TEACHER AND PRINCIPAL EXPERIENCES WITH DATA-DRIVEN DECISION MAKING, SCHOOL IMPROVEMENT PLAN QUALITY, AND ACADEMIC GROWTH

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ABSTRACT

TEACHER AND PRINCIPAL EXPERIENCES WITH DATA-DRIVEN DECISION MAKING, SCHOOL IMPROVEMENT PLAN QUALITY, AND ACADEMIC GROWTH

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Data-driven decision making and improvement planning have become common expectations in today's schools, but much is unknown about how these efforts actually occur and the degree to which they impact student achievement. The purpose of this study was to examine the influence of data-driven decision making (DDDM) and school improvement plan (SIP) quality on student achievement and to identify best practices in DDDM and school planning. The mixed-methods design employed surveys of teachers and principals, a rubric to score SIPs, principal interviews, and a qualitative review of SIPs. Quantitative results showed that while teachers and principals have many areas of agreement regarding DDDM on their campuses, they also have multiple areas of disagreement. There was limited evidence of relationships between DDDM survey results, SIP quality, and student achievement. The important role of collaboration, especially in the context of professional learning communities, emerged as a key theme in the qualitative component of the study. Results are analyzed within the theoretical framework of organizational learning theory and recommendations for future research are included.

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CHAPTER 1: INTRODUCTION

The passage of the *No Child Left Behind* (NCLB) Act in 2001 created an increased focus on the use of evidence in decision making among school leaders in the United States (Coburn & Talbert, 2006), but using data for decision making is not exclusive to school leaders. Learning Forward (2015), formerly the National Staff Development Council, and the National Board for Professional Teacher Standards (NBPTS, 2014) both include the use of data to guide planning and decision making among expectations for educators. Although data-driven decision making (DDDM) has become an expected activity among educators, many questions remain regarding its impact. The present study will contribute to a better understanding of how DDDM impacts student achievement.

Research Problem

In 2005, a national sample of 813 school superintendents conducted by the *Education Week* Research Center reflected the trend towards data-driven decision making. When the superintendents were asked to identify their important instructional leadership practices, several of the 10 most commonly cited involved using evidence to make decisions (Archer, 2005). Following a review of the literature Young and Kim (2010) found that data use has become a common focal point of school improvement efforts. Young and Kim also found, however, that the literature is limited in detailing how the use of data leads to improved results and what, if any, factors influence the process. Other researchers have found that these gaps in the literature persist (Datnow & Hubbard, 2015; Farrell, 2015; Lai & McNaughton, 2016).

In their phenomenographic analysis of how nine elementary teachers conceived of using student data, Jacobs, Gregory, Hoppey, and Yendol-Hoppey (2009) found that data use could help motivate teachers to identify and implement needed changes in their instructional practices. Jennings (2012) found several ways teachers used data including evaluating current progress and making appropriate adjustments to their teaching. Two notable studies have documented how teachers progress in their ability to use data to change their instructional practices. Saunders, Goldenberg, and Gallimore (2009) studied grade-level teams in several Title I schools and found that they produced significant gains in student achievement with collaborative effort that included use of student data as one component. These gains only appeared, however, after the researchers provided the campus principals and teachers with training and tools beginning in the third year of the study. Similarly, Cosner (2011) found that teachers initially used student data primarily to determine the level of performance among their students. Only as the study progressed over several years and teachers received guidance and support, were they more likely to identify student strengths, weaknesses and learning gaps. Finally, they began to evaluate whether strategies used during instruction were eventually used by students.

Young (2006) identified several activities that supported teachers' successful use of student data to improve instruction. These included very practical matters like handling the logistics of data reporting and identifying resources to support teachers' instructional responses to the data. They also included activities to encourage teacher growth such as building teachers' ability to interpret data appropriately and guiding discussions to focus on instructional practices related to the data. In addition, holding

teachers accountable for implementing new practices and ensuring appropriate support for them were important in the ongoing cycle of improvement. Huguet et al. (2014) studied factors that allowed instructional and data coaches to successfully guide teachers to effectively use student data to improve instruction and identified several approaches that align with Young's results particularly efforts by the coaches to guide teachers with feedback, questioning, and dialogue.

Unfortunately, many aspects of how teachers use data to improve instruction and the factors in schools that best support teachers' efforts are poorly understood (Young & Kim, 2010). Even though Saunders et al. (2009) concluded that teachers' collaborative efforts led to significant gains in student achievement, the researchers also made clear that the study did not explicitly determine precisely what aspects of the teachers' work led to the gains. Hamilton et al. (2009) echoed this conclusion after an extensive review of the literature by concluding that "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).

The school improvement plan (SIP) is often the most tangible artifact of DDDM at the campus level. Doud (1995) noted that school improvement planning had become an expectation of the most prominent school accrediting agencies in the U. S. as well as a requirement in many states. Like DDDM at the teacher level, however, very few studies have attempted to link SIPs to academic achievement. Huber and Conway (2015) studied 108 schools in Connecticut that were under state-mandated improvement requirements and found a slight positive relationship between plan quality and student achievement at

the school level. The researchers noted, however, that plan quality was generally low across the participating campuses which might have limited the impact of the plans. Another study of over 250 schools in Clark County, Nevada found a slight positive relationship between the quality of a school's SIP and student achievement (Fernandez, 2011). Other studies have examined school improvement planning practices (Anfara, Patterson, Buehler, & Gearity, 2006; Beaver & Weinbaum, 2015; Caputo & Rastelli, 2014; Doud, 1995), but taken together these studies provide limited guidance to leaders who want to use data to improve instructional practices in their schools.

Significance of the Study

The demands on teachers and principals are numerous and varied, and improvement initiatives like collaborative use of data must make efficient use of their time. However, simply requiring or encouraging teachers to collaborate does not ensure the desired changes (Saunders et al., 2009). Instead, teachers need appropriate support and tools to ensure their use of student data leads to improved student achievement. Young (2006) found that the norms already in place within teacher teams impacted the extent and nature of teachers' use of student data to improve instruction and concluded that well-intended attempts to promote teacher data use to improve instruction will fail if they are not aligned with the ways teachers think about their instructional practices. Several studies have shown that leadership plays a crucial role in shifting teachers' focus toward changing instructional practices (Cosner, 2011; Halverson, Grigg, Prichett, & Thomas, 2007; Keuning, Van Geel, & Visscher, 2017; Lai & McNaughton, 2016; Robinson & Temperley, 2007; Schildkamp et al., 2016; Young, 2006). By examining the

relationships between teacher and principal experiences with DDDM, the quality of SIPs, and student academic growth, this study attempted to identify DDDM and SIP practices that lead to increased student learning.

Research Purpose and Questions

The purpose of this study was to examine the influence of DDDM and SIP quality on student achievement and to identify best practices in DDDM and school planning. The following questions guided this study:

1. To what extent do the perceptions of DDDM of teachers and principals agree?
2. What relationship, if any, exists between the DDDM experiences self-reported by teachers and principals and the quality of the campus SIP?
3. What relationship, if any, exists between the DDDM experiences self-reported by teachers and principals, the quality of a school's SIP, and the academic growth of its students?
4. How do elementary and middle school principals create and implement SIPs?

Definitions of Key Terms

Academic Growth: Academic growth will be defined as the change in scale scores in consecutive grade levels in reading and mathematics on the State of Texas Assessment of Academic Readiness (STAAR) (Texas Education Agency [TEA], 2015).

Data-Driven Decision Making: Data-driven decision making (DDDM) will be defined as the systematic application of data analysis to guide the selection and implementation of instructional practices that are expected to improve student achievement (Hamilton et al., 2009; Mandinach, 2012).

Data Driven Decision Making Readiness Survey: Principals: An instrument designed to measure the perceptions of principals regarding how DDDM occurs on their campuses. (McLeod & Seashore, 2006).

Data Driven Decision Making Readiness Survey: Teachers: An instrument designed to measure how individual teachers experience DDDM (McLeod & Seashore, 2006).

School Improvement Plan: School improvement plan (SIP) will be defined as a written document that describes a school's needs, goals for improvement, action steps that will be taken to reach the goals, and evidence that will indicate if the goals are met (Fernandez, 2011; Reeves, 2006).

Conclusion

This chapter provided a summary of the research problem, significance of the study, research purpose and questions, and definitions of key terms. This study contributes to the literature by examining possible relationships between teacher and principal experiences with DDDM, the quality of school improvement plans, and student academic growth. In doing so the study seeks to identify DDDM practices that lead to increased student learning. The next chapter contains a review of the literature related to key topics addressed by this study.

CHAPTER II: REVIEW OF THE LITERATURE

Although data use has become a common focal point of school improvement efforts, the literature is limited in detailing how use of data leads to improved results and what, if any, factors influence the process (Young & Kim, 2010). Very few studies have attempted to link teacher data use directly to student achievement outcomes, but at least two did find a positive impact on student test scores (Carlson et al., 2011; Saunders et al., 2009). At the campus level the school improvement plan (SIP) is often the most tangible artifact of DDDM, but again very few studies have attempted to link SIPs to academic achievement. The purpose of this study was to examine the influence of data-driven decision making (DDDM) on student achievement. This literature review focuses on: (a) DDDM models and theories, (b) How teachers experience DDDM, (b) How principals experience DDDM, (c) Impact of DDDM, and (d) Challenges in DDDM. The chapter concludes with a summary of the findings and discussion of the theoretical framework that guided the study.

DDDM Models and Theories of Action

The models and theories of action for DDDM found in the literature are typically built upon the ideas expressed in “From Data to Wisdom” by R. L. Ackoff (1989). Ackoff argued that data have no value until transformed into a useful form. This transformation can involve three different hierarchical levels – information, knowledge, or understanding. At the information level, data are used simply to create descriptions with arithmetic or statistical techniques. Knowledge and understanding arise when human beings consider how the information relates to organizational systems to learn and adapt

for greater efficiency. Understanding is distinguished from knowledge based on how systematic the learning and adaptation process is. Information, knowledge, and understanding are focused on the efficiency of systems, but wisdom focuses on their effectiveness. As such, wisdom is characterized by the application of values and judgement and is most likely to guide future actions.

Education researchers have adapted Ackoff's work to the context of K-12 education. Mandinach, Honey, and Light (2006) proposed a model that included the data, information, and knowledge elements from Ackoff's model with additional elements expanding upon Ackoff's conception of wisdom. In the Mandinach et al. model wisdom translates knowledge into a decision which is then implemented followed by an assessment of its impact. This assessment provides feedback to the previous steps in the process allowing for enhanced knowledge presumably leading to an improved decision. This model could apply to an individual classroom, a campus, or a school district depending on the data available and specific issue under consideration. Mandinach et al. point out that regardless of the scope of the DDDM process, the participants need certain specific skills and resources. In particular, they need the ability to select and interpret data that is relevant to the issue or question of interest.

As the literature related to DDDM has grown, other researchers have expanded upon the model of Mandinach et al. (2006) to emphasize different aspects of the process. For example, the model proposed by Hamilton et al. (2009) prioritized using data as part of an ongoing improvement effort that repeats the cycle multiple times per year. This model also highlighted the critical role school leaders play in establishing expectations

for data use and supporting development of a data-driven culture. Coburn and Turner (2011) proposed a model that also recognized that DDDM is situated within the larger context of the educational system and the significant impact that context has on DDDM activities. In particular, this model acknowledged that most data use occurs in a collaborative setting which means issues such as leadership, group norms, and power differentials play a role in how DDDM occurs. Huguet, Marsh, and Farrell (2014) similarly emphasized the collaborative nature of data use and elaborated on the factors and practices that can support teachers involved in DDDM with special attention to the role of coaches.

While some researchers continued to develop and refine conceptual models of DDDM, others created more prescriptive guidance and materials for school leaders. For example, *Data Analysis for Continuous School Improvement* (Bernhardt, 2013) which provides a rationale for DDDM along with suggestions regarding the types of data to use and protocols for analyzing the data to reach decisions and take appropriate action. As various models of DDDM, whether researcher-developed or generated locally by educators, have been implemented and studied in practice, researchers have documented that the idealized process rarely proceeds neatly from step to step and that cycles of improvement can be easily interrupted (Marsh & Farrell, 2015; Schildkamp & Poortman, 2015; Slavit, Nelson, & Deuel, 2013). Others have observed that the purpose of DDDM is often framed by leaders more as a means of accountability and compliance than a path to improvement (Data Quality Campaign, 2017; Datnow & Hubbard, 2015; Weiss, 2012).

Thus, it is important to understand how teachers and principals experience DDDM in practice. The next two sections will examine the literature related to these topics.

How Teachers Experience DDDM

Jacobs et al. (2009) conducted a phenomenographic study using interviews with nine teachers from four different elementary schools in Florida. The purpose of the study was to identify the different ways teachers use data to inform their instruction. The authors used their prior experience with the schools to classify each of the four selected campuses as high, moderate, or low based on the level of support for teacher data use so the results reflect a range of environments.

Based on their analysis of the interviews, four conceptions were identified that are hierarchical because the nature of the data use becomes more complex and impactful as teachers move from one to the next. These four conceptions are: (a) “data use requires ongoing attention to multiple sources,” (b) “data use focuses teachers on student needs,” (c) “data use creates a sense of urgency and serves as a catalyst for action,” and (d) “data use leads to changes in professional practice.” (Jacobs et al., 2009, p. 44). Two more conceptions were found to influence the other four and support progression along the hierarchy. These two conceptions are: (a) “data use requires sophisticated professional knowledge” and (b) “data use requires a culture of support” (Jacobs et al., 2009, p. 44).

The hierarchical nature of the ways teachers use data also appeared in Cosner’s 2011 study of three elementary schools in Chicago that used teacher collaboration around data as a key piece of a much larger reform effort over a three year period. The purpose of the study was to examine how teacher knowledge of student learning in literacy

developed over time. Through observation of teachers during periodic professional development sessions as well as interviews with the teachers, literacy coaches, and principals Cosner identified several shifts in the nature of the teachers' collaborative data use. In the first year of the study teachers primarily used data as a description of student performance and rarely related it to details of content or to instructional decisions. As the study progressed, teachers became much more likely to use data as an impetus to discuss specifics of content and to use it as a basis for instructional decisions. Findings indicate that even after three years teachers rarely used data to examine the effectiveness of their instructional strategies.

More recent studies have confirmed these findings regarding the primary uses teachers make of data. Wayman, Cho, Jimerson, and Spikes (2012) surveyed over 3,000 staff members including over 2,500 teachers in three Texas districts and also conducted interviews and focus groups to examine data use. Although teachers indicated on the survey that they used data for a range of purposes, their responses in the interviews and focus groups focused heavily on using data to group students and to identify strategies to address struggling students. Farrell and Marsh (2016) studied five middle schools across three districts to create detailed case studies of how they used data to support improvement and found that data rarely led to changes to instruction. Instead, data were most often used to group students for reteaching. Schildkamp, Poortman, Luyten, and Ebbeler (2016) surveyed 1,073 secondary teachers in 27 Dutch schools regarding their use of data and found that it was more often used for accountability or to address school organization matters than to spur changes to instruction.

Some studies have shown that the way teachers experience DDDM and progress through the hierarchy of use may be influenced by the way the district or campus is approaching DDDM. Kerr, Marsh, Ikemoto, Darilek, and Barney (2006) employed a comparative case study design to analyze how three urban districts encouraged their schools to use data-driven decision making as a means to improve instruction. Data were collected via interviews and focus groups that occurred during multiple visits to each district. These qualitative data were complemented by results from a survey administered to principals and teachers in each district. The study found that the degree to which teachers used data to guide instruction varied from district to district and was impacted by the district's approach to encouraging data use. For example, one district in the study emphasized data use for school improvement planning. Teachers in this district were much more likely, 62% versus 35% and 36% in the other districts, to say that the planning process had changed their teaching through activities such as identifying student weaknesses or evaluating instructional strategies.

In a similar study Feldman and Tung (2001) studied six schools in Massachusetts that were involved in projects supported by outside organizations guiding the campuses in using data-based decision-making as a means to whole school reform. The authors conducted interviews and observations to document the process at each campus. Although the focus of each campus was whole school reform rather than improvement of instruction by individual teachers, some outcomes relevant to these goals were observed. Multiple teachers said they had become more reflective and had started looking more

deeply at possible causes of poor student performance in order to address student needs more individually or to make changes in their instructional practices.

Taken together these studies indicate that teachers are not naturally inclined to use data to examine their instructional practices. These studies also show, however, that teachers can progress in their data use and learn to embrace data as an important resource supporting reflective practice. The next section of this review will focus on how principals experience DDDM.

How Principals Experience DDDM

Halverson et al. (2007) studied four schools in the same state in the Midwest using an approach similar to grounded theory except with some initial coding developed before data collection began. The campuses were selected based on previous success increasing student achievement and positive reputations regarding effective use of data. The purpose of the study was to examine how the schools implemented data-driven decision making with particular emphasis on the role of leadership. Data were collected using interviews, observations, and by examining a variety of artifacts from each campus. The data were analyzed within a data-driven instructional systems (DDIS) framework developed by the researchers and refined based on the data collected in the study. This framework includes six elements: (a) data acquisition, (b) data reflection, (c) program alignment, (d) program design, (e) formative feedback, and (f) test preparation.

In contrast to the six conceptions developed by Jacobs et al. (2009), the elements of this framework do not form a hierarchy but rather exist as a cycle that can repeat continuously. The study by Halverson et al. (2007) found that meetings focused on data

were central to the activities in the framework and that school leaders played a critical role in shaping the nature of the discussions. The researchers observed that teachers had a tendency to shift discussions to individual students (i.e. level 2 in the Jacobs et al. hierarchy), and leaders shifted the focus back to broader issues related to instruction (i.e. level 4). In addition, the study found that principals played a key role in limiting the number of initiatives presented to teachers at one time and in creating opportunities to discuss data and instruction beyond the typical faculty meetings which is an example of the "culture of support" (p. 49) identified by Jacobs et al.

Shen et al. (2010) interviewed 16 principals from four urban districts in Michigan with two elementary schools, one middle school, and one high school selected from each district. The purpose of the study was to examine the types of data principals use to make decisions and to identify the types of decisions resulting from each type of data. The researchers began with a general framework for the types of data based on their review of the literature. These three types of data were: (a) student and community background data, (b) school process data, and (c) student achievement data. Following the structured interviews the researchers used a constant comparative method to code the results into this framework. The study found that virtually all data use fell into the category of student achievement data. Only two principals mentioned student and community background data and only three mentioned school process data. In principals' discussions of how they used student achievement data, all but one mentioned using data for school accountability, but only about half mentioned using data for instructional decisions such as grouping students or identifying weak areas. Unfortunately, Shen et al. did not gather

data on how teachers at these 16 campuses used data which naturally raises the question of whether the principals' fairly narrow range of data use influenced the range of data used by their teachers.

