principal observed that the meeting schedule was "tight" (Team B observation, 10/15/2018). The conversations in the meeting then proceeded very quickly, with team members primarily reporting out student benchmark data from math or Language Arts classes with little to no discussion. Ultimately, the meeting – which was scheduled to take an hour – lasted about 30 minutes. Throughout the observed data meetings that occurred that day, the principal seemed highly aware of the time, and commented at one point that she was glad to be a full hour ahead of schedule (Team D observation, 10/15/2018). The pace at which the principal led these meetings rarely allowed for teachers to carefully attend to student data, to inquire in depth into what the data may have meant, or to have conversations around potential instructional decisions.

Cross-case Analysis

A cross-case analysis of the functioning data teams at Blue Ridge Falls Elementary School and Piedmont Elementary School was necessary to fully address the micro-problem of practice which informed this study. Therefore, I conducted a cross-case analysis to ascertain whether the limitations around data use at Blue Ridge Falls Elementary School were not limited simply to this school and to what degree both school's organizational and political context informed their data use. From this analysis, I concluded that data-use processes enacted during both schools' data team meetings did not align with research-based structures and supports for data use. Specifically, both schools' data team processes manifested as follows:

1. Data team members espoused narrow, accountability-focused data use processes.
2. Data teams members overlooked the role of the classroom teacher in student learning.

3. Data teams lacked purposeful configurations to support data use processes.

Pattern 1: Data team members espoused narrow, accountability-focused data use processes.

As mentioned previously, principals at both schools established formal and informal routines or processes for data use during the data team meetings. In their conceptual framework for data use, Coburn and Turner (2011) explained that formal routines are "guided by protocols and facilitated by a school coach or the principal," while informal routines tend to revolve around unstructured data conversations (p. 181). At Piedmont Elementary School, routines tended to be formal and static, such as when the principal directed team members to identify students who scored below a given score on a particular assessment. Frequently, these scores came from district- or state-level tests that were administered for accountability, such as benchmark or PALS assessments. Data team members repeated this routine across the observed team meetings, and members appeared very familiar with the expectation that they would identify students who did not meet the target score on a given assessment.

In contrast, the data use processes at Blue Ridge Falls Elementary School were at times formal and static and at others informal and dynamic. As described earlier in this chapter, the primary formal process was to read student data aloud from the data wall, with student names organized alphabetically and grouped by teacher. This routine was used during all of the observed data team meetings at Blue Ridge Falls Elementary School. Additionally, there were informal processes that varied across data meetings. For example, often the principal would participate in data team meetings by making the same recommendation for different students: in one meeting, she emphasized attending the after-school program; in another, participating in a test anxiety group. Regardless, most sought-after solutions aimed to increase student performance on district- or state-level assessments. Though the principal never directly stated

that other data team members should adopt her approach, team members appeared to notice her tendency to make specific recommendations and began to follow her lead. Quickly, these principal-directed recommendations became "go-to" solutions for the team, shaping many of the decisions that were made.

With these routines in place, data team members at both schools espoused narrow, accountability-focused data use processes. Rather than support data use as an iterative process of inquiry, analysis, and decision making, data team members enacted routines that espoused superficial, rote and repetitive data use processes. For example, these routines often led team members to read data aloud from a list, with reporting out student data an end unto itself rather than the beginning of an iterative process of data-driven inquiry, analysis, and action. In her interview, the Piedmont Elementary School principal noted how team members adopted this recurring routine into their data use processes:

> They automatically bring [student data] to me now instead of me saying "hey provide me with a report this time of what your common assessments were." They know what questions we talk about. And again, I don't have to have a formal piece to that where they complete a chart or complete a report, we just have conversation about it.

At no point did these routines support data teams' inquiry into or analysis of the data, nor did they help team members identify or enact appropriate in-class accommodations or modifications based on student needs. Rather, these processes often reinforced team members' tendencies to move directly from reporting on student data to making vague, superficial, or even inappropriate decisions regarding student needs.

Pattern #2: Data teams members overlooked the role of the classroom teacher in student learning.

Another consistent pattern in both schools was data team members' tendency to omit the role of the classroom teacher in supporting student learning. The basic purpose of DDDM is to help teachers enact appropriately challenging learning experiences for all students by, for example, considering whether learning experiences are a good fit for students or evaluating the appropriateness of a particular curricula (Datnow & Park, 2018; Hubbard et al., 2014). Yet members of both data teams never discussed in-class instructional approaches that could be used to support student learning. Rather, data teams simply viewed the existence of data team meetings as evidence of team members' data use. As the Piedmont Elementary School principal stated:

> We bring all the data to the table, and we just have conversations. After we go through and have – we have conversations about every single kid in the building. Every single one, because we are able to do that, because we're talking about 25 or less students in a session. So, every single student gets their time, and I don't know that you're able to do that in larger schools. So, I feel like we have a lot of opportunity to analyze. (10/11/2018)

Consistently, data teams did manage – however superficially – to discuss most students, with an emphasis on students who "concerned" or "worried" them (Team A observation, 11/9/2018; Team C observation, 1/1/2019). Though many of these discussions were limited, team members appeared to view a meeting as successful if a majority of students were discussed. For example, at the end of one such meeting, the Blue Ridge Falls Elementary School principal noted, "Everyone is working hard with this group. Great things are happening" (Team A observation, 11/11/2018). During these meetings, team members focused almost exclusively on non-

instructional circumstances that could impact student performance, such as the format of the test, the student's testing environment, or the student's personality or home life. This excerpt from a field observation shows how team members tended to overlook considerations regarding classroom instruction:

> [Student name] Teacher says she "likes to play the dumb card." Principal asks about reading level.
>
> Administrative Intern: [It's] R/S.
>
> Math Specialist: she's having trouble with fractions. She usually gets at least a 60 [on tests in class].
>
> The math teacher indicates her recent low test grade was due to silly mistakes.
>
> Principal: Is it anxiety?
>
> Teachers: No – [student name is] not intimidated by [a] pop quiz.
>
> Reading Specialist : She could pass [SOL] if she focuses.
>
> Teachers feel [the student's] confusion is an act.
>
> Reading Specialist: Small group testing would be good.
>
> Principal: Does she needs individual testing.
>
> Teachers: No, small group [testing] is sufficient (Team C observation, 1/25/2019).

