LEADERSHIP FOR DATA USE: A STUDY OF THREE
AWARD-WINNING ELEMENTARY SCHOOLS

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of TIMOTHY KEVIN ENFIELD find it satisfactory and recommend that it be accepted.

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Abstract

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Data use is a significant part of a school principal’s responsibility. The principal who leads the development and implementation of a data-driven plan for increasing student achievement has the potential to improve school performance; yet empirical evidence supporting the use of such a plan is scarce (Leithwood & Louis, 2011). This study was designed to further scholars’ understanding of how principals lead the implementation of data-driven plans to increase student achievement. Data were collected using the qualitative method. Interviews were completed during the 2015–2016 school year with three principals and nine teachers working in schools that received the Washington Achievement Award for reading growth.

The researcher sought to identify types of data, patterns of data use, and conditions supporting data use in these schools. Five characteristics emerged: shared focus on student learning; time and opportunity to meet; the presence of a schoolwide data system; access to expertise; and shared, purpose-driven leadership. Examination of these characteristics through a leadership lens surfaced three synthetic themes. These were the importance of knowledge and expertise as it relates to data use and classroom instruction, the feelings and beliefs teachers bring to the data use process, and the ways in which collective efficacy is enhanced by successful data use.
The implications for practice are threefold. First, a principal must focus simultaneously
on the effective use of data and accompanying successful instructional response. Second,
promoting a shared focus on student learning appears to create a sense of collective efficacy
when those with the knowledge and skill needed to assess student learning and respond to
findings instructionally support data use. Third, principals should access the expertise of teacher
leaders, including instructional coaches, by giving them time to use their knowledge to support
the administration of assessments and ongoing use of data from those assessments.
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CHAPTER ONE
INTRODUCTION

The education policy environment has undergone significant changes in the past 50 years. Federal policy, which was originally focused on issues of social justice, equitable learning outcomes, and accountability, evolved into federal reforms requiring states to adopt policies that reformed teacher and principal evaluation. In response to these federal requirements, Washington State passed legislation authorizing the Teacher Principal Evaluation Project (TPEP). TPEP sets forth eight criteria for evaluating principal leadership. One of the eight state evaluation criterion for evaluating principals focuses on the principal’s ability to lead the development, implementation, and evaluation of a data-driven plan for increasing student achievement that includes the use of multiple student data elements.

Thesis Statement

Effective data use in schools is dependent on the principal’s leadership in developing a school culture of working together with a shared focus. The principal can promote a shared focus on student learning and create a sense of collective efficacy with the support of those who have the knowledge and skill needed to assess student learning and then respond instructionally.

Statement of Problem

Although the use of data to inform decision making has significant potential for improving school performance, the empirical evidence supporting its use has been lacking (Leithwood & Louis, 2011). Furthermore, school leaders have been found to be lacking the necessary knowledge and skill set to collect and use data effectively (Orr, Berg, Shore, & Meier, 2008). Moreover, although the national research literature is growing, each state differs in how it
defines and regulates data use in schools. Washington is no exception. In Washington, state standards suggest that principals are expected to engage in data collection and use and that data use should translate into changed classroom practice. However, the approach and methods of such use vary within schools. For these reasons, this study was designed to further an understanding of how selected principals successfully lead the implementation of data-driven plans for increasing student achievement in Washington State.

Summary of the Literature

Policymakers have responded to public pressure regarding accountability by urging school leaders to use data as a strategy for improving student learning and school effectiveness (Boudett & Steel, 2007; Depka, 2006; Earl & Katz, 2006). Administrators and teachers can use data to drive decision making by collecting and analyzing various types of data systematically to achieve greater student and school success through making better decisions (Marsh, Pane, & Hamilton, 2006). And although data use in schools is not new, the pressure to use data has increased with greater public accountability and the subsequent policy expectations that have amplified the focus on data use for educational improvement (Knapp, Swinnerton, Copland, & 2006).

As Johnson and Kruse (2009) pointed out, “Leadership is synonymous with decision making. It is decision making in action” (p. 5). The review of literature in this study includes a review of research on data-driven leadership with a focus on effective instructional leadership, a discussion of leadership in data-driven decision making, and an examination of the conditions that affect data use. The relationship between data use and student achievement is also addressed.

Effective leadership has been the subject of a vast number of research studies and publications. An examination of five leadership models—collaborative, instructional,
transformational, distributed, and shared—give the reader a better understanding of how leaders do their work. These models broadly define how leaders act but do not necessarily describe the specific actions they will take.

Attention to data-driven decision making has been amplified with the focus on accountability: Leaders are expected to use data to improve student progress and eliminate what is commonly referred to as the achievement gap, a gap in performance among identified groups of students. A review of four case studies conducted by Halverson, Grigg, Pritchett, and Thomas (2007) outlines components that support data use in schools that is designed to improve student performance.

School improvement and school effectiveness research suggests that data use is central to the improvement process (Chrispeels, 1992; Earl & Katz, 2006), yet the lack of a research-based inventory of leadership behaviors that support data use makes effective implementation challenging (Wayman, Spring, Lemke, & Lehr, 2012). Also challenging is the lack of “conclusive evidence in the research on using data of what works to improve student achievement” (Hamilton et al., 2009).

In focusing on the use of data, this review provides some information on data systems, the challenges they present, and the support systems needed to improve their effectiveness. The result of a research meta-analysis conducted by Hamilton et al. (2009) on effectively supporting the use of data in decision making includes the following suggestions:

1. Make data part of an ongoing cycle of instructional improvement,
2. Teach students to examine their own data and set learning goals,
3. Establish a clear vision for schoolwide data use,
4. Provide supports that foster a data-driven culture within the school, and
5. Develop and maintain a district-wide data system. (p. 7)

School and district level leadership is consistently seen as a key condition for effective data use. Leithwood et al. (2009) referred to the following conditions that need to be attended to for constructive use of data: vision, focus on continuous improvement, capacity, adequate time, and professional learning focused on data use in decision making and collaboration.

Central to the policy focus on the use of data is data’s potential to have an impact on student achievement, but this has yet to be established in the research literature (Datnow, Park, & Wohlsetter, 2007; Faria et al., 2012; Snipes, Doolittle, & Herlihy, 2002). Although I summarize some guidance for data use, conclusive evidence on what works is not available in the existing research (Hamilton et al., 2009)

The school leader’s ability to influence student learning is well supported, but the use of data-driven decision making to improve school performance has mixed backing in the literature (Leithwood et al., 2009). A focus on leadership practice related to data-driven decision making at the building level combined with further understanding of the relevant conditions can provide added clarity regarding the use of data to improve student achievement.

**Research Questions**

In an effort to achieve greater understanding of principal leadership in relation to data use in schools, the following research questions were addressed:

1. What types of data and patterns of data use are found in K–5/6 schools that have received a Washington Achievement Award for reading growth?

2. What organizational characteristics and conditions influence K–5/6 principals’ leadership for data use to improve instruction?
Data Collection and Analysis

The use of a qualitative method for gathering data provided the researcher with an opportunity to achieve a detailed understanding of the social phenomenon and cultural dynamic that informs the construction of leadership practices in the area of data-driven decision making (Bryman, 2008). A sample of three schools was chosen from a list of schools that received a Washington Achievement Award (WAA) for reading growth.

Washington Achievement Awards are based on statewide assessment data for the three previous years and recognize schools for overall excellence (highest performing and top tier), high progress, reading growth, math growth, extended graduation rate, and English language acquisition (Educator Awards, 2014). The student growth percentile (SGP) scores are calculated based on a methodology developed by the National Center for the Improvement of Educational Assessment using data derived from the Washington Comprehensive Assessment Program (Betebenner & VanIwaarden, 2014).

The sample for this study was limited to schools that had a principal with at least 3 years of leadership experience in that school. In addition to the principal, a focus group of three to five teachers was interviewed at each school. The interviews focused on data use and on the organizational conditions and characteristics related to data use.

A semistructured interview format was used to better allow the interviewee to create a complete and rich description of the participants’ leadership and the culture in which it operates. These interviews were conducted in person for 1–2 hours. Transcribed interviews were analyzed, and follow-up interviews were conducted to clarify and/or gather additional data.

The data were analyzed with an intentional focus on the research questions. Rereading and reflection on the transcripts allowed for a better determination of the influence context had
on individual codes and categories, and on resulting themes. An inductive and comparative data analysis strategy was used during the collection of data to capture the common themes and patterns that emerged from the data.

**Purpose**

Leadership is a dynamic process that requires a careful review of the interdependent factors that affect how that process is carried out. The purpose of this dissertation is to improve understanding of the types of data, the patterns of data use, and the organizational characteristics within a school or school district that may have potential for supporting leadership’s ability to bring about improved student achievement.

**Summary of Findings**

The study findings separated data used for decision making into two categories: connected and nonconnected assessment data. Nonconnected assessment data was referred to in the interviews with significantly greater frequency. An examination of the patterns of data use showed systematic efforts by staff to work together with a shared focus on student learning, which included ongoing monitoring of student progress to make sure that student instructional groups were fluid in response to student needs.

The characteristics and conditions that influenced school principals were not generally consistent among all three of the schools studied but were organized into five themes: a shared focus on student learning; time and opportunity to meet; the presence of a schoolwide data system; access to expertise; and shared, purpose-driven leadership.

The implications can be summarized as concerning three areas. First, a principal in charge of leading a school to more effective use of data must focus simultaneously on effective
use of data and the accompanying successful instructional response. Second, principals should access teacher leaders and, if available, instructional coaches, by giving them the time to use their knowledge and expertise to support all teachers in the administration of assessments and the ongoing use of data that resulted from those assessments. Third, promoting a shared focus on student learning has the potential to create a sense of collective efficacy if those with the knowledge and skill needed assess student learning and then respond to findings instructionally support data use.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

The use of data in decision making has become a focus of policymakers as they respond to public pressures for accountability. This emphasis has resulted in increased attention in the literature on data-driven decision making as a strategy for improving student learning and school effectiveness (Boudett & Steel, 2007; Depka, 2006; Earl & Katz, 2006). Furthering the understanding of the types of data and patterns of data use found in typical schools may provide a better understanding of the effect data use has on student growth and school success in schools today.

As Johnson and Kruse (2009) pointed out, “Leadership is synonymous with decision making. It is decision making in action” (p. 5). Effective leadership has been the subject of a vast number of research studies and publications, including an examination through five leadership models: collaborative, instructional, transformational, distributed, and shared leadership (Hallinger, 2011). Although no proven empirical model provides explicit guidance for decision making in schools, a greater understanding of the models cited by Hallinger may provide guidance for principals in leading their school to become a better learning organization.

This chapter reviews the research on data-driven leadership, beginning with a focus on effective principal leadership, followed by a section on data-driven decision-making leadership. The review continues with an examination of the conditions that affect data use and concludes by examining the relationship between data use and student achievement.
Effective Principal Leadership Practice

Effective leadership has been the subject of numerous research studies and publications. Hallinger (2011) noted that leadership research includes examinations of various models: collaborative, instructional, transformational, distributed, and shared leadership. Each model is described below.

Collaborative Leadership

A collaborative leadership strategy provides teachers with a formal leader who embodies the school vision, while empowering others with the opportunity to lead. Leaders listen to skeptics as they seek out and forge consensus through participation (Harris & Chapman, 2002). As Cambone, Weiss, and Wyeth (1992) suggested, “When teachers share in decision making, they become committed to the decisions that emerge. They buy into the decision; they feel a sense of ownership; therefore, they are more likely to see that decisions are actually implemented” (p. 350). Several approaches to collaborative or democratic leadership are present in the literature. All require the principal and teachers to share responsibility for staff development, curricular development, and supervision of instructional tasks. Andrews and Crowther (2002) noted, “Teacher leaders emerge within these schools to fill many roles; they join their principals as colleagues to help achieve the schools’ desired goals” (p. 153).

Instructional Leadership

Cotton (2003) characterized instructional leadership as being intensely involved in curricular and instructional issues that directly affect student achievement. The Interstate School Leadership Licensure Consortium (ISLLC) created the National Standards for School Leaders in 1996 and revised them in 2008 and 2014. The standards highlight actions critical to instructional leadership:
(a) developing and facilitating a school vision of learning, (b) advocating and nurturing a school culture conducive to student learning, (c) managing the organization for an effective learning environment, (d) collaborating with families and community members and responding to needs and mobilizing resources, (e) acting with integrity and fairness, and (f) understanding and influencing the larger sociopolitical context. (Council of Chief State School Officers [CCSSO], 2008)

By highlighting and articulating the component skills related to effective instructional leadership, ISLLC stressed the importance of instructional leadership in schools today.

**Transformational Leadership**

Transformational leaders are people who are able to lead students and staff in the creation of values and long-term goals that result in positive and successful schools (Muijs, Harris, Lumby, Morrison, & Sood, 2006). The leader’s role in transforming leadership is to “facilitate and initiate the organizational change, even though both the leader and the followers negotiate the vision as it is being carried out” (Webb, Neumann, & Jones, 2004, p. 260). Transformational leadership provides an intellectual direction aimed at innovating the organization from within, while supporting teachers as partners by empowering them as decision makers (Conley & Goldman, 1994). The power in transformational leadership comes from its capacity to motivate; as Marks and Printy (2003) pointed out, “Transformational leaders motivate followers by raising their consciousness about the importance of organizational goals and by inspiring them to transcend their own self-interest for the sake of the organization” (p. 375).

**Shared and Distributed Leadership**

Shared and distributed leadership both call on teachers to “conceive of their roles differently and to assume different responsibilities, mostly beyond the classroom, and often for
school-level improvement” (Smylie, Mayrowetz, Murphy, & Louis, 2007, p. 158). Scribner and Sawyer (2007) defined shared leadership as leadership activity shared between leaders and followers in the school’s context. Similarly, distributed leadership has been defined as a “perspective on leadership [that] acknowledges the work of all individuals who contribute to leadership practice, whether or not they are formally designated or defined as leaders” (Harris & Spillane, 2008, p. 31). In distributed leadership models, principal and teacher move beyond the hierarchal constructs that are more strongly present in shared leadership. More abstract in nature than shared leadership, distributed leadership requires those who practice it to see “leadership practice differently and [as] illuminating the possibilities for organizational transformation” (p. 33).