Several studies have identified campus-level factors that are significantly influenced by principal leadership that promote meaningful data use by teachers. Collaboration, often in the form of professional learning communities (PLCs), appears to enhance teachers' examination of data and increase the likelihood that it translates into instructional changes (Keuning et al., 2017; Lai & McNaughton, 2016; Schildkamp et al., 2016). Marsh, Bertrand, and Huguet (2015) found that coaches working with individual teachers or with PLCs could play a significant role in shaping the nature of data use. Other studies have also identified the important role of principal leadership in encouraging teachers to use data effectively. The principal influence arises not only from their direct participation in meetings with teachers but also from the actions they take to establish a culture of data use and to model effective data use practices (Keuning et al., 2017; Park, Daly, & Guerra, 2012; Schildkamp & Poortman, 2015).

Impact of DDDM

Several of the studies already discussed in this review (Cosner, 2011; Feldman & Tung, 2001; Jacobs et al., 2009; Kerr et al., 2006) provide evidence that teacher data use can influence instruction, but very few studies have attempted to directly link the use of data to student achievement outcomes. One such study by Carlson, Borman, and Robinson (2011) examined the impact of a data-driven reform intervention on reading and math achievement. The study included over 500 schools in roughly 55 districts

spread across seven states. The intervention trained and supported state, district and campus leaders along with some teacher leaders as they used benchmark assessment data to identify problem areas and select appropriate solutions. The full intervention required three years to implement, but this study only examined the first year. To create an experimental design the researchers randomly assigned half the schools to begin the intervention immediately while the other half began one year later. This design allowed the researchers to treat the schools that waited a year as a control group. Outcomes were measured using the assessments students were already required to take in each state. The results showed a statistically significant improvement in math among the treatment campuses with an effect size of .21. The results in reading were positive but did not reach statistical significance. Given that this study measured effects at the campus and district levels, the authors could not identify which teacher behaviors, if any, led to the gains.

In a somewhat similar study Saunders, Goldenberg, and Gallimore (2009) sought to determine if implementing teacher teams focused on the improvement of student learning leads to increased campus-level student achievement in low-performing campuses. While the study did not focus exclusively on the use of data, it is noteworthy because it employed a prospective, quasi-experimental design which had not previously been used to research this problem. The study included nine Title I elementary schools in a large urban district in Southern California with six statistically similar Title I elementary schools in the same district used as a comparison group. In the first two years of the study, referred to as Phase 1, the researchers provided training and limited support to principals to guide the work of campus leaders who were expected to lead regular

grade level team meetings. After observing limited implementation at the teacher level in the first two years of the study, the researchers enhanced the intervention significantly for the last three years which is referred to as Phase 2. The enhancements included regular meetings between project advisors, principals, and team leaders, meetings with individual grade level teams, and summer and winter institutes.

A repeated measures ANOVA analysis of SAT-9 results found no significant effect of the treatment in Phase 1. A separate analysis for Phase 2 found a significant interaction of treatment by year, $p < .01$, showing that the gap between the student achievement at the experimental schools and the comparison schools widened over time. The analysis also included the Academic Performance Index (API) assigned by the state of California to rank all schools statewide. The increasingly larger effect sizes each year during Phase 2 for the SAT-9 results (0.63, 0.64, and 0.88) and API results (0.66, 0.75, and 0.98) are especially compelling in demonstrating the impact of the intervention.

Lai and McNaughton (2016) studied how implementation of the Learning Schools Model (LSM) impacted student achievement in several dozen schools in New Zealand. The LSM is a multi-phase school improvement intervention that focuses on the collaborative use of data as a key strategy to guide change in instruction. The researchers used quasi-experimental designs to find statistically significant improvements in student achievement in reading, writing, and high school qualification exams. They also found that PLCs were a key element in the success of the intervention. As part of a large-scale study of DDDM in the Netherlands, Keuning et al. (2017) examined a group of 20 elementary schools in which half had produced significant improvement while the other

half had not. Results showed that overall teaching quality, attitude toward DDDM, and the school data culture all helped explain the difference in student outcomes. These results demonstrate that data use alone does not inevitably lead to increased student achievement.

Challenges in DDDM

So far this review has considered how both teachers and principals experience DDDM as well as the potential impact of DDDM on student achievement. This section of the review will discuss some challenges in DDDM that have been identified by researchers. Mason (2002) documented a two year project at six Milwaukee schools that sought to integrate data-driven decision-making into each school's planning and improvement activities. Throughout the project the researcher conducted surveys, interviews, focus groups and observations to identify successes and challenges faced by the staff involved in the project. Six specific challenges were identified across all of the campuses including developing adequate skills among staff members to analyze the data effectively and capacity to take appropriate actions based on the conclusions from the analysis. The inadequate skills identified by Mason (2002) are examples of the "sophisticated professional knowledge" (p. 49) identified by Jacobs et al. (2009) as an important influence on teachers as they progress through the hierarchy of data use.

Quilter and Gallini (2000) studied the relationship between teachers' assessment literacy, prior experience, and attitudes toward both traditional and alternative forms of assessment. Roughly 100 regular education teachers from a school district in southeastern Michigan completed study instruments that measured assessment literacy and attitudes

toward traditional and alternative assessments along with items to assess teacher prior experience. The authors used a canonical correlation analysis to examine the data from the completed instruments and the results showed prior experience with standardized testing and classroom assessment were positively correlated with attitudes toward the same activities currently. In contrast the results showed a negative correlation between prior experience and attitudes toward alternative forms of assessment. Years of experience and level of assessment literacy were not found to be significantly related to current attitudes. A positive correlation was found between attitudes regarding standardized assessment and classroom assessment while each of these was found to be inversely correlated with attitudes towards alternative assessments. In total these results indicate that teacher prior experience with assessment plays a powerful role in forming current attitudes which could impact how data from various assessments is ultimately used.

Kerr et al. (2006) identified several challenges in the three urban districts that encouraged their schools to use data-driven decision making as a means to improve instruction. A commonly reported challenge arose from the timeliness of data. In one district this issue stemmed from a system that required campus staff to request data from a district office. Even though the other two districts did not face this issue, staff members still reported frustration with expectations that they use state test results when more recent interim assessment results were available. Similarly, teachers expressed concerns about the validity of state tests as a basis of instructional decisions and often preferred to use their own observations of student work instead. Finally, teachers in two of the three

districts felt constrained by district curriculum expectations even when data analysis indicated a need to make adjustments.

Hubbard, Datnow, and Pruyn (2014) conducted a case study of an elementary school implementing DDDM along with two substantial instructional initiatives. The researchers found that teachers struggled to use data fully while also responding to the expectations of the other initiatives. The results also showed that the impact of data was limited by the district's decision to only assess students in reading and mathematics which meant teachers did not have consistent, systematically collected data for other subject areas. Park and Datnow (2017) similarly found that district decisions had a clearly observable impact on the ways teachers made decisions based on data. For example, the district specified time in the school day for differentiated instruction which led teachers to emphasis the use of data for grouping students. Teachers were also influenced by the types of curriculum materials provided by the district.

School Improvement Planning

Common Elements of the SIP Process

Doud (1995) noted that school improvement planning had become an expectation of the most prominent school accrediting agencies in the U. S. as well as a requirement in many states and offered a model created by the National Study of School Evaluation as a promising approach for schools to use. This model includes the following elements:

- Student community profile
- Beliefs and mission
- Desired learner outcomes

- Analysis of the alignment of the following with desired learner outcomes
    - Student performance
    - Instructional effectiveness
    - Organizational effectiveness
    - Specific program areas
- School improvement plan
- Implementation and monitoring

Anfara et al. (2006) found similar elements in the process and template required by the state of Tennessee, and Caputo and Rastelli (2014) found similar, albeit more focused, elements in their study of a targeted school improvement planning program in Italy. Anfara et al. (2006) also found that the expected steps of the planning process were not consistently executed with fidelity. They found that the analysis of instructional and organizational effectiveness was often superficial which aligns with the previously discussed findings regarding the difficulty teachers have using data to examine their own instructional practices. It appears that this same difficulty extends to campus level planning. One possible explanation for this difficulty might be that principals and teachers hold very different perceptions of the purpose of the process itself (Dunaway, Kim, & Szad, 2012), and, thus approach the process with different mindsets.

Typically, the SIP process is dominated by state assessment data which is understandable given the high-stakes nature of these assessments. Because these results represent a single point in time, often apply to a small subset of students, and generally do not arrive until the summer, they may have limited use as a driving force for school-

wide improvement. Beaver and Weinbaum (2015) documented this phenomenon in their study of 11 schools in Pennsylvania which examined in detail how state assessment results influenced school improvement efforts. This expectation aligns with Caputo and Rastelli (2014) who found that plans associated with greater levels of improvement prioritized issues based on a robust analysis that considered the overall school context which would include not only a school profile but also the analysis of instructional and organizational effectiveness discussed previously.

Multiple studies have found that when teachers individually or whole schools use data in improvement efforts, they tend to focus on individual student needs and respond with intervention and test preparation rather than carefully examining and changing regular classroom instruction (Beaver & Weinbaum, 2015; Cosner, 2011; Jacobs et al., 2009) which is a manifestation of the previously discussed difficulty school staff members have using data to examine instructional practices. Fullan (2006) points out that many standards-based reform initiatives fall short because they fail to emphasize changes in instructional practice. He goes on to argue that a successful strategy must "simultaneously focus on changing individuals and the culture or system within which they work" (p. 7).

These studies demonstrate that the difficulties individual teachers have using data to reflect upon and improve their instructional practices extend to the school improvement planning process. This observation is not surprising because it is based on the fear of change that is a part of human nature. An important question, then, is whether

DDDM or the SIP process are worth the time and energy they consume. The next section will review the evidence for how DDDM and SIPs impact results.

Impact on Results

Several of the studies already discussed in this review (Cosner, 2011; Feldman & Tung, 2001; Jacobs et al., 2009; Kerr et al., 2006) provide evidence that teacher data use can influence instruction, and a few others have linked the use of data to student achievement outcomes (Carlson, Borman, & Robinson, 2011; Saunders, Goldenberg, & Gallimore, 2009). The research on the direct relationship between SIP quality and student achievement is even more limited. Huber and Conway (2015) studied 108 schools in Connecticut that were under state-mandated improvement requirements. The study showed a slight positive relationship between plan quality and student achievement at the school level. The researchers noted that plan quality was generally low across the participating campuses which might have limited the impact of the plans.

In the most prominent study of the impact of SIPs on student achievement, Fernandez (2011) examined the relationship between SIP quality and student achievement in Nevada's Clark County School District. In addition to being one of the only studies to address this relationship directly, this study is notable because Clark County is a massive system that allowed the researcher to include data for over 250 schools. The analysis showed a small but statistically significant relationship between SIP quality and academic gains in both reading and math even after controlling for student demographic factors.

Summary of Findings

Researchers have identified several different ways that teachers can experience and have their practices changed by DDDM. Teachers may be influenced by their participation in school-wide efforts (Feldman & Tung, 2001; Kerr et al., 2006) or by using data individually or in focused grade level teams. In the latter case it is common for teachers to use data in increasingly sophisticated ways to impact their instruction (Cosner, 2011; Jacobs et al., 2009). Halverson et al. (2007) found that principals and other leaders play an important role in ensuring that teacher data discussions move beyond a focus on individual students and toward deeper examination of instructional practices. Another study found, however, that principals' own use of data focuses primarily on state tests related to accountability rather than data more applicable to improving instruction (Shen et al., 2010). Evidence has been found that teacher collaboration that includes student data can lead to increased student achievement (Carlson et al., 2011; Keuning et al., 2017; Lai & McNaughton, 2016; Saunders et al., 2009). Unfortunately, these studies did not pinpoint the specific teacher behaviors or activities that caused the observed increases.

Other studies have identified challenges campuses face when implementing DDDM. These challenges include lack of skill among staff members to analyze the data and take appropriate actions, timeliness and perceived validity of the data, and limited freedom for teachers to adjust instruction (Hubbard et al., 2014; Kerr et al., 2006; Mason, 2002; Park & Datnow, 2017). Although formal school improvement planning has been generally expected of schools in the United States for over 20 years, the process is not

consistently executed by school leaders (Anfara et al., 2006; Huber & Conway, 2015). Few studies have thus far examined directly whether SIPs impact student achievement, but two such studies found at least moderate positive relationships between the quality of a SIP and student outcomes (Fernandez, 2011; Huber & Conway, 2015).

Theoretical Framework

In recent decades several approaches to school improvement have emerged from the business world with varying degrees of acceptance by educators. One approach that has gained some traction is organizational learning theory which has proven especially valuable for school leaders because it reconciles the growth of the individual with the learning and growth of the organization. This factor is a primary reason organizational learning theory has greater applicability to schools than other approaches (e.g. Total Quality Management) that also originated in the business world (Konidari & Abernot, 2006). Senge's (2006) widely accepted conception of a learning organization developed from the work of Argyis and Schon which examined systems thinking and reflective practice. It integrates these seemingly disparate areas of study into a unified whole that not only guides leaders in their thinking but also provides them specific approaches to use to translate thinking into action.

What Is a Learning Organization?

Before examining the most important aspects that define a learning organization, it is helpful to review common characteristics of an organization that is not engaging in systems thinking. Senge (2006) identified seven "learning disabilities" (p. 18) that are contradictory to systems thinking and organizational learning each of which inhibits

organizational learning by preventing individuals or teams from accurately identifying cause and effect relationships or from understanding their role in those relationships. As a result, decisions tend to focus on short-term impacts and often lead to counterproductive outcomes.

Several of the issues identified by Senge are particularly applicable to K-12 education. A mindset of "I am my position" can prompt teachers to limit their focus to a narrow range of instructional decisions that only impact their own classrooms. As a result, broader issues that transcend grade levels and subject areas are never addressed. Moreover, teachers can grow to view themselves as technicians who simply implement decisions made by others rather than thinking like true professionals who synthesize a broad knowledge base to make critical decisions. Similarly, "the enemy is out there" thinking absolves staff at all levels of ultimate responsibility for success. In this way of thinking the "enemy" might be a group like parents, the community, the next higher level of administration, or even the students themselves; or it might be a more abstract idea like a lack of resources or the rise of social media as a distraction. In any case the constant thought that the cause of failure is something outside gives those inside permission not to seek solutions or strive to improve. The delusion of learning from experience stems from the fact that actions in complex organizations are often separated significantly in time and space from their outcomes. The delusion occurs when members of the organization believe they have observed the consequences of an action when they actually have not. In the school setting this phenomenon commonly arises when student achievement is judged based on year-end test scores. While these scores provide some measure of the impact of

instruction provided during the immediately preceding school year, much of the effect on the student may not appear until well into the future.

Several important concepts and principles must be recognized in order to shift toward systems thinking. Senge (2006) identifies over a dozen laws, patterns, and templates that are important to understand as part of systems thinking. A detailed examination of each is beyond the scope of this review, but two important themes that are especially relevant to K-12 schools will be discussed briefly. First, it is critical to acknowledge that structures strongly influence human behavior. As noted management expert Edwards Deming once said, “a bad system will beat a good person every time” (Hunter, 2015). Thus, leaders must focus more on identifying structures that impede progress and less on modifying the behavior of individual staff members. Leaders must also realize that the structures are often hidden and a result of longstanding beliefs and practices rather than formal policy or procedure. Second, leaders should understand that cause and effect relationships are cyclical rather than linear and often counterintuitive. Senge (2006) calls these relationships “circles of causality” (p. 73) and emphasizes the futility of short term actions that focus only on the symptoms of issues and ignore the longer-term effects as the cycle of causation repeats. For example, a school that redirects resources from first through third grades to the state-tested grades in an effort to raise test scores will likely produce a short-term increase. The gains will be short lived, however, because the younger students who are now less prepared will eventually reach the tested grades.

Senge (2006) proposes that a true learning organization must develop and practice four core disciplines that are integrated through the fifth discipline of systems thinking. These four disciplines are: (a) personal mastery, (b) mental models, (c) shared vision, and (d) team learning. The discipline of *personal mastery* acknowledges the basic fact that organizations can only grow when the individuals within them grow. Moreover, it recognizes that individuals in a learning organization must be motivated by a personal vision that serves as a calling to guide their work. *Mental models* are the images and beliefs people hold about how the world works. This discipline ensures that these models are identified, examined, and modified if necessary so that decisions are made based on truth. Reflective practice plays a critical role in bringing mental models to light. *Shared vision* is the organizational equivalent of the personal visions that drive personal mastery. A shared vision is not simply an inspirational message displayed prominently. Instead, it is a genuine image of the future the organization is striving to create. The discipline of *team learning* focuses on the use of dialogue to create new solutions that could not have arisen from any one team member. Dialogue is distinguished from discussion in that a discussion typically features two opposing sides with alternating arguments for each while a dialogue features a group creating shared meaning that emerges from all of their contributions.

The School as a Learning Organization – Teacher Teams

One common way schools put the principles of organizational learning into action is in the context of teacher collaborative teams, but all schools are not equally ready to embark on this endeavor. Konidari and Abernot (2006) examined the degree to which

conditions necessary for building learning organizations exist in Greek schools and found that many were not ready because the staffs lacked a commitment to professional learning and trust in the principals. Based on their findings and review of the literature, Konidari and Abernot (2006) offered a framework for "teachers' communities of professional co-development and co-learning" (p. 17) that includes five components: (a) school culture, (b) collective reflective thinking, (c) transformational leadership, (d) continuous training, and (e) external and internal evaluation. These components align very closely with Senge's (2006) core disciplines. In this vision for organizational learning, teachers lead the way in developing the school's collective capacity. In this process they should emerge as true professionals who actively guide the direction and nature of their work.

This framework corresponds to DuFour's (2004) conception of a professional learning community (PLC) in many ways but differs in that the PLC is more focused on immediate student needs and less focused on long-term capacity building. In addition, Konidari and Abernot's (2006) inclusion of external and internal evaluation emphasizes the deep impact organizational learning is expected to have on the school. Robinson and Temperley (2007) point out that PLCs fail to reach their potential when they exist in name only without engaging in the activities that lead to instructional improvement. To be successful, PLCs must function with a clear focus on building capacity for continuous improvement (Fullan, 2006), and leadership is crucial to ensure this happens.

The School as a Learning Organization – Using Data for Improvement

Katz and Dack (2014) argue that data can play a central role in helping educators, especially teachers, overcome natural cognitive biases as they work to improve instructional practices. The authors call upon the existing literature showing that professional learning is enhanced and more likely to lead to permanent change when it is situated in a culture of inquiry. When used appropriately, data helps educators shift their thinking toward consideration of alternative possibilities or to clearly defining the relationships between variables. When these shifts happen routinely as part of collaborative work, a culture of inquiry will form. Such a culture embodies the disciplines of a learning organization especially personal mastery, mental models and team learning.

Such a process exemplifies the discipline of mental models by recognizing instruction as the primary cause of changes in student learning. Several studies have shown that leadership plays a crucial role in shifting teachers' focus toward changing instructional practices (Cosner, 2011; Halverson et al., 2007; Kerr et al., 2006; Lachat & Smith, 2005; Robinson & Temperley, 2007; Young, 2006). By modeling the inquiry process at the campus level through the SIP, campus leaders reinforce the expectation for teachers to think similarly about their own practices and model the disciplines of a learning organization. Modeling is not adequate, however, to ensure teacher teams engage in reflective practice. Senge (2006) points out that regular practice with guidance from a skilled facilitator is crucial to the development of team learning. Campus leaders can use the SIP process as one way to give teacher leaders this practice.