This observational excerpt demonstrates a common occurrence during both schools' data team meetings: team members identified some areas in which a student was struggling, but their conversation focused on their deficit view of the student, attributing her low score to her attitude and behavior. At no point did team members, including this student's own teachers, consider the role of classroom instruction to improve student learning outcomes. Likewise, when the team discussed potential changes to support student performance, they focused on the testing

environment rather than on in-class accommodations or instructional approaches. Furthermore, at no point did either school's data teams consider the instructional needs of students who were performing at or above their expectations. Data team members appeared to be satisfied simply by completing a meeting rather than considering whether the meeting yielded instructional decisions to support student learning. In sum, team members' data use processes revolved around identifying a variety of causes for students to underperform on assessments, none of which included the quality or impact of in-class instruction. Additionally, when the teams made actionable decisions based on student learning outcomes, these decisions never included modifying classroom instruction to better support student needs.

Pattern #3: Data teams lacked purposeful configurations to support data use processes.

Finally, a consistent pattern across both schools was that data teams lacked purposeful configurations to support data use processes. Consistently, research on DDDM recommends that data teams be developed via some intentional grouping of teachers, instructional specialists, school-level administrators, and others (Schildkamp & Poortman, 2015). In their most successful configurations, school leaders compose teams of specific individuals who can make unique contributions to the group, purposefully building data teams so that all participants can support and be supported in their data use processes (Schildkamp & Poortman, 2015). Yet at both participating schools, data teams were formed by grouping teachers according to grade level. Other faculty such as reading specialists, special education teachers, school counselors, or speech pathologists attended based on their availability. For example, while grade-level teachers' attendance was consistent, other faculty members often dropped into meetings as their schedule allowed, sometimes missing meetings entirely. Below, the Piedmont Elementary School principal describes this structure:

> [I]n our school, I only have one grade-level teacher at every grade level except for kindergarten. Three, four, and five are actually departmentalized, semi-departmentalized. So, on our data team would be the teacher, the instructor, and that content or that grade level. My title I reading specialist, my special education teachers, my speech/language provider, as well as – I have a part-time guidance person, and sometimes she's in those meetings depending on the schedule. Sometimes she is not able to attend that. (Piedmont Elementary School principal interview, 10/11/2018).

Similarly, at Blue Ridge Falls Elementary School, faculty members such as the speech pathologist, special education teachers, and school counselor inconsistently attended data team meetings. At no point did principals at either school enact any other approach to forming data teams, such as according to discipline rather than grade level, that could have helped team members consider content-specific approaches to supporting student learning.

Conclusion

In this chapter, I described findings related to my research question and my micro-problem of practice. I first discussed both schools' data teams separately, then I drew comparisons between the functioning of both schools' data team meetings to identify three overarching patterns regarding how both schools' organizational and political context informed team member's data use. Together, these findings indicate that both schools' data teams were constrained by the organizational and political context in which they operated, thereby limiting their processes of data use. Additionally, these findings illustrate the important role of rural school leaders, particularly principals, in advancing data use at their schools. In the following chapter, I discuss the implications related to these findings in light of my aforementioned micro-

and macro-problems of practice. I also make recommendations to support data use within the participating schools and to advance future research regarding the functioning of data teams.

Chapter 5: Recommendations and Conclusions

Through this study, I explored the implementation of grade-level data team meetings, taking into consideration their organizational and political contexts. With this research project, I aimed ultimately to develop a better understanding of how to engage teachers in data use in order to provide high-quality and equitable learning opportunities for all students. As such, I explored how two rural elementary schools' data teams engaged in data use while considering the ways in which the functioning of those teams was informed by a variety of school-level factors such as leadership, routines and norms, access to data, and protected time for data use. Using Coburn and Turner's (2011) Framework for Data Use Research, I situated this exploration within the context of two rural elementary schools in the mid-Atlantic United States, both of which were aiming to engage in data use during data team meetings to address the following research questions:

> *To what degree does the school's leadership support engagement in data use within the context of data teams?*
>
> *To what degree do common patterns occur in data team meetings across two different schools?*

In this chapter, I discuss this study's findings in light of relevant research regarding data use, give recommendations for the participating schools to enact to better support their data teams' effective data use, and describe the limitations of this study's findings.

Recommendations

The micro-problem of practice that anchored this study was to consider whether the limited and albeit ineffective data use I observed at Blue Ridge Falls Elementary School was just

anomaly or was indicative of a broader issue concerns other elementary schools' data use in the district that espoused data use as a priority. To that end, I explored how data teams in two rural elementary schools, Blue Ridge Falls Elementary School and Piedmont Elementary School, engaged in data use to better understand how these teams functioned within their organizational and political contexts. The findings from the previous chapter suggest that the limitations regarding data use I observed are likely districtwide, as I found numerous similarities between the functioning of data teams at both schools as well as in the organizational and political structures that constrained their data use. Therefore, in this section I present recommendations to support data use at the district and the school level.

Macro-Recommendation: Prepare Teachers To Notice, Interpret, and Construct Instructional Implications based on Student Data

An integral part of moving data teams beyond superficial data use and toward data use that actually impacts in-class instruction is to prepare team members to consider fully what it means to "use data." To that end, my first recommendation is rooted in Coburn and Turner's (2011) framework for data use and focuses on three components of data-use processes: noticing, interpreting, and constructing implications. I call this recommendation a macro-recommendation because it can be enacted at the district level to advance all teachers' engagement with data use. In the following sections, I describe how and why the district should focus on strengthening data teams' ability to notice, interpret, and construct implications based on student data.

Noticing. In both schools, data teams' noticing of student data is limited. In other words, the data teams rarely observe patterns in the data. Additionally, the teams adopt a limited view of the types of data worth noticing, tending to focus almost entirely on summative assessments such as district benchmarks or statewide standardized tests. Yet given that summative assessments

occur at the end of an instructional period, it can be difficult to modify instruction based on summative assessment data (McMillan, 2018). Notably absent from the observed data teams' data use are the regular inclusion of classroom-based assessments, particularly common formative assessments, which can better support data teams' ability to meet various student needs through their instruction (McMillan, 2018; Tomlinson & Moon, 2013). As this study's findings show, data from team members' classrooms at best includes students' end-of-quarter grades in a particular subject, and discussions regarding these data are rare. Additionally, at no point do the data teams consider data collected via common formative assessments. Yet, formative assessments are vital elements of the assessment cycle (Tomlinson & Moon, 2013) and are integral to forming sound instructional decisions (McMillan, 2018). Therefore, I recommend the district enact teacher training opportunities regarding data use with an emphasis on incorporating all parts of the assessment cycle – particularly formative assessments – into teachers' classroom assessment plans and data team meeting discussions. During training sessions, instructors should model how all parts of the assessment cycle work together to direct teachers' pedagogical decisions and support student learning. Furthermore, attendees should bring student data from common formative assessments to analyze and discuss. Through this approach, data teams can become more equipped to discuss and understand classroom-based formative assessments during data team meetings.