The models of leadership discussed above seek to define leadership broadly. With the exception of instructional leadership, each model describes how leaders may act but does not focus on what they may be working on, or on what activities have the potential to produce valued outcomes. Halverson et al. (2007) studied data-driven decision making (DDDM) and described it as a revolution in the work of school leadership. DDDM follows the push for accountability by the public at large, resulting in an expectation of leaders to use data to monitor and track student progress, achievement, and success. Inasmuch as the use of data can influence instructional choices, Halverson et al. suggested that the focus on DDDM is “a new form of instructional leadership” (p. 160). In research based on case studies of four schools, looking at how schools use data, Halverson et al. found that the use of data supported the following components of an integrated instructional system: “professional development sessions, data retreats, curriculum planning meetings, and formative feedback assessments” (p. 187). The
leader’s focus on DDDM fostered development of a community of practice, which in turn resulted in improved student learning outcomes.

**Data-Driven Decision-Making Leadership**

*Data-driven decision making* as a term is a major focus for educators today, both in Washington State and nationally. DDDM can be broadly defined as the act of making decisions based on analysis of information. School improvement and school effectiveness research does suggest that data use is central to the improvement process (Chrispeels, 1992; Earl & Katz, 2006). However, effectively implementing DDDM in schools is challenging, and the literature “lacks a concrete, research-based inventory of key principal behaviors that foster data use” (Wayman et al., 2012, p. 3). In sharp contrast to other researchers, Halverson et al. (2007) and Hamilton et al. (2009) both found that research regarding data usage to bolster student achievement is inconclusive. Clearly, using data effectively at the school level is a difficult endeavor (Wayman, Cho, Jimerson, & Snodgrass Rangel, 2010). In part, the contradiction can be explained as the difference between smaller, more focused research studies, such as those by Halverson et al., and studies that look beyond successful case examples (Wayman et al., 2010).

Additionally, ambiguity is heightened when the prescriptive literature is considered. For example, Bernhardt (2004) described the DDDM process as the act of basing educated guesses upon data, allowing for a focus on specific indicators and the identification of priorities; yet, as Hamilton et al. (2009) suggested, data use in schools falls short of its promise when assessments lack validity and reliability, or when findings are used in ways inconsistent with their intended purpose.
Data Systems

Since the inception of No Child Left Behind (NCLB), states have been required to develop data systems that provide disaggregated data, and individual schools are required to have a plan for those subgroups identified by the state assessment as not making adequate progress (Hansen, 2007). The 2002 reauthorization of the Elementary and Secondary Education Act (ESEA) that resulted in NCLB increased pressure on administrators to access data that (a) informs their leadership and (b) supports the requirement to meet adequate yearly progress (AYP) goals (Mandinach, Honey, & Light, 2006).

Data use by school leaders for mainly managerial purposes is not new, yet the shift in practice to use it more for instructional leadership, and to include it as part of high-stakes accountability, is significant (Jazzar & Algozzine, 2006). This new requirement to use data placed the accountability more directly on the school principal (Jazzar & Algozzine, 2006). Nationally, the ESEA has successfully kept a focus on using data to drive decisions in schools that receive federal funding. Legislation passed in Washington State that mandates the use of evaluation criteria for teachers and principals puts a very clear focus on principals’ efforts to lead the development and implementation of a data-driven plan for increasing student achievement (Kipp, Quinn, Gordon, & Sharratt, 2012).

In contrast to these policy mandates, Hamilton et al. (2009) found that “there is no conclusive evidence in the research on using data of what works to improve student achievement” (p. 7). Using data effectively in schools is challenging partly because, as the literature points out, there is a lack of “a concrete, research-based inventory of key principal behaviors that foster data use” (Wayman et al., 2012, p. 3).
Collaboration

When examining successful models of data use, it appears that a collaborative approach is key for a successful implementation. Studies by Copland (2003) and by Park and Datnow (2009) found that using data was a complex and difficult task; yet success was achieved when other administrators and/or teacher leaders were involved. A study on principals as instructional leaders conducted by Deike (2009) found that employing a collaborative focus with clear structures resulted in the implementation of more successful data initiatives. In addition, Datnow, Park, and Wohlstetter (2007) found that effective leadership behaviors in districts successful with DDDM included setting clear goals, creating faculty time to examine data, and fostering a collaborative environment.

Challenges in Data Use

Challenges to successful use of data for decision making include a lack of resources, time, and leadership preparation (Valli & Buese, 2007; Wayman et al., 2007; Wayman et al., 2009). Studies by Valli and Buese (2007) and by Wayman and colleagues (2007, 2009) suggest that the process for DDDM could require more time than is currently available, a greater investment in technology systems that support timely access to data, and professional development that builds capacity for examining and acting on data (Ikemoto & Marsh, 2007). Similarly, Cromey (2000) found that the factors that contribute to the DDDM challenge include limited time to analyze the data; a mistrust of available data sources, including standardized assessments; and a lack of staff that are adequately trained in analyzing and processing data. Thus, using data effectively at the school level is a challenging endeavor (Wayman et al., 2010).
Professional Learning

If teachers are to overcome the challenges of effective data use and sustain a plan for using data successfully, they must increase their professional knowledge related to data use. Teachers can acquire this knowledge if they are provided with professional development time specific to data use, along with time to work with, analyze, and reflect upon the data; they can then use it to plan instruction based on the scrutiny of multiple pieces of data (Armstrong & Anthes, 2001; Cromey, 2000). Offering these elements requires principal leadership; it is also important to have a teacher or another staff member at the school lead the management and analysis of the data (Nichols & Singer, 2000). In fact, research suggests that using data effectively requires that all teachers be involved (Wayman et al., 2005; Wayman & Stringfield, 2006). Engaging the support of all teachers in this endeavor is essential and requires that leaders build a culture that values and supports the use of data.

School Culture

The culture at the school must be data friendly and encourage inquiry (Goldring & Berends, 2009; Knapp, Copland, & Talbert, 2003; Sutherland, 2004). A principal who distributes leadership should be able to involve teachers in the process in meaningful ways. Wayman and Stringfield (2006) observed that DDDM initiatives could be replicated in other settings as long as support is provided to educators to make it a learning endeavor. As stated above, collaboration is key to data use efforts, and collaboration, for the most part, is a learning process. In addition, a focus on data is best supported by increased interaction (collaboration) between teachers and in-school instructional coaches (Lachat & Smith, 2005).
Relevant and Timely Data

Another support for data use is a focus on data that is relevant and timely. Teachers are more inclined to embrace the use of data when assessments are seen as soundly implemented and responsive to the needs of their students (Chen, Heritage & Lee, 2005). A key support for effective data use is to provide staff with access to data in ways that allow them to quickly disaggregate and analyze the information (Cox, 2000; Nicolas & Singer, 2000).

Differences in Data Use

Principals and teachers approach data use differently. Mandinach et al. (2006) presented research showing that school administrators examine high-stakes test data to “understand general patterns of performance, identifying class, grade, and school-wide strengths and weaknesses so that they can allocate resources and plan professional development and other kinds of targeted intervention activities” (p. 2). Teachers, on the other hand, tend to seek out multiple data sources and experiential information to make decisions about students’ individual strengths and weaknesses (Mandinach et al., 2006).

Additionally, Anderson, Leithwood, and Strauss (2011) argued that the term decision making is better described as problem solving, suggesting that the latter “invokes a more accurate picture of the improvement challenge faced by most educational leaders and their teacher colleagues” (p. 323). The focus on using data to drive decision making honors the importance of knowing where gaps are in student learning and of focusing our problem-solving efforts on addressing them. Sustaining those efforts requires that administrators create a school climate that supports staff as problem solvers by setting the right conditions for effective data use.
**Recommendations**

The results of the research meta-analysis by Hamilton et al. (2009) on effective support for data use are summarized in the following five recommendations for implementing a DDDM plan:

1. make data part of an ongoing cycle of instructional improvement;
2. teach students to examine their own data and set learning goals;
3. establish a clear vision for schoolwide data use;
4. provide supports that foster a data-driven culture within the school; and
5. develop and maintain a district-wide data system. (p. 8)

**Conditions Affecting Data Use in Schools**

Ikemoto and Marsh (2007) identified a set of conditions at the school and district levels that are likely to support the use of data. These conditions include accessibility and timeliness of data, perceived validity of data, staff capacity and support for considering data, time to interpret and act on evidence, external partnerships that support analysis and interpretation, and tools for collection and interpretation of data. Ikemoto and Marsh summed up what they found regarding principal leadership as follows:

Principals play a key role in establishing the purposes and expectations for data use, structured opportunities (collegial groups and time), data-use training and assistance, access to expertise, and follow-up actions. Where principals do not make data use a priority, mobilize expertise to support data use, and create working conditions to facilitate data use in instructional decision-making contexts, teachers are not doing it on their own. (p. 232)
The research evidence consistently points to the importance of leadership in regard to conditions for effective data use. Leaders with the technical skill and knowledge of DDDM process are consistently associated with effective data analysis and continuous improvement efforts (Datnow et al., 2007; Park & Datnow, 2009; Supovitz & Klein, 2003).

Conversely, a principal’s inability to effectively lead and support data use can limit a school’s overall capacity to use data effectively (Leithwood & Louis, 2011). Wayman et al. (2007), referring to principal leadership in the context of data use, asserted that data use “lives and dies in the principal’s office” (p. 55). Gallagher et al. (2008) reported survey results that show 56% of teachers who had access to data systems credited their principal’s encouragement as a significant source of support in their learning to use the data system effectively. Datnow et al. (2007) identified common strategies employed within systems that were designed to build the capacity to use data to improve instruction. These strategies included professional development focused on data analysis; providing the time and structure for staff to collaboratively analyze data; and facilitating connections across the school faculty, allowing staff to share strategies for using data and improving instruction. In addition, teachers reported that the best way to enhance their interpretation of data was participation in collaborative teacher teams where data analysis was a focus (U.S. Department of Education, 2010).

Leithwood et al. (2009) listed the following conditions that need to be attended to if data use is to be constructive: vision related to data-informed information; focus on continuous improvement, especially when there is already a level of success present; capacity to use data and lead its use; adequate time and expertise to promote data use; and professional learning focused on data use in decision making and collaboration.
Vision and Capacity

Having a shared vision is key to organizational effectiveness. This is also true for schools and their use of data to improve instruction. Adequate supports and resources must be provided to establish and sustain a data culture within schools (Datnow et al., 2007). Hamilton et al. (2009) asserted that

A data culture is a learning environment within a school or district that includes attitudes, values, goals, norms of behavior and practices, accompanied by an explicit vision for data use by leadership for the importance and power that data can bring to the decision-making process. (p. 46)

This vision is supported when a representative team establishes a schoolwide plan for data use to ensure that the focus on data is not forced on staff but is shaped by them (Anderson et al., 2006). This team should establish a written plan that is consistent with district and school goals, establishes a common language for data use and its relationship to teaching and learning, and makes the use of data a key professional responsibility (Datnow et al., 2007; Wayman et al., 2007).

Increasing teacher capacity through professional development is critical in any effort to improve a school or school district’s use of data. Seventy-two percent of districts in a national study said that lack of teacher preparation was a barrier to improved data use (U.S. Department of Education, 2008). In addition, time that is dedicated to structured staff collaboration helps data use to become an established part of the school’s culture (Feldman & Tung, 2001). This time should be used to focus on both the analysis and the interpretation of achievement data, with attention being paid to needed instructional changes and professional development on data use (Hamilton et al., 2009).
Continuous Improvement

A focus on continuous improvement is another important condition for effective data use. Bernhardt (2013) noted continuous improvement in terms of the differences between compliance and commitment: “When schools focus primarily on compliance, they tend to concentrate their school improvement efforts on what, and how they are being measured” (p. 14). In contrast, emphasizing an approach to data use that is based more on commitment is described by Bernhardt as advocating for schools to use a framework for achieving their goal of continuous school improvement. He noted, “When schools use a framework for Continuous School Improvement, along with comprehensive data analysis, they understand how they are getting their results—what is working, and what is not working” (p. 15).

This is especially true for schools that are already experiencing a measure of success. The challenge has to do with the organizational structures within the schools that insulate the local instructional practices from external interference (Weick, 1995). By adapting policy, curriculum needs, and professional development to support instructional systems already in place, Halverson et al. (2007) observed, building leaders can alter, or build upon, existing capacity. They do this by using achievement data to “reshape the central practices and cultures of their schools” (p. 161). Halverson et al. discussed how a flourishing internal accountability system can support the development of data-driven decision making built on a school’s existing capacity. This dynamic is part of an improvement cycle that continually uses data to inform systemic improvement.

DDDM initially stemmed from work on continuous improvement (Halverson et al., 2007). Significant research on its use in a cycle of continuous improvement is summarized by Halverson et al. (2007) as “collecting, reflecting on, and acting on feedback” (p. 163). These
authors also suggested that school leaders devote considerable attention to the “construction of sociotechnical systems to focus professional discourse and practice on measures of student achievement” (p. 474). Specific system components were identified as professional development sessions, data retreats, curriculum planning meetings, and formative feedback assessments. When present, these components supported a strong community of practice among teachers and sustained a cycle of continuous improvement.

**Time to Collaborate**

Teachers’ capacity for data use begins with their skill and opportunity to collaborate. Supovitz and Morrison (2015) studied teachers in 37 schools and found that their data use was strongly associated with an ability to collaborate. The relationship between collaboration and data use was characterized by Supovitz and Morrison as strong and significant. Collaboration requires time—time for teachers to meet in teams to examine data in meaningful ways. In addition, teachers must have the expertise to use data effectively. Hamilton et al. (2009) included time and expertise in their five recommendations for using data to support instructional decision making, advising, “Schools and districts should invest in leadership, professional development, and structured time for collaboration” (p. 33).

The investment Hamilton et al. (2009) advocated includes hiring a data facilitator who meets at least monthly with the teacher team. This facilitator should encourage the teacher team to meet more often and help them to “obtain the knowledge and skills they need to use data appropriately so that staff do not become too dependent on facilitators” (p. 34). This practice should be supported through ongoing professional development opportunities for principals and teachers (Wayman, Cho, & Johnston, 2007).
A strong culture of data use must be established if staff are to make data-based decisions frequently, appropriately, and consistently (Datnow et al., 2007). An emphasis on collaboration, both across the school and within the grade level/subject area, supports the diagnosis of problems and the refinement of educational practices (Datnow et al., 2007). Factors that influence schools’ success in developing a data culture include planning, leadership, implementation, and attitude (Hamilton et al., 2009).