If the SIP process is going to lead to improvement in teacher instructional practices, it cannot involve only a few individuals or be visible only a few days each year. It must be collaborative, ongoing, and embedded in the regular work of school staff (Caputo & Rastelli, 2014). The role of leadership is crucial in creating a culture where inquiry is the norm. Robinson and Temperley (2007) call this aspect of leadership "engaging in constructive problem talk" (p. 253) and identify two critical qualities it includes. First, leaders must identify problems in a way that encourages engagement in solutions rather than defensiveness. Second, they must guide teachers and other leaders in examining how their own beliefs and practices can change to create improvement.

Organizational learning theory frames this study in two important ways. First, it promotes the campus (i.e. the organization) itself as the primary unit of study rather than individual teachers or the building principal alone. Teachers and principals will be asked to supply information about their experiences, but the resulting data will be analyzed in terms of how they represent overall campus culture and performance. Second, the study reflects the understanding that organizational learning is a complex and ongoing process that cannot be examined using a single measure. Thus, this study will employ multiple measures including teacher and principal surveys, a review of SIPs, student test scores, and interviews to provide a multi-faceted picture of how DDDM and the SIP process function and influence outcomes for students.

Conclusion

This chapter provided a review of the literature related to topics relevant to the study including how teachers experience DDDM, how principals experience DDDM,

impact of DDDM, challenges in DDDM, school improvement planning, organizational learning theory, and a summary of findings. The next chapter will provide the methodological details of the study including the operationalization of theoretical constructs, research design, population and sample, instrumentation, data collection procedures, data analysis, privacy and ethical considerations, and research design limitations.

CHAPTER III: METHODOLOGY

The purpose of this mixed methods study was to examine the influence of DDDM and SIP quality on student achievement and to identify best practices in DDDM and school planning. Teachers and principals were surveyed regarding their experiences with DDDM, SIPs were evaluated using a pre-established rubric, and principals were interviewed to investigate how they create and implement their plans. This chapter will present an overview of the research problem, operationalization of theoretical constructs, research purpose and questions, research design, population and sample selection, instrumentation used, data collection procedures, data analysis, privacy and ethical considerations, and the research design limitations for this study.

Overview of the Research Problem

Although data use has become a common focal point of school improvement efforts, the literature is limited in detailing how use of data leads to improved results and what, if any, factors influence the process (Young & Kim, 2010). Several studies have found that teachers can have their practices changed by participating in DDDM (Cosner, 2011; Feldman & Tung, 2001; Jacobs et al., 2009; Kerr et al., 2006). Very few studies have attempted to link teacher data use directly to student achievement outcomes, but at least two did find a positive impact on student test scores (Carlson et al., 2011; Saunders et al., 2009). At the campus level the SIP is often the most tangible artifact of DDDM, but again, very few studies have attempted to link SIPs to academic achievement. One such study found a slight positive relationship between the quality of a school's SIP and student achievement (Fernandez, 2011). By examining the relationships between teacher

and principal experiences with DDDM, the quality of SIPs, and student academic growth, this study attempted to identify DDDM and SIP practices that lead to increased student learning.

Operationalization of Theoretical Constructs

This study included the following constructs: (a) DDDM, (b) SIP, and (c) academic growth. Data driven decision making (DDDM) was defined as the systematic application of data analysis to guide the selection and implementation of instructional practices that are expected to improve student achievement (Hamilton et al., 2009; Mandinach, 2012). Data driven decision making (i.e. acting upon data, support systems, and school culture) was measured by the *Data Driven Decision Making Readiness Survey: Principals* and *Data Driven Decision Making Readiness Survey: Teachers* (McLeod & Seashore, 2006) respectively. School improvement plan (SIP) was defined as a written document that describes a school's needs, goals for improvement, action steps that will be taken to reach the goals, and evidence that will indicate if the goals are met (Fernandez, 2011; Reeves, 2006). SIP was measured using the rubric developed by Reeves (2006). Academic growth was defined as the change in scale scores in consecutive grade levels in reading and mathematics. Academic growth was measured using the State of Texas Assessment of Academic Readiness (STAAR) progress measure (Texas Education Agency [TEA], 2015).

Research Purpose and Questions

The purpose of this study was to examine the influence of DDDM and SIP quality on student achievement and to identify best practices in DDDM and school planning. The following questions guided this study:

1. To what extent do the perceptions of DDDM of teachers and principals agree?
2. What relationship, if any, exists between the DDDM experiences self-reported by teachers and principals and the quality of the campus SIP?
3. What relationship, if any, exists between the DDDM experiences self-reported by teachers and principals, the quality of a school's SIP, and the academic growth of its students?
4. How do elementary and middle school principals create and implement SIPs?

Research Design

This study used a mixed methods research design. This approach was appropriate because each component measured a different aspect of the underlying phenomenon resulting in a fuller exploration than either the quantitative or qualitative component alone would have produced (Greene, Caracelli, & Graham, 1989). The quantitative phase measured DDDM in general through administration of the *Data Driven Decision Making Readiness Survey* to both principals and teachers and by measuring the quality of the SIP on each sampled campus. Quantitative data were analyzed using frequency distributions, percentages, and Pearson's product moment correlations (*r*). The qualitative phase involved in-depth semi-structured interviews with principals to gain a deeper

understanding of their experience with DDDM and school improvement planning, and their responses were analyzed using an inductive thematic approach.

Population and Sample

The population for this study was a large suburban school district in southeast Texas. The district has 75 total campuses including 47 elementary schools, 14 middle schools, 11 high schools, two alternative schools and a technical education center. The district employed approximately 4,500 teachers and 225 campus administrators (TEA, 2016). The district was selected based on the researcher's familiarity with the district and its data use and planning practices. In particular, the district encourages DDDM but does not mandate a particular approach to be used across all campuses which provided a range of experiences among potential participants in the study. In addition, the district has a standard SIP template but allows principals significant flexibility in using it to create their plans again providing a variety of experiences. High schools were not included because a relatively small number of their students were evaluated by the STAAR progress measure. Table 3.1 summarizes the student population of the district based on campus level, gender, race/ethnicity, and socio-economic characteristics. Table 3.2 summarizes the principal population of the district based on gender and race/ethnicity. Table 3.3 summarizes the teacher population of the district based on gender and race/ethnicity, and years of experience. This study employed a purposeful sample of elementary and middle school principals in the participating district and a sample of teachers assigned to the campuses of the participating principals.

Table 3.1

Participating School District Student Population based on 2015-2016 TAPR

	Frequency (n)	Percentage (%)
1. Enrollment		
Elementary	32,655	44.8
Middle School	16,987	23.3
High School	23,268	31.9
Total Students	72,910	100.0
2. Race/Ethnicity		
African-American	20,580	28.2
Hispanic	19,295	26.5
White	12,684	17.4
American Indian	262	0.4
Asian	17,972	24.6
Pacific Islander	106	0.1
Two or More Races	2,011	2.8
3. Socio-economic Characteristics		
Economically Disadvantaged	24,538	33.7
English Language Learners (ELL)	11,947	16.4
At-Risk of Dropping Out	32,800	45.0

Table 3.2

Participating School District Principal Population

	Frequency (n)	Percentage (%)
1. Gender		
Female	51	79.7
Male	13	20.3
2. Race/Ethnicity		
African-American	28	43.9
Hispanic	7	10.9
White	27	42.2
American Indian	0	0.0
Asian	2	3.1
Pacific Islander	0	0.0
Two or More Races	0	0.0

Note. Excludes campuses that changed principals during the 2016-2017 school year.

Table 3.3

Participating School District Teacher Population based on 2015-2016 TAPR

	Frequency (n)	Percentage (%)
1. Gender		
Female	3,474.1	77.1
Male	1,029.6	22.9
2. Race/Ethnicity		
African-American	1,282.5	28.5
Hispanic	615.8	13.7
White	2,250.2	50.0
American Indian	8.0	0.2
Asian	241.3	5.4
Pacific Islander	13.0	0.3
Two or More Races	93.0	2.1
3. Years of Experience		
Beginning Teachers	246.4	5.5
1-5 Years Experience	1,217.3	27.0
6-10 Years Experience	1,083.3	24.1
11-20 Years Experience	1,327.2	29.5
Over 20 Years Experience	629.5	14.0

Participant Selection

The district limited the study to 10 campuses, so initially 13 of the 14 middle school principals were contacted with a request to participate. One middle school was omitted because a new principal had been moved to the campus within the school year. Middle schools were preferable to elementary schools because they have more teachers and all of their students take the state assessment in reading and mathematics in every grade level. After only four middle school principals agreed to participate, the selection process was expanded to include elementary campuses. Many of the district's 47

elementary campuses were excluded from consideration because they had participated in an earlier pilot study, were undergoing principal changes due to the opening of new campuses, or were part of a district initiative with unique data use and planning requirements. Twenty-two elementary campuses were contacted, and the principals from 13 of them agreed to participate.

To fill the six openings in the study, these 13 campuses were grouped based on the percentage of economically disadvantaged students to form five pairs and one group of three. The campus in each group with the largest enrollment was selected to participate which created a diverse sample while providing as large a pool of teachers as possible. The principals for two of the six selected elementary campuses failed to complete the principal survey after two requests, so the other campus in the pair participated instead. After principals completed the principal survey, they were invited to participate in interviews for the qualitative component of the study. Although campus staff and parents often have significant input in the planning process, the principal is typically the most influential leader in the process and in some cases creates the SIP without much collaboration (Dunaway, Bird, Wang, & Hancock, 2014). Thus, gathering qualitative data from the principals was prioritized, while gathering qualitative data from other groups like teachers or assistant principals through additional interviews, focus groups, or observations was deemed to be beyond the scope of this study. Nine of the 10 principals of the participating campuses also participated in the interview. Seven of these nine principals were female which was expected since the district has very few male elementary and middle school principals. In terms of ethnic background, four of the nine

principals were White, four were African-American, and one was Hispanic. Interviewing the principals helped identify effective practices related to DDDM and provided additional insight into the ways principals create and implement SIPs. Additional details regarding the participating principals are provided in Chapter 4.

Instrumentation

This study used three instruments: (a) *Data Driven Decision Making Readiness Survey: Principals*, (b) *Data Driven Decision Making Readiness Survey: Teachers*, and (c) STAAR progress measure.

Data Driven Decision Making Readiness Survey: Principals and Teachers

The *Data Driven Decision Making Readiness Survey: Principals* was originally developed by McLeod in 2006 (see Appendix B). The original survey contains 89 total items that cover: (a) beliefs about assessments, (b) acting upon data, (c) support systems, (d) school culture, and (e) demographics. The items in the first four sections use a 6-point Likert scale ranging from "Disagree Strongly" to "Agree Strongly" except for the final item before the demographics section which is open-ended and asks "Is there anything else you want to tell us about data use in your school?" The demographic items vary in format depending on the nature of the data being requested. This study omitted the questions regarding beliefs about assessments because they have limited relevance to the use of data for DDDM leaving 57 Likert-style items. Each item on the principal version of the survey has a corresponding item on the teacher version. The items on the principal version reflect how the principal believes DDDM occurs on the campus, while the items on the teacher version reflect how the teacher personally experiences DDDM. For

example, an item on the principal survey reads, “Teachers in my school use assessment results to measure the effectiveness of their instruction,” and the corresponding item on the teacher survey reads, “I use assessment results to measure the effectiveness of my instruction.”

An expert review of the survey suggested that participants might struggle to consistently differentiate between the levels “Moderately” or “Slightly” that were used in the original survey unless they were given additional criteria to consider. Matell and Jacoby (1971) found that reliability and validity of Likert scales are independent of the number of alternatives used in each item especially when the participants are not highly trained on how to select responses. Therefore, the present study reduced the original Likert scale from a 6-point to 4-point – “Disagree Strongly,” “Disagree Moderately,” “Agree Moderately,” and “Agree Strongly.”

White (2008) used the principal survey and omitted the same items regarding beliefs about assessments in a study of 471 principals’ beliefs about DDDM and student achievement in Florida elementary schools. The teacher version of the *Data Driven Decision Making Readiness Survey* (McLeod & Seashore, 2006) used in this study does not appear to have been used in published research since its original development for a state-sponsored project in Minnesota. Sulser (2006) used an early version of the teacher survey and found it to have adequate validity and reliability ($\alpha = .95$). For the present study reliability of the teacher survey was analyzed by computing the value of Cronbach’s α. This analysis produced the following values for each section of the survey: (a) acting upon data, $\alpha = .91$, (b) support systems, $\alpha = .95$, and (c) school culture, $\alpha =$

.92. The value of Cronbach's α for the full survey was .97. These values are all large enough to indicate adequate reliability (Johnson & Christensen, 2014).

State of Texas Assessment of Academic Readiness

The STAAR became the required criterion-referenced assessment for the state of Texas beginning in the 2011-2012 school year and at the elementary and middle school levels includes tests in reading and mathematics for grades three through eight, writing for grades four and seven, science for grades five and eight, and social studies for grade eight. The STAAR progress measure used in this study can only be computed for subjects that are tested in consecutive grade levels, so only reading and mathematics in grades four through eight were considered (TEA, 2015).

The most recently available technical manual for STAAR reported reliability estimates (KR-20) of .909 and .913, respectively, for fourth grade reading and mathematics administered in English. For fifth grade reading and mathematics administered in English, the KR-20 values were .907 and .921. For fourth grade tests administered in Spanish the KR-20 values were .890 and .901 for reading and mathematics, respectively. For fifth grade tests administered in Spanish the KR-20 values were .886 and .896 for reading and mathematics, respectively. Beginning in sixth grade, STAAR assessments are only administered in English, and the KR-20 values were .907 and .923 for reading and mathematics, respectively. For seventh grade reading and mathematics the KR-20 values were .902 and .920, and for eight grade the KR-20 values were .910 and .904. These values were all deemed high enough by the TEA to represent adequate reliability. Validity of the assessment was established through multiple methods

including the use of experts to review test items, internal validity studies, and external comparisons to establish correlations between scores on STAAR and scores on other assessments including the SAT and ACT (TEA, 2015).

Data Collection Procedures

Before any data were collected, approval was requested from the University of Houston Clear Lake (UHCL) Committee for Protection of Human Subjects (CPHS) and the school district where data collection occurred. Once both approvals were received, elementary and middle school principals were contacted via email with a request to participate (see Appendix A) that clearly explained that participation was voluntary. This request also described the purpose of the study, explained the confidentiality of all responses, and provided an estimate of the time required to complete the survey (10-minutes for principals and teachers) and participate in an interview (45-minutes for the principal). After principals completed the principal survey, they were asked to forward a separate email request to their teachers that contained similar introductory information. An email reminder was sent to principals who had not completed the principal survey after one week. Two campuses whose principals initially agreed to participate but did not complete the principal survey after two email reminders were replaced in the study by two other campuses. An email reminder regarding the teacher survey was sent to each principal two weeks after the initial request. A second email reminder was sent to the principals of campuses with low response rates on the teacher survey.

Surveys. Principals and teachers accessed the appropriate survey by following links to the online form (see Appendix B) provided in the request to participate. The

online form contained the same introductory information regarding voluntary participation, purpose, confidentiality, and estimated time requirement as the request email. Principals and teachers indicated their willingness to participate by proceeding beyond the introductory information and providing responses to the survey items.

SIPs. The district posted copies of the 2016-2017 school improvement plans for all campuses on its website. The researcher downloaded plans of participating campuses. Plans were scored by the researcher using the rubric from Reeves (2006). The original rubric contains 30 dimensions in five categories with each dimension scored from one to three. For this study, the rubric was reduced to four categories with 18 total dimensions to focus on areas most related to DDDM and to omit items not available from the district (e.g. final evaluation). The four categories were: (a) Comprehensive Needs with three dimensions, (b) Inquiry Process with four dimensions, (c) S.M.A.R.T Goals with five dimensions, and (d) Design with six dimensions (see Appendix C).

Interviews. An email invitation to participate in an interview was sent to principals after they completed the principal survey. Principals who accepted the invitation to interview were asked to review and sign an Informed Consent Form (see Appendix D) before the interview. Interviews were semi-structured using an interview guide (see Appendix E) developed by the researcher and revised based on peer review and a pilot study. Each interview began with a brief reminder about the purpose of the research followed by questions related to participants' DDDM practices and improvement planning. Each interview lasted 20 to 30 minutes, and all interviews were recorded and transcribed. Data were stored in password-protected files on the

researcher's computer and a separate portable drive. Files will be destroyed five years after completion of the study.

Data Analysis

Quantitative

Survey data were downloaded from SurveyMonkey to IBM SPSS and reviewed for anomalies, such as respondents who followed the survey link but did not respond to any of the survey items. Given that these records could not be used in the analysis, they were removed from the survey data. In addition, responses were aggregated to produce an average score for each item, total composite score and score for each subscale (acting upon data, support systems, school culture) of the survey. Although the individual survey items produce ordinal data for which Pearson's *r* would not be appropriate, the composite and subscale scores can be treated as continuous interval data (Carifio & Perla, 2008; Norman, 2010).

To address research question one, frequencies and percentages were used to assess the extent of agreement between teachers and principals on the individual survey items. Research questions two and three were addressed using a Pearson's product moment correlation (*r*) analysis to determine the strength of the relationships, if any, between measured variables. The analysis for research question two examined each combination of SIP rubric score and total survey and section scores for both principals and teachers. The analysis for research question three examined each combination of the percentage of students meeting the STAAR progress measure in reading and the SIP rubric score and section scores followed by a comparable analysis using mathematics

results. A significance value of .05 was used throughout the quantitative analysis and the coefficient of determination (r^2) was used to assess effect size.

Qualitative

Research question four was addressed by the qualitative component of the study. The interview data were analyzed by an inductive thematic coding process using NVivo. A first round of coding was completed using an initial list of codes created based on the researcher's prior knowledge, a review of the literature, and a pilot study. As each transcript was coded, additional codes were added as needed. After all transcripts had been coded once, codes were revised and a second round of coding was performed to incorporate the additional codes. Codes were then grouped into themes, and the frequency of each code and number of participants mentioning each code at least once were then computed. NVivo was used to identify data supporting each theme. The most salient themes are discussed in the study's results.

A similar inductive coding process was applied to the SIP documents. Document review was not part of the pilot study, but initial codes were generated based on the researcher's familiarity with the SIP template used by the study district and a review of the literature. Separate themes were not identified for the SIP documents. Instead, the SIP codes were organized to provide thorough descriptions of the SIPs. These descriptions were then analyzed for elements that aligned with or contradicted themes emergent in the interviews. Because the research questions and theoretical framework guiding the study emphasized teacher and principal experiences and perceptions, this approach ensured the

principal interviews were the primary source of qualitative data while the document review served as a secondary source.