Interpreting. In addition to broadening teacher noticing of student data to incorporate formative assessments, school and district leaders can focus on supporting teachers' ability to make meaning from various forms of data. Evident in this study's findings is the limited degree to which data teams at either school engaged in meaning making based on student data. Indeed, data team members themselves expressed confusion regarding what student data may mean. To

that end, I recommend that professional development sessions for this district's elementary schools focus on two primary topics. The first is alignment, or the degree to which assessments relate to the classroom instruction students' received as well as the learning objectives (i.e. KUDs) and state standards that informed that instruction. This is an important and necessary focus because data team members at both schools often express confusion or uncertainty regarding what a student's score on an assessment may indicate. As Gummer and Mandinach (2016) explained, "Teachers do not use data to inform teaching without reference to the instructional goals and objectives that address the disciplinary areas they teach" (p. 12). By focusing on alignment between curriculum, assessment, and instruction, PD leaders can help attendees understand the discipline-specific knowledge, understanding, and skills students were asked to demonstrate on a given assessment. By connecting the training to teachers' specific content area, teachers may be better equipped to consider the implications of a high or low score and to make instructional decisions accordingly.

The second topic that can support individuals' meaning making is how to uncover and reflect on patterns in student data. This training can help attendees plan for instructional grouping, set long-term goals for students, and identify areas of student strength or potential (Datnow & Park, 2018). Through focusing on alignment and pattern identification, individuals can grow in their ability to make meaning from a variety of student data. In all PD sessions, leaders should ensure the training is active, content-focused, and provides collaborative learning opportunities for teachers to develop their data use (Darling-Hammond et al., 2017).

Constructing Implications for Instructional Actions. Finally, professional development can emphasize how to construct implications based on interpretations of student data to inform classroom instruction. In both schools' data team meetings, faculty rarely

constructed implications based on student data, and when they did so these implications did not result in changes to in-class instruction. Therefore, as with the training sessions regarding interpretation, faculty could benefit from PD on how to arrive at these implications. These PD sessions can focus on two topics. The first is how to decide to modify in-class instructional approaches based on conclusions drawn from student data. This focus is necessary because during many of the observed data team meetings, faculty emphasize out-of-class scaffolds or supports for students almost exclusively. By emphasizing the importance of constructing implications based on student data, PD leaders can model decision-making around when modifying in-class instruction is necessary and which modifications may be appropriate. Attendees can also collaborate with one another to identify and plan for such modifications. For example, during the training teachers could form content-area groups in which they practice making discipline-specific instructional decisions based on student data. In this stage, training should draw on individuals' pedagogical and content knowledge and should ensure ample opportunities for attendees to practice collaborating with colleagues during the decision-making process. Furthermore, these sessions should emphasize how to decide what, if any, out-of-class supports are necessary to support student learning.

Characteristics of Effective Professional Development. To this point, my recommendations regarding teacher training have focused on data-use-specific topics that should form the content of the professional development sessions. However, it is also necessary to ensure the training offered to teachers aligns to research based on the characteristics of effective professional development. Therefore, in this section I briefly describe the general qualities that should be apparent in the teacher training provided.

Professional Development is Ongoing. District leaders should work with schools to plan continual opportunities for PD in data use. This characteristic is vital for two main reasons. First, data use itself is a complex construct (Gummer & Mandinach, 2015), and supporting educators' ability to transfer their interpretations of student data into their instruction will take time. Through ongoing PD, faculty can build their knowledge and skill in data use over time, developing and refining their ability to use data to make instructional decisions and support student learning (Gummer & Mandinach, 2015; Jimerson, 2014). A synthesis of research on qualities of effective professional development reveals substantial contact time is necessary for the training to impact teacher knowledge and skill. As Desimone (2009) explained:

> Research has not indicated an exact "tipping point" for duration but shows support for activities that are spread over a semester (or intense summer institutes with follow-up during the semester) and include 20 hours or more of contact time. (p. 184).

This summer institute model may work quite well for the district, as some faculty are already accustomed to working with assessments and curriculum during the summer (Piedmont Elementary School principal interview, 10/11/2018). The district could consider leveraging their existing structures for summer work to support ongoing PD in data use.

Professional Development Includes Opportunities for Modeling and Practice. The duration of PD is far from the only characteristic needed to ensure the sessions impact teaching and learning. Other features of effective PD include that it involves active, content-focused, and collaborative learning opportunities (Darling-Hammond et al., 2017). In other words, PD should provide many occasions for faculty to discuss relevant student work, to delve into how students learn in their content areas, and to demonstrate their own teaching practices (Desimone, 2009). These criteria can be met during PD on data use by modeling of and engaging in DDDM during

the sessions. Attendees could work collaboratively with data from their own students or with simulated student data in order to develop and refine their data use knowledge and skill.

Characteristics of Professional Development for Data Use. Not only should the professional development offered align to general best practices for teacher training, it also should incorporate what is known regarding how best to support educators in their data use practices. For example, research suggests that when teachers engage in PD around data use, they often are actually being trained in how to use data management systems rather than in how to collect, interpret, and construct instructional implications based on student data (Jimerson, 2014). Indeed, this phenomenon appears to be playing out within the school district in which this research took place, as the principal at Piedmont Elementary School described having extensive training in the use of Power School – an online platform used to house student data – and cited teachers' training in Power School as an examine of professional learning opportunities for data use (Piedmont Elementary School principal interview, 10/11/2018). While supporting educators to use tools such as Power School can be one facet of supporting engagement with data use, research suggests this training alone is insufficient to develop teacher capacity for DDDM (Jimerson, 2014; Jimerson & Wayman, 2015). Rather, educators need training to develop their data literacy for teaching, or the pedagogical knowledge, content knowledge, and knowledge of data use that undergird DDDM (Datnow & Hubbard, 2015; Gummer & Mandinach, 2015; Jimerson, 2014). Specifically, my findings indicate that this study's participants need additional support in understanding what student data may mean and aligning those understandings to discipline-specific instructional approaches. Therefore, I recommend that the following topics form the basis of districtwide PD sessions for elementary-school faculty in this district:

Module #1: Understanding Assessment Data. Through this module, I recommend educators explore how commonly-used assessments including PALS, benchmark and common assessments provide information regarding what students know, understand, and can do. As noted in my findings, data team members did not appear to consider what information could be gathered from the myriad student data to which they had access, and some faculty even expressed confusion regarding what the data may mean. This module's focus can address those issues by focusing on the knowledge, understanding, and skills students demonstrate on the assessments most often discussed in the data team meetings. Additionally, this module can expand educators' conceptions of student data to include classroom observations, formative assessments, social-emotional learning data, and other types of student data that can support understanding of the whole child.