**Data Use and Student Achievement**

Hamilton et al. (2009) described the status of the research on using data to improve student achievement, writing, “The existing research on using data to make instructional decisions does not yet provide conclusive evidence of what works to improve student achievement” (p. 6). They listed three reasons for this absence of evidence. First, data use practices are impractical to study in any rigorous way, because isolating the impact of a particular data system to a comparison group is not possible. Second, the close ties between data use and education technology, coupled with the rapid development of new data use technologies, makes conducting timely, rigorous research difficult. Third, the broad nature of the studies on data use makes isolating individual elements challenging.

Research on the positive effects of using data suggests that data use practices have more of an effect at elementary than at secondary levels (Leithwood et al., 2009). Leithwood et al. (2009) suggested that district policy initiatives also had an impact on principals’ efforts to promote data use at the school level.

A review of research on data used to inform instruction, including interim assessments, benchmark assessments, formative assessments, progress monitoring, and curriculum-based measurement, suggests that interim assessments alone have been ineffective at raising student
achievement (Henderson, Petrosino, Guckenberg, & Hamilton, 2007). In contrast, more formative assessment has been shown to increase student achievement gains (Black & William, 1998). Additionally, Faria et al. (2012) examined the relationship between data use practices and student achievement in more than 400 schools and 2,000 classrooms. They found that teachers’ review of data and subsequent instructional responses were most strongly linked to improved student achievement. This finding is particularly important considering the policy environment that is focusing increasingly on using data to inform measures of teacher effectiveness. In a recent meta-analysis looking at the effects of data-driven assessments, Gersten et al. (2009) noticed that when teachers were provided with specific information about student progress, including areas of strengths and weaknesses, their students’ achievement in the area of mathematics improved.

Researchers found that schools making great academic strides through the use of data, with data-driven decision-making initiatives in place, had yet to produce evidence of a reliable relationship between the use of student achievement data and the effectiveness of the instructional efforts (Datnow et al., 2007; Faria et al., 2012; Snipes et al., 2002).

Although the topic is somewhat tangential to the prior discussion concerning the use of data to inform a school leader’s decision making, it is important to acknowledge the use of Value-added Modeling (VAM) as a measure of teacher effectiveness. VAM is a statistical procedure that has gained support in this era of data-driven decision making. Unlike data use that is designed to inform classroom practice, VAM involves the use of annual test data to determine both student progress over time and teacher effectiveness at supporting students in meeting their learning goals (Braun, 2005). Numerous authors (Gorard, 2008; Kane & Staiger, 2002; Saunders, 2000) voiced concern over the use of VAM as an evaluative tool. In a recent
statement released by the American Education Research Association (AERA), VAM was critiqued for being limited in its ability to inform teacher evaluations (AERA, 2015). The authors expressed concern about “the challenges of isolating the contributions of teachers and school leaders from the many other factors that shape student learning” (p. 1). Furthermore, given that VAM cannot be used for instructional decision making, its use for DDDM is limited.

**Conclusion**

The different models of leadership reviewed provide a context for the notion of supporting decision making through various leadership structures. Data-driven decision making has mixed support in the literature, and the discussion about its effectiveness is ongoing. The policy context today requires that data use be incorporated into leadership practices at both the school and the district levels.

This review provided a brief description of the literature describing conditions that support the use of data in decision making; it included a focus on how leadership can provide the support needed if data is to drive decisions in school settings. A review of the connection, however controversial, between student achievement and data use provided additional considerations regarding using data to improve student learning and highlighted the inconsistency of relevant findings in the various studies.

Building an understanding of how leadership can best support the use of data by examining principal and teacher actions in successful schools will contribute to current efforts to use data efficiently to improve instruction and student learning. Further study in this area is needed.
CHAPTER THREE
RESEARCH METHOD

The purpose of this study was to explore how school leaders foster and support teachers’ use of data. The study was conducted to further the understanding of how principals successfully led the implementation of a data-driven plan for increasing student achievement. The qualitative method was used for this study. Bryman (2008) described the qualitative method as a way to better understand the social phenomenon and cultural dynamic that informs the construction of leadership practices in the area of data use in schools. By using qualitative research methods, including primarily interview and focus group data, the researcher attempted to capture the complex elements of the school environment as they relate to data and data use. The following research questions guided this study:

1. What types of data and patterns of data use are found in K–5/6 schools that received a Washington Achievement Award for reading growth?

2. What organizational characteristics and conditions influence K–5/6 principals’ leadership for data use to improve instruction?

Methodology

Research can be divided into two categories: basic and applied. Basic research is intended to inform an understanding of a phenomenon and generally support the extension of knowledge. Applied research “is intended to improve the quality of practice in a particular discipline” (Merriam, p. 3, 2009). Often, but not always, applied research, such as the research completed for this study, is accomplished using qualitative methods and methodology. The qualitative researcher seeks to “answer the whys and how’s of human behavior, opinion, and
experience—information that is difficult to obtain through more quantitatively-oriented methods of data collection” (Guest, Namey, & Mitchell, 2012).

The qualitative study does this by focusing on meaning in context and studying phenomena by examining how people interpret their experiences (Merriam, 2009). In a qualitative study, the researcher is the instrument of exploration, focusing on how realities are developed within different contexts and seeking to understand each context as unique. By focusing effort on an inductive process of discovery, the researcher comes up with a final product that offers a richly descriptive sense of how meaning and understanding are developed within the setting of the study (Creswell, 2009). The researcher does so by immersing him or herself in the setting being studied. The researcher collects data mainly from words and attempts to create a picture from the data (Marshall & Rossman, 2006).

Qualitative research methods do not introduce treatments, manipulate variables, or impose meaning on variables that emerge from participants (Saint-Germain, 1997). Instead, the qualitative researcher’s aim is to define variables through the research (Merriam & Simpson, 2000). This is done by asking open-ended questions that are meaningful to the participants, evoking responses that are unanticipated by the researcher yet rich and explanatory in nature (Mack, Woodsong, MacQueen, Guest, & Namey, 2005).

Again, this study was conducted using a qualitative research method. Merriam’s (2009) description of qualitative research as being “interested in understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences” (p. 5) supports using the qualitative research method to address the research questions this study sought to answer.
Sample Selection

Since the results were not intended to be generalizable, nonprobability sampling was used (Merriam, 2009). A purposeful sampling strategy was used to select participants from whom the most could be learned. The selection criteria for this purposeful sample included being a principal or a teacher who worked in elementary (k–5/6) schools that earned the Washington Achievement Award (WAA) for reading growth in 2013–2014. The next section provides detail about the WAA, explaining why personnel from schools that had earned it were chosen for this study. Following this detail, participant selection will be discussed.

Washington Achievement Award

The use of data has become a significant part of the accountability environment schools find themselves in today. The delay of the reauthorization of ESEA for many years resulted in the Department of Education providing states with the opportunity to receive a waiver regarding the penalties that resulted from failure to meet NCLB’s student achievement requirements. The state of Washington responded to this waiver by submitting a policy package that included a plan to recognize schools by awarding the Washington Achievement Award. The WAA used the Washington State Board of Education Revised Achievement Index, and criteria set by the federal Elementary and Secondary Education Act (ESEA) Flexibility Waiver, to award individual schools. Awards are based on data from statewide assessments for the 3 previous years. The Measure of Student Progress was the statewide assessment required by the state of Washington for the 3 years that data was collected to inform the 2014 WAA. The test is given to all third-, fourth-, and fifth-grade students and covers reading, math, science, and writing. The test results show the percentages of students meeting the standard for each area tested.
Schools for this study were selected based on their receipt of the Washington Achievement Award. Washington Achievement Awards are based on statewide assessment data and recognize schools for the following: Overall Excellence (highest performing and top tier), High Progress, Reading Growth, Math Growth, Extended Graduation Rate, and English Language Acquisition (Educator Awards, 2014). The WAA’s special recognition for reading progress is awarded to schools with a 3-year average Median Student Growth Percentile (MSGP) in reading at or above the 95th percentile of all schools in the state. To be eligible for recognition, a school must have reportable school MSGP in reading for the previous 3 years. Schools must not be identified for the Priority/Focus list (Educator Awards, 2014).

**Student Growth Percentile**

The student growth percentile (SGP) scores are calculated based on a methodology developed by the National Center for the Improvement of Educational Assessment, using data derived from the Washington Comprehensive Assessment Program (Betebenner & VanIwaarden, 2014). Betebenner and VanIwaarden (2014) explained, “The SGP methodology is a norm and criterion referenced student growth analysis that produces student growth percentiles and student growth projection/targets for each student in the state” (p. 1). Although controversial, the SGP provides a consistent measure of performance for student achievement (Fuller & Hollingworth, 2014).

The WAA is intended to be the tool used by the state of Washington to recognize schools that achieve success. One of the measures of principal success used by the state of Washington is a principal’s ability to lead the development and implementation of a data-driven plan. The assumption made by the researcher was that schools earning the WAA were also schools with
quality examples of data use. Tables 1 and 2 show the WAA scoring level and index ranges followed by the levels achieved by each school in this study.

Table 1

*Washington Achievement Award Performance Levels and Index Ranges*

<table>
<thead>
<tr>
<th>Performance Level</th>
<th>Index Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplary</td>
<td>7.89 – 10.00</td>
</tr>
<tr>
<td>Very Good</td>
<td>6.85 – 7.89</td>
</tr>
<tr>
<td>Good</td>
<td>5.75 – 6.85</td>
</tr>
<tr>
<td>Fair</td>
<td>4.26 – 5.75</td>
</tr>
<tr>
<td>Underperforming</td>
<td>3.63 – 4.26</td>
</tr>
<tr>
<td>Bottom 5%</td>
<td>1.00 – 3.63</td>
</tr>
</tbody>
</table>

Table 2

*2014 Reading Growth Performance Levels and Index Ranges for Schools in This Study*

<table>
<thead>
<tr>
<th>School</th>
<th>Growth Score</th>
<th>Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>W School</td>
<td>7.83</td>
<td>Very Good</td>
</tr>
<tr>
<td>S School</td>
<td>9.33</td>
<td>Exemplary</td>
</tr>
<tr>
<td>U School</td>
<td>7.00</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

School, Principal, and Teacher Selection

The purposeful sample for this study included three Washington Achievement Award-winning schools in communities that had a significant number of low-income families, and a principal with at least 3 years of experience in the school. The sample group of WAA-winning schools was chosen because the schools that receive this award performed in the top 5% of schools in the state of Washington. The need for consistency among sample groups led to the
focus on schools that were similar in that they each had a significant level of poverty. A high level of poverty offered the best chance of getting rich responses from staff, as shown in the finding by Louis et al. (2010) that “collective responsibility for student learning [is] to be more likely present in high poverty schools than in low poverty schools” (p. 97).

In addition, the sample group requirement that a principal has been in the school for at least the 3 previous years allows the staff to become acculturated and move beyond a resistance to change (Fullan, 1991). The schools selected had 430–630 students. The percentage of families qualifying for free and reduced meals in each of these schools was greater than 45%. Interviews were conducted with each principal and a group of three teachers at each school. The three principals interviewed for this study had 4–15 years of experience as a school principal. The principal sample contained one male and two female principals. Each of their backgrounds included teaching, and two also worked as instructional coaches prior to becoming a principal.

The nine teachers ranged in experience from 3 years to more than 20 years as a classroom teacher. The teacher sample included eight female teachers and one male teacher.

The teachers were selected by their school principal using these suggested criteria: teachers with more than 1 year of experience in the school, teachers from more than one grade level, and at least one teacher considered a teacher leader in the school. The goal in setting these criteria was to include staff from different grade levels with varied experience in the use of data in the previous 3 years, and staff that had some leadership experience that might be related to data use.
Table 3

Schools

<table>
<thead>
<tr>
<th>School</th>
<th>Number of Students</th>
<th>Socio Economic Status</th>
<th>School Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>W School</td>
<td>478</td>
<td>59%</td>
<td>Suburban</td>
</tr>
<tr>
<td>S School</td>
<td>637</td>
<td>45%</td>
<td>Suburban</td>
</tr>
<tr>
<td>U School</td>
<td>430</td>
<td>95%</td>
<td>Suburban</td>
</tr>
</tbody>
</table>

Data Collection

The primary source of data came from interviews with individual principals and small groups of teachers. These interviews were structured using qualitative interview questions and related follow-up interviews designed to collect rich and detailed information about data use. The Washington State University (WSU) Institutional Review Board (IRB) procedures for studies on human subjects were followed. The interviewer used a semistructured interview format in efforts to capture a unique and rich description of the leadership process and the culture in which it operates. Considering Seidman’s (2013, p. 9) assertion that interviews represented the “lived experience of the people and the meaning they make of that experience,” these interviews were the appropriate way to gather data for this study.

The first round of interviews was conducted in person and took an average of 2 hours, resulting in approximately 12 hours of interview data. This raw data resulted in 368 pages of transcribed interview data. Follow-up interviews were conducted with the three principals and took an average of 1 hour, resulting in 3 additional hours of interview data. Interviews were recorded and transcribed for analysis and interpretation. This activity resulted in 88 more pages of interview data. The interviews were read, reread, and coded. (Coding will be discussed in detail later in this chapter.) They were then listened to again and re-read with a focus on
determining categories. Follow-up interviews and member checks were conducted using the
categorical areas to clarify and/or gather additional data from the three principals.

Focus Groups

The school principal selected small groups of teachers using the suggested criteria. These
interviews, being conversational in style, were informed by Morgan’s (1997) recommendations
for focus groups, including that a researcher consider the extent to which focus group
participants in the interview will actively and easily participate in discussing the topics. A group
size of three teachers allowed enough opportunity for each to speak while still providing a good
diversity of responses (Krueger & Casey, 2009). Every effort was made to make participants
feel comfortable and ready to share. These efforts included emphasizing what they all had in
common, informing the group of the purpose of the interview, and assuring the participants that
their responses would be confidential and would never be identified to any specific setting
(Krueger & Casey, 2009).

Teacher Interviews

Teacher interviews were conducted with small focus groups of teachers using 13
interview questions. A conversational style was used, and every effort was made to avoid
making the interviews feel like an oral survey. To give the teachers a chance to get comfortable,
the interviewer asked a warm-up question: “Tell me about your school.” This opening probe was
followed by the more focused, yet still open-ended, questions. See appendix A for list of
interview questions.

Principal Interviews

Principal interviews included 15 questions. A conversational style was used, and every
effort was made to not make it feel like an oral survey. As in the teacher interviews, the
interviewer gave the participants a chance to get comfortable by asking a warm-up question. See appendix B for list of interview questions.