Qualitative Validity

The researcher took several steps to increase the validity of the qualitative component of the study. The initial interview guide was revised based on peer review by an experienced principal and then used for eight principal interviews as part of a pilot study. The pilot study took place in the same district as the current study, and only principals with multiple years of experience at their assigned campus were selected for interviews, ensuring that all interview participants had experienced at least one complete cycle of annual improvement planning. As a result, several interview questions were revised and specific follow-up questions were identified in advance and added to the interview guide. Member checking was used to increase accuracy of interview transcripts. None of the participants requested changes to the transcripts. Finally, the mixed-methods design of the study allowed teacher responses to the survey in the quantitative component to provide additional context for the principal interviews and document review in the qualitative component. In particular, the teacher survey responses helped validate principals' descriptions of DDDM and SIP activities on their campuses.

Privacy and Ethical Considerations

Before any data were collected, approval was requested from the UHCL's CPHS and the school district where data collection occurred. Once both approvals were received, elementary and middle school principals were contacted via email with a request to participate (see Appendix A) that clearly explained that participation was

voluntary. This request also described the purpose of the study, explained the confidentiality of all responses, and provided an estimate of the time required to complete the survey (10-min for principals and teachers) and participate in an interview (45-min for the principal).

Principals and teachers accessed the appropriate survey by following links to the online form provided in the request to participate. The online form contained the same introductory information regarding voluntary participation, purpose, confidentiality, and estimated time requirement as the request email. Principals and teachers indicated their willingness to participate by proceeding beyond the introductory information and providing responses to the survey items. Data from the online survey forms were stored in password protected files on the researcher's computer and a separate portable drive. Files will be destroyed five years after completion of the study. Campuses were assigned pseudonyms so that survey responses, SIP rubric scores, STAAR scores, and interviews were associated with the appropriate pseudonym for all reporting. Any quotation presented in the results was not attributed to a specific campus to further protect the identity of interview participants.

Research Design Limitations

The design of this study includes several limitations. First, the study was based on schools sampled from a single district in southeast Texas which limits the generalizability of results. Second, the researcher was previously an employee of the school district and has trained and coached principals on the use of data and creation of SIPs. This prior experience might bias some principals' responses to survey or interview questions. It may

also bias the researcher's interpretation of results based on knowledge and observations originating from outside the study. Third, the STAAR progress measure is only available at the elementary level for reading and mathematics in fourth and fifth grades which limits its validity as a measure of academic growth for the schools in the study. Fourth, the data collection occurred in the spring semester, but work on the SIP likely began during the prior school year when two of the sampled campuses had different principals. It is impossible to know how a change in principals may have influenced results.

Conclusion

This chapter provided the methodological details of the study including the operationalization of theoretical constructs, research design, population and sample, instrumentation, data collection procedures, data analysis, privacy and ethical considerations, and research design limitations. The next chapter will provide the results of the study including participant demographics, findings related to each research question, and a summary of findings.

CHAPTER IV: RESULTS

The purpose of this study was to examine the influence of DDDM and SIP quality on student achievement and to identify best practices in DDDM and school planning. For the quantitative component of the study teachers and principals were surveyed regarding their experiences with DDDM, School Improvement Plans (SIPs) were evaluated using a pre-established rubric, and the resulting data were analyzed using frequencies, percentages, and Pearson's *r*. For the qualitative component of the study principals were interviewed to investigate how they created and implemented their plans, and the resulting data were analyzed by inductive thematic coding. This chapter will present a summary of participant demographics, results related to each research question, and a summary of findings.

Participant Demographics

This study used a purposeful sample of 10 elementary and middle schools in the district. The principal and teachers from each campus completed the *Data Driven Decision Making Readiness Survey,* and each SIP was scored using a rubric. All principals were invited to participate in a follow-up interview for the qualitative component of the study, and nine of them agreed to do so. The qualitative component also included inductive thematic coding of each school's SIP.

Campuses

All of the middle schools in the study serve grades 6^{th}-8^{th} while the elementary schools serve kindergarten or pre-kindergarten through 5^{th} grade. The middle schools ranged in enrollment from 988 to 1,633 while the elementary campuses ranged in

enrollment from 443 to 928. The percentage of economically disadvantaged students at each campus ranged from 5.3 to 64.0. The percentage of English language learners at each campus ranged from 7.3 to 53.7 while the percentage of students receiving special education services ranged from 4.0 to 7.2. Only Everly Elementary School had a school-wide Title I program. Table 4.1 summarizes the demographic characteristics of each campus.

Table 4.1

Participating Campus Characteristics based on 2015-2016 TAPR

	Enrollment	Econ. Dis.	ELL	Spec. Ed.
Avalon MS	991	48.8	13.8	6.6
Berry MS	1572	29.6	7.3	5.8
Cooper MS	1633	19.3	9.1	5.8
Dunn MS	988	30.3	11.2	5.4
Everly ES	928	64.0	53.7	5.3
Francis ES	885	42.4	30.4	4.0
George ES	443	36.6	25.7	7.2
Hamilton ES	798	33.0	36.3	7.1
Inverness ES	682	15.0	25.2	5.6
Joliet ES	769	5.3	27.0	4.2

Principals

Seven of the 10 participating principals were female which was expected since the district has very few male elementary and middle school principals. In terms of ethnic background, four of the 10 principals were White, four were African-American, one was Hispanic, and one was Asian. The principals ranged in experience from one year to 10 years (including 2016-2017) with a mean of 4.80 years and a standard deviation of 3.16 years. The time as principal of the current campus ranged from one year to five years

with a mean of 2.70 years and a standard deviation of 1.34 years. In the study district, each principal was supervised by one of five assistant superintendents. All five assistant superintendents were represented by at least one of the participating principals. The principal from Dunn was unable to participate in the interview component of the study. Table 4.2 summarizes the gender, race/ethnicity, total years of experience as a principal, and total years as principal of the current campus for each of the participating principals.

Table 4.2

Participating Principals Characteristics

	Gender	Race/Ethnicity	Total Years as a Principal	Years at Current Campus
Avalon MS	Female	African American	1	1
Berry MS	Female	White	8	3
Cooper MS	Female	White	4	4
Dunn MS	Male	Asian	8	4
Everly ES	Male	African American	6	2
Francis ES	Female	African American	3	3
George ES	Female	White	1	1
Hamilton ES	Male	Hispanic	5	2
Inverness ES	Female	African American	10	5
Joliet ES	Female	White	2	2

Teachers

A total of 162 teachers completed the teacher survey. The number of teacher responses per campus ranged from five to 34 with a mean of 16.20. In terms of gender percentage 85.8 of the teachers were female, 10.5 were male, and 3.7 did not provide an answer. In terms of race/ethnicity percentage, 54.9 of the teachers were White, 14.8 were African-American, 11.7 were Hispanic, 6.8 were multiracial, 1.2 were American Indian/Alaskan Native, 0.6 were Asian, and 9.9 chose not to provide an answer. The total

years of experience for teachers ranged from one to 36 with a mean of 13.63 years and a standard deviation of 8.13 years. The number of years teachers had worked at their current campus ranged from one to 25 with a mean of 6.30 years and a standard deviation of 5.53 years. Tables 4.3, 4.4, and 4.5 summarize the characteristics of the participating teachers from each campus.

Table 4.3

Participating Teachers Demographics – Gender (%)

	Total Responses	Female	Male	No Response
Avalon MS	8	62.5	25.0	12.5
Berry MS	18	72.2	27.8	0.0
Cooper MS	5	100.0	0.0	0.0
Dunn MS	15	80.0	13.3	6.7
Everly ES	27	85.2	11.1	3.7
Francis ES	12	83.3	16.7	0.0
George ES	9	100.0	0.0	0.0
Hamilton ES	11	90.9	9.1	0.0
Inverness ES	23	91.3	0.0	8.7
Joliet ES	34	91.2	5.9	2.9
Total	162	85.8	10.5	3.7

Table 4.4

Participating Teachers Demographics – Race/Ethnicity (%)

	Total Responses	African American	Hispanic	Multiracial	White	Other[a]	No Response
Avalon MS	8	25.0	0.0	12.5	50.0	0.0	12.5
Berry MS	18	11.1	5.6	0.0	83.3	0.0	0.0
Cooper MS	5	0.0	0.0	20.0	60.0	0.0	20.0
Dunn MS	15	6.7	6.7	6.7	60.0	0.0	20.0
Everly ES	27	25.9	33.3	11.1	14.8	3.7	11.1
Francis ES	12	25.0	33.3	8.3	25.0	0.0	8.3
George ES	9	22.2	0.0	0.0	66.7	11.1	0.0
Hamilton ES	11	9.1	27.3	0.0	63.6	0.0	0.0
Inverness ES	23	17.4	0.0	0.0	69.6	0.0	13.0
Joliet ES	34	5.9	2.9	11.8	64.7	2.9	11.8
Total	162	14.8	11.7	6.8	54.9	1.8	9.9

Note. [a]Includes American Indian/Alaskan Native and Asian.

Table 4.5

Participating Teachers Years of Experience Including 2016-2017

	Years as a Teacher		Years at Current Campus	
	Mean	Standard Deviation	Mean	Standard Deviation
Avalon MS	12.4	5.15	5.9	3.64
Berry MS	14.8	9.22	7.6	7.35
Cooper MS	20.0	9.06	5.4	4.83
Dunn MS	15.6	7.30	10.1	5.72
Everly ES	10.5	6.74	2.7	1.73
Francis ES	8.9	5.04	5.6	2.47
George ES	18.2	8.47	8.0	6.52
Hamilton ES	16.8	10.19	4.5	2.25
Inverness ES	13.7	8.21	8.9	6.58
Joliet ES	13.3	8.24	5.8	5.73
Total	13.6	8.13	6.3	5.53

Research Question One

Research question one, *To what extent do the perceptions of DDDM of teachers and principals agree?,* was answered using frequencies and percentages of responses to the *Data Driven Decision Making Readiness Survey* by teachers and principals. The survey required participants to rate their level of agreement with each item on a scale of 1 to 4. Responses were collapsed into the categories "Disagree", including responses of 1 (Disagree Strongly) and 2 (Disagree Moderately), and "Agree", including responses of 3 (Agree Moderately) and 4 (Agree Strongly). The survey includes three sections: (a) Acting Upon Data, (b) Support Systems, and (c) School Culture.

Acting Upon Data

Table 4.6 summarizes results for the Acting Upon Data section of the survey. Over 90.0% of teachers indicated agreement with 15 of the 17 items in this section. Taken together these responses indicated that teachers believed they engaged in multiple activities associated with DDDM including using data to set goals, using data to guide instructional decisions, and assessing the effectiveness of curriculum changes and instructional strategies. Slightly fewer teachers (83.6%, n = 133) agreed with the statement "Teachers in this school regularly discuss assumptions about teaching and learning," and significantly fewer (67.3%, n = 109) agreed with the statement "Teachers are given adequate time for collaborative planning."

Among principals, 90.0% (n = 9) or more indicated agreement with seven of the 17 items. For two items, 80.0% (n = 8) agreed; for four items, 70.0% (n = 7) agreed; for

one item, 60.0% (n = 6) agreed; and for three items, 50.0% (n = 5) agreed. These three items were: (a) “Teachers in my school know what instructional changes to make when data show that students are not successful,” (b) “Teachers in my school have clear criteria for determining the success of instructional activities,” and (c) “If teachers in my school propose a change, they bring data to support their proposal.” These values indicated that the principals differ significantly from the teachers on several of the items.

The three statements with which only 50.0% of principals agreed had 96.3%, 95.7%, and 92.5% of teachers agreeing, respectively, which indicates a significant difference of opinion between the two groups. The largest difference occurred for the item regarding whether teachers know, “what instructional changes to make when data show that students are not successful.” A large difference of opinion on this item is notable because changing instruction in response to data is a fundamental activity of DDDM. For three of the 17 items, a higher percentage of principals than teachers agreed. For two of these statements, however, over 90.0% of teachers agreed while 100.0% of the principals agreed which indicated a minimal difference of opinion. However, the third item regarding teachers having adequate time for collaborative planning showed a greater difference. This item had the lowest rate of agreement for teachers (67.3%, n = 109), while 80.0% (n = 8) of principals agreed.

Table 4.6

Participant Responses to Acting upon Data per Group (%)

Survey Item		Disagree	Agree
1. Teacher teams [in my school] meet regularly to look at student data and make instructional plans	Teachers	4.3 (*n* = 7)	95.7 (*n* = 154)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
2. When I meet with other teachers, we usually focus on student learning outcomes	Teachers	4.3 (*n* = 7)	95.7 (*n* = 155)
When teachers in my school meet with each other, they usually focus on student learning outcomes	Principals	20.0 (*n* = 2)	80.0 (*n* = 8)
3. Teachers in this school work collaboratively to improve curriculum and instruction	Teachers	6.8 (*n* = 11)	93.2 (*n* = 151)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
4. Teachers [in my school] are given adequate time for collaborative planning	Teachers	32.7 (*n* = 53)	67.3 (*n* = 109)
	Principals	20.0 (*n* = 2)	80.0 (*n* = 8)
5. Teachers in this [my] school regularly discuss assumptions about teaching and learning	Teachers	16.4 (*n* = 26)	83.6 (*n* = 133)
	Principals	30.0 (*n* = 3)	70.0 (*n* = 7)
6. I [Teachers in my school] use assessment data to identify students who are not experiencing academic success	Teachers	3.1 (*n* = 5)	96.9 (*n* = 157)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
7. I [Teachers in my school] know what instructional changes to make when data show that students are not successful	Teachers	3.7 (*n* = 6)	96.3 (*n* = 156)
	Principals	50.0 (*n* = 5)	50.0 (*n* = 5)

Survey Item		Disagree	Agree
8. I [Teachers in my school] use assessment results to measure the effectiveness of my [their] instruction	Teachers	4.3 (*n* = 7)	95.7 (*n* = 155)
	Principals	30.0 (*n* = 3)	70.0 (*n* = 7)
9. In this school I am encouraged to try out new teaching strategies	Teachers	8.0 (*n* = 13)	92.0 (*n* = 149)
Teachers in my school are encouraged to try out new teaching strategies	Principals	0.0 (*n* = 0)	100.0 (*n* = 10)
10. I [Teachers in my school] use data to verify my assumptions about the causes of student behavior and performance	Teachers	7.5 (*n* = 12)	92.5 (*n* = 148)
	Principals	40.0 (*n* = 4)	60.0 (*n* = 6)
11. I [Teachers in my school] have clear criteria for determining the success of instructional activities	Teachers	4.3 (*n* = 7)	95.7 (*n* = 154)
	Principals	50.0 (*n* = 5)	50.0 (*n* = 5)
12. If I [Teachers in my school] propose a change, I [they] bring data to support my [their] proposal	Teachers	7.5 (*n* = 12)	92.5 (*n* = 148)
	Principals	50.0 (*n* = 5)	50.0 (*n* = 5)
13. I [Teachers in my school] make changes in my instruction based on assessment results	Teachers	1.9 (*n* = 3)	98.1 (*n* = 159)
	Principals	30.0 (*n* = 3)	70.0 (*n* = 7)
14. Our district's goals are focused on student learning	Teachers	3.1 (*n* = 5)	96.9 (*n* = 157)
	Principals	0.0 (*n* = 0)	100.0 (*n* = 10)
15. Our [My] school[‘s] improvement goals are clear, specific, measurable, and based on student data	Teachers	5.6 (*n* = 9)	94.4 (*n* = 153)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)

Survey Item		Disagree	Agree
16. Teachers and principals have access to good baseline data from which to set annual instructional goals	Teachers	3.7 (n = 6)	96.3 (n = 155)
Teachers in my school have access to good baseline data from which to set annual instructional goals	Principals	10.0 (n = 1)	90.0 (n = 9)
17. I [Teachers in my school] use data from student assessments to set instructional targets and goals	Teachers	1.2 (n = 2)	98.8 (n = 159)
	Principals	30.0 (n = 3)	70.0 (n = 7)

Support Systems

Table 4.7 summarizes results for the Support Systems section of the survey. Over 90.0% of teachers indicated agreement with six of the 19 items in this section, between 75.0% and 90.0% of teachers indicated agreement with eight of the 19 items, and less than 75.0% of teachers indicated agreement with the remaining five items. Four of the six items with which over 90.0% of teachers agreed related to the availability of student performance data and the teachers' skills in using technology to access it. The other two items with which over 90.0% of teachers agreed concerned alignment of improvement initiatives with state standards and the use of student data in those initiatives. The five items that had less than 75.0% of teachers in agreement related to professional development and teacher input in planning.

Given that over 90.0% of teachers agreed with multiple items in the Acting Upon Data section of the survey related to the regular use of data to change instruction and support student progress, it is notable that only 71.6% (n = 116) agreed with the item, "My professional development has helped me use data more effectively." The difference

in these responses indicates that a sizable group of teachers believe they have acquired data use skills through means other than professional development. This seeming contradiction can be partially explained by the item in the Support Systems section of the survey with the lowest level of agreement, “Teachers have significant input into plans for professional development and growth.” Only 61.3% (*n* = 98) of teachers agreed with this statement indicating there may be a gap between the professional development they want and what they receive.

Among principals, 90.0% (*n* = 9) or more indicated agreement with seven of the 19 items. For five items, 80.0% (*n* = 8) agreed; for two items, 70.0% (*n* = 7) agreed; for three items, 60.0% (*n* = 6) agreed; and for two items, 50.0% (*n* = 5) agreed. These two items were: (a) “Teachers have significant input into data management and analysis practices” and (b) “Professional development has improved my teachers’ skill in developing classroom assessments.” Although these two items were also among those with the lowest levels of agreement for teachers (73.1% and 72.8%, respectively), principals differ significantly from the teachers on these items and several others.

Teachers and principals differed in the percentage of respondents in agreement by over 20.0% for six of the 19 statements in the Support Systems section of the survey. Four of these statements had a higher level of agreement among the teachers, and two of them had a higher level of agreement among the principals. The largest difference occurred for the item, “I [Teachers in my school] know how to use technology to monitor student progress.” Only 60.0% (*n* = 6) of the principals agreed, while 91.3% (*n* = 147) of the teachers agreed. The next two largest differences occurred on items where the level of

agreement was higher for principals than for teachers. These two items were: (a) "Teachers have significant input into plans for professional development and growth" and (b) "My professional development has helped me use data more effectively." For the first of these two items, 80.0% (n = 8) of principals agreed, while 61.3% (n = 116) of teachers agreed. For the second of these two items, 100.0% (n = 10) of principals agreed, while 71.6% (n = 116) of teachers agreed.