Module #2: Organizing and Interpreting Assessment Data. Through this module, I recommend educators explore how to gather and organize their own student data in order to make data-informed decisions. One common characteristic of both school's data team meetings was a lack of clarity about how best to organize data in order to support educators' making meaning from the data. For example, Blue Ridge Falls Elementary School's data teams tended to collect data in an excel spreadsheet and to organize the data alphabetically, customs that actually constrained rather than supported the team's data use. Therefore, this module can explore options for housing student data that can facilitate rather than limit data team's ability to interpret student data.

Module #3: Constructing Implications from Assessment Data. Through this module, I recommend educators explore how to construct implications for their classroom instruction based on their analysis of student data. As my findings show, data teams never sought to develop in-class instructional decisions or modifications that could support student learning. Therefore,

this module will focus on how to transform their interpretations of student data into discipline-specific instructional approaches for the classroom. Through this module, educators can explore and enact a variety of instructional approaches to engage and support students. Additionally, they can collect additional student data to uncover whether the instructional approaches they enacted were a good fit for their students, thereby engaging in the ongoing cycle of DDDM.

To facilitate these PD modules, I recommend the district enact the following year-long schedule, which combines the aforementioned characteristics of effective professional development together with the module topics listed above.

Table 5.1

PD for Data Literacy Schedule

Date (approximate)	**Tasks**
Summer Institute (prior to school year)	Introduction to Modules 1-3
September	Revisit Module 1
October	Revisit Module 2
November	Revisit Module 3
January	Revisit Module 1
February	Revisit Module 2
March	Revisit Module 3

I recommend this schedule for PD because by introducing modules in a summer institute and revisiting them throughout the school year, educators will be able to refine their data literacy over time using actual student data they collect throughout the year. Additionally, because data use is itself an iterative cycle, this recurring PD structure will help teachers to engage continually in making data-informed decisions that can support teaching and learning in their classrooms.

Micro-Recommendations for Data Use

The aforementioned recommendation aims to support data use at the district level. However, effective data use initiatives must acknowledge the ways in which each school is comprised of faculty who will have their own attitudes and approaches toward data use (Coburn & Turner, 2011). Similarly, no two student populations are exactly the same, and school-level data use initiatives can be tailored to support the unique needs of the students therein (Park & Datnow, 2017). Therefore, I use the following sections to make school-level recommendations to support data use. Though the following recommendations can be enacted across the district, the ways in which they are realized may vary by school.

Micro-Recommendation #1: Purposefully Reconfigure Data Teams. An essential component of supporting data teams' data use is to purposefully select who actually comprises the data team. As I referenced in my introductory chapter, Schildkamp et al. (2016) explain the ideal configuration of a PLC includes the following: "shared values and visions, collective responsibilities, engagement in reflective professional inquiry, collaboration, promoting both group and individual learning, mutual trust, inclusive membership, and openness" (p. 229). These criteria are not met among either participating schools' data teams, which often are built according to teachers' grade level with other faculty such as school counselors, speech pathologists, and instructional specialists attending if they are available. Therefore, my second recommendation is that school and district leaders revisit data team configurations, purposefully building teams to support data use. For example, data teams could be configured according to content area in order to support teachers' decision making according to their discipline. As mentioned previously, one significant missing piece of the observed data team meetings was that team members rarely used student data to make decisions about teachers' instruction. By

reconfiguring data teams according to content area rather than grade level, teachers can leverage their pedagogical content knowledge to support one another in choosing and enacting instructional approaches aligned to their discipline.

Furthermore, school and district leaders should set expectations regarding who should attend data team meetings. Without much consistency among who comprises a data team, it is difficult to build the rapport and trust necessary for the team to reach its potential for supporting student learning (Schildkamp et al., 2016). Yet, at most observed data team meetings, the faculty in attendance vary. With established norms regarding who should attend these meetings, data teams can begin to build the type of community needed to best support student learning through data use. Additionally, school leaders such as principals are uniquely positioned to build effective data teams due to their firsthand knowledge of the faculty. Therefore, I recommend the principals carefully consider who among the faculty may work well together on particular teams as well as who could contribute to positive, data-focused meetings.

Micro-Recommendation #2: Leverage School Leadership for Data Use. To date, existing research regarding leadership for data use has couched the principal's role as being responsible for establishing organizational structures to support data use, such as providing formal training in the practice or ensuring protected time for data use (Anderson et al., 2010; Hubbard et al., 2014). Yet, despite this expectation, relatively little is known regarding how principals actually inform data use during the data team meetings they often are tasked with leading (Meyers et al., 2021). This study contributed to the broader conversation regarding how principals lead data use in schools. Specifically, this study indicated that even when principals regularly engage in data team meetings and aim to enact organizational and political structures to advance DDDM, they may ultimately constrain rather than advance data teams' data-use

processes. Much of the research around supporting teachers' DDDM has focused on building their capacity for the practice, and indeed doing so is an important endeavor. Yet this study indicates that principals, too, may need purposeful supports to advance their capacity for data use so they may more effectively lead teachers in DDDM.

Rural School Principals' Role in Data Use. This study also indicated a particular missed opportunity for rural school principals to support an in-depth approach to DDDM at their schools. Both data teams clearly had rich knowledge of their students, often having taught multiple generations of their students' families. Also, many faculty at these schools had themselves been embedded in the community for generations, such as the principal at Piedmont Elementary School who was a graduate of the school district in which she worked. This sustained engagement within a particular community appeared to reduce the degree to which both schools experienced teacher turnover: at one school, the principal informed me she had not had to hire a new teacher in eight years. Taken together, these contextual factors represent a unique opportunity for both schools' data teams to engage in sustained data-use practices that are made richer by their generational understanding of their students' home lives and community. For example, teachers could have allowed their understanding of their students' homes and communities to plan learning experiences that incorporate students' funds of knowledge (Hinchman & Appleman, 2017). Yet rather than allow this knowledge to undergird their instructional decision making, the data teams in this study often shared their knowledge of students home lives in ways that derailed their data use. In one data team meeting, team members themselves acknowledged that they got "off topic" and were "chasing rabbits" as they talked about students' out-of-school circumstances. Therefore, I recommend that both research and

practice consider how to leverage the unique role of the rural school principal in advancing schoolwide data use.