**Follow-up interviews.** After initial interviews were completed, the three principals were re-interviewed. These follow-up interviews were conducted after all teacher interviews and initial principal interviews were completed. It was clear to the researcher that additional information was needed to gain a complete understanding of how the schools operated. The interviews were organized using the five themes identified in the analysis of the teacher and principal interview transcripts. (See appendix C for a sample of the principal follow-up interview questions.)

**Analyzing Data**

Prior to data immersion, a review of the research questions was conducted to focus the analysis on the questions guiding this study. This approach helped the researcher to better “identify segments in the data set that are responsive to [the] research questions” (Merriam, 2009, p. 176). The analysis of the data was ongoing, allowing for initial interviews to inform those that followed. This arrangement included an organization of the interview data into transcripts using a transcription service, after which the researcher immersed himself in the data by reading the transcripts and listening to the recorded interviews while re-reading the transcripts to ensure that the interviews were recorded accurately. In the margins, the researcher wrote notes, analytical memos, and emerging codes from each reading. These notations included important relationships observed in the data. While analyzing the interviews and field notes, the researcher wrote memos about and reflected upon what was being learned from the data, to better identify codes that emerged across the data sets (Birks, Chapman, & Francis, 2008).
The data analysis was focused intentionally on the two research questions. It was conducted by re-reading transcripts, listening to interview recordings, and reflecting on the interview responses between interviews to consider the influence context had on individual codes, categories, and resulting themes. By using descriptive coding and in vivo coding paired with the participants’ own language, the researcher was able to develop evolving narratives concerning data use, which contributed to the codes that emerged (Merriam, 2009). Descriptive coding’s one-word code summarized the primary topic of an interview excerpt (Saldina, 2012), while in vivo coding incorporated the participants’ own language into the coding process. The importance of this approach is explained well in this excerpt from Bliss, Monk, and Ogborn (1983): “A word or a phrase does not ‘contain’ its meaning as a bucket ‘contains’ water, but has the meaning it does by being a choice made about its significance in a given context” (p. 27). In vivo coding allows the researcher to better capture the meaning participants assign to a given context. One example of this process took place in a response to a question about general staff beliefs concerning the strengths and limitations of data. The respondent mentioned that the staff engaged in extensive work when rewriting the school vision statement, which resulted in the Mission and Vision code. Additional codes included collaboration, data systems/structures, time, and data types. (See appendix D for list of initial subcodes and emerging codes.)

An inductive and comparative data analysis strategy used during the collection of data helped in capturing the common themes and patterns that emerged from the data. These themes and patterns were collected in categories that spanned the data. Thomas (2003) summarized the inductive approach as having “between three and eight main categories in the findings” and as “a convenient and efficient way of analyzing qualitative data for many research purposes” (p. 1). Similarities and differences were identified, grouped, and named as a category so that patterns in
the data could be identified, in accordance with Merriam (2009). Transcripts were read and re-read, with notes kept along the way. The researcher compared and categorized these notes after discussing them with a critical friend.

After completing the initial analysis of the data, the researcher re-examined the research questions and re-read the interviews to further clarify the most salient points identified in the initial coding. After the research on data use in decision making conducted by Leithwood and Louis (2011) had been reviewed, the categories were compared with the relevant research. This review of and reflection upon the relevant research contributed to the analysis throughout this study by grounding the researcher in the salient literature.

Initially, 10 characteristics emerged from the review of the data. As these were examined in relation to current research and defined more precisely, they were edited down to five characteristics robustly identified in the data. Although some data did suggest that the five that were dropped—Multiple Data Types, Mission Vision Focus, School & District Support, Shared and Distributed Leadership, and Adaptive Leadership Style—were present and probably contributed to the school’s success, the data lacked the specificity and detail necessary to allow the researcher to confidently defend the finding. For example, although responses suggested that an adaptive leadership style supported responsiveness to varied conditions, the principal’s specific comment was limited and perhaps more self-aggrandizing and less of an actual reflection on the leadership practice he advocated.

**Reliability and Validity**

In an effort to support the reliability of the results of this study, careful attention was given to the study’s conceptualization and the way in which data was collected, analyzed, and interpreted (Merriam, 2009). Merriam (2009) provided five strategies for ensuring that internal
validity is present: triangulation, member checks, adequate engagement, reflexivity, and peer examination or peer review.

The researcher first relied on triangulation, implemented by examining data from multiple sources, including individual, group, and follow-up interviews. In addition, member checks were incorporated into the second round of interviews with the principals. Participants were asked to expand upon and/or revise the responses they gave in the first round of interviews. This approach was taken to make sure that the participants’ intended meaning was represented appropriately. Maxwell (2004) described member checks as being “the single most important way of ruling out the possibility of misrepresenting meaning” (p. 111).

The researcher considered the level of engagement that was achieved in the effort to get as close as possible to the participants’ understanding. He did so by applying the rule of thumb as Merriam (2009) described it: “Data and emerging findings must feel saturated; that is, you begin to see or hear the same things over and over again, and no new information surfaces as you collect more data” (p. 219). This approach allowed the researcher to determine that adequate engagement in the data was achieved, as evidenced in the feel of saturation that emerged during the data analysis phase. After the initial review and re-reading of the transcripts, follow-up interviews were conducted. The researcher reflected critically (reflexivity) on positionality and possible bias, dispositions, and assumptions, as suggested by Merriam (2009). Reflexivity is “the process of reflecting critically on the self as a researcher, the human instrument” (Lincoln & Guba, 2000, p. 183). Additionally, the author relied on peer review by following the guidance of his research committee prior to the study, during data collection, and while writing up the findings and recommendations. Finally, he asked an elementary principal practitioner peer to
review the methods and the findings, serving as a critical friend. These efforts were implemented to increase the credibility of the findings of this study.

**Positionality**

Because the researcher is the primary tool in a qualitative study, it is essential that any possible biases be disclosed. The potential for bias to affect study outcomes is well established, as is the importance of disclosing the positionality of the researcher (Merriam, 2009). For this study, the primary researcher was a working school principal who participates annually in the practice of developing and implementing a data-driven plan for increasing student achievement. The researcher’s background includes past experience as an elementary school teacher, a middle school assistant principal, and an elementary school principal. The principal believes strongly in the positive impact data use can have on the work of leading the development and implementation of a data-driven plan. Leadership concerning using data to make decisions has been a required part of the researcher’s work for several years. This work includes ongoing development of school improvement plans that are based on student data.

Throughout the data collection and analysis phases, particular attention was paid to the possibility of bias influencing the results of the study. By acknowledging the possibility of the impact of bias based on positionality, the researcher was better able to respond critically and sensitively during the research study (Griffiths, 1998). Inherently, this work was influenced by the values and beliefs the researcher carried into the work. An effort to surface and acknowledge those biases is reflected in the limitations of this study.

**Limitations**

As with all research, this study has factors that limit its influence and findings. The following conditions placed restrictions on the methodology and limited the results of the study.
First, the sample size was small and limited, including only three schools and 12 interview subjects. Participants were chosen based on their receipt of the Washington Achievement Award. The Student Growth Percentile (SGP) on which the award was based was new and had seen limited (i.e., 2 years) use at the time the data were gathered. Although the reliability of the SGP scores may be supported, their validity is not (Fuller & Hollingsworth, 2014). The use of teacher groups comprising teachers who worked together in each building may have been a factor limiting the study as well. This familiarity may have constrained each participant’s responses, or allowed one member to dominate the discussion. This study was also limited by the fact that the results are not generalizable. Researcher objectivity was a concern as well, considering the researcher’s position as a building principal, as explained above. Finally, it is important to note that a novice researcher, whose skills and expertise are still developing in this area, conducted the study. To mitigate these factors, it was imperative that biases, assumptions, and dispositions be fully disclosed.

Although the results from this qualitative study are limited in their transferability, it is appropriate to leave the generalizability of the findings up to the reader. Merriam (2009) describes this reader or user generalizability as “leaving the extent to which a study’s findings apply to other situations up to the people in those situations” (p. 226). To give others the ability to make sound decisions about the appropriateness of the findings for informing their practice, the detailed description of the study methods described above, in addition to the disclosure of the researcher’s positionality has been provided.

**Pseudonyms**

The anonymity of the study participants requires the use of pseudonyms to keep respondents’ identities confidential. For the three schools involved in this study, the following
pseudonyms were used: W School, S School, and U School. In addition, references to quotations from the interviews used the following naming structure: WT for W School teachers, WP for W School principal, ST for S School teachers, SP for S School principal, UT for U School teachers, and UP for U School principal.
CHAPTER FOUR

FINDINGS

The review of the literature in chapter two revealed that data use has significant potential to inform decision making and improve school performance; yet the empirical evidence supporting data use is still lacking (Leithwood & Louis, 2011). This study was intended to support a greater understanding of how data are used in schools. To achieve this understanding interviews were conducted focused on types of data and patterns of data use as well as on organizational conditions in the schools studied as they related to data use.

Types of Data

Responses were placed into two categories: connected and nonconnected assessment data. Connected assessment data is defined as coming from assessment tools embedded in the instructional material or directly connected to the instructional material sets based on their use by the teacher in the classroom. One example of a connected assessment is a unit quiz from the instructional material used to teach the unit. Nonconnected assessment data is defined as data that is not embedded or directly connected to instruction happening in classroom. An example of a nonconnected assessment would be the Smarter Balanced tests that are related to instruction via the Common Core State Standards but are not directly connected to the instructional material used to teach the concepts tested.

Connected Assessments

Placement tests given for specific sets of instructional material offer one example of connected assessment. These assessments were given to determine whether material had been mastered and to inform placement decisions in that program. They included placement tests for
ReadWell, a reading curriculum currently in use at only one of the three schools but used extensively prior to this year at a second school. In addition, all three schools mentioned the ongoing use of quizzes, chapter tests, and unit tests embedded in the curriculum materials. A data use pattern shared by a primary teacher in the area of math provided some context:

So it’s every few lessons or so we’ll have a quick quiz and a fluency check. So the quick quiz assesses their understanding of the concepts we’ve been learning like [the] last few weeks or a couple weeks. And then the fluency check is just addition and subtraction fluency. And at the end of the unit, then we’ll have the unit assessment. So we use that data to see if they’re understanding the concepts that we taught within that unit. (UT310)

In W School, a teacher explained the use of unit tests and small group follow-up like this:

Every time I would give the unit assessment, there were kids where that was not the data I was hoping for. I was like, come on, I’ve taught my [small] group with you, we’ve had all these conversations and you still cannot prove it on your own. And so it’s very disheartening, and so then many times I would re-teach a small group, and I actually pulled kids during lunch because there wasn’t any other time . . . And I would just explain that they had to come but that I would give them dessert during their lunch. And we would have these little groups, right, because even though our unit was done you [the student] still had to understand X, and then I would reassess with that same unit assessment or an exit ticket because you just could not learn certain things, in my mind. (WP1072)

Daily lesson checkouts or exit slips were reportedly used by each of the three schools. These are short, loosely structured end-of-lesson assessments designed to determine whether students met the standard of learning set for that specific lesson. One teacher explained their use
by saying, “But I know a lot of teachers use entry and exit slips . . . because you’re also wanting to have formative data, because by the time you’re to your unit test, that’s sort of summative” (WT478).

**Nonconnected Assessments**

All three schools reported using both an early literacy assessment and an oral reading fluency measure as a significant source of data. These assessments are considered general outcome measures and are designed for long-term goal monitoring (Shinn, 2013). General outcome measurement (GOM) is supported by substantial evidence for its use with students who have learning disabilities as a way to both show performance and growth and to predict future performance (Marston, 1989; Stecker, Fuchs, & Fuchs, 2005; Wayman, Wallace, Wiley, Tichá, & Espin, 2007). The data are collected over time to show progress. Aimsweb is one such assessment used extensively by one of the schools. Aimsweb organizes data into tiers for review, as described here by the principal at U School: “We look at where kids are falling, how many kids are Tier One, Tier Two, Tier Three as we examine our Aimsweb data” (UP297). This organization is typically done once at the beginning of the year to show a student’s level in comparison to a normed group and again, periodically, to show progress over time. The use of oral reading fluency assessments, such as the Aimsweb assessments, was acknowledged by each of the principals and teacher focus groups. A teacher at U School explained the extent to which she used these data, saying:

I use my Aimsweb every week and we just, in fact, did it today. I go through and I check and see where they are at—if they’re meeting the benchmark and how far they are off—and then I make a list of those kids. And then on Monday when my para comes in, she knows exactly what kids to pull for extra practice. (UT269)
Related nonconnected assessments, numbers-sense or early numeracy skills (for primary grades), and math computation fluency assessments, all designed to measure general outcomes, were reported as being offered by two of the three schools. These are similar to the oral reading fluency assessments in that they guide differentiated support and set a benchmark for future growth in the area of math.

Another source of nonconnected data for each of the three schools is best described as a software package to which a district or school can subscribe. Through these programs, the software company manages the assessment tools, the assessments, and the data resulting from the assessments. Schools reported using the following software packages: i-Ready, IRLA, Aimsweb, and STAR. One teacher at U School described the STAR assessment as something that was well established at the teacher’s school, saying, “Yeah, STAR assessment, and it seemed pretty established to me—that that’s what everybody knew, that that was the first assessment you give your kids” (ST81). These assessments are used to support a variety of data needs, including differentiated grouping, benchmark testing, and progress monitoring, and also as a way to compare student and school performance with the performance of other students and schools. In each school the district required that the assessments provide specific protocols for conducting the testing. However, the use of these data was less directed.

The principal at W School described the use of IRLA data by saying, “We pull IRLA data into the primary reading [data]. We go through that data and talk about how we analyze it, and we determine the implications and how we’re going to respond to it instructionally” (WP3).

The state-mandated Smarter Balanced Assessment (SBA) is another nonconnected assessment mentioned as a source of data for each of the three schools. The principal at W school described using it to follow growth of cohort groups: “[With] the SBA results, we
compare the same group. So, last year’s fourth graders to this year’s fifth graders” (WP86).

These schools also reported that use of the interim Smarter Balanced Assessment is increasing. The interim assessment is designed to provide additional data directly tied to the Common Core State Standards and the Smarter Balanced Assessment. These interim assessments are new and have been made available only partially since 2014. One school reported collecting the assessment data required by the state of Washington, which is called WaKids. Although they were collected, the data were not reported to be of much use in making decisions.