Table 4.7

Participant Responses to Support Systems per Group (%)

Survey Item		Disagree	Agree
18. I [Teachers in my school] can easily access the information I [they] need from school and district data systems	Teachers	5.6 (n = 9)	94.4 (n = 152)
	Principals	0.0 (n = 0)	100.0 (n = 10)
19. Teachers and parents communicate frequently about student performance data	Teachers	14.9 (n = 24)	85.1 (n = 137)
	Principals	20.0 (n = 2)	80.0 (n = 8)
20. Student performance data available to me are accurate and complete	Teachers	9.3 (n = 15)	90.7 (n = 146)
	Principals	20.0 (n = 2)	80.0 (n = 8)
21. Student performance data are easily available to the individuals that need them	Teachers	7.5 (n = 12)	92.5 (n = 149)
	Principals	0.0 (n = 0)	100.0 (n = 10)
22. Parents and community members know what our school is doing and what is needed to improve student achievement	Teachers	19.3 (n = 31)	80.7 (n = 130)
	Principals	30.0 (n = 3)	70.0 (n = 7)
23. Successful educational practices are widely shared in the district	Teachers	20.6 (n = 33)	79.4 (n = 127)
	Principals	40.0 (n = 4)	60.0 (n = 6)
24. My school uses multiple data sources to assess the effectiveness of educational programs	Teachers	14.3 (n = 23)	85.7 (n = 138)
	Principals	20.0 (n = 2)	80.0 (n = 8)

Survey Item		Disagree	Agree
25. Teachers have significant input into data management and analysis practices	Teachers	26.9 (n = 43)	73.1 (n = 117)
	Principals	50.0 (n = 5)	50.0 (n = 5)
26. I [Teachers in my school] know how to use technology to monitor student progress	Teachers	8.7 (n = 14)	91.3 (n = 147)
	Principals	40.0 (n = 4)	60.0 (n = 6)
27. I [Teachers in my school] have adequate access to the technology necessary to monitor student progress	Teachers	14.3 (n = 23)	85.7 (n = 138)
	Principals	20.0 (n = 2)	80.0 (n = 8)
28. My professional development has helped me use data more effectively	Teachers	28.4 (n = 46)	71.6 (n = 116)
	Principals	0.0 (n = 0)	100.0 (n = 10)
29. I [Teachers in my school] have received adequate training to effectively interpret and act upon yearly state assessment results	Teachers	19.3 (n = 31)	80.7 (n = 130)
	Principals	30.0 (n = 3)	70.0 (n = 7)
30. Professional development has improved my [my teachers'] skill in developing classroom assessments	Teachers	27.2 (n = 44)	72.8 (n = 118)
	Principals	50.0 (n = 5)	50.0 (n = 5)
31. Teachers have significant input into plans for professional development and growth	Teachers	38.8 (n = 62)	61.3 (n = 98)
	Principals	20.0 (n = 2)	80.0 (n = 8)
32. Student achievement data are used to inform school and district improvement initiatives	Teachers	7.6 (n = 12)	92.4 (n = 146)
	Principals	0.0 (n = 0)	100.0 (n = 10)

Survey Item		Disagree	Agree
33. Whole-school staff meetings focus on measured progress toward data-based improvement goals	Teachers	19.9 (*n* = 32)	80.1 (*n* = 129)
	Principals	40.0 (*n* = 4)	60.0 (*n* = 6)
34. Student achievement data are used to determine teacher professional development needs and resources	Teachers	26.1 (*n* = 42)	73.9 (*n* = 119)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
35. School and classroom improvement efforts are aligned with state standards	Teachers	3.1 (*n* = 5)	96.9 (*n* = 157)
	Principals	0.0 (*n* = 0)	100.0 (*n* = 10)
36. Student achievement data are used to determine resource allocation	Teachers	19.4 (*n* = 31)	80.6 (*n* = 129)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)

School Culture

Table 4.8 summarizes results for the School Culture section of the survey. Over 90.0% of teachers agreed with eight of the 20 items in this section, and between 75.0% and 90.0% of teachers agreed with 11 of the 20 items. Six of the eight items with 90.0% or more of teachers in agreement reflect the teachers' belief in their commitment and ability to use data to improve instruction and, ultimately, student learning. For example, 98.1% (*n* = 159) of teachers agreed with the statement, "I have the knowledge and skills necessary to improve student learning," and 98.1% (*n* = 158) agreed with the statement, "By trying different teaching methods, I can significantly affect my students' achievement levels." The other two items with over 90.0% of teachers in agreement indicate that the teachers felt their efforts are adequately supported and that their students

believed they can learn through continuous effort. Only 66.3% (*n* = 106) agreed with the item, “My success or failure in teaching students is primarily due to factors beyond my control rather than to my own efforts and ability” which indicates that many of the teachers recognized that many factors influence the success of students.

Among principals, 90.0% (*n* = 9) or more indicated agreement with 11 of the 20 items. For one item, 80.0% (*n* = 8) agreed; for three items, 70.0% (*n* = 7) agreed; for two items, 60.0% (*n* = 6) agreed; and for three items, 40.0% or fewer principals agreed. These three items were: (a) “Teachers conduct self-assessments to continuously improve performance,” (b) “I am a valued member of my district’s data-driven reform efforts,” and (c) “Our success or failure in teaching students is primarily due to factors beyond our control rather than to our own efforts and ability.” The principals differ significantly from the teachers on all three of these items and several others.

Teachers and principals differed in the percentage of respondents in agreement by over 20.0% for seven of the 20 statements in the School Culture section of the survey. Six of these statements had a higher level of agreement among the teachers, and one of them had a higher level of agreement among the principals. The largest difference (65.7%) occurred for the item, “I [Teachers] conduct self-assessments to continuously improve performance.” Only 30.0% (*n* = 3) of the principals agreed, while 95.7% (*n* = 154) of the teachers agreed. The next two largest differences (46.3% and 43.9%) occurred on the following two items: (a) “My [Our] success or failure in teaching students is primarily due to factors beyond my [our] control rather than to my [our] own efforts and ability” and (b) “I am a valued member of my school’s [district’s] data-driven reform efforts.”

For the first of these two items, 20.0% (*n* = 2) of principals agreed, while 66.3% (*n* = 106) of teachers agreed. For the second of these two items, 40.0% (*n* = 4) of principals agreed, while 83.9% (*n* = 135) of teachers agreed.

Table 4.8

Participant Responses to School Culture per Group (%)

Survey Item		Disagree	Agree
37. As a school we have open and honest discussions about data	Teachers	8.7 (*n* = 14)	91.3 (*n* = 147)
	Principals	20.0 (*n* = 2)	80.0 (*n* = 8)
38. I [Teachers] have the knowledge and skills necessary to improve student learning	Teachers	1.9 (*n* = 3)	98.1 (*n* = 159)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
39. Student achievement data are used primarily for improvement rather than teacher evaluation	Teachers	11.1 (*n* = 18)	88.9 (*n* = 144)
	Principals[a]	0.0 (*n* = 0)	0.0 (*n* = 0)
40. Administrators in this school trust the professional judgments of teachers	Teachers	15.4 (*n* = 25)	84.6 (*n* = 137)
	Principals	0.0 (*n* = 0)	100.0 (*n* = 10)
41. Administrators model data-driven educational practices	Teachers	14.3 (*n* = 23)	85.7 (*n* = 138)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
42. My school adequately supports teachers' use of data to improve classroom instruction	Teachers	6.2 (*n* = 10)	93.8 (*n* = 152)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
43. My building's administrator(s) [I] buffer my school from distractions to our school improvement efforts	Teachers	21.4 (*n* = 34)	78.6 (*n* = 125)
	Principals	0.0 (*n* = 0)	100.0 (*n* = 10)

Survey Item		Disagree	Agree
44. My [Our] success as an educator[s] should be determined primarily by my [our] impact upon student learning	Teachers	17.4 (*n* = 28)	82.6 (*n* = 133)
	Principals	10.0 (*n* = 1)	90.0 (*n* = 9)
45. I [Teachers in my school] routinely use data to inform my [their] instructional practices and understand student needs	Teachers	3.1 (*n* = 5)	96.9 (*n* = 157)
	Principals	30.0 (*n* = 3)	70.0 (*n* = 7)
46. Teachers in this [my] school have a sense of collective responsibility for student learning	Teachers	11.1 (*n* = 18)	88.9 (*n* = 144)
	Principals	30.0 (*n* = 3)	70.0 (*n* = 7)
47. My school uses data to uncover problems	Teachers	11.2 (*n* = 18)	88.8 (*n* = 143)
	Principals	40.0 (*n* = 4)	60.0 (*n* = 6)
48. I [Teachers] conduct self-assessments to continuously improve performance	Teachers	4.3 (*n* = 7)	95.7 (*n* = 154)
	Principals	70.0 (*n* = 7)	30.0 (*n* = 3)
49. I am a valued member of my school's [district's] data-driven reform efforts	Teachers	16.1 (*n* = 26)	83.9 (*n* = 135)
	Principals	60.0 (*n* = 6)	40.0 (*n* = 4)
50. I [Teachers in my school] have access to high-quality student assessments to evaluate student progress	Teachers	16.8 (*n* = 27)	83.2 (*n* = 134)
	Principals	40.0 (*n* = 4)	60.0 (*n* = 6)
51. My [Our] success or failure in teaching students is primarily due to factors beyond my [our] control rather than to my [our] own efforts and ability	Teachers	33.8 (*n* = 54)	66.3 (*n* = 106)
	Principals	80.0 (*n* = 8)	20.0 (*n* = 2)

Survey Item		Disagree	Agree
52. Using data has improved the quality of decision-making in my school	Teachers	10.6 (n = 17)	89.4 (n = 143)
	Principals	0.0 (n = 0)	100.0 (n = 10)
53. By trying different teaching methods, I can significantly affect my students' achievement levels	Teachers	1.9 (n = 3)	98.1 (n = 158)
By trying different teaching methods, teachers can significantly affect students' achievement levels	Principals	0.0 (n = 0)	100.0 (n = 10)
54. There is a strong sense of trust among teachers and administrators in my school	Teachers	22.4 (n = 36)	77.6 (n = 125)
	Principals	10.0 (n = 1)	90.0 (n = 9)
55. If we constantly analyze what we do and adjust to get better, we will improve	Teachers	2.5 (n = 4)	97.5 (n = 157)
	Principals	10.0 (n = 1)	90.0 (n = 9)
56. I feel some personal responsibility when our school improvement goals are not met	Teachers	11.8 (n = 19)	88.2 (n = 142)
Teachers in my school feel personal responsibility when our school improvement goals are not met	Principals	30.0 (n = 3)	70.0 (n = 7)
57. Students in our school believe that they will succeed at learning if they keep trying	Teachers	9.3 (n = 15)	90.7 (n = 147)
	Principals	0.0 (n = 0)	100.0 (n = 10)

Note. [a]This item was inadvertently omitted from the principal survey.

Research Question Two

Research question two, *What relationship, if any, exists between the DDDM experiences self-reported by teachers and principals and the quality of the campus SIP?*, was answered using Pearson's Product Moment Correlations (r) to assess if there was a

statistically significant relationship between each section score on the teacher survey and the SIP rubric score. The researcher scored each SIP twice (8-weeks apart) using the rubric adapted from Reeves (2006) (see Appendix C). The scores are summarized in Table 4.9. Reliability analysis of the rubric scores yielded an Intraclass Correlation Coefficient (ICC) of .749 which was deemed to be "good" reliability (Koo & Li, 2016).

Table 4.9

SIP Rubric Total Scores

	Score 1	Score 2	Average
Avalon MS	40	40	40.0
Berry MS	41	42	41.5
Cooper MS	42	41	41.5
Dunn MS	36	37	36.5
Everly ES	40	42	41.0
Francis ES	35	40	37.5
George ES	38	40	39.0
Hamilton ES	41	39	40.0
Inverness ES	37	38	37.5
Joliet ES	35	38	37.5

The results of Pearson's Product Moment correlations (r) did not indicate a statistically significant relationship between any of the measured subscales or entire survey: (a) Acting Upon Data, $r = .085$, $p = .281$, (b) Support Systems, $r = .032$, $p = .690$, (c) School Culture, $r = -.003$, $p = .966$, and (d) Survey Total Score, $r = .036$, $p = .650$. These findings provide no evidence that higher survey scores are associated with higher SIP rubric scores. Table 4.10 summarizes the results of the Pearson's r correlations that were performed. Given the small sample of principals completing the survey, inferential procedures were only applied to the teacher results.

Table 4.10

Relationship between Survey Sub-scales and SIP Rubric Score

Section	N	*r*-value	*p*-value
Acting Upon Data	162	.085	.281
Support Systems	162	.032	.690
School Culture	162	-.003	.966
Survey Total Score	162	.036	.650

Note. *Statistical significance ($p < .05$)

Further analysis was performed using Pearson's *r* correlations to assess if there was a statistically significant relationship between each section score on the SIP rubric and the total survey score. These results indicated a statistically significant relationship between the Comprehensive Needs, $r = .382$, $p < .001$, $r^2 = .146$, and Goals, $r = -.173$, $p = .028$, $r^2 = .030$, SIP rubric section scores and the total survey score. These findings provide evidence that higher scores on the Comprehensive Needs section of the SIP rubric are associated with higher total survey scores with approximately 14.6% of the variation in total survey score explained by the relationship with the Comprehensive Needs SIP rubric section score. These findings also provide evidence that higher scores on the Goals section of the SIP rubric are associated with lower total survey scores with approximately 3.0% of the variation in total survey score explained by the relationship with the Goals SIP rubric section score. No evidence was found for a relationship between the Inquiry Process, $r = .042$, $p = .596$, and Design, $r = .126$, $p = .111$, section scores and the total survey score. Table 4.11 summarizes the results of the Pearson's *r* correlations that were performed. Given the small sample of principals completing the survey, inferential procedures were only applied to the teacher results.

Table 4.11

Relationship between SIP Rubric Section Scores and Survey Total Score

Section	N	*r*-value	*p*-value
Comprehensive Needs	162	.382	<.001*
Inquiry Process	162	.042	.596
Goals	162	-.173	.028*
Design	162	.126	.111

Note. *Statistical significance ($p < .05$)

Research Question Three

Research question three, *What relationship, if any, exists between the DDDM experiences self-reported by teachers and principals, the quality of a school's SIP, and the academic growth of its students?,* was answered using Pearson's Product Moment correlations (*r*) to assess if there was a statistically significant relationship between the score on each survey section, the score on each SIP rubric section, and the percentage of students at each campus meeting the STAAR progress measure. Separate analyses were conducted for reading and mathematics scores.

These results did not indicate a statistically significant relationship between any of the survey subscale scores and the percentage of students meeting the STAAR progress measure in reading: (a) Acting Upon Data, $r = .055$, $p = .483$, (b) Support Systems, $r = .018$, $p = .822$, (c) School Culture, $r = .121$, $p = .126$, (d) Survey Total Score, $r = .069$, $p = .382$. Results for mathematics did indicate a statistically significant relationship between all of the survey section scores and the percentage of students meeting the STAAR progress measure: (a) Acting Upon Data, $r = .304$, $p < .001$, $r^2 = .092$ (b) Support Systems, $r = .304$, $p < .001$, $r^2 = .092$ (c) School Culture, $r = .390$, $p < .001$, $r^2 = .152$ (d) Survey Total Score, $r = .360$, $p < .001$, $r^2 = .130$. These findings

provide evidence that higher survey scores are associated with higher percentages of students meeting the STAAR progress measure in mathematics but no evidence that a similar relationship exists for reading. Table 4.12 summarizes the results of the Pearson's r correlations that were performed. Given the small sample of principals completing the survey and of SIPs with rubric scores, inferential procedures were only applied to the teacher results.

Table 4.12

Relationship between Survey Scores and Percent Met STAAR Progress Measure

		Reading		Mathematics	
Section	N	*r*-value	*p*-value	*r*-value	*p*-value
Acting Upon Data	162	.055	.483	.304	<.001*
Support Systems	162	.018	.822	.304	<.001*
School Culture	162	.121	.126	.390	<.001*
Survey Total Score	162	.069	.382	.360	<.001*

Note. *Statistical significance ($p < .05$)

Research Question Four

Research question four, *How do elementary and middle school principals create and implement SIPs?,* was answered by using data from interviews and review of SIP documents analyzed using an inductive coding process. To explore more deeply the experiences of principals, nine principals were interviewed regarding DDDM and school improvement planning related to SIPs and the 2016-2017 SIP for each campus was reviewed. The inductive thematic coding analysis led to three themes emergent in the data: (a) Collaboration, (b) SIP Steps and Decisions, and (c) Benefits of DDDM and Improvement Planning. In addition, a sub-theme of Obstacles emerged within each of the themes. Each theme and sub-theme will be described below with supporting data.

Collaboration

The theme of collaboration permeated participants' descriptions of how DDDM and improvement planning occurred on their campuses. Every participant discussed multiple ways that they directly collaborated with others as well as describing different ways that their teachers collaborate. Teachers not only collaborated on issues related to their own classrooms but also collaborated with school leaders to contribute to creation and implementation of the SIP. The discussion below will detail these activities and provide details regarding who is involved and the structures principals employed to promote collaboration. Participants also described two significant obstacles that hamper collaboration – teacher capacity and the SIP timeline – which will be discussed along with actions principals took to overcome them.

Collaboration in DDDM. Many participants described how collaborating with other staff members enhanced their own leadership of the campus. An elementary principal summarized the value of collaboration in DDDM by saying:

> … you can have all of those charts and everything, but if you don't have a good group of administrative team that will actually look at it, it's just a piece of paper that's sitting on your desk. I mean you have to have a group of, you know, your AP, your principal, your counselor, all of your specialists and everything. They have to get together and be able to read the data, and be able to use it.

Participants explained that they especially valued collaboration in DDDM because it allowed them to capitalize on the various perspectives and areas of expertise among their staff members. For example, when asked "What is most helpful in using data to make

decisions?", one middle school participant simply said, "It's sitting down with my team that all looks at data through a total different lens." Another middle school participant said, "For me, I think it comes down to getting other people's insight and other people's perspectives, because I can look at the data and I can see certain patterns and certain things, but somebody else can see other things."

Many participants described regularly incorporating data into leadership meetings. One elementary principal described this phenomenon by saying, "We meet routinely with regards to looking at data, and actually we meet every Monday. I have, it depends on the situation, but I have some of my staff members, I have my teachers, my leadership team members, and we all come together." For teachers, the professional learning community (PLC) is the primary venue for DDDM. As one elementary principal explained:

> … so we're [the leadership team] looking at the school-wide. Then we look at grade level-wise [via PLCs]. And then the teachers are looking at their individual classes as well, and then the small groups. So it goes from the whole school on their level all the way down to the small groups within the classrooms. They're all data-driven.

The crucial role of teacher PLCs in DDDM and improvement planning will be discussed in detail below.

Collaboration in improvement planning. Participants valued collaboration in improvement planning as a means to tap into the perspectives and expertise of their staff members just like they valued it for DDDM. One elementary participant said, "… you

have to do it [improvement planning] as a team. So I think the most important thing is to do it as a team, instead of just one person deciding it." When asked "What is most helpful to you as you create your plan?", one elementary principal responded:

> That you can involve a lot of people. The team ... So, in other words, it was not a document that I created. It was established already here that it was done and completed by different teams. Which I think is phenomenal, because I'm not the expert on everything. So, we were receiving input. So we met and everybody was looking at their particular areas of expertise.