Establish Clear, Specific, and Actionable Norms and Routines for Data Use. Regarding the importance of data-use routines, Schildkamp et al., (2017) wrote "there should be norms for data use, meaning that data use should be a priority in the school and that the school needs a structured method for analysis and interpretation of data on which to base actions" (p. 244). Breaking down Schildkamp et al.'s (2017) statement into two parts reveals how norms and routines for data use can be enacted both at the school-level and within opportunities for collaborative data use, such as data-team meetings. The first part of this statement, that data use should be a priority, can begin to be addressed through school-wide norms and routines for data use that establish a vision for DDDM. The second part, that there must be a systematic approach to data use, can begin to be addressed by specific routines or procedures that guide data teams in data use. Therefore, I recommend that school principals, teachers, and other data-team members collaborate to generate a set of norms to guide data use at their school. Specifically, these norms should acknowledge that faculty members likely have rich knowledge regarding their students' lived experiences and should set parameters regarding how this knowledge can be used productively during data-team meetings to support student learning. For example, principals can work with other faculty to establish norms regarding when and why information regarding students' lived experiences should be shared. Additionally, principals can draw from a variety of procedural models for data use (Coburn & Turner, 2011; Gummer & Mandinach, 2015; Schildkamp & Ehren, 2013) to develop

Limitations

As with all research, there are limitations that arose during this study. Two primary limitations informed this study. The first was that my data sources were exclusively archival. This meant that all data were collected prior to planning or developing my study, and I was unable to directly tailor the interview or observation protocols I used to my research question. Because my study purpose and research design were inspired by the larger study in which the archival data were collected, the impact of this limitation did not notably hinder my ability to develop a rich picture of how data use was enacted during both schools' data teams or how the schools' organizational and political contexts informed their data team meetings. However, using archival data exclusively did mean I did not conduct follow-up interviews with participants, which could have illuminated how the schools' data-use efforts may have changed or progressed. Follow-up interviews or observations at Blue Ridge Falls Elementary School would have been particularly interesting for me to collect because the administrative intern mentioned in the archival data is now the acting principal. Without additional data collection, I do not know how this personnel change may have informed the school's organizational and political content or the functioning of their data team meetings.

Reflection

I discovered my passion for supporting teachers to use student data to inform their instruction during my doctoral studies at UVA. More than anything, I am driven to help teachers, particularly teachers in rural schools, better meet the needs of their students through enacting research-based approaches to teaching and learning. Through this capstone, I aimed to pair that passion with the methodological rigor necessary to understand and address a problem of practice in a local context. This capstone experience therefore represents a synthesis of my growth

throughout my doctoral studies. By combining my interest in rural schools with an in-depth exploration of how data teams at these schools engage in data use, I arrived at practical recommendations that can support data teams' data use processes and ultimately positively impact student learning. In the future, I intend to continue to pair research and practice to improve teaching and learning for all students.

Educators in rural schools are uniquely equipped to attend to their students through the rich knowledge that can develop from living in a small community. For example, many of the teachers in both Blue Ridge Falls Elementary School and Piedmont Elementary School had lived and taught in this school district for many years, even decades. By being embedded in the community, they regularly encountered their students and students' families outside of school, such as at local stores or community events. Additionally, they were often deeply familiar with their students' families, often having taught their students' relatives. This rich understanding of students' worlds outside of school can afford rural educators a valuable opportunity to notice and address the needs of the whole child.

Yet, too often in the observed data team meetings, team members did not leverage this knowledge into action that could support their students. Rather, they engaged in unproductive conversations akin to gossip, sharing but not acting on students' out-of-school circumstances. Indeed, rural educators are often met with so much knowledge regarding their students' lived experiences that they may not know how to use their knowledge productively. For example, in an interview with the Piedmont Elementary School principal, she noted "[B]eing a small school in a small community, we sometimes have more information about what's going on outside of our building than we care to have" (Piedmont Elementary School Principal interview, 10/11/2018). Educators in rural schools, therefore, need more support regarding how to

incorporate their rich knowledge of their students' lived experiences into data team meetings to meet the needs of the whole child.

Coburn and Turner's (2011) framework provides an opportunity to begin to consider how to support rural educators in leveraging their understanding of students' out-of-school circumstances. As mentioned previously, Coburn and Turner (2011) define data use processes as "what actually happens when individuals interact with assessments, test scores, and other forms of data in the course of their ongoing work" (p. 175). They go on to identify noticing as an important first step in an educator's data use processes that involves attending to student data to identify patterns and learning needs (Coburn & Turner, 2011). However, individuals may be limited in their ability to attend to patterns in the data for several reasons. For example, Coburn and Turner (2011) explain that people tend to focus on data that can confirm their existing beliefs and may overlook entirely data that contradicts those beliefs. Furthermore, Coburn and Turner (2011) describe a phenomenon called "data overload" in which "individuals often narrow the range of information they search for and pay attention to because they simply cannot attend to it all given real limits of their time and attention" (p. 177). In light of these potential limitations regarding individual's noticing of student data, the ways in which educators at both participating schools discussed their students' out-of-school circumstances gains additional significance: data team members' focus on students' lived experiences indicates they were aware of its potential impact on teaching and learning; however, they often used these discussions to reinforce deficit views of their students. Therefore, these data team members needed more support in translating their knowledge of students' lived experiences into valuable data to support student learning.

Research and practice can expand procedural models for data use such as Coburn and Turner's (2011) data use processes to better incorporate rural educators' knowledge of the whole

child including how to translate this knowledge into asset-oriented approaches to teaching and learning. For example, Coburn and Turner's definition of data use processes could incorporate specific reference to data educators can gather from their own understanding of students' out-of-school circumstances. Additionally, procedural models for data use can explicitly describe how examine and reflect on students' lived experiences as a data source rather than as a source of gossip. Finally, procedural models for data use can include specific plans for translating this data into action to support the whole child while in school.

References

Anderson, S., Leithwood, K., & Strauss, T. (2010). Leading data use in schools: Organizational conditions and practices at the school and district levels. *Leadership and Policy in Schools*, *9*(3), 292–327. https://doi.org/10.1080/15700761003731492

Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. SAGE.

Bolhuis, E., Voogt, J., & Schildkamp, K. (2019). The development of data use, data skills, and positive attitude towards data use in a data team intervention for teacher educators. *Studies in Educational Evaluation*, *60*, 99–108. https://doi.org/10.1016/j.stueduc.2018.12.002

Booher-Jennings, J. (2005). Below the bubble: "Educational Triage" and the Texas accountability system. *American Educational Research Journal*, *42*(2), 231–268. https://doi.org/10.3102/00028312042002231

Chuong, C., & Schiess, J. O. (2016). *The promise of personalized learning in rural america*. Bellweather Education Partners.

Coburn, C. E., & Turner, E. O. (2011). Research on data use: A framework and analysis. *Measurement: Interdisciplinary Research & Perspective*, *9*(4), 173–206. https://doi.org/10.1080/15366367.2011.626729

Cosner, S. (2011). Teacher learning, instructional considerations and principal communication: Lessons from a longitudinal study of collaborative data use by teachers. *Educational Management Administration & Leadership*, *39*(5), 568–589. https://doi.org/10.1177/1741143211408453

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fifth edition). SAGE.