Other nonconnected assessment data mentioned by those interviewed included such things as high-frequency word lists, sometimes referred as Fry word lists. The teachers at S School described their use as follows: “We put them [students] in rank order based on the data of high-frequency words” (ST147). Assessments in this realm can be used to support student monitoring by measuring the number of words read in a given amount of time. Story re-tells done following an oral reading fluency probe were mentioned as a source of data used in U School as well.

IXL Math is a program used at one school. This on-line subscription program provides both data and practice opportunities by having students work on math problems and monitors student errors to inform future work in the program. Student growth goals (SGG), as part of the state’s evaluation model, were also reported as a source of data. SGG are designed by the teacher and scored by the evaluator, who is most often the building principal or assistant principal. They may not connect directly to the instruction happening at any given moment and are typically more of a long-term summative goal. A teacher at S School described SGG like this: “The other support that I can think of, which is more of an expectation, are the student
growth goals that each teacher is expected to make” (ST1632). The state-required SGG also support collaborative work, as is evident in the comment by a teacher at S School:

It’s been kind of cool because people are a little nervous about it (Student Growth Goals), but when we started talking about just skill-based growth goals . . . they (teachers) are really seeing some control. Like it’s not so scary. I mean only four kids in my class knew how to do that [before] and now 18 kids know how to do that. And then other teams have been saying, “Hey, Third Grade, can I look at your growth goals, because I need some ideas for our growth goals.” (SP823)

Often connected and nonconnected assessments are used together, as this principal from W School explained, “based on . . . the difference between the unit test data and the i-Ready data; we said, ‘What do we have to do different?’ So what we did was, we broke that unit up into pieces, and . . . we chunked it throughout the school year” (WP761).

Table 4 lists the assessments mentioned during the interviews by type, along with the number of times each assessment type was mentioned during the interviews. Although the number is not intended to quantify the findings, the stark difference is presented to add context to the overall findings.

In addition to the aforementioned academically focused assessments, there were several data types that were not academic in nature but still contributed to the decision making at the school level. These data types include behavior and attendance data. Each of the three principals reported using data on student behavior and attendance to assist in the development of their schoolwide plan. These data were also used to compare individual schools with district and state data points. Two of the schools reported using a data program called SWIS for managing their behavior data. The principal at one of those schools, S School, expressed the opinion that S
School had been selected by the district to pilot the SWIS data system because of their building’s success with data use in general. He said, “Yeah, I mean you know we’re pretty savvy around here, that we would be able to figure out a system, and yeah we have a team already that meets once a month to talk and look at behavior data” (SP568).

Table 4

*Connected and Nonconnected Assessments*

<table>
<thead>
<tr>
<th>Connected Assessments (86)</th>
<th>Nonconnected Assessments (161)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum placement tests</td>
<td>Oral Reading Fluency with Re-tell</td>
</tr>
<tr>
<td>Lesson pre-tests</td>
<td>Math Computation Measures (MCOMP)</td>
</tr>
<tr>
<td>Lesson post-tests</td>
<td>Smarter Balanced Assessment</td>
</tr>
<tr>
<td>Unit tests</td>
<td>Early numeracy assessments</td>
</tr>
<tr>
<td>Lesson quizzes</td>
<td>DIBELS assessments</td>
</tr>
<tr>
<td>Lesson exit slips</td>
<td>STAR &amp; MAZE assessments</td>
</tr>
<tr>
<td>Writing assessments</td>
<td>I-Ready &amp; IRLA assessments</td>
</tr>
</tbody>
</table>

The data types described above are all quantitative. When asked about the use of qualitative data during a follow-up interview, principals were not able to provide any examples of its use for decision making. Continued discussion revealed that at one school the principal saw collaborative discussion as an ongoing reflective process that generated information that was qualitative. Yet none of the principals or teachers reported any specific focus on the collection or examination of qualitative data.

**Patterns of Data Use**

In addition to seeking information on the types of data used in the schools involved in this study, I also sought to gather information on the patterns of data use. Patterns of data use are the schedules and structures used to assess, analyze, and make decisions with the data. These
data use patterns were identified as the interviews were analyzed. In the section that follows, each school’s general patterns of data use is described separately.

**W School**

At W School, the patterns of data use began with a comprehensive testing calendar created at the building level by the principal. This calendar is set prior to the opening of school in order to guide the collection and use of data throughout the year. Testing and meeting dates are all kept on this calendar in a central location and are shared with staff. Included in the calendar are regularly scheduled meetings to review data involving various staff.

Students are assessed using the i-Ready and IRLA assessment tools a minimum of three times throughout the year. These are district required assessments that must be followed by a data meeting called a Collaborative Academic Support Team (CAST) meeting. The fall data are discussed at this meeting and are used to decide on instructional supports put in place to begin the year. These support efforts’ effect on student learning are then monitored through regular assessments throughout the year, with the frequency determined by the level of support needed for each student. Tier Three students are typically assessed weekly using progress monitoring probes, and Tier Two and Tier One students are monitored less often. This monitoring allows instruction and placement in groups to be fluid so that changes can be made based on student progress.

The schedule includes three CAST meetings that typically involve the teacher meeting with the principal and other support staff in the building to review data and determine the need for additional support. A teacher at W School explained, “We have three CAST meetings, two of which are truly formative, and the last one is summative” (WT311). These meetings are scheduled shortly after the benchmark testing. Half-day subs are provided for the teachers to
make sure that they have adequate time to focus only on understanding the data and planning how to follow up. The principal described the CAST meeting structure:

First we start with norms—set that aside because norms are norms—then we have a protocol and we use, based on the four questions, PLC questions, so we use that protocol for both math and reading. We also break it down by subgroups in each grade level. So here’s how our special education students are doing as compared to non-special education students. Here’s how our Black students are doing compared to students who are not Black. Here’s our ELL students. . . So we break each of those pieces down, and here’s the components in math, you know, algebra and algebraic thinking, numeracy, numbers and computation, geometry and measurement, you know. All of those different ones, and so we really get specific on this, is where our students at this grade level go, and it’s a very structured conversation for both math and reading. (WP745)

Teachers use these data to inform a focus on the work during their professional learning community (PLC) meetings that take place four times each month. A teacher at W School explained what teacher teams considered during these PLC meetings, saying, “Well, what do students need? What’s the pattern that we see in our grade level? Are there different patterns in different classes?” (WT313). The result is a tiered support system that places students into instructional groups, including leveled reading and math groups, based on their instructional needs. It is important to note that the time for these PLC meetings was created at the school level. Although the flexibility to make this time came from the district, the decision to create the time was made at the building level. Only a few other schools in the district have restructured their time in this way.
W School has what they call a Tiered Intervention Team that organizes connected and nonconnected data, including benchmark assessments, unit assessments, SBA data, and progress monitoring results, and then places them in a master spreadsheet. The Tiered Intervention Team then keeps those data updated for teachers and teams to use and review at data meetings and as needed throughout the year. The principal at W School explained, “We have [an] extensive kind of spreadsheet, Excel spreadsheet, that we use to help determine our tiered intervention model. So staff really are expected to use it” (WP162).

The pattern of data use at W school begins with the development of an annual assessment calendar, which sets out the benchmark assessment blocks and the CAST meetings that follow each benchmark assessment. These assessment blocks are supported by two data systems that incorporate the I-Ready and the IRLA assessments. The Tiered Intervention Team organizes these and additional assessment data described earlier for progress monitoring and measuring mastery. These data are also used during PLC meetings and allow staff to monitor progress and adjust instructional support as needed.

S School

At S School, the principal said that the pattern for data use had developed over the previous 3 years, starting with PLC meetings, described by the principal as follows: “So, this is my third year here as the principal and we are beginning now to have system for data use. When I first started here there were teachers using data, but there wasn’t any system” (SP34). The principal went on to describe the data use patterns in which “grade level teams meet once a month to talk through data on specific skills, so each grade level team has specific skills they’ve identified that they are collecting data on and those are typically a 6–8-week goal” (SP40). These goals are then incorporated into individual teacher SGG.
Working on building developed learning targets was the goal for grade-level teams. Teams used these goals to focus instruction on these areas through instruction and assessment that identifies individual student learning needs. The followed excerpt from the principal interview explains how this worked.

Kindergarten wanted to look at letter sounds. That was their data point that they wanted to sort kids by, so they would say our most struggling or Tier 3-ish kids, are the kids who know this many letter sounds and identified who those kids were, and then Tier Two and Tier One. In second grade they used Oral Reading Fluency as their target. (SP106)

Another pattern of data use involved the identification of students who need extra support in the fall during district benchmark assessments. These are followed up in the winter to monitor progress and again in the spring. These benchmark tests include fall testing using ReadWell placement tests for kindergarten and first grade and the STAR test for second through fifth grades. This testing provides a score and a ranking that is used by the Title I support teacher to determine who qualifies for support in their Title I program. The use of the STAR test has increased over the last several years, as a teacher from S School explained: “I think more teachers are doing the STAR test more often than three times a year. I think we have a testing window of three times a year. That’s relatively new. Some teachers do it every month” (ST287).

S School has an established PLC structure set up as well. PLCs meet monthly during early release time for a 45-minute block. These meetings include the classroom teachers, Title 1 teacher, LAP teacher, resource teacher, psychologist, counselor, and an administrator. This is a change from previous years when these meetings were expected to be held monthly, but there was no requirement regarding when they were to be held. However, according to one teacher, the structure of the meetings has continued to be flexible:
I think each grade level does something that is unique to that grade level. I don’t think there is necessarily a whole plan that every grade level does exactly the same thing. I think [the principal] has left some team decisions to let PLCs decide really specifically how they want to—what tools they want to use and how often. (ST346)

Yet the principal reported that they have increased the structure and support provided at these meetings. A teacher at this school did share praise for the principal’s leadership in this area, observing, “She has very much encouraged the PLC processes and systems around here, which, as I understand it, has not always been the case” (ST431). This PLC work is focused on supporting staff efforts to meet student learning/growth goals that are set every 6–8 weeks at school based on the objective of building developed essential learning targets.

The district also provided U School with staff that serve as leaders in the area of data use, including instructional coaches and reading specialists. A spreadsheet was created by these support staff members to help teachers track multiple sets of data throughout the year. The district also provides support for a collaborative use of data by setting up a data dashboard system called Performance Plus. This is a web-based system that organizes school and student data so that staff have easy access to multiple pieces of data over time.

The pattern of data use at S school includes both a schoolwide use of benchmark assessments and a grade-level focus on essential learning. Students are placed in support groups based on needs identified and are then monitored through Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments during PLC meetings. These placement tests and other benchmark test results inform the teachers’ development of student growth goals (SGG). The process is supported by principal leadership and support staff assigned to assist teams with data use using building- and district-provided data-tracking tools.
U School

The data patterns reported at U School were based on benchmark testing that takes place three times a year, followed by data meetings that include the principal, classroom teachers, instructional coaches, reading and math specialists, the special education teacher, and the school psychologist. The principal at U School explains one way they prepare for the meeting in which benchmark testing data is reviewed with teachers:

So, the learning specialists, the coach and I, oftentimes, we will before our three times a year benchmarking meetings and we will look at the data, talk about kind of the celebrations ourselves, so that when we go into the meeting with those celebrations in our head we can highlight those if a teacher is having a hard time or if grade level is having a hard time finding those celebrations. (UP997)

The benchmark assessments blocks are set by the district to complete common assessments agreed upon by all schools in the district. U School scheduled the individual tests and data meetings that follow these assessment blocks.

These benchmark tests include early literacy measures of pre-reading skills and oral reading fluency measures. In addition, math skills are measured, including number sense skills for primary grades and computation/concepts and application skills for other grade levels. These testing sessions and subsequent meetings support the establishment of baseline scores for measuring growth throughout the year. For some grades, the data are used to inform decisions about placement into additional academic support programs.

At U School, a teacher reported that the discussions exposed missing data and led to additional assessments that were more diagnostic in nature:
What we were finding is we were able to analyze it down to that point, but we weren’t getting specific enough to know what the need was with certain kids. So, some of these kids require a diagnostic in order to determine some of those higher needs. (UT699)

These more detailed data allowed teachers to plan and provide support that was targeted and specific.

It is important to note that this pattern of conducting assessment, holding data meetings, and then following up supported a team approach, with one teacher at U School saying that the student success is a group responsibility: “These are all our students” (UT9). The teacher also emphasized the importance of a shared focus on student learning, saying, “I don’t want to let my team down. We all feel a great responsibility to not disappoint each other” (UT34).

Another data use pattern identified was the ongoing practice of progress monitoring. Progress monitoring includes an initial assessment to determine a baseline and regular follow-up assessments to measure progress over time. Data are used to make decisions about current support and when to add and adjust the support. Progress monitoring at U School was outlined by the principal as follows:

The classroom teachers also collect data. They are responsible for collecting the reading progress monitoring data, so all of our students who are in Tier Three, the teachers are expected to progress monitor weekly. Our students that are in Tier Two, the teachers are responsible for progress monitoring twice a month. (UP241)

Progress monitoring data are reviewed both at the ongoing PLC meetings and at larger CAST data meetings in order to help make decisions about any changes to the added support being given.
PLC meetings are held during district early release time 1 day a week on every full workweek during the school year. PLC meetings are described as ongoing data review and planning sessions that take place regularly throughout the year. The teachers describe PLC meetings as a time to “look at exits slips, end-of-unit assessments, end-of-week reading assessments, and to have a conversation on what went well for the grade level, what didn’t go so well, what do kids need some additional practice with” (UP71).

The PLC process at U School is supported through early release time given to all schools in the district so that teacher teams can meet for 90 minutes. The teachers described the PLC process as a time for focused use of data:

It’s not meant to be planning time where they go and make copies. It’s meant to be [time when they] sit together and actually collaborate and look at student data and make decisions that drive the instruction based on that [data]. (UT54)

This collaborative time is often led by support from the leadership team at U School. The following statement by a teacher at U School describes the pattern of support being implemented at the school.

There is a protocol that we go through with it. So first grade will go through that protocol and it’s just—the time is used so we can make that—it’s that 6-week check-in to make sure all are our kids growing and making the progress they need or do we need to adjust and, you know, revamp or whatever, that kind of thing. So then we meet with them for 45 minutes and then we meet with kindergarten for 45 minutes. And then the next week, we meet with second and third grade. (UT896)
Another pattern of support for data use includes the use of a leadership team that leads the patterns of data use. The instructional coach at U School described their data leadership team:

That CORE team consists of the principal, the psychologist, myself, our specialists, and what we do is we have a binder that we have identified all of our Tier 3 kids. And usually it comes from the fall data. We revised it in the winter and we keep track of those kids when we look at progress. (UT524)

The principal at U School also described an ongoing meeting at the district level with all the elementary principals and instructional coaches from each building gathering to review data.