Another elementary principal described how the SIP benefited from the contributions of staff members whose roles emphasized different areas:

> I think having a team. If you sat there by yourself, and tried to do it, you'd go crazy I think. I think the team, because you have different viewpoints… Like when you're doing your master schedule, you need to have the viewpoints of the teachers and the outclasses and the special ed and everything, because they all come from a different thought process. And the same with the CIP, when you're at your entire school, you need to have those different stake-holders in it ... You may have something that's really important to you, but there are other things that may be just as important to somebody else. So you have to do it as a team.

Participants provided specific examples of how they employ collaboration in each stage of the improvement planning process. These will be discussed in detail in the SIP Steps and Decisions section below.

Participants also valued collaboration in improvement planning as a way to encourage the staff to commit to the goals and strategies in the plan. One elementary principal said, “I like working with everyone else once I kinda know where we're going. I like to get the input from everyone else. I think you get more buy-in that way.” Another elementary principal expressed a similar view by saying, “The more that you can have teachers and the more people you can have a part of doing your CIP, the more buy-in you have from everybody. Because it's their CIP and not yours.” Another elementary principal described involving teachers in the SIP creation process as a way to model behavior they could emulate for their classrooms:

> And I think it's a good way for our teachers, too, because they begin to see how we [the leadership team] do it, and they do the same things with their classrooms. Kinda like a little mini CIP in their classrooms. They have their goal sets, and their objectives, and ways to move their kids. … So it's kind of a way of leading by example, too.

The same principal went on to describe how collaboration combined with a publicly available written plan helped involve the wider school community by saying, “Then it gets your parents involved, and some of the community members and stuff involved with it as well. Makes you an open book I think, so no one ever has to wonder what's happening.”

Collaboration –Who is involved? As shown in the examples above, participants named a variety of individuals and groups with varying levels of involvement in DDDM and improvement planning. Table 4.13 summarizes how many times participants

mentioned different staff members or groups in the interviews as well as the number of participants who mentioned each at least once. Not surprisingly, teachers were by far the most frequently mentioned staff members. Teachers are also the primary participants in PLCs and fill the roles of team leaders and department heads. Almost every participant also mentioned the assistant principal(s) and made reference to a leadership team that typically included the principal, assistant principal(s), and other campus leaders like instructional specialists or a counselor. Six of the nine interview participants discussed the Campus Based Leadership Team (CBLT) in their responses with the PLC emerging as a critical venue for DDDM and improvement work. The role of specialists and PLCs will be discussed in detail in the following sections.

Table 4.13

Staff Members and Groups Mentioned by Participants

	Total Frequency	At Least Once
Teachers	50	9
Specialists	19	8
PLC	16	5
CBLT	14	6
Team Leaders/Department Heads	14	5
Assistant Superintendent[a]	13	9
Assistant Principal	9	7
Leadership Team	7	6
Parents	5	4
Counselor	2	2

Note. [a]An interview question specifically asked about the principal's supervisor, so all principals mentioned the Assistant Superintendent.

Collaboration – Role of specialists. It is notable that eight of the nine principals mentioned the role of specialists in DDDM and improvement planning. These references included both subject-specific specialists and campus testing coordinators. Their

involvement was most pronounced at the elementary level because each campus has dedicated specialists in reading, mathematics, and, in some cases, science and English as a Second Language (ESL). Principals rely on these specialists' subject area expertise to interpret data during improvement planning and to place the data in context based on their observations of classroom instruction. As one elementary principal explained:

> So the content is not just [principal name]'s, but also the content is from the math specialist, the reading specialist. And we look at it together [and say things like] "Well, okay, I noticed this trend right now. Now what's your take [staff member name]?" We're seeing the same exact thing through walk-throughs on campus, and then the specialists they do snapshots [classroom walkthroughs] for me as well. So they're not evaluative, but they're just keeping an eye on what's happening in the classroom area of math, or what's happening in the classroom area of reading.

The specialists' knowledge of how teachers on the campus are teaching makes them especially valuable to principals when they are crafting strategies to meet their SIP goals. One elementary principal said, "They'll [the reading and math specialists] look at their own content data per grade level, and they'll kind of make suggestions on what they think, or where they think we should go, and what strategies they think we should try to implement."

Because the middle schools in this study rarely had dedicated subject-specific specialists, they depended on department heads and assistant principals to contribute to DDDM and improvement planning. Although department heads had subject matter

expertise, their opportunities to observe other teachers were limited by their own teaching schedules. Thus, their involvement lacked one of the factors most valued by the elementary principals regarding their specialists, namely, the time and skills to observe classroom instruction. As discussed above, these observations helped principals determine whether strategies outlined in the SIP or identified through DDDM were being implemented in classrooms. Each middle school in the study district did have a full-time testing coordinator whose duties included organizing data and supporting DDDM. The testing coordinators are all certified teachers, but do not necessarily have the same curriculum and instruction expertise as a subject-specific specialist.

Two of the three middle school principals specifically highlighted the benefit of having someone who can regularly provide reports to the staff and support them as they use the data. One middle school principal said:

> … I don't mind going and digging through the data and looking at it myself, but for the teachers, if they have someone who can help them navigate [the district's data system], whatever system, and help them pull together different views of the data, that helps because then they can then concentrate on the data, what the data says rather than pulling the data.

Another middle school principal emphasized the role the testing coordinator plays in monitoring data and SIP implementation throughout the year:

> My [testing coordinator], she is on it and she's the person that lives and breathes the data. Like when she has a red flag about something. She's my person that's probably doing the work of the monitoring piece, … She's the one that's really

kind of, "Hey ... " and she'll bring something, "Hey, we need to look at this. This is, this is of concern. You know, I'm seeing this."

These examples demonstrate how the middle school principals valued the perspective and skills of a staff member well-versed in data use similarly to the way elementary principals valued the input of subject area experts. They capitalized on these skills in both creating and implementing their SIPs.

Collaboration – Role of PLCs. Participants provided multiple examples of how they involve specialists, teachers, and other administrators in DDDM and improvement planning. In most cases, they described integrating this work into an existing structure like PLCs or the CBLT with PLCs playing an especially critical role in their efforts. PLCs were typically organized as grade level teams at the elementary level and as grade/subject teams at the middle school level so that all participants were teaching the same subject matter. Some principals described integrating special education teachers into PLCs as well. PLCs normally met two to four times per month. The CBLT membership is specified by district policy and includes teachers, non-teaching professional staff members, parents, and community or business representatives. They usually met two to four times per semester. The limited meeting frequency for the CBLT helps explain why it was much less crucial to DDDM and improvement planning than PLCs.

Although PLCs played a central role in DDDM and improvement planning on most campuses, the specific contribution of PLCs varied from campus to campus. One

elementary principal described moving to a new campus and discovering that it did not have a strong tradition of using PLCs for DDDM:

> They didn't do PLCs like I had done at other campuses I had been at. They didn't look at the data and run these [district data system] reports and then based on where there was still need make a plan instructionally and then do a little dipstick to create their own CFA [common formative assessment] to kind of check to see where their kids were.

It is notable that in this principal's view, DDDM and PLCs are naturally linked. The DDDM activities the principal described could be done individually by each teacher, but the principal did not consider that approach. Instead, developing PLCs became a priority for the campus.

A middle school principal at a campus where PLCs are more established described how they serve as a venue for translating the improvement planning process into changes at the classroom level by saying:

> … [teachers] being in the PLCs and remembering what the [campus] goals are and remembering what the questions [used to guide PLCs] are, and how then going back on that micro level of using their data that they have to make those decisions. From us [administrator] it's this broad, broad thing, but then you pare it down to eighth grade math, what are you doing with those to make the decisions to improve the kids every day.

This description demonstrates the principal's desire to bring coherence to DDDM and the planning process by aligning classroom activities with larger campus level efforts. An

elementary principal expressed a similar desire for coherence by incorporating PLCs into the evaluation of improvement plan strategies. This principal described how this approach combined formative assessment data with observations of classroom instruction and teacher discussions in PLCs to assess the success of SIP strategies by saying:

> I think when you look at the data that we get from [the district data system] from checkpoints and things like that, if we see the kids are making steady progress, then I think it's being successful. If I look at the strategy and see that they're being implemented in the classrooms and the teachers are coming back, talking about it during their PLC or even team planning times, then I think it's being successful.

Each of these examples exemplifies how DDDM and improvement planning were woven into the existing PLC structures that existed on campuses rather than being approached as distinct activities.

Obstacles to collaboration - Teacher capacity. Although existing PLCs served as a useful venue for involving teachers in DDDM, participants identified several areas in which they observed a lack of capacity among their teachers. When asked, “What frustrates you the most in using data to make decisions?”, one elementary principal described teachers who struggled to use the district’s data system to access test results:

> I think also getting the teachers trained on looking up their information as well. Sometimes they wait for us to just give it to them, … because we want them to be able to do it on their own, so that can be frustrating.

Even when teachers had data to review, several participants observed them using data in superficial ways because they lacked the capacity to more deeply examine the data and

translate their findings into action. One middle school principal described the situation by saying:

> What we're learning is that we have to train teachers on how to look at the data and then make those decisions, because they do some very surface level looks at data, which is a great start, but then we've got to help get them to drill down …

The gaps in teacher capacity were especially apparent when teachers were asked to collaborate. An elementary principal described how one teacher stood out as a model because she consistently used data to guide instruction:

> [One helpful thing is] utilizing our teachers here that are really good at collecting data. We have a kinder teacher here who is very phenomenal at it. She has a binder, she keeps all that data right there. We've used her to model to other teachers so that they're seeing that good how to collect the data, how to track it, how to keep checking on the kids during that small group instruction to make sure they're focused on the right things, the right concepts …

Each of these examples shows that employing PLCs as a structure for DDDM or improvement planning is inadequate if teachers lack the capacity to fully engage in DDDM and planning activities.

Some principals suggested that teachers often do not feel a sense of ownership of their students' success which leads to their lack of deep engagement with the data used to measure that success. One middle school principal said, "… getting teachers to that point is kind of frustrating. They just want to do the easy work. 'Okay, we've got ... Here's our

surface level data. OK, we're done, we looked at data, check, and move on.'" An elementary principal described how this challenge impacts the use of data in PLCs:

> [Some teachers] take ownership of it. There's many teachers that they look at that data before PLC, they already know. They have a plan. They already know what they're going to do instructionally, they know where they need to make changes and they come and they're ready to go. There's others that we kind of have to bring them along because they're not proficient with [the data system] yet, they don't feel comfortable with it so they may not have, we get them the data ahead of time but they may not have looked at it as in depth as our other teachers. Just getting them too to have that ownership in it and know "these are my kids, this is what I can do to get them there."

This concern aligns with the comments discussed earlier regarding the ways principals involve teachers in the improvement planning process in order to generate commitment. It is difficult to determine, however, if what appears to be a lack of ownership on the part of teachers is instead a reflection of their lack of capacity.

The concern over teacher capacity was also reflected in the goals and strategies in the SIPs. Seven of the 10 participating campuses had goals that broadly addressed teacher collaboration and data use such as, "During the 2016-2017 school year, Joliet ES faculty will collaborate in professional learning communities with the focus on effective implementation of differentiated, research-based, and data-driven instruction." Every plan also had at least one strategy that identified collaboration or data use as means to achieve a campus goal, and there were 32 such strategies across all of the plans. Some of

these strategies were general such as this example from a middle school plan that supported a goal of increasing the percentage of students in each subject area showing progress, “Grade level PLCs meet weekly to monitor test data and adjust instruction accordingly.” Others were specific such as this example from an elementary school plan:

> Teachers will use [common formative assessment] data and [district assessment] data to differentiate instruction during guided math. Assessments of and for learning will be ongoing throughout the year ([vendor name], [district assessments] and [common formative assessments]). Teachers will analyze data to determine plans for intervention/enrichment. [Vendor name] heat maps will be used regularly to address gaps in learning.

Like these examples, none of the 32 strategies related to collaboration or data use directly address building teacher capacity. Instead, they simply specify that these approaches will be employed towards meeting some other goal.

Obstacles to collaboration – SIP timeline. Although PLCs and the CBLT showed promise as venues for DDDM and monitoring improvement plan implementation, the SIP timeline limited their usefulness as structures to promote collaboration in the creation of the SIP. State assessment results play a critical role in the planning process, and they do not arrive until early or mid-June when PLCs and the CBLT are inactive because teachers and most other staff members are off duty for the summer. It is impractical for principals to wait until the staff returns in August to develop the SIP. In addition, staff time and attention in August is consumed by the immediate needs related to starting the new school year. One elementary participant described this

dilemma by saying, “It's hard because you get your data from your STAAR in the middle of June, all your teachers are gone, and you have to have that improvement plan pretty much done before they come back.” Another elementary participant said, “It's hard in the summertime because we get the data so late. This year it's supposed to be around June 14. Everybody's off contract. I'm having to bring them back in.”

Most of the participants mentioned scheduling a “data day” or “data retreat” for the summer during which their teams analyzed data and work on the SIP. One middle school participant described the process on that day by saying:

> We do data digs. We look at all the different pieces of data and we just start asking why, why? Or just getting deeper. How many kids actually met the standard, but didn't meet their progress? How many people met the progress, but didn't meet the standard? How many of those kids have not met their progress over a couple of years?

In this example, the principal invited the assistant principals and department heads for the day during the summer and then repeated the process in abbreviated form with teachers when they returned to work. Other participants described similar patterns on their campuses. Principals know that some key personnel may not be present for these summer sessions, but prefer this approach to waiting until everyone returns. Two principals also mentioned that the district scheduled these days as well and appreciated the opportunity to work on their plans with central office support available. None of the principals mentioned whether off-contract staff members who participate in summer improvement planning activities are compensated.

Another approach to overcoming this obstacle is to begin the planning process before state assessment data arrives. Only one principal, who was leading a middle school, explicitly described employing this approach by saying:

> We are already starting now [in April], before we have data. We're already talking at our leadership level about where we're anticipating, what we think our data is going to look like, where do we think our holes are going to be, based on what we're seeing in instruction. What we've been seeing all year long. That happens with my tight circle and then it happens with ... my core leadership team. That's all of my department leaders. “What are you feeling at your department?” That kind of thing.

Elsewhere in the interview, this same principal mentioned taking an increasingly collaborative approach to monitoring the SIP via PLCs. This process for developing the SIP is a natural extension of the collaborative monitoring activities that capitalized on the existing PLC structures on the campus. The principal also mentioned that the campus generally has well-functioning PLCs which make this approach feasible.

SIP Steps and Decisions

As participants described their improvement planning process, three major steps or decisions were evident: (a) Identifying Strengths and Needs, (b) Goal Setting, and (c) Monitoring. Participants also described significant obstacles they encounter in goal setting. These steps mostly mirrored the major sections in the district’s online improvement planning tool which included a needs assessment, campus goals aligned to the district goals, strategies to reach each goal, and evidence that will be used to monitor

each strategy. In their responses to interview questions, participants rarely mentioned the process they used to identify strategies for inclusion in the plan. This omission is notable given that each plan included dozens of strategies.

Identifying strengths and needs. When asked about the first steps they take to develop their SIPs, eight of the nine principals indicated they begin with a data review. One elementary principal described the process this way:

> You do some research. On our campus improvement plan we have to really know our campus. There are some questions that are asked about your population, asked about your community, asked about the strengths of your campus, the weaknesses of your campus. There's a research portion that's a part of that campus improvement plan to get a clear understanding of your campus and the community that it's in, number one. Number two, you do a needs assessment so you're looking at some data from several sources to see where really your needs are. Where really are your areas of strengths? Sometimes without data you think you have a strength in an area until you see the numbers or you see the information and research on it.

Principals emphasized different types and aspects of data as they assessed their strengths and needs. Most began by examining state assessment data by grade level and subject and then considered results for students by race/ethnicity or special needs such as English language learners and students with disabilities. Several principals mentioned an increased emphasis on measuring student growth, and not just proficiency, with statements like this from an elementary principal: “It's not just whether they're passing or

not now, it's whether they're making that growth. So the emphasis has to be even more that way with data, because just because somebody's passing, doesn't mean that they're making their growth." Table 4.14 summarizes the data sources referenced in the Comprehensive Needs Assessment section of each SIP.

Table 4.14

Types of Data Referenced in Comprehensive Needs Assessments

	Total Frequency	At Least Once
STAAR (Passing)	21	7
STAAR (Advanced)	13	9
STAAR (Unspecified)	10	7
STAAR (Progress)	7	4
Culture and Climate Survey	20	9
State Accountability Results	7	4
Community and Student Engagement Ratings	2	2
District Assessments	2	1
Technology Literacy Assessment	2	2
Common Formative Assessments	1	1
Discipline	1	1
Primary Grades Literacy Assessments	1	1
Texas English Language Proficiency Assessment	1	1

Participants reported that there are often more areas in need of improvement than they can address in a single year, so they look for areas that provide "the most bang for the buck" which often means prioritizing math and reading because those areas are more frequently covered by the state assessment system and support learning in other subjects. One elementary principal described the decision to focus on reading by saying:

> We look at all this data and then we have to narrow down to what are we going to work on, or am I choosing the right thing to work on? Sometimes you only rely on reading because you think reading is what flows through all the subjects.

In other cases, principals prioritize areas of need that they feel are within their ability to address. As one middle school participant said, "… it [low scoring subject area] was certainly a weakness for us, but we felt like, but we can impact this, we can do this. It's gonna take some work. We have to be intentional, but we can take care of this."

Goal setting. By translating identified areas of need into specific goals, principals and their teams make their priorities more explicit and provide a focus for the staff. For example, one elementary participant said, "… if there's not a specific goal that's written, and that's measurable, then people are all over the place. They're scattered. They're not sure what they're working toward." Many principals employ a somewhat cyclical process in which they get input from various stakeholders, draft preliminary goals, and then seek additional feedback before finalizing the goals. One middle school participant said, "We start big, we go narrow, and then … it funnels back out that way again" to describe the process on her campus. These efforts focused on selecting the area(s) of emphasis for each goal rather than the specific target(s) within each goal. Participants made no mention of the target setting process in their responses which reinforces the idea that goal setting is primarily a means of making priorities concrete.

Campuses in the study had an average of 11 goal statements in their SIPs, and some of these statements addressed multiple academic subjects or included separate targets for different student groups. The plan with the fewest goal statements had eight, and the plan with the most had 17. Typically, between two and four of these goals addressed academic areas, and the remainder addressed other areas such as parent involvement, culture and climate, or staff quality. Some academic goals used a general

target for all subjects like the following example from a middle school plan, “By the end of the 2016-17 school year, Level III (Advanced Performance) will increase by 7% across all content areas,” but other academic goals focused on a specific grade level and subject like “4th grade students will increase their performance on the state mandated test as measured by STAAR Writing from 68 to 75 by June 2017.” Table 4.15 summarizes the area(s) of focus for the academic goals in the SIPs from the participating campuses and reflects principals’ emphases on “getting the most bang for the buck” by prioritizing content areas that are most heavily tested. In Texas, reading and math are tested in third through eighth grades, but science is only tested in fifth and eighth grade. Social studies is only tested in eighth grade, so it is not surprising that no campuses in the study had a goal specifically related to it.