Curry, K. A., Mwavita, M., Holter, A., & Harris, E. (2016). Getting assessment right at the classroom level: Using formative assessment for decision making. *Educational Assessment, Evaluation and Accountability*, *28*(1), 89–104. https://doi.org/10.1007/s11092-015-9226-5

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective Teacher Professional Development* (p. 76). Learning Policy Institute.

Datnow, A., & Hubbard, L. (2015). Teachers' use of assessment data to inform instruction: Lessons from the past and prospects for the future. *Teachers College Record*, *117*, 1–26.

Datnow, A., & Hubbard, L. (2016). Teacher capacity for and beliefs about data-driven decision making: A literature review of international research. *Journal of Educational Change*, *17*(1), 7–28. https://doi.org/10.1007/s10833-015-9264-2

Datnow, A., & Park, V. (2018). Opening or closing doors for students? Equity and data use in schools. *Journal of Educational Change*, *19*(2), 131–152. https://doi.org/10.1007/s10833-018-9323-6

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, *38*(3), 181–199. https://doi.org/10.3102/0013189X08331140

Dunn, K. E., Airola, D. T., Lo, W.-J., & Garrison, M. (2013). What teachers think about what they can do with data: Development and validation of the data driven decision-making efficacy and anxiety inventory. *Contemporary Educational Psychology*, *38*(1), 87–98. https://doi.org/10.1016/j.cedpsych.2012.11.002

Farley-Ripple, E., & Buttram, J. (2015). The development of capacity for data use: The role of teacher networks in an elementary school. *Teachers College Record*, *117*, 1–34.

Farrell, C. C. (2015). Designing school systems to encourage data use and instructional improvement: A comparison of school districts and charter management organizations. *Educational Administration Quarterly*, *51*(3), 438–471. https://doi.org/10.1177/0013161X14539806

Gummer, E. S., & Mandinach, E. B. (2015). Building a conceptual framework for data literacy. *Teachers College Record*, *117*, 1–22.

Hays, D. G., & Singh, A. A. (2012). *Qualitative inquiry in clinical and educational settings*. Guilford Press.

Hinchman, K. A., & Appleman, D. (Eds.). (2017). *Adolescent literacies: A handbook of practice-based research*. Guilford Press.

Hubbard, L., Datnow, A., & Pruyn, L. (2014). Multiple initiatives, multiple challenges: The promise and pitfalls of implementing data. *Studies in Educational Evaluation*, *42*, 54–62. https://doi.org/10.1016/j.stueduc.2013.10.003

Huguet, A., Farrell, C. C., & Marsh, J. A. (2017). Light touch, heavy hand: Principals and data-use PLCs. *Journal of Educational Administration*, *55*(4), 376–389. https://doi.org/10.1108/JEA-09-2016-0101

Huguet, A., Marsh, J. A., & Farrell, C. (2014). Building Teachers' Data-use Capacity: Insights from Strong and Developing Coaches. *Education Policy Analysis Archives*. https://doi.org/10.14507/epaa.v22n52.2014

Jimerson, J. B. (2014). Thinking about data: Exploring the development of mental models for "data use" among teachers and school leaders. *Studies in Educational Evaluation*, *42*, 5–14. https://doi.org/10.1016/j.stueduc.2013.10.010

Jimerson, J. B., & Wayman, J. C. (2015). Professional learning for using data: Examining teacher needs & supports. *Teachers College Record*, *117*, 1–36.

Lai, Mei Kuin, Wilson, A., McNaughton, S., & Hsiao, S. (2014). Improving achievement in secondary schools: Impact of a literacy project on reading comprehension and secondary school qualifications. *Reading Research Quarterly*, *49*(3), 305–334. https://doi.org/10.1002/rrq.73

Lai, M.K., & McNaughton, S. (2016). The impact of data use professional development on student achievement. *Teaching and Teacher Education*, *60*, 434–443. https://doi.org/10.1016/j.tate.2016.07.005

Lasater, K., Albiladi, W. S., Davis, W. S., & Bengtson, E. (2019). The data culture continuum: An examination of school data cultures. *Educational Administration Quarterly*, *00*(0), 0013161X1987303. https://doi.org/10.1177/0013161X19873034

Little, J. W. (2012). Understanding data use practice among teachers: The contribution of micro-process studies. *American Journal of Education*, *118*(2), 143–166. https://doi.org/10.1086/663271

Marsh, J. A., Bertrand, M., & Huguet, A. (2015). Using Data to Alter Instructional Practice: The Mediating Role of Coaches and Professional Learning Communities. *Teachers College Record*, *117*, 1–40.

Marsh, J. A., Sloan McCombs, J., & Martorell, F. (2010). How instructional coaches support data-driven decision making: Policy implementation and effects in Florida middle schools. *Educational Policy*, *24*(6), 872–907. https://doi.org/10.1177/0895904809341467

McMillan, J. H. (2018). *Classroom assessment: Principles and practice that enhance student learning and motivation* (Seventh edition). Pearson Education.

Means, B., Padilla, C., DeBarger, A., & Bakia, M. (2009). *Implementing data-informed decision making in schools—Teacher access, supports and use*. U.S. Department of Education.

Meyers, C., Moon, T. R., Patrick, J., Brighton, C. M., & Hayes, T. (2021). Data use processes in rural schools: Management structures undermining leadership opportunities and instructional change. *Submitted for Publication*.

National Policy Board for Educational Administration. (2015). *Professional standards for educational leaders*.

Park, V., & Datnow, A. (2017). Ability grouping and differentiated instruction in an era of data-driven decision making. *American Journal of Education*, *123*(2), 281–306. https://doi.org/10.1086/689930

Player, D. (2015). The supply and demand for rural teachers. *Rural Opportunities Consortium of Idaho*, 1–34.

Poortman, C. L., & Schildkamp, K. (2016). Solving student achievement problems with a data use intervention for teachers. *Teaching and Teacher Education*, *60*, 425–433. https://doi.org/10.1016/j.tate.2016.06.010

Rossman, G. B., Rallis, S. F., & Rossman, G. B. (2017). *An introduction to qualitative research: Learning in the field* (Fourth Edition). SAGE Publications, Inc.

Schildkamp, K. (2019). Data-based decision-making for school improvement: Research insights and gaps. *Educational Research*, *61*(3), 257–273. https://doi.org/10.1080/00131881.2019.1625716

Schildkamp, K., & Ehren, M. (2013). From "intuition"- to "data"-based decision making in dutch secondary schools? In K. Schildkamp, M. K. Lai, & L. Earl (Eds.), *Data-based*

Decision Making in Education (pp. 49–67). Springer Netherlands. https://doi.org/10.1007/978-94-007-4816-3_4

Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education*, *26*(3), 482–496. https://doi.org/10.1016/j.tate.2009.06.007

Schildkamp, K., & Poortman, C. (2015). Factors influencing the functioning of data teams. *Teachers College Record*, *117*, 1–42.