The pattern of data use at U school is anchored in both benchmark assessments with district-assigned assessment blocks three times a year using common assessments, and progress monitoring done at the PLC level. The use of in-program data (connected data) has increased to allow staff to more accurately identify individual needs. Staff meet with the large CAST after the benchmark tests and with a smaller support team at the weekly PLC meetings. The CORE team meets weekly, separately from the teachers, to review student progress and the need for additional support for teachers and individual students. Table 5 shows the data use pattern practiced at each school.

This section reviewed the types of data and the patterns of data use incorporated by three schools. These first two sections provided a way to understand the data use that takes place in these three successful schools. The following section focuses on the organizational characteristics and conditions within which schools implement those patterns of data use.
Table 5

Data Use Patterns/Practices

<table>
<thead>
<tr>
<th>Patterns/Practices</th>
<th>W School</th>
<th>S School</th>
<th>U School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled testing/data review</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>District required testing</td>
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<td>X</td>
</tr>
<tr>
<td>Benchmark testing 3x a year</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Progress monitoring</td>
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<td>X</td>
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<tr>
<td>CAST (team) data review mtgs</td>
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<td>X</td>
</tr>
<tr>
<td>Extended time for data mtgs</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>PLC mtgs weekly/monthly</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Data Leadership Team</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>6–8-week student growth goals</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Diagnostic assessments</td>
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</tbody>
</table>

Organizational Characteristics and Conditions

Another reason for conducting this research was to better understand the organizational characteristics and conditions that influence K–5/6 principals as they lead their schools in the use of data. Interview transcripts were reviewed, resulting in the identification of conditions and the categorization of those conditions into five qualitative themes suggested as supporting data use. It should be noted that these organizational conditions are mutually reinforcing and not linear. They appear to work in conjunction with each other to support a culture within the school that fosters data use. This culture includes the following characteristics: a shared focus on student learning; time and opportunity to meet; the presence of a schoolwide data system; access to expertise; and shared, purpose-driven leadership. Further detail about how these organizational conditions reinforced data use is offered in the remainder of this chapter.
Shared Focus on Student Learning

In each school, the staff described their school as having a collaborative environment. Datnow (2011) defined a collaborative culture as a “working relationships between teachers [that] tends to be spontaneous, voluntary, development-oriented, pervasive across time and space, and unpredictable” (para. 3). When asked to describe the collaboration that takes place at her schools, the principal at U School described it as a decision-making process in which “decisions are made by a team of people collaborating together, brainstorming ideas” (UP454). This characterization of collaboration is closer to the kind of work that Hargreaves (1994) defined as collegial. Hargreaves developed the term *contrived collegiality* to describe an effort designed to regulate collaborative work.

In Hargreaves’s thinking, contrived collegiality suggests that the nature of the collaborative work is forced and highly regulated rather than facilitated. Relationships are mandatory and are manufactured by the structures of the school rather than by felt need or purpose. In all the school sites studied here, structures such as PLCs and release time were employed to make space for collaborative work. So although the work fell outside of the empirical or theoretical definition of collaboration, teachers’ work was labeled as collaborative by study participants.

When asked to share more about how she supports staff in collaborating, the principal at S School spoke of a change they made to no longer allow individual teachers to seek individual student support. The change requires that teachers bring their team to the meeting to work together in a more structured approach. The principal explained,

We changed our format; we don’t have that [teachers seeking individual support for students without first consulting each other] happening anymore. Basically, teachers can
bring forward a student of concern but they have to bring their grade-level team with them when they schedule that meeting. (SP1711)

In this way, the principal requires that teachers work together to address problems of student learning. A shared focus on student learning is supported by this practice.

Yet, some leaders appeared to understand that collaboration might be taken further. When pressed, principals admitted that they were not always certain the discussion was collaborative. As the principal at W School stated, “You know, our issue at [W School] is we can be very collegial, but it’s tougher for my staff to be collaborative because collaboration sometimes involves courageous conversations” (WP1348). The principal described the need to push conversations by attending meetings or assigning specific other teacher leaders in the building to attend meetings: “When I’m a member, or a couple other key people on our staff are members, then, you know, we can push that discussion” (WP1360).

The data suggest that principals are aware that structures, such as PLCs, support a shared focus on student learning. Even though work within PLCs was often described as collaborative, the principals in this study realized that more robust collaborative efforts would be required for the school to continue to move toward greater success. However, all the principals in this study noted how difficult it is to move teachers toward less structured and more organic collaborative work. Additionally, upon being probed, principals in the study were unable to articulate what they might do to move toward deeper collaborative work. Therefore, although those interviewed identified collaboration as a characteristic of their schools, in practice, these schools were not truly collaborative as described in the literature. Nonetheless, each school had fostered an orientation toward a shared focus on student learning.
**Time and Opportunity to Meet**

Time and opportunity to meet was consistently mentioned as an important aspect of data use within all three schools. Principals structured the schedule to provide regular opportunities to meet and discuss student data. These meetings involved a variety of groups and structures and were often referred to as PLC time; yet the principals’ understanding of a PLC was not clearly defined. Although PLC is commonly understood to refer to a professional learning community, the specifics of how this time that the participants referred to as PLC time was used did not correlate directly to commonly understood standards of a PLC. For example, it was not clear that practice was deprivatized in any meaningful way or that dialogue was particularly reflective (Louis, Kruse, & Bryk, 1995). In fact, as the examples below illustrate, conversation in the PLC tended toward the routine implementation of already agreed-upon practices.

The principal at U School summarized his staff’s PLC time in this way:

The purpose of that PLC time is for them to look at exit slips, end-of-unit assessments, end-of-week reading assessments and to have a conversation on what went well for the grade level, what didn’t go so well, what do kids need some additional practice with, and they also can talk about—regarding the data they also sometimes will talk about if the kid needs to be moved to a different group. (UP71)

The importance of having dedicated time to meet was consistently shared during the interviews. At U School, the principal expressed the value of having the district build extended time into the school calendar:

The district has built a schedule that allows 90-minute early release on most Wednesdays where my grade level teams can meet as a PLC. I can join those teams. We can review student data. We can talk about what’s working and what’s not working, and that’s been
a huge support because it just gives us kind of like a gift of time, 90 minutes every week on top of the teachers’, or in addition to the teachers’ 40-minute plan time. So it doesn’t interfere with their day-to-day planning. (UP435)

Although the meeting schedules varied from once a month to once a week, each school was consistent in providing a scheduled data review meeting three times a year. These meetings followed schoolwide-testing windows often referred to as benchmark testing. Two of the three schools called these data meetings collaborative academic support team (CAST) meetings. The principal at W School reported on the importance of CAST meetings as an opportunity for a focus on data use:

   And again it’s part of the PLC process, the why, why do you think we got the results we did. The CAST discussions that we have—basically “Here is the data, why do you think we got what we got, why are students performing at this level” (regardless of what the level is)—the discussion is important to have because you need to know what to continue as well as what to stop, and you need to celebrate the good things, and you can have powerful celebrations when you know why you’re getting the results. (WP1495)

Time to meet and focus on student learning was provided in various ways among the schools studied. As stated above, time was made available by scheduling late start and early release days for students. This schedule allowed teachers to use non-student time to focus on student learning.

   Another way in which schools provided time was hiring half-day substitutes in order to provide shared free-from-students time. At W School, teachers use substitutes to cover their classrooms so they can spend the extended time in a CAST meeting. The principal at U School explained the importance of providing the additional time to their teachers:
A big turning point of when our data use starts is every benchmark period. We provide our teachers with a half-day release so—and then the entire grade level and all specialists, our LAP specialists, our i3 specialists, myself, counselor shows up, the special ed teacher shows up, and we sit down and we talk about every single kid and we put them in intentional groups to meet their needs. And the data that we’re using is from their benchmark data, the three times a year data. (UT92)

Another way to provide time for teachers to meet and use data is more at the principal’s discretion and dependent on the teachers’ willingness to participate. The principal at W School said that at their school, “We have optional paid time [that is] at [the] principal’s discretion to appoint, but it takes me saying, ‘Okay, this [is] optional principal time and you have to use this amount of time for this’” (WP201).

A significant support related to time and opportunity to meet is involving key stakeholders in the meetings by making them available. A teacher at W School expressed the importance of having their principal freed up by having other staff cover for him during the time that teachers were available to meet:

To free him up is really important, to be a part of those data discussions, and so he is really immersed and familiar with the data as well, which I think gives him a better overall picture [of] what’s happening in the building and then making some leadership decisions; that way he’s usually immersed in the data with the teachers. (WT779)

Finally, time for data work is provided as part of the common daily planning time provided to all teachers as part of the collective bargaining agreement. This time is not completely controlled by the building principal, but it does allow the principal to use time for teachers to meet as a team, work one-on-one with the principal or instructional coach, or work

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individually with data. As was noted by the principal at U School, “Grade levels also have just a common planning time where [teachers] go through the common planning and review data and that kind of stuff and then individual teacher time really that I don’t structure” (UP1419).

In sum, in each of these schools time was provided for teachers to meet and discuss a variety of data. Time was provided in typical ways—through PLC meetings, half-day intensives, and daily planning. What appeared to differ in these schools was the consistent and ongoing use of allotted meeting time to attend to data use.

**Schoolwide Data System**

Another characteristic present in these schools was the use of a schoolwide data system. The term *data system* as used in this study most closely resembles Wayman’s (2005) definition characterizing an educational data system as a computer system that provides educators with student data to help solve educational problems. The data systems were sustained by school- and district-level support. Although each school in this study had a system for providing educators with student data that was purchased to provide support in implementing assessments and organizing the results, they also had systems designed by staff. School staff, including instructional coaches and learning specialists, created spreadsheets that were shared either electronically or as paper collections of data for review. In each school, a combination of these two systems supported using data to make decisions.

W School’s data systems are iReady and the Independent Reading Level Assessment (IRLA). iReady is a software package published by Curriculum Associates. The publisher describes it as a data system that delivers student instruction, performance diagnostics, and progress reports based on K–12 Common Core State Standards. IRLA is described by its publisher as a diagnostic and formative assessment tool that gives teachers the ability to
“establish a baseline reading level and outline a course of remediation, acceleration, or maintenance for each child” (American Reading Company, 2016, para. 1). The principal at W School explained how these data were used, saying, “We use the iReady for reading, third through six, and math, kindergarten through six, and then we use IRLA for kindergarten through second grade in reading” (WP1275). Additional student data are kept on an Excel spreadsheet that is made available to staff to allow them to compare results, identify patterns, and make decisions regarding student support.

S School used a system called Performance Plus. Performance Plus is described by its publisher as an assessment and curriculum management software package that keeps teachers and administrators informed through student assessment software and providing information about what is and is not working in the classroom. Other data, including Smarter Balanced Assessment results, DIBELS assessments, and STAR testing scores, are also entered into Performance Plus to be included with the data analysis. When asked to share what these data system had done to contribute to the school’s success, the principal at S School responded,

I would say that it’s providing an easier way to access data for kids once people are savvy with the system. For example, we had a meeting about a student this morning and somebody said, “Well let’s look at their data.” [I] pulled it up on the big screen and you could see that data for 4 years for that student. (SP225)

At U School, the data system used was Aimsweb. Aimsweb is described by its publisher as a k–12 web-based program that can be used for “universal screening, progress monitoring, and data management” (Aimsweb, 2014, para. 1). The principal at U School described how Aimsweb is used at their school:
All of our benchmarking data is kept in the Aimsweb program, which is an online program where we can actually test our kids online or the data gets inputted. Teachers have their own individual logins [and] can print their student reports. (UP492) The data collected at U School included both benchmark data, which were collected three times a year, and progress monitoring data, which were collected and tracked over time and as often as once a week.

While Aimsweb served as the primary data system, the school designed a spreadsheet to organize and present additional data. Aimsweb managed only assessment data from Aimsweb, so in order to provide a more comprehensive data system, the school created a data spreadsheet in which data from the state Smarter Balanced Assessment (SBA) and district core curriculum assessments are collected and shared with staff.

These systems are used to support the work done to improve student learning in a variety of ways. The teachers at S School said data use begins in their school with the STAR Assessment. STAR Assessments are commercially available assessment resources published by Renaissance Learning. The publisher describes the STAR assessments as assessment tools that “provide teachers with reliable and valid data instantly so that they can target instruction, monitor progress, provide students with the most appropriate instructional materials, and intervene with at-risk students” (Renaissance Learning, 2014, p. 1).

This assessment is given in the fall, and students are placed in leveled groups so that those most in need can be scheduled to get additional instruction using supplemental intervention programs. One teacher reported that after testing, students “get a score and a ranking and that is an important piece of data that’s used for Title [Title One] and LAP [Learning Assistance Program] decisions. And so that leads us to start rolling right away” (ST91).
In addition to using data from these systems to place students into Title and LAP groups, classroom teachers use the information to individualize instruction in the classroom in order to provide students with instruction in groups that meet their individual needs. The groups were formed using benchmark data, but they were kept fluid through progress monitoring and regular data meetings that resulted in teachers’ regrouping students based on individual progress. A teacher at S school explained one way in which this is done:

Speaking for the fourth grade team, we use that data to ability group our students. We have two intervention blocks—one reading and one math. And turning that back to your questions just now, [principal’s name] has intentionally built-in two intervention blocks into the master schedule for every grade level team for the purpose of using data to group kids so that they are receiving differentiated instruction. (ST365)

The use of these data that led to fluid groups and other supports was new at this school and was reported at least by one teacher to have been implemented because of principal leadership. The principal led a discerning use of data by providing clear expectations for how to use the data, according to the teacher, who said that before the principal brought it up,

We did not discuss data actually, except when we looked at the MSP scores in those days before school started. Other than that, as a whole group or even as a grade level, we didn’t ever really talk about data. (ST1405)

One of the benefits of these systems is that they provide a tool that can provide a consistent data set, allowing schools to compare scores and track growth over time. The data systems provide schools with a series of assessments that can be used to formally measure student progress throughout the year, including benchmark testing and progress monitoring with the Aimsweb data system. The Aimsweb system has established performance benchmarks to
rank where a student score is in comparison with a normed group of students taking the same test across the country. A teacher at U School described the use of the Aimsweb data system at that school, saying: “I think AimsWeb and progress monitor is a big thing that we all do at every grade level weekly. We use that to determine which kids need extra help and pull out extra resources” (UT36).