Table 4.15

Focus Area(s) for SIP Academic Goals by Campus Level

	Elementary		Middle	
	Total Frequency	At Least Once	Total Frequency	At Least Once
All Subjects	2	2	8	3
Reading/Writing	12	6	4	3
Math	5	4	1	1
Science	4	3	0	0
Social Studies	0	0	0	0

Table 4.16 summarizes the focus areas of the non-academic goals in each plan and shows the influence of district and state requirements. The district SIP template has a section in the needs assessment devoted to culture and climate, and nine of the ten campuses have at least one goal focused on this area. Eight of those nine campuses specify the district’s required climate survey as a measure within their goals. The district

has a goal to “provide and promote leadership development at all levels.” Most of the campus goals for staff growth reflected this district expectation. For example, one middle school campus had “foster leadership development through opportunities in committees and PLCs” as a goal. The state influence was apparent in the health, wellness, and physical education goals. Seven campuses had a goal in this area, and four of these goals specifically referenced the state-sponsored fitness assessment. For example, one campus had the goal, “By June 2017, the percentage of 3rd - 5th grade students meeting the Aerobic Capacity passing standard (Pacer test) according to the FitnessGram test will increase by 10%.” Two other campuses had goals that referenced the state-required and district-developed Community and Student Engagement Ratings which include a health and wellness component.

Table 4.16

Focus Area(s) for SIP Non-Academic Goals by Campus Level

	Elementary		Middle	
	Total Frequency	At Least Once	Total Frequency	At Least Once
Collaboration, Planning	5	4	4	3
Culture, Climate	11	5	5	4
Discipline, Behavior	3	3	3	2
Health, Wellness, PE	5	5	2	2
Parent Involvement	8	5	2	2
Staff Growth	10	5	6	4
Teacher Recruitment, Retention	2	2	3	3
Other	7	4	2	2

Obstacles to goal setting - District and state requirements. Several participants expressed frustration that their SIPs were not truly data-driven because they must meet multiple district and state requirements. One elementary principal expressed this concern

by saying, "… if we're gonna be data driven, and based on campus needs, I'm here so I know what we need. Sometimes you're kinda forced into doing, or having a goal that you're like: 'Okay, why do I have this goal?'" For example, eight of the ten participating campuses had at least one goal related to developing leadership skills in teachers, and these goals rarely arose from the needs assessment in the plan. Instead, they appear to stem from the district's goal to "provide and promote leadership development at all levels." Similarly, many campuses had goals related to physical fitness which are based on state requirements for the school health program. One middle school participant's comment raised the question of how hard campuses are likely to work to meet goals they feel are imposed upon them:

> There's so much of the compliance piece that we have to put in, that I feel like we're doing that to be compliant, but the heart of what we're doing is really in this one, small piece of the CIP, and that's where we're doing the work all year along.

Another elementary principal framed this issue in terms of the number of students impacted by efforts toward these goals:

> Sometimes I feel like some of those goals are just in there just to say, "Check, we did it. Check, I have a GT goal. Check, I have a ..." even though I might not be focused on the five GT kids that I have on my campus. Some schools have different but, check, I have to put something in there. Check, I have to mention this; those kind of things. Sometimes we put things in there just to have a, check it off, check off a box.

It is unclear, however, to what extent these compliance-driven goals divert attention and effort away from the goals genuinely driven by campus priorities.

Monitoring. Participants used ongoing monitoring of progress to change their plans throughout the year and described their plans as "a work in progress" or "a fluid document." The online template the district used for managing the SIPs included a feature for quarterly progress monitoring, and principals used it as an opportunity to modify or discontinue strategies that were not producing results or had proven to be impractical. One elementary participant described the process this way:

> If you're working on something, and it just doesn't seem to be doing what you thought it was going to be doing. Looking at the data, are you making progress? Then we need to go back, and look at it and say, maybe that's not what we ... What we thought it was going to do, is not what it's doing. So maybe we need to scrap that and do something else.

Although participants described having flexibility to develop and modify their plans, no participant mentioned abandoning an entire goal or launching a significant initiative that was not in the plan originally.

Participants employed different approaches to monitoring the implementation of plans after they are written. Many use the same collaborative structures (e.g. PLC, CBLT) that they use for creating the plans. One elementary participant described a formal monitoring process:

> We're doing that [monitoring the SIP] with our CBLT which meets twice a semester and then we're also doing it weekly through our PLCs. Some of the

> strategies that we put in our campus improvement plan they may not work or we may say, "Find something else better that's going to work for us." CBLT, twice a semester, and then with our PLC's, every month.

Some participants, however, acknowledged that their monitoring process is less systematic than they would prefer. One middle school participant said, “It is very just informal. It's not a, we're going to sit down and review. Probably, it's just informal. To me, it's just part of the work. Probably should be more formalized.” Another middle school participant stressed the importance of monitoring incremental progress without emphasizing the plan itself:

> But instead of talking about that goal all the time, talk about it as those small increments and where are we, are we improving? But I don't keep the plan front and center, and we have the goals on our agendas and we talk about them, but it's not something that is 100 the focus of everything that we do in terms of the goals in the plan.

The same participant expressed concern that regular discussion of the SIP would put too much emphasis on the state assessment saying, “… it's always been a balance, …, knowing that the state is looking at STAAR scores, our goals are set on STAAR achievement, but keeping it balanced out where you kind of don't talk about STAAR all the time.” This comment is understandable given that the data types campuses used for planning (see Table 4.14) are dominated by the state assessment. The principal’s concern would apply to all campuses in the study considering that 36 of 41 outcome measures listed in the academic goals were based on STAAR results. Thus, a focus on the SIP

goals themselves would naturally create a focus on STAAR results unless the discussion is framed differently.

Seven of the nine participants interviewed specifically mentioned the quarterly monitoring feature in the online template and the district's expectations for its use as an important factor. One elementary principal said, "I like the follow-ups we have with our CIP because you know, within the month, every two months or so, we're looking to see 'Okay this is not working. Am I progressing, am I not progressing?'" Some principals recorded progress in the template themselves based on their observations and conversations with staff members. One elementary participant described the process this way:

> Some goals are monitored by the APs, the assistant principals. Some things, I go in there. Of course, I'm the one typing all the information in, but I'm getting it from our PLC meetings, those discussions that we're having, or with the leadership team. When we do meet, we'll sit down and talk about certain things, certain strategies maybe, and then I'll take it from there.

Other principals delegate the entry of the progress information in the template. The online template allows multiple staff members to enter notes regarding the status of plan implementation, and several principals incorporate this feature into their monitoring demonstrating again how they value collaboration. One elementary principal valued this approach because, "… you're not just getting it from our [administrators'] end, but you're getting it from the teachers' perspective as well. Because they're the ones that are in the

trenches.” A middle school participant described how the approach to plan monitoring has become more collaborative over time:

> I've had a shift over the past several years of really trying to get to a team approach. I'm not the one in there entering the updates and doing that. My teacher leaders are. That's been a new component. We actually do calendar invites, "Hey, at this point you need to go in and update on your CIP. How's your department doing on your strategies? What data are you looking at?" We've built that in over the years. That's been a new piece for some of our teachers, but letting them own some of that. Doesn't always look the way I might do it, but I have to be okay with that and know that that's way more meaningful to the teacher, and that's way more meaningful to student learning

Whether principals took responsibility for entering the progress updates directly in the online template or distributed that task among other staff members, these examples once again show how collaboration was woven throughout DDDM and improvement planning.

The monitoring activities discussed to this point relied primarily on assessment data or feedback from teachers. One elementary principal, however, described the criticality of directly observing plan strategies being implemented: “So in my case as a principal, I have to make sure that I look at everything and ask the team. And actually, when I go to the classrooms, I can see, okay yes, we're doing what we said.” The same principal elaborated on the concern by going on to say:

> Because people can say that we're doing this and it's not happening. In my case, it's with the walkthroughs and the observations, that I go through the classroom

and, of course, my assistant principal, she does the same. We make sure that okay, yes, I saw it. What we said, that was in the plan is included [in instruction].

Although only one principal commented on this concern during the interviews, all ten campus plans reflected it. Every plan listed classroom observations as a method that would be used to assess the success of one or more strategies. Most plans also included other concrete measures to verify strategy implementation such as reviews of lesson plans and collection of student work samples.

Benefits of DDDM and Improvement Planning

Despite the obstacles to DDDM and improvement planning, participants agreed that these efforts were beneficial. DDDM was viewed not only as a support for making discrete instructional decisions but also as a catalyst for broader reflective conversations about teaching practices. Similarly, the SIP was valued not just as a checklist of strategies to be implemented but also as a critical tool for creating focus and alignment among the staff. The discussion below provides more details regarding how principals perceived the benefits of DDDM and SIPs.

Benefits of DDDM. When asked about the value of DDDM, every participant indicated that it was important to their leadership. One middle school participant said, “I have to have something to substantiate what I think is going on. So, I'm just kind of one of those people. It's an opinion if you don't have any data to support it.” An elementary participant emphasized the use of data for instructional planning, saying, “It is extremely important because that's what drives our instructional decisions. So, because of the data is when we decide what to teach, when to teach it, and how to teach it.” Item analyses for

individual assessments were an often-mentioned resource with comments such as the following from an elementary participant, “Most helpful have been the item analysis reports and also the reports that give us the breakdown of what answers the students selected …. That tells the teachers what they need to go back and teach differently.” Participants also described using this type of analysis to identify opportunities for teachers to learn from each other. One elementary principal described this approach by saying:

> A lot of times I don't even look at the [overall passing] percentages, I look at the percent on the question. I look really closely at the questions to see if you're at 80 on this question, how did you teach it, so that we can help this other teacher.

The same participant went on to explain one of the key challenges to collaborating in this way, “Doing that, of course you got to have a bond, you have to have a relationship with them. Teachers must have a relationship with each other in order to do that.”

Several participants valued data as more than a guide for decision making. Instead, they viewed data as a tool to promote accountability among staff members. As one elementary principal said, “Accountability is important with regards to data. It gives us a clear goal, a clear pathway, of getting where we need to get to. We're just not aimlessly walking around trying to do things that are not purposeful.” Principals who took this approach described using data as a catalyst for conversation and reflection about teaching and learning. For example, one elementary principal said:

> I think the most important thing is the conversation around the data, like we mentioned. Of course, you have to have that relationship with all the teachers in

> order for them to feel comfortable enough to come have that conversation with you. Then we ask them sometimes, "Well, what do you see? What do you see in the classroom? Is it being translated on the assessment?"

The principal's use of guiding questions is notable given the previously described challenge of teacher capacity. By guiding the discussion, the principal helps teachers examine the data more deeply than they might otherwise while also reinforcing what is valued.

A middle school principal described how discipline data showing repeated referrals for the same students (i.e. "frequent fliers") sparked this type of conversation:

> We look at discipline data, just student number of referrals, who are our frequent fliers, and we look at teacher frequent fliers. Then we look at those who don't have referrals and see what the differences are. We don't make too many decisions with that data, but we do have conversations with teachers. We have a teacher who has 112 referrals over the course of the year. The next closest person is 68. So, what is the conversation with that teacher about what we need to do to help her or him in that situation?

While this description from the principal indicates the data were used in a mostly non-threatening way, it is unknown how the teacher interpreted the conversation. The delicate nature of these conversations was described by an elementary principal who said, "Some of them [teachers] think we're going to attack them and say, 'You're not a good teacher because you only have 50% and this one has 80%.' That's not what it's about." Whether teachers interpret these conversations regarding their students' data as an attack or as a

genuine effort to promote growth and improvement is likely related to the previously discussed concerns principals had regarding teachers taking ownership of their students' results.

Benefits of the SIP. Participants valued the SIP as an important tool for creating alignment and focus among staff members similarly to how they valued DDDM for the same purpose. One elementary participant described this idea by saying:

> It [the SIP] gives us a framework to know what we're doing. What our mission, and what our goals are for the next year. And that's so important to be able to do that. And it's nice to have that framework, instead of just everybody's doing this, or everybody's doing that.

A middle school participant was even more direct about how the SIP communicates priorities to the staff, saying, "So for teachers if they're ever trying to figure out, 'What is it that she [the principal] wants?'. Well we just look at the CIP, that's what we're working towards." Another elementary participant focused on the value of the SIP to communicate campus goals across grade levels so that efforts are aligned:

> We have to continue as a leader make sure that we're communicating that too to the grade levels where we need to focus and make sure we have vertical conversations to make sure we're all progressing towards the same goal. If we're not communicating that and sharing that with our staff then we're not going to all be moving in the same direction.

In addition to serving as another example of how SIP goals established priorities, this conception of the SIP encapsulated how principals use the SIP to support collaboration.

Summary of Findings

This chapter presented findings from the quantitative and qualitative components of the study. Teacher responses to the Acting upon Data section of the *Data Driven Decision Making Readiness Survey* indicated that they believed they engaged in multiple activities associated with DDDM including using data to set goals, using data to guide instructional decisions, and assessing the effectiveness of curriculum changes and instructional strategies. Principal responses concurred with the teachers on nearly half of the items but differed noticeably, however, on several others. The largest difference occurred for the item regarding whether teachers know, "what instructional changes to make when data show that students are not successful." Another significant difference occurred on the item related to whether teachers are provided adequate time to plan collaboratively.

Teachers and principals disagreed more frequently in their responses to the Support Systems and School Culture sections of the survey. The largest difference in the Support Systems section occurred for the item, "I [Teachers in my school] know how to use technology to monitor student progress." The next two largest differences occurred on the items: (a) "Teachers have significant input into plans for professional development and growth" and (b) "My professional development has helped me use data more effectively." The largest difference for the entire survey occurred in the School Culture section for the item, "I [Teachers] conduct self-assessments to continuously improve performance." The next two largest differences in this section occurred on the following two items: (a) "My [Our] success or failure in teaching students is primarily due to

factors beyond my [our] control rather than to my [our] own efforts and ability" and (b) "I am a valued member of my school's [district's] data-driven reform efforts." Overall, these results indicated that although teachers and principals agreed regarding many aspects of DDDM on their campuses, there are also multiple areas of significant disagreement.

Analysis of possible relationships between the teacher survey section scores and SIP rubric total scores did not indicate a statistically significant relationship between any of the measured variables. These findings provide no evidence that higher survey section scores are associated with higher SIP rubric total scores. Further analysis assessed relationships between each SIP rubric section score and the total survey score. These results indicated a statistically significant relationship between both the Comprehensive Needs and Goals SIP rubric section scores and the total survey score. No evidence was found for a relationship between the Inquiry Process and Design SIP rubric section scores and the total survey score. These findings provide evidence that higher scores on the Comprehensive Needs section of the SIP rubric are associated with higher total survey scores and that higher scores on the Goals section of the SIP rubric are associated with lower total survey scores. Effect sizes, however, were small with approximately 14.6% and 3% of the variation in total survey score explained by the relationships with the Comprehensive Needs and Goals SIP rubric section scores, respectively.

Analysis of possible relationships between the score on each survey section and the percentage of students at each campus meeting the STAAR progress measure indicated statistically significant relationships for mathematics but not for reading. These

findings provide evidence that higher survey scores are associated with higher percentages of students meeting the STAAR progress measure in mathematics but no evidence that a similar relationship exists for reading. Effect sizes were small, ranging from .092 to .152 indicating that between 9.2% and 15.2% of the variation in the percentage of students meeting the STAAR progress measure for mathematics was explained by the relationship with the survey scores.

The qualitative component of the study involved interviews with the principals of participating campuses and a review of each campus's SIP. The inductive thematic coding analysis led to three themes emergent in the data: (a) Collaboration, (b) SIP Steps and Decisions, and (c) Benefits. Principals valued several aspects of collaboration in DDDM and school improvement planning including the benefit of multiple perspectives and differing areas of expertise that staff members contribute to the process. The primary steps and decisions involved in creating and implementing a SIP included identifying strengths and needs, setting goals, and monitoring implementation.

Several obstacles emerged that hinder campuses as they work to collaborate and develop their SIPs. First, the bulk of improvement planning work occurred during the summer when many staff members are off duty which makes collaboration difficult. Second, many teachers lacked the capacity to effectively use data to improve their practice or to collaborate efficiently with colleagues. Finally, district and state requirements complicated the processes of identifying strengths and needs and setting goals because campuses are not able to base their decisions exclusively on their data. Despite these obstacles, principals generally valued DDDM and the improvement

planning process because they saw them as important tools to create focus and alignment of effort for their staff members.

Conclusion

This chapter presented a summary of participant demographics, results related to each research question, and a summary of findings. The next chapter will provide a discussion of the findings, implications, and recommendations for future research.

CHAPTER V: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

Although data use has become a common focal point of school improvement efforts, the literature is limited in detailing how use of data leads to improved results and what, if any, factors influence the process (Young & Kim, 2010). Very few studies have attempted to link teacher data use directly to student achievement outcomes, but at least two did find a positive impact on student test scores (Carlson et al., 2011; Saunders et al., 2009). At the campus level the school improvement plan (SIP) is often the most tangible artifact of DDDM, but again very few studies have attempted to link SIPs to academic achievement. The purpose of this study was to examine the influence of DDDM and SIP quality on student achievement and to identify best practices in DDDM and school planning. For the quantitative component of the study teachers and principals were surveyed regarding their experiences with DDDM, and SIPs were evaluated using a pre-established rubric. For the qualitative component of the study principals were interviewed to investigate how they create and implement their plans, and the SIP for each study campus was reviewed. This chapter provides a discussion of the findings, implications, and recommendations for future research.

Summary

Organizational learning theory framed the design of this study in two important ways. First, it promoted the campus (i.e. the organization) itself as the primary unit of study rather than individual teachers or the building principal alone. The data collected from teachers and principals were analyzed in terms of how they represent overall campus culture and performance. Second, the study reflected the understanding that

organizational learning is a complex and ongoing process that cannot be examined using a single measure. Thus, this study employed multiple measures including teacher and principal surveys, a review of SIPs, student test scores, and interviews to provide a multi-faceted picture of how DDDM and the SIP process functioned and influenced outcomes for students. Focusing on the school as the unit of study and recognizing organizational learning as a complex and ongoing process both reflect principles that are critical to successful change in schools (Hall & Hord, 2015). The study's findings provide insight into how these principles manifest themselves through DDDM and improvement planning in the context of organizational learning.

Senge (2006) proposes that a true learning organization must develop and practice four core disciplines that are integrated through the fifth discipline of systems thinking. These four disciplines are: (a) personal mastery, (b) mental models, (c) shared vision, and (d) team learning. Although this study was not designed to measure the degree to which these five disciplines were evident on the study campuses, they still provide a valuable lens through which to view the results.

The discipline of *personal mastery* acknowledges the basic fact that organizations can only grow when the individuals within them grow. In both their survey and interview responses, principals identified teacher capacity as a significant obstacle to success in DDDM. They described gaps in the skills teachers possess to effectively interpret data and, more importantly, translate those interpretations into action. Teachers using data in superficial ways that have little impact on instruction has been observed in several other studies (Data Quality Campaign, 2017; Datnow & Hubbard, 2015; Marsh & Farrell,

2015). In contrast, the teachers' survey responses indicated they believed they adjust their instruction based on data although their responses did show that they are less confident their professional development has prepared them to use data effectively. The data collected does not allow a full exploration of this seeming contradiction, but another obstacle identified by the principals provides one possible explanation.

In addition to its focus on individual growth, the discipline of *personal mastery* recognizes that individuals in a learning organization must be motivated by a personal vision that serves as a calling to guide their work. In the interviews principals cited a lack of "ownership" as a reason some teachers engaged with data in only superficial ways. What the principals described indicated these teachers were not driven by a vision that includes improving instructional practices in response to data as part of their responsibility for student success. Datnow and Hubbard (2015) reviewed several studies that observed a similar phenomenon and suggested that the perceived lack of commitment from teachers to using data resulted from their belief that the data mostly reflected the quality of their students rather than their instruction. This finding is echoed in responses to the survey item "My success or failure in teaching students is primarily due to factors beyond my control rather than to my own efforts and ability." While 66.3% of teachers agreed with this statement, only 20.0% of the principals agreed. Principals also suggested that the use of data itself was a means to promote accountability and alignment of effort among campus staff members. It seems unlikely, however, that simply using data will bridge the significant difference in belief regarding teachers' degree of impact on student outcomes that seems to form the foundation of this issue.

The differing beliefs held by teachers and principals regarding how teachers should use data to change instruction exemplify the second core discipline of organizational learning, *mental models.* These models are the images and beliefs people hold about how the world works. This discipline ensures that these models are identified, examined, and modified if necessary so that decisions are made based on truth. Reflective practice plays a critical role in bringing mental models to light. Principals and teachers clearly demonstrated differing mental models of self-assessment for continuous improvement with their responses to the survey item, "I [Teachers] conduct self-assessments to continuously improve performance." Among teachers, 95.7% of participants agreed while only 30.0% of principals agreed. Although principals mentioned using DDDM and the improvement planning process at the campus level as a model that teachers could follow at the classroom level, they described their approach in terms of modeling desired behaviors rather than as an effort to create a unified mental model throughout the organization.

While there was agreement between teachers and principals on many of the survey items, the level of disagreement regarding personal engagement in continuous improvement is noteworthy because it is a key feature of a learning organization. Schools in the study engaged in many activities typical of DDDM and improvement planning but did not appear to have fully developed cultures of inquiry. Such a culture helps teachers overcome natural resistance to using data to examine their own instructional practices and can make professional learning more likely to lead to permanent change (Katz & Dack, 2014). In a comparison of schools that had either strong or weak effects on student

performance, Keuning, Van Geel, and Visscher (2017) found that the strong-effect schools were more likely to exhibit a strong culture of data use. The present study found few relationships between the variables measured by the surveys, SIP rubrics, and test scores which likely reflects the developing data cultures on the study campuses.

The limited alignment between teacher and principal beliefs and actions could also reflect a lack of *shared vision* within campuses. *Shared vision* is the third core discipline of a learning organization and is the organizational equivalent of the personal visions that drive personal mastery. A shared vision is not simply an inspirational message displayed prominently. Instead, it is a genuine image of the future the organization is striving to create. One important finding in this study is that principals view their campus SIP goals as a means to communicate priorities and align staff efforts. In this sense, an SIP aligned with a campus's shared vision plays a critical role in reinforcing that vision and ensuring staff actions reflect it. In cases where a shared vision is not fully developed, the improvement planning process might be used as a catalyst for developing one. Principals embraced this idea with their emphasis on collaboration in DDDM and improvement planning.

The discipline of *team learning* harnesses the power of collaboration and uses dialogue to create new solutions that could not have arisen from any one team member. Principals valued collaboration because it allowed them to capitalize on the variety of viewpoints and areas of expertise represented by their staff members. Teachers confirmed the important role of collaboration in their schools by indicating on the survey that they meet regularly to review data, discuss student learning, and plan instruction. Similarly,

other studies have found that establishing collaborative practices is a prerequisite for teachers to use data effectively (Hoogland et al., 2016; Hoover & Abrams, 2013). Principals especially valued PLCs as a structure that supported collaboration on their campuses echoing other studies that have found PLCs can be a valuable approach for promoting data use among teachers (Farrell & Marsh, 2016; Marsh, Bertrand, & Huguet, 2015; Marsh & Farrell, 2015). Multiple studies have also found, however, that collaboration does not automatically lead to thorough analysis of data or to changes in instruction and that the content and skills of the participants impacts the degree to which the collaboration translates into instructional changes (Hubbard et al., 2014; Marsh & Farrell, 2015). Principals in the present study offered one possible explanation for this phenomenon when they identified teacher capacity as an obstacle to effective DDDM.

Implications

Although this study examined DDDM and school improvement planning in a small sample of schools in a single district, several important principles emerged that school leaders should use to guide DDDM and campus improvement planning:

1. DDDM and the SIP should focus on improving instructional practices.
2. DDDM and the SIP process should be collaborative, ongoing, and embedded in professional learning communities.
3. Data should not be used just to support discrete decisions but instead should be used to support a culture of inquiry (Katz & Dack, 2014).

DDDM and an SIP process that prioritize improvements in teacher instructional practices can play an important role in effecting change at both the individual and campus

levels. Several studies have shown that leadership plays a crucial role in shifting teachers' focus toward changing instructional practices (Cosner, 2011; Halverson et al., 2007; Kerr et al., 2006; Lachat & Smith, 2005; Robinson & Temperley, 2007; Young, 2006). Several principals in the present study viewed their own DDDM and the SIP process as a model for teachers to emulate, but the practice was not consistently applied on most campuses. Even though principals described using data to investigate problems and prompt reflective conversations with the sincere intent to identify solutions rather than with a focus on assigning blame, several acknowledged that many teachers are still defensive when discussions involve data. This defensiveness is a barrier to translating data into instructional change. The plan documents themselves also reflect a lack of focus on improving instruction given that they all had numerous non-academic goals.

If DDDM and the SIP process are going to lead to improvement in teacher instructional practices, they cannot involve only a few individuals or be visible only a few days each year. They must be collaborative, ongoing, and embedded in the regular work of school staff (Caputo & Rastelli, 2014). The findings of this study demonstrate that principals understand the value of collaboration and using existing structures to support these practices. In particular, they used the PLC as the primary venue for DDDM and on many campuses for monitoring implementation of the SIP. Principals expressed concerns, however, regarding teacher capacity to effectively contribute to PLCs when the discussion focused on data. Teachers, on the other hand, expressed concerns about the adequacy of the time allotted for collaboration and the usefulness of professional development related to data use. Thus, campuses in the study engaged in many of the

activities of DDDM and improvement planning, but did not appear to have fully developed cultures of inquiry. If these cultures are to mature, district and campus leaders must further refine their leadership of PLCs so that they emphasize using data to change instructional practices.

One way leaders can promote PLC discussions that lead to instructional change is to identify problems in a way that encourages engagement in solutions rather than defensiveness (Robinson & Temperley, 2007). Interestingly, at no point in the interviews for this study did a principal describe first identifying a problem and then seeking data to investigate and solve it. Instead, the descriptions offered by principals in this study emphasized the data as the focus for DDDM and SIP conversations. Marsh, Bertrand, and Huguet (2015) observed that if data were used to enhance PLC discussions that mostly emphasized instruction then teachers were more likely to shift their teaching practices. Thus, campuses like those in the present study would be wise to continue to invest in developing their PLC structures but to shift the emphasis from data to instruction. One important way they can accomplish this goal is suggested by the finding that specialists play a critical role in both DDDM and improvement planning. School leaders should capitalize on the unique position of specialists by ensuring they have the training and support needed to effectively guide teachers in translating data into improved instructional practices via their participation in PLCs.

Kerr et al. (2006) reported that many teachers grew frustrated when they used data to identify issues and craft solutions only to be directed to implement district-mandated approaches instead. Principals in the present study expressed similar frustrations with

state and district requirements related to the SIP especially the expectation that every campus create goals for certain areas such as leadership development. Many principals said they included these goals in their plans strictly for compliance. If a district identifies a widespread need based on district data and determines that all campuses should address that need, it is not unreasonable to require a response from all campuses. Requiring campuses to address the need in their SIPs as if it had emerged from their own needs assessment, however, directly undermines the development of genuine cultures of inquiry. Instead, districts should implement these mandates without compromising the improvement planning process. For example, the district could add a separate section for district mandates to the SIP template to allow campuses to document their activities and show how they are aligned to the district expectation.

Districts should identify other opportunities to strengthen the SIP process with changes to the template and supporting tools. The study district strengthened the planning process by including specific sections in the SIP template for areas such as family and community involvement and by regularly administering a climate survey. These decisions forced campuses to incorporate a variety of data sources into their plans which is a key practice for continuous improvement (Bernhardt, 2013). Many principals in this study cited the quarterly progress monitoring tool built directly into the online SIP template as a valuable support even though several acknowledged that the monitoring process on their campuses needed to be more formalized indicating there is still room for refinement. In contrast, principals struggled to describe how they identified and planned for strategies aligned to their goals. Given that the strategies are the key element in an

SIP that translates data analysis into action, districts should prioritize providing coaching and tools to principals to build their capacity in this area.

Recommendations for Future Research

This study demonstrated the complexity of how DDDM and improvement planning activities occur on elementary and middle school campuses. Given this complexity, there continues to be a need for additional research in this area. For example, studies with larger numbers of campuses including elementary, middle, and high schools would allow researchers to identify important differences in how these phenomena exist at different types of campuses. Similarly, a larger number of participants would allow the influence of variables such as years of experience to be examined. In addition to studies with a variety of campuses, other studies are needed that provide highly detailed data from individual campuses. In particular researchers need to directly observe DDDM and improvement planning activities at multiple points during the school year to document precisely how they occur. This study documented the critical role of specialists in DDDM and improvement planning. Future research should also examine other roles in detail such as assistant principals and teacher leaders.

More focused research related to assessing DDDM and SIPs would benefit many future researchers and provide guidance for practitioners. This study combined two surveys and a rubric that were developed independently for use in other studies. Although both reflected key aspects of organizational learning theory, none were specifically designed to measure the degree to which it was present in a campus culture. Surveys, rubrics, and observation and interview protocols developed based on the principles of

organizational learning theory would allow research to better assess the cultures of inquiry on school campuses.

Conclusion

The purpose of this study was to examine the influence of DDDM and SIP quality on student achievement and to identify best practices in DDDM and school planning. The study contributes to the literature in two important ways. First, by investigating DDDM and improvement planning as interrelated manifestations of organizational learning, it provides insights that can guide school leaders in their efforts to align and improve both DDDM and SIP processes. Second, the study's mixed methods design provides a model for future research. Most studies in this area concentrate on either qualitative data sources such as interviews and observations or quantitative sources such as surveys, rubric scores, and test scores. By employing surveys, interviews, document review, and an SIP rubric, this study demonstrated how these various sources can be brought together in a coherent fashion.

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APPENDIX A

SURVEY COVER LETTERS

March 2017

Dear Principal:

Greetings! You are being solicited to complete the *Data Driven Decision Making Readiness Survey: Principals* survey. The purpose of this survey is to examine practices you and your staff employ as you use data to make decisions. The survey results will be used to help identify data-driven decision making practices that lead to increased student learning.

Please try to answer all the questions. Filling out the attached survey is entirely voluntary, but answering each response will make the survey most useful. This survey will take approximately 10 minutes to complete and all of your responses will be kept completely confidential. No obvious undue risks will be endured and you may stop your participation at any time. In addition, you will also not benefit directly from your participation in the study.

Your cooperation is greatly appreciated and your willingness to participate in this study is implied if you proceed with completing the survey. Your completion of the *Data Driven Decision Making Readiness Survey: Principals* survey is not only greatly appreciated, but invaluable. If you have any further questions, please feel free to contact me or my faculty advisor, Dr. Michelle Peters (petersm@uhcl.edu). Thank you!

Sincerely,

Zack Bigner

March 2017

Dear Teacher:

Greetings! You are being solicited to complete the *Data Driven Decision Making Readiness Survey: Teachers* survey. The purpose of this survey is to examine practices you and your colleagues employ as you use data to make decisions. The survey results will be used to help identify data-driven decision making practices that lead to increased student learning.

Please try to answer all the questions. Filling out the attached survey is entirely voluntary, but answering each response will make the survey most useful. This survey will take approximately 10 minutes to complete and all of your responses will be kept completely confidential. No obvious undue risks will be endured and you may stop your participation at any time. In addition, you will also not benefit directly from your participation in the study.

Your cooperation is greatly appreciated and your willingness to participate in this study is implied if you proceed with completing the survey. Your completion of the *Data Driven Decision Making Readiness Survey: Teachers* survey is not only greatly appreciated, but invaluable. If you have any further questions, please feel free to contact me or my faculty advisor, Dr. Michelle Peters (petersm@uhcl.edu). Thank you!

Sincerely,

Zack Bigner

APPENDIX B

DATA DRIVEN DECISION MAKING READINESS SURVEYS

Data Driven Decision Making Readiness Survey: Principals

Cover Letter

Dear Principal:

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Please try to answer all the questions. Filling out the attached survey is entirely voluntary, but answering each question will make the survey most useful. This survey will take approximately 10 minutes to complete and all of your responses will be kept completely confidential. No obvious undue risks will be endured and you may stop your participation at any time. In addition, you will also not benefit directly from your participation in the study.

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Thank you!

Sincerely,

Zack Bigner

Data Driven Decision Making Readiness Survey: Principals

In order for your responses to be correlated to other data (e.g. responses to the teacher survey), it is necessary for you to indicate your campus. All results will be reported using pseudonyms to maintain confidentiality.

1. I was the principal of the following [redacted] campus in 2016-2017:

Data Driven Decision Making Readiness Survey: Principals

Acting upon Data

2. Please indicate your level of agreement with each statement based on the 2016-2017 school year.

	Disagree Strongly	Disagree Moderately	Agree Moderately	Agree Strongly
Teacher teams in my school meet regularly to look at student data and make instructional plans	○	○	○	○
When teachers in my school meet with each other, they usually focus on student learning outcomes	○	○	○	○
Teachers in this school work collaboratively to improve curriculum and instruction	○	○	○	○
Teachers in my school are given adequate time for collaborative planning	○	○	○	○
Teachers in my school regularly discuss assumptions about teaching and learning	○	○	○	○
Teachers in my school use assessment data to identify students who are not experiencing academic success	○	○	○	○
Teachers in my school know what instructional changes to make when data show that students are not successful	○	○	○	○
Teachers in my school use assessment results to measure the effectiveness of their instruction	○	○	○	○
Teachers in my school are encouraged to try out new teaching strategies	○	○	○	○
Teachers in my school use data to verify their assumptions about the causes of student behavior and performance	○	○	○	○
Teachers in my school have clear criteria for determining the success of instructional activities	○	○	○	○
If teachers in my school propose a change, they bring data to support their proposal	○	○	○	○
Teachers in my school make changes in their instruction based on assessment results	○	○	○	○
Our district's goals are focused on student learning	○	○	○	○
My school's improvement goals are clear, specific, measurable, and based on student data	○	○	○	○
Teachers in my school have access to good baseline data from which to set annual instructional goals	○	○	○	○
Teachers in my school use data from student assessments to set instructional targets and goals	○	○	○	○

Data Driven Decision Making Readiness Survey: Principals

Support Systems

3. Please indicate your level of agreement with each statement based on the 2016-2017 school year.

	Disagree Strongly	Disagree Moderately	Agree Moderately	Agree Strongly
Teachers in my school can easily access the information they need from school and district data systems	○	○	○	○
Teachers and parents communicate frequently about student performance data	○	○	○	○
Student performance data available to me are accurate and complete	○	○	○	○
Student performance data are easily available to the individuals that need them	○	○	○	○
Parents and community members know what our school is doing and what is needed to improve student achievement	○	○	○	○
Successful educational practices are widely shared in the district	○	○	○	○
My school uses multiple data sources to assess the effectiveness of educational programs	○	○	○	○
Teachers have significant input into data management and analysis practices	○	○	○	○
Teachers in my school know how to use technology to monitor student progress	○	○	○	○
Teachers in my school have adequate access to the technology necessary to monitor student progress	○	○	○	○
My professional development has helped me use data more effectively	○	○	○	○
Teachers in my school have received adequate training to effectively interpret and act upon yearly state assessment results	○	○	○	○
Professional development has improved my teachers' skill in developing classroom assessments	○	○	○	○
Teachers have significant input into plans for professional development and growth	○	○	○	○
Student achievement data are used to inform school and district improvement initiatives	○	○	○	○
Whole-school staff meetings focus on measured progress toward data-based improvement goals	○	○	○	○
Student achievement data are used to determine teacher professional development needs and resources	○	○	○	○
School and classroom improvement efforts are aligned with state standards	○	○	○	○
Student achievement data are used to determine resource allocation	○	○	○	○

Data Driven Decision Making Readiness Survey: Principals

School Culture

4. Please indicate your level of agreement with each statement based on the 2016-2017 school year.

	Disagree Strongly	Disagree Moderately	Agree Moderately	Agree Strongly
As a school we have open and honest discussions about data	○	○	○	○
Teachers have the knowledge and skills necessary to improve student learning	○	○	○	○
Administrators in this school trust the professional judgments of teachers	○	○	○	○
Administrators model data-driven educational practices	○	○	○	○
My school adequately supports teachers' use of data to improve classroom instruction	○	○	○	○
I buffer my school from distractions to our school improvement efforts	○	○	○	○
Our success as educators should be determined primarily by our impact upon student learning	○	○	○	○
Teachers in my school routinely use data to inform their instructional practices and understand student needs	○	○	○	○
Teachers in my school have a sense of collective responsibility for student learning	○	○	○	○
My school uses data to uncover problems	○	○	○	○
Teachers conduct self-assessments to continuously improve performance	○	○	○	○
I am a valued member of my district's data-driven reform efforts	○	○	○	○
Teachers in my school have access to high-quality student assessments to evaluate student progress	○	○	○	○
Our success or failure in teaching students is primarily due to factors beyond our control rather than to our own efforts and ability	○	○	○	○
Using data has improved the quality of decision-making in my school	○	○	○	○
By trying different teaching methods, teachers can significantly affect students' achievement levels	○	○	○	○
There is a strong sense of trust among teachers and administrators in my school	○	○	○	○
If we constantly analyze what we do and adjust to get better, we will improve	○	○	○	○
Teachers in my school feel personal responsibility when our school improvement goals are not met	○	○	○	○
Students in our school believe that they will succeed at learning if they keep trying	○	○	○	○

Data Driven Decision Making Readiness Survey: Principals

Open-Ended Items