Schildkamp, K., Poortman, C. L., & Handelzalts, A. (2016). Data teams for school improvement. *School Effectiveness and School Improvement*, *27*(2), 228–254. https://doi.org/10.1080/09243453.2015.1056192

Showalter, D., Hartman, S. L., Johnson, J., & Klein, B. (2019). *Why rural matters 2018-2019: The time is now.pdf*. Rural School and Community Trust. http://www.ruraledu.org/WhyRuralMatters.pdf

Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners* (2nd edition). ASCD.

Tomlinson, C. A., & Moon, T. R. (2013). *Assessment and student success in a differentiated classroom*. ASCD.

van Geel, M., Keuning, T., Visscher, A. J., & Fox, J.-P. (2016). Assessing the effects of a school-wide data-based decision-making intervention on student achievement growth in primary schools. *American Educational Research Journal*, *53*(2), 360–394. https://doi.org/10.3102/0002831216637346

Wayman, J. C., Wilkerson, S. B., Cho, V., Mandinach, E. B., & Supovitz, J. A. (2016). Guide to using the teacher data use survey. *Department of Education, Institute of Education*

Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Appalachia., 1–60.

Wiggins, G. P., & McTighe, J. (2005). *Understanding by design* (Expanded 2nd ed). Association for Supervision and Curriculum Development.

Williams, S. M., & Welsh, R. O. (2017). ESSA and school improvement: Principal preparation and professional development in a new era of education policy. *Journal of School Leadership*, *27*(5), 701–724. https://doi.org/10.1177/105268461702700505

Appendices

Appendix A: Field Observation Protocol

School Name:

Grade Level:

Meeting Start and Stop time:

Attendees Present:
Note not only who attends but what materials attendees bring to the meeting to facilitate data discussions.

Environment:
Note seating arrangements, any data displays, etc.

Running record of meeting:
Note how student data are discussed, who leads or directs discussions and how, and what if any outcomes are of the discussions.

Appendix B: Archival Interview Protocol

Script prior to interview:

I'd like to thank you once again for being willing to participate in the interview aspect of our study. As we mentioned to you before, the study seeks to understand how school leadership engage in conversations around data use and school-level and classroom level decisions. The aim of this research is to document the types of conversations around data use, the types of data that are considered in the conversations, and the areas, for example, instructional decision making, that are addressed through data use. Our interview today will last approximately one hour during which I will be asking you about your beliefs about data, your experience with analyzing data (access to data, data literacy skills, etc.), your perspectives on the useful of your data engagements, etc.

I would like to record our conversation so that the focus is on the conversation and not mine writing down responses. Is that okay with you?

IF YES: *Thank you! Please let me know if at any point you want me to turn off the recorder or keep something you say off the record.*

IN NO: *Thank you for letting me know. I will only take notes of our conversation.*

Before we begin the interview, do you have any questions? (DISCUSS QUESTIONS)
If any questions arise at any point in the study, you can feel free to ask them at any time. I would be more than happy to answer your questions.

SAMPLE QUESTIONS:

1. Which of the following kinds of information do you use to assess the quality of teaching and learning in your school?
   - Information on student learning outcomes, behavior, and engagement:
     - State assessments
     - Division benchmark assessments
     - Other division-purchased assessments (used for what purposes?)
     - Assessments developed by teachers
     - Student attendance
     - Student report cards
     - Discipline reports
     - Student participation in academic competitions
     - Other (Specify):
   - Information on stakeholder satisfaction
     - Surveys of students
     - Surveys of teachers and other instructional support staff
     - Surveys of parents

- Information on teaching and learning processes:
    - Classroom walkthroughs (use of an instrument?)
        - Reviews of lesson plans?
        - Other (Specify):

2. What kids of information to you use to keep track of quality of teaching and learning in non-tested grades in the four content areas:
    - Reading/ELA
    - Mathematics
    - Science
    - Social Studies

3. Which kinds of information are used on an ongoing basis to make adjustments to teaching and learning?

4. What kinds of information do you find most useful for long-term improvement planning?

5. Can you give examples of how you have used one or more of these types of information in making a decision for a course of action for school improvement?

6. Is there a body of research or set of research findings that you have found useful in your efforts to improve teaching and learning?

7. What kinds of information do you wish you had more of?

8. Is there any kind of information that you wish you had less of?

9. What kinds of support in each of the following areas does the division routinely provide or arrange to facilitate the use of data by you and by teachers in your school?
    - Training
    - Scheduled meeting time during work hours
    - Meetings with division leaders or supervisors (how often; focus of meetings)
    - Online reports
    - Vertical team meetings across grades, school levels?
    - Other support (Specify):

Appendix C: Codebook

Parent Code	Child Code	Definition
Process of data use	Noticing	Teachers/faculty observe the data or patterns in the data.
	Interpreting	Teachers/faculty make meaning from the data.
	Constructing Implications	Teachers/faculty respond to the data by planning to modify instruction.
Organizational and political context	Routines	Teachers/faculty use structures to support interactions with data.
	Access to data	Teachers/faculty have access to data to support data use.
	Leadership	Teachers/faculty experience leadership actions or conditions that inform data use (protected time, data norms/routines/expectations).
Depth of inquiry	No depth	"Only storytelling, retelling (known) information and personal anecdotes, not based on systematically collected data" (Schildkamp et al., 2016, p. 236).
	Average depth	"Basic data use and basic understanding and explanations based on data, such as 'the percentage of students that pass is too low'" (Schildkamp et al., 2016, p. 236).

	High depth	"Data team members developing new knowledge based on data, focused on taking action in their classroom. This refers to analyzing, interpreting, comparing, summarizing, and drawing conclusions based on data, to create new knowledge to solve the data team's problem" (Schildkamp et al., 2016, p. 236).