In systems like Aimsweb, the scores are norm-referenced with other schools across the country, and the progress monitoring probes are aligned with the benchmark tests. In this way, teachers can compare the progress of their students with that of others across the nation. The intent is that these comparisons will alert teachers to deficiencies and motivate them to offer just-in-time curricular or instructional interventions.

Although it was clear that the data system used by each school studied here contributed to its success, not all of the teachers interviewed acknowledged the important role of the data systems. When asked whether these data systems had a significant impact on the school’s success, one teacher replied, “No. I’d say it had nothing to do with it,” explaining that the system was too complicated and that staff didn’t know how to use it (SP972). This minority opinion is interesting in that teachers appeared to place great importance on the data system as a structure that supported instructional decision making. Yet, without high-quality programs and materials, data systems alone will not sustain teachers’ efforts. It is also important to note that time invested in data system use may detract from time to plan and innovate within the classroom. As is described in the next section, knowing what to do when data suggest students need assistance is essential for school success.
Access to Expertise

The use of multiple types of data was reported by each of the schools studied. However, data alone cannot support student success. Teachers must know procedures for assessing, understanding, and acting upon the data. They must also know what curricular and instructional choices to make once they have made a determination regarding where enhancement or remediation is required.

Because knowing how to read assessment data and figure out the next steps is an important part of using data, schools benefited from expertise that provided ongoing support of data use among their staff. Although the delivery of connected assessments was often part of district training on new curriculum, the use of the data gained from these assessments required additional support. This support came from both in-building and district staff. Two of the three schools in this study had an in-building instructional coach position. The third school had a principal who served as an instructional coach before becoming a principal. In this way, teachers in these schools had considerable access to instructional expertise when need was determined by sources such as connected progress monitoring.

A regular source of data for decision making at two of the three schools studied is progress monitoring. Fuches and Fuches (2001) described progress monitoring as follows:

Teachers assess students’ academic performance on a regular basis (weekly or monthly) for two purposes: to determine whether children are profiting appropriately from the typical instructional program and to build more effective programs for the children who benefit inadequately from typical instruction. (p. 1).
Teachers use progress monitoring as a data source to ensure that students do not fall behind in their academic growth or fail to respond to specific interventions. Therefore, knowing how to use these tools is an important aspect of the overall data plan.

Added support was key to the successful implementation of progress monitoring. The progress monitoring assessments required regular support, including initial set-up and ongoing training concerning assessment practices and decision making as suggested by the data. A teacher at U School explained: “In our fall data meetings, the instructional coach has trained all of our classroom teachers on how to progress monitor” (UP658). The principal at U School provided a clear explanation of how progress monitoring is generally used:

We track their data [progress]. If their progress monitoring as an individual or as a group is still continuing, then we’ll meet 4 to 6 weeks later and either continue with the new intervention if the data [are] showing that it’s working, or we will come up with new interventions or a new plan if the data is not showing that the students are learning,

(UP473)

The data also suggest that in at least one school, explicit attention was paid to the ways in which data inform instructional decisions. In W school, the principal reported that progress monitoring had been abandoned because “it didn’t give us any detailed information. It just showed us the trends students are on” (WP461). Progress monitoring had been used in the past, yet a perception that targeted instructional data was lacking resulted in the decision to discontinue its use. The principal noted, “It didn’t give us any data that we could use to plan instruction” (WP463).

The importance of instructional coaches was evident in the schools that employed them. Additional training provided by instructional coaches supported use of assessments beyond those
directly connected to standardized data sources, such as progress monitoring. This process took place at PLC meetings as classroom assessment practices were discussed, and then results were used to make instructional decisions. While discussing the coaches’ role, a teacher at W School offered the following information:

Well, for coaches they have done a couple of trainings this year on professional learning communities and really digging into how to analyze data quickly and how to set up data quickly. And that happened to be at our last training. And then of course the iReady training that I talked to you about, but I think that looking at data and trends and the support, one of the things is that the belief is that we really do have teachers that are experts who, if you look at this trend and this is the skill, a lot of times teachers know, “If I do this, this, and this, that will help.” (WT972)

Various connected and nonconnected assessments used by teachers and other school staff was explained earlier in this chapter. Using all these assessment types to gather and analyze data productively requires that a person have a good understanding of how the test is administered and how the data are used for decision making. In-building instructional coaches provided the support teachers needed to use these multiple assessments. The instructional coach at W School gave an example of what the instructional coach does at her school:

There was some data that I, I think it was for the IRLA, that we were a little unsure of, and so [coach’s name], as an instructional coach, I would go in and sit with that teacher and do the assessment side by side to kind of calibrate [ensure] the quality. (WT664)

The principal at W School gave the following answer when asked about district support for his leadership of data-driven decision making:
My school improvement officer is always available. That’s my immediate supervisor. She’s sharp. She asks . . . I’ll just speak for me. I believe iron sharpens iron, and she asks really pointed questions that make you think, and I appreciate that. You need to know your stuff, and sometimes I go, “I don't know, but I’ll find out.” That’s the first support. (WP1042)

In addition to support from a district supervisor, the value of district office support was also expressed by a teacher who said, “I would say [support] primarily has come from [the district] Teaching and Learning [Department] with the [district] reading coach, just working with myself and my grade-level teachers. And my first 2 years here, she attended most of our benchmark meetings” (UP723). Although support for instruction and management are typical functions of an instructional coach, these schools used their coach in specific ways to support their work with data collection, analysis, and decision making. The expertise provided by coaches also informed classroom decision making regarding instruction and curriculum.

**Shared, Purpose-Driven Leadership**

Another characteristic that surfaced in the data was a strong sense of shared, purpose-driven leadership. Scribner, Sawyer, Watson, and Myers (2007) defined shared leadership as leadership activity spread over leaders, followers, and the school’s context. Purpose-driven leadership, often referred to as moral leadership, was defined by Dantley (2005) as “a way to situate school leadership in a broader social context. It not only is conscious of issues of race, class and gender, but also perceives the work of school as sites committed to social justice” (p. 35). Principals spoke of a focus on their overall mission and vision as a support for data use. The leadership need to sustain this focus was paired with a sense of responsibility shared among the staff.
The principal at W School spoke about the staff commitment to a common mission and vision that provided an important focus for current teachers and the selection of new staff, saying, “We agreed on certain things that we wanted W School to be and so one piece that we agreed on was the use of critical examination of research, best practices, and ongoing assessment to drive instruction” (WP1550). The principal at W school asserted that the mission reflected a school culture that focuses on evidence use in classroom and other decision making.

At U School, the principal reported, they had just completed a process of revising their mission and vision in the previous year:

So we spent a lot of time in August, between August and December, rewriting our vision statement. We have really focused on ways to improve our students’ learning, and so I think one of the strengths of the staff with using data is they do believe that our kids can learn and can be successful, and they also have seen the improvements on our data over the last 3 years on all sorts of assessments. (UP131)

The focus on data has brought about a focus on success and in turn, celebrations of that success as seen in awards such as the WAA have led to a greater focus on student data in these schools.

When asked about the staff beliefs regarding data, the S School principal described the process they had gone through as organic:

People are starting to see the strengths of collecting data and celebrating growth of data.

In fact it’s trickling into how do we celebrate growth, and then they see more growth with the kids, so it’s really been a little bit of an organic process because they benefited from looking at data, now kids are benefiting, so now let’s look at more data. (SP148)

When pressed for more specifics, this principal was unable to provide specific answers; yet her overall response was a general statement emphasizing the value of shared leadership:
It is my perception that we are changing that belief because in the past this school has been teachers functioning really in their classrooms and doing an amazing job with their own kids, but as we’ve pushed to serving all students and how are we going to serve all students, we have to look at data together, which was hard to get to, but we’re getting there. (SP159)

Teachers shared in the ownership of a mission and vision embracing the use of data. This was evidenced in the way that teachers held each other responsible for the work that needed to be done. A teacher at W School put it this way: “I think they (other teachers) keep you accountable, to be talking with each other about things you’re teaching the kids and the strategies you’re using” (WT142). Although talking does not mean there was true collaboration or even a change in practice, the sense of accountability to others on the teaching team as expressed by this teacher shows moderate evidence of shared leadership.

The teachers at U School echoed this sense of shared leadership in focusing on the work that needed to be done at their school. As one teacher suggested,

Staff has a big buy-in to the importance of using data and in guiding our instruction. I think just in the positive attitude about it, it’s not this fearful thing anymore. And so I think they really do support it. (UT1093)

Other examples of a shared sense of leadership include the way decisions were made about the focus on data. The principal at S School remembered how their leadership team made a commitment to the way in which they would support data use: “And then as a leadership team last year, everybody made a commitment that we’re going to keep the data in one place and that’s going to be via spreadsheet, so we’ve slowly moved to a system” (SP855). The principal acknowledged the need to provide leadership that brought teachers along, saying,
I think that was part of my piece as a leader here, to say, “This will benefit students. I have a vision for how it will be. Come along with me; trust me that it will be a good idea.” (SP191)

Summary

The types of data used for data used in the award-winning schools included in this study were separated into two categories: connected and non-connected assessments. Connected assessments were embedded in the instructional materials. Their use was intended to inform immediate instructional responses, including specific lesson placement and/or re-teaching of concepts and skills not yet mastered. Nonconnected assessments were not part of the instructional materials used in the classroom. These were separate sets of assessment tools and protocols often used to place students into fluid, leveled groups and to provide data in efforts to monitor progress for regrouping or revising instructional interventions as needed.

The patterns of data use involved a combination of data types to determine instructional responses for individuals as well as groups of students. These patterns were full of examples of staff working together with a shared focus on student learning. The use of data to focus instructional support was followed up by ongoing monitoring of student progress, conducted to inform efforts to make sure that student groups were fluid in response to student needs.

The conditions that influenced school principals were not generally consistent among all three of the schools studied. The discussion above provides an overview of those characteristics and conditions but does not present a full understanding of their impact. The intent of this discussion was to provide a general sense of the most salient points coming out of the interviews. Each area is ripe for further investigation and deeper discussion regarding data use in schools and school success in general.
CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

This study was conducted in an effort to better understand leadership in the context of data use in schools. The purpose of this research was to further understanding of the types of data and patterns of data use as well as the characteristics and conditions that influenced principal leadership in the context of data use in schools. Through an examination of the various types of data as they emerge in patterns of data use, characteristics emerged. Examination of these characteristics through a leadership lens resulted in three synthetic themes: the importance of knowledge and expertise as it relates to data use and classroom instruction; the feelings and beliefs teachers bring to the data use process; and the ways in which collective efficacy is enhanced by successful data use. Each will be further discussed in this chapter. Implications for practice and further research will be highlighted.

Discussion

Theme 1: Knowledge and Expertise

With the use of data becoming a significant part of the accountability environment permeating schools today, the need for high quality instruction has become apparent. Principals in Washington State are being evaluated on their ability to lead data use as described in criterion 3 of the AWSP Leadership framework, “Planning with Data: Leading the development, implementation and evaluation of a data-driven plan for increasing student achievement, including the use of multiple student data elements” (Kipp et al., 2012, p. 3). To successfully implement a data-driven plan, the principal must also address instruction in relation to the use of
data as stated in element 3.4: “[The principal] Assists staff to use data to guide, modify and improve classroom teaching and student learning” (Kipp et al., 2012, p. 14).

Taken together, these standards suggest that school leaders must be able to address data collection and analysis in tandem with making decisions for instructional practice. Smylie (2010) and Murphy (2010) have both suggested that leaders should be equally adept at managing data use and instructional expertise. However, prior research (Leithwood & Louis, 2011) suggests that school leaders are not equally expert in employing these tandem skills. In cases of chronically low-performing schools, Orr, Berg, Shore, and Meier (2008) noted that school leaders appear to be equally poor in both areas, unable to collect and use data to guide classroom-level decision making as well as lacking strong instructional leadership knowledge and skills to guide those aspects of teachers’ work. In their comprehensive study, Leithwood and Louis (2011) suggested that developing strong skills in each of these areas remains a challenge across the nation.

Data suggest that the award-winning schools in this study demonstrated both high knowledge of data use and high knowledge of instructional skills, in tandem. By pairing knowledge of data use with strong instructional knowledge, which allowed leaders and teachers to act on the data, data from this study suggest, they enhanced their success. Figure 1 illustrates one way the association between knowledge and expertise in data use and in instructional skill can be seen. Each quadrant suggests the ways in which leadership knowledge and skill might interact within and between these domains. Figure 1 shows these potential relationships.
Figure 1. Potential relationships between leadership knowledge and skill.

Schools in this study appeared to fall into quadrant one because they had high expertise in both data use and instructional skill. Quadrant two schools, although not researched in this study, can be thought of as having jumped on the data-use bandwagon by increasing teacher access to quality data but not necessarily providing the same level of support to improve instructional expertise. Similarly, schools that have historically operated at high levels until demographic shifts and/or staffing changes occurred may find themselves operating in quadrant three: demonstrating pockets of instructional excellence but lacking responsiveness to data. Finally schools that are struggling significantly are likely operating in quadrant four, having little expertise supporting the use of data and the related improvement of instructional skill.

Several interview responses highlight that strong expertise, both in data use and in instructional skill, is evidenced in these award-winning schools. One teacher at S School responded to a question about data use support by providing specific praise for her principal’s instructional expertise:

So her ability to lead people in that direction is really specific to the task and instead of a global, “Well, you could do more” or, “It would be nice if you add something else.” She would never say something like that. Her suggestion would be very specific. “Have you...
thought about this?” or “Can I show you this?” That, I think brings people back to her to ask more questions, like, “Oh, I bet [the principal] knows.” (ST2173)

Support was also evidenced in the expertise of colleagues. As a teacher from W School stated, “The belief is that we really do have teachers that are experts, who if you look at this trend and this is the skill, a lot of times teachers know, “If I do this, this, and this, that will help” (WT973). As well as building shared expertise, support also came from the district level, as stated in this comment from the principal at U School:

I think one of the things that the district has done is they’ve been willing to attend our data meetings and they’ve listened to like where we are kind of going but they’re also willing to step in. They’re not afraid to step in and say have you thought about this, have you considered this? And so I think their support has been more in opening our eyes to trying new things or new ways of supporting kids. (UP422)

In addition to instruction, expertise in data use was reported by each of the schools in this study as a support. A teacher at W School noted, “Well for coaches they have done a couple of trainings this year on professional learning communities and really digging into how to set up and analyze data quickly” (WT970). Another support came from the inclusion of school psychologists in data use teams. A teacher at U School praised the support they had received from their school psychologist, saying, “I have to give [our] new psychologist a lot of credit. She is very versed in RTI, highly versed. She studied [with] Mark Shinn and whatnot. She is extremely good with AIMSweb, understands ROI, the rate of improvement” (UT952).

In summary, the theme of expertise in data use and instruction stands out in the interviews as highly supportive of the schools’ efforts to make data-driven decisions. Because the school leaders in this study were able to pair data knowledge with just-in-time instructional
expertise, they were able to gain traction regarding student learning in ways that contributed to student success. Additionally, the data suggests that this expertise came from multiple sources and supported an emerging sense of confidence in the work that was being done with data.

Theme 2: Feelings and Beliefs

A key finding present in the data was the level of teacher trust both in the data tools employed and in the data those tools generated. Just as important was the belief that teachers had in their own ability to effect student learning through data analysis followed by intervention and support. A teacher, reflecting on staff belief, explained the change that took place as teachers engaged more directly with data:

I’ve seen an evolution of this in the 15 years that I’ve been here and that—the one thing from [the previous principal] being here for the 8 years that she was here, that woman is so talented, but she did all the data. She did it herself, and what I’m finding is the shift that we’re going into is that the teachers are having to take the responsibility of the data. So there is buy-in from teachers because they are having to look at it, they’re having to do it, they’re having to take it, and when they have to do it, it’s more authentic. (UT1127)

The belief that teachers either had or had access to the knowledge, skills, and resources needed to improve student learning fostered a sense of trust in the system and in their work as a school community focused on student learning. Additionally, teachers reported an increased sense of effectiveness and efficacy.

Furthermore, these feelings of success and personal effectiveness were reinforced when data confirmed teacher beliefs about students’ strengths and challenges. At the same time, the teachers’ belief in the system was supported when the data suggested a surprising result. This
was evident in the following quote from a teacher reflecting on student data that did not show the growth teachers were expecting:

    I think for me, looking at data on a school-wide level, when you’re looking at a grade level and you see very few kids moving tiers, so you see very few kids moving from strategic to benchmark and from intensive to strategic, it can be daunting. It can be depressing almost that you’re not moving kids. However, the celebration in it is if you break it down into a smaller increment and you look at, let’s say, you have your Tier 3 group of kids and you can pull out their accuracy and see growth and accuracy and they’re jumping 25%, 30% higher in accuracy, they might not be reading that many more words but their accuracy is better. (UT1310)

    The school staff expressed a strong belief in their own skills and expertise when using student data. There was a sense of trust that learning could be measured accurately and influenced successfully. The decisions made based on data were supported by this trust.

Tschannen-Moran and Hoy (2000) sum up the importance of trust in relation to school success as follows:

    In sum, there is compelling evidence that trust is important in regard to the processes required for the smooth functioning of schools. Trust is related to a positive school climate, to productive communication, to participative decision processes, and to organizational participants’ willingness to go beyond the minimum requirements of their job descriptions. (p. 584)

    It is important to point out that leadership is about developing people. Leithwood and Louis (2011) point to capacity building as the primary aim of practices designed to develop
people. They state, “People are motivated by what they are good at” (p. 60) and that “building capacity that leads to a sense of mastery is therefore highly motivational as well” (p. 60).

In summary, data collected during this study suggest that when teachers trust in the data they are collecting and using and have the ability and the tools/resources to respond successfully to the student learning needs the data points to, a feeling of mastery emerges. This in turn encourages an ongoing cycle of data use. Furthermore, data suggest that these schools developed a shared motivation for data use because they felt they were good at it, which supported ongoing use and increased expertise.

**Theme 3: Collective Efficacy**

A shared focus on student learning was reported and related directly to a theme of collective efficacy. One way this focus was evident was in a data cycle that staff engaged in, described here by the principal at U School:

We come together, we meet, we look at the data and we oftentimes will make a list, kind of like a running list of ideas or suggestions, and then we pick and choose, okay what do we feel is going to be most effective? Is it a core replacement? Is it a Tier Two intervention out of the core curriculum that you’re teaching in class? And we try something. We track their data. If their progress monitoring as an individual or as a group is still continuing, then we’ll meet 4 to 6 weeks later [to review data] and either continue with the new intervention if the data shows that it’s working, or we will come up with new interventions, or a new plan if the data is not showing that the students are learning. (UP444)

It is important to emphasize that this pattern of assessment, data meetings, and then follow-up is supported by a team approach. One teacher at U School reported that student success is seen as a
group responsibility, explaining, “These are all our students” (UT9). Additionally, she emphasized the importance of a shared focus on student learning, stating, “I don’t want to let my team down. We all feel a great responsibility to not disappoint each other” (UT34).

Data suggest that these schools were not composed of pockets of excellence; instead, they possessed a shared sense of purpose and a focus on data and on instructional decisions based on that data. This shared focus could be seen in the way teachers worked together to align instruction with standards shared here by a teacher at S School:

So we had a really good conversation about the flow of instruction and kind of the big picture idea about the jump that goes between grade levels in a particular skill. So that was a 40-minute meeting, and then next month we’re going to do the same with math. (UT803)

When data demonstrated a need for a more detailed view of student skills, internal expertise was accessed to determine what additional data were needed, how to collect that data, and what to do with the data once they were collected. The principal at U School, when asked about shared common beliefs about data and instruction, gave the following response:

They see the power in the data to drive their instruction and their lesson planning. They look at the data to see: are the kids learning it, are they not learning it. If they’re struggling, they’ll give them, you know, oftentimes they’ll give them other assessments, screeners, things like that to try to identify more specific skills that kids need, and so they use that to help drive their instruction. (UP119)

It is important to stress that these schools were not perfect and that gaps in understanding and in trust in the data and its use for instructional decision making were evidenced in the data. As one teacher stated,
We think that in general a belief is that the teacher’s intuition is stronger than the data. Lots of times, the data agrees with the teacher’s intuition, but if you—if it disagrees, I think our general belief is that the teacher is probably right. (ST1673)

Although this response’s potential to support a self-fulfilling prophecy regarding data use was troublesome, the sentiment was limited to one teacher’s response. The interview data as a whole displayed that there was a shared focus on student learning supported by a strong belief among staff members in the power of data use.

In summary, the sense of collective efficacy among the staff at these schools was characterized by a shared focus on student learning. The belief in the data tools and the patterns of data use were enhanced by a team approach. Staff working together to analyze data and make instructional decisions based on that data prevented staff members from operating only in isolation.

**Confirmation of Existing Knowledge**

The findings of this study confirm existing knowledge about data use and leadership in schools. Halverson et al.’s (2007) findings suggest that data-driven decision making has the potential to foster a community of practice that results in improved student outcomes. Data from this study support the finding: Leaders and teachers alike in these schools identified a strong sense of community as a result of their data use initiatives. Similarly, Deike (2009) asserted that a collaborative focus supported by clear structures resulted in more successful data initiatives. Here too, data support this prior work suggesting that student-learning success was bolstered by the use of data in concert with processes and practices used by teachers to make sense of the data and employ classroom instruction to remediate need. Finally, Park and Datnow (2009) observed that when administrators and/or teachers were involved in the data work, greater success was
achieved. Consistent with the findings of this study, it appears that involvement with data use fosters increased use of data as well as increased success resulting from the application of data for instructional decisions and actions.

**Implications for Practice**

A principal in charge of leading a school to more effective use of data must focus simultaneously on effective use of data and the accompanying successful instructional response. The expertise needed to make this happen should come from a variety of sources, beginning with the hiring and/or supporting staff that have the skill or interest in developing their skill to use data and the discrete instructional knowledge needed to respond to a detailed data analysis. This support continues with the principal who leads through example by engaging in data work and setting up building structures that allow others with expertise to support staff assessment practices, the analysis of the results, and the subsequent instructional responses.

Data use is enhanced by an expertise in how to respond instructionally. The data help to identify areas of focus, but it is the success of the instructional responses that gives value to that data’s ability to focus instruction. When staff review data and then ask questions that amount to “So what do we do now?”, a principal who can respond knowledgeably will be able to provide staff with the confidence to trust the data and its implications for instruction. The findings of this study suggest that a teacher’s trust in the data tools is enhanced by his or her ability to respond successfully, resulting in a feeling of mastery regarding data use. Principals who support data use with access to instructional knowledge will encourage an ongoing data cycle and a shared motivation to use data.

Promoting a shared focus on student learning will create a sense of collective efficacy if those with the knowledge and skill needed to assess student learning and then respond to it
instructionally support it. Team work in schools is often loosely referred to as Professional Learning Community (PLC) work. The principal who promotes professional learning with a focus on data, and how to respond in ways that improve the data, will enhance the shared focus on student learning that was found in the schools in this study. The effective instructional responses resulting from a team focus on data can promote a sense of collective efficacy that leads to continued student and school success.

Principals interested in enhancing achievement by focusing on data use should attend to the following recommendations regarding types of data, patterns of data use, and organizational conditions with the following characteristics:

- Focus on fostering a community of practice that supports the use of data to enhance student learning;
- Provide clear structures that encourage a collaborative focus on data collection and analysis;
- Provide and support expertise in the selection and/or use of data tools;
- Provide and support expertise in the selection and delivery of effective instructional responses to data analysis; and
- Support the increased use of data by continually being involved in the data use process.

Principals should also access teacher leaders and, if available, instructional coaches by giving them the time to use their knowledge and expertise to support all teachers in the administration of assessments and the ongoing use of data that resulted from those assessments.
Further Research

Further research into the implementation of the data use practices and procedures as stated above will support a greater understanding of effective, data-driven, decision-making leadership. A study that includes more schools showing a measure of success would be helpful. Research that focuses more directly on the development of a shared focus on student learning over a longer period can add valuable information. An examination of the differences in the influence and impact of connected as opposed to nonconnected assessments could provide support for the principal’s data-driven leadership efforts. Further understanding of a principal’s support of staff expertise in data use and related instructional responses could provide more direction for principals who are leading staff to use data to guide, modify, and improve classroom teaching and student learning.
REFERENCES


APPENDIX A

TEACHER INTERVIEW QUESTIONS
Teacher Interview Questions

- Tell me about data use in your school.
- Who is involved in the collection of data in your school?
- What kinds of data do you use regularly in your school?
- How frequently are data collected at your school?
- How are data kept and shared with staff and other stakeholders?
- How do you determine the quality of the data you are collecting?
- What tools are used to collect the data?
- Describe for me the process used when discussing data in your school.
- What kind of training regarding data is provided, how often, and who is being trained?
- What support is provided for your school to help make decisions with data?
- How would you describe the general staff belief concerning the strengths and limitations of data use?
- Tell me about a time when the data you were working with were or were not what you were hoping for and how you handled that.
APPENDIX B

PRINCIPAL INTERVIEW QUESTIONS
Principal Interview Questions

- Tell me about your school.
- Tell me about data use in your school.
- How would you describe the general staff belief around the strengths and limitations of data use?
- Tell me about a time you’ve used data to inform a decision.
- Who is involved in the collection of data in your school?
- What kinds of data do you use regularly in your school?
- Where did you learn your data use skills?
- What support have you received to become more skilled at data use?
- How are decisions made with the data?
- How are data kept and shared with staff and other stakeholders?
- How do you determine the quality of the data you are collecting?
- Describe for me the process used when discussing data in your school.
- What kind of training is provided, how often, and who is being trained?
- What kind of district support is provided for your school to help make decisions with data?
- Tell me about the supports you have received from your supervisor around the use of data.
APPENDIX C

PRINCIPAL FOLLOW-UP INTERVIEW QUESTIONS
Principal Follow-up Interview Questions

- Define collaboration in your building.
  - List the ways you collaborate around data.
  - How do you know when people are collaborating and how do you know when they are not?
- What data systems or structures do you use?
  - What do you do with/get from those systems?
- How do you dedicate time to data use?
  - How does the district provide time for data use?
  - How is that time used—for individual teacher time, group/PLC time, or school group time?
APPENDIX D

CODES AND SUB CODES
Codes and Sub Codes

**Collaboration**
CL: Professional learning communities (PLC)
CL: Late starts monthly
CL: Courageous conversations
CL: Staff team approach
CL: History of collaboration
CL: Commitment to collaborate
CL: Vertical Collaboration
CL: Communication
CL: Principal supports PLC
CL: Grade-level decisions
CL: Grade-level support
CL: Conversation
CL: Colleague support
CL: Data meetings
CL: Core team meetings
CL: Safety in numbers
CL: Team effort
CL: Teamwork

**Mission/Vision**
MV: Culture
MV: Planning for the future
MV: Goals
MV: Building vision statement
MV: Fits with our mission
MV: Support for all students
MV: Principal shared vision
MV: District vision/mission

**Data systems/structures**
DS: Building structures to support data use
DS: Data spreadsheet
DS: Data storage system
DS: Data monitoring
DS: Support systems
DS: PLC processes
DS: District data systems
DS: Performance Plus data structure
DS: Structured conversations
DS: Systemic use of data
DS: Smart goals
DS: Data meetings
**Time**

T: Maximize time  
T: PLC time  
T: District-provided time  
T: Principal-provided time  
T: Chunks of time for data review  
T: Early release time  
T: Late start time  
T: CAST meeting time  
T: Flexible with time  
T: PD time  
T: Data over time  
T: Time to talk about kids  
T: Contracted time  
T: Meeting time  
T: Individual teacher time  
T: Team meeting time  
T: District directed time  
T: Lack of time  
T: Time to use data  
T: Schedules  
T: Choice  
T: Negotiated time  
T: Scheduling meetings

**Data types**

DT: Benchmark data  
DT: Oral Reading Fluency  
DT: Dibbles data  
DT: Math computational fluency  
DT: STAR tests  
DT: SWIS behavior data  
DT: Attendance data  
DT: ReadWell Placement Testing  
DT: Daily lesson results  
DT: Pre-Post Testing  
DT: Accelerated Reader  
DT: Smarter Balanced Assessment (SBA)  
DT: IRLA (Independent Reading Level Assessment)  
DT: Screening and progress monitoring  
DT: In-classroom formative assessments (self-created)  
DT: Behavior and attendance data  
DT: WaKids  
DT: In-program data (Wonders unit tests and quizzes)  
DT: CBM progress monitoring