Appendix D: Sample Table for Within-Case Data Analysis

Data team: Team B
Code and definition: Depth of Inquiry involves the degree of depth teachers bring to their data use and includes three possible levels: No depth – "Only storytelling, retelling (known) information and personal anecdotes, not based on systematically collected data" Average depth - "Basic data use and basic understanding and explanations based on data, such as 'the percentage of students that pass is too low'" High depth - "Data team members developing new knowledge based on data, focused on taking action in their classroom. This refers to analyzing, interpreting, comparing, summarizing, and drawing conclusions based on data, to create new knowledge to solve the data team's problem" (Schildkamp et al., 2016, p. 236).
Theme: 1-2 sentences Team B's depth of inquiry was characterized by little to no depth. Often, team members did not even mention specific data on students, choosing instead to indicate whether a student "did well" or "did not pass" an assessment, for example. At other times, students were reported on in context of their peers, such as saying a student is "right in the middle" (of what? – not sure) or "She's the top one in the low [reading] group". Teachers also talked in vague terms about student growth or performance, saying "he's come a long way" or "he holds his own" without providing the data to support these conclusions. Anecdotal information was common and most often related to student behaviors, teachers' general impressions of students, or students' out-of-school circumstances. Few changes were made to the RTI supports students received, and when changes were discussed they appeared to have already been decided on and were simply reported on during the meeting. It's unclear what, if any, data informed these changes – often, teachers did not cite data to support why these changes would be made. Additionally, according to this team's own databased guidelines for how to determine which RTI supports a student would receive, some students should have changed tiers (often removing rather than adding supports) but these changes were decided against for no clear reason. Teachers appeared to place

significant emphasis on anecdotal information and their own assumptions as sources of data, often saying "I think…" and sharing their impressions of how a student will perform without sharing reasons – data-informed reasons or even anecdotal ones – for why they think that. As is proving typical, student data on students who are at/above grade level is not inquired into at all.

Description/Summary of interpretation (Patterns)

Lots of loose reporting of data by saying either a student "did well" or "didn't pass" an assessment [most often reported about the benchmark assessment]

Students are talked about in terms of how they did compared to other students (on the benchmark) – "i.e., right in the middle" or "She's the top one in the low group"

Lots of "he's come a long way" or "he holds his own" in this team's discussion of students.

Uneven chances actual data is going to be mentioned/noticed. Lots of anecdotal information or vague sense of the data (like saying did well/didn't do well, etc. without giving scores)

Anecdotes are often behavioral or general impressions of the student (they're sweet, they can't focus…) or their home circumstances.

Decisions that were/are made are not based in the data, and sometimes defy their own rules (i.e. a student is technically a Tier 2 but receives Tier 3 services because "I'm hesitant of her coming out. I think this is what has keep her above water.")

Notes

Note how the principal framing of this meeting limited the depth of inquiry.

How do these "did well" or "didn't pass" comments limit data use?

I don't understand the real reluctance to even provide supports for students. Where does this "wait and see" tendency come from?

Keep thinking about the role of in-school/out-of-school supports. Where are the in-class instructional supports?

E1 Excerpt	*E1 Explanation for choosing*
Student 2 – Math: 32 on benchmark, 74% class average. Teacher: she's good. Principal: She's fine right? Teacher: She's good. she's a good little worker. JNP_2018.10.15_DataMeetingObservation (2), Pos. 19	E1 is a typical example of the lack of depth in inquiry when data were mentioned. Note teachers simply report of scores and say something like" she's good" before moving on.
E2 Excerpt	*E2 Explanation for choosing*
Student 4 – Teacher brings up 23% on benchmark and below grade level on PALs. Teacher: She's worked so hard I think she's going to be ok I really do. Principal: Did she end up with a 3 or a 2? T: A two. But she didn't have pre-school she came in with nothing. She's stubborn. Principal says to monitor until end of semester and then make a decision. T: Mom asked what if she doesn't know anything? She's made a lot of progress. JNP_2018.10.15_DataMeetingObservation (2), Pos. 21-26	E2 is another typical example of how data are/are not discussed Note how teachers share their impressions of students but don't give data to back these up. Also note how students PALS' is cited as "below grade level" with no further inquiry.
E3 Excerpt	*E3 Explanation for choosing*

Next student: 2 in math – teacher wants to monitor. He will be referred for speech services. Teachers have a hard time understanding him. In the process of recommending him for speech therapy. Has learned letters and numbers, mom works with him on sight words. JNP_2018.10.15_DataMeetingObservation (2), Pos. 27 Next student: Are you having problems with him? T: I moved him down to a lower reading group because he needed more practice – PALs score indicated he could handle the higher group, but his behavior was bad, so he got bumped down. P: Attendance is potentially a problem. T1: 61% PALs. Was with her last year. T: Doesn't need extra help but wasn't ready for the more independent reading group. JNP_2018.10.15_DataMeetingObservation (2), Pos. 82	E3 has two examples of teachers making decisions (data-informed? Maybe) outside of the data-team meeting and simply using the meeting as an opportunity to report on these changes. I wonder if/when the data inquiry occurs and who engages in it. Still, note that changes are more about external supports than in-class instruction.
E4 Excerpt	*E4 Explanation for choosing*
A student is discussed who has already missed nine days of school She scored well on the benchmark (82%) but has a low average in the class. The teacher and principal are concerned about absences. They decide to monitor her in math and provide services in reading. JNP_2018.10.15_DataMeetingObservation (2), Pos. 35	When decisions are made in the meeting, they often function like this: reporting out of data and quick triage of services. No real inquiry into what the services are or why the student has a mismatch between benchmark and in-class average.
E5 Excerpt	*E5 Explanation for choosing*
Principal brings up another student attendance issues. Teacher dismisses this concern and says she's only a couple minutes late in the mornings. The student stays in at recess to make up work she misses because of being tardy. T: He's fine. He's in the higher reading group. P: Last year we were concerned about him.	E5 has two examples of how team members often talk about students in context to how they perform against others, i.e. "he's in the higher reading group."

JNP_2018.10.15_DataMeetingObservation (2), Pos. 84 Next student – T: She's good. Top of the middle pack – 67%. P: That surprised me because she wasn't always there last year. JNP_2018.10.15_DataMeetingObservation (2), Pos. 86	
E6 Excerpt	*E6 Explanation for choosing*
Next student - His scores showed he should be with the higher reading group, but he's not independent enough to handle it. T notes that the lower group is more structured than the higher reading group. JNP_2018.10.15_DataMeetingObservation (2), Pos. 87	E6 shows how teachers drew conclusions not based in data. It seems they came to this meeting with their minds made up about the supports students do/do not need and often used this meeting simply to affirm and share those conclusions with the principal.

Appendix E: Sample Table for Cross-Case Analysis

Depth of Inquiry		
	Team A	Team C
No Depth *Only storytelling, retelling (known) information and personal anecdotes, not based on systematically collected data"*	Record patterns and themes from within-case analysis here.	Record patterns and themes from within-case analysis here.
Average Depth *Basic data use and basic understanding and explanations based on data, such as 'the percentage of students that pass is too low'*	Record patterns and themes from within-case analysis here.	Record patterns and themes from within-case analysis here.
High Depth *Data team members developing new knowledge based on data, focused on taking action in their classroom. This refers to analyzing, interpreting, comparing, summarizing, and drawing conclusions based on data, to create*	Record patterns and themes from within-case analysis here.	Record patterns and themes from within-case analysis here.

new knowledge to solve the data team's problem.	
Notes/Questions/Emerging Patterns	
Record patterns and themes from cross-case analysis here.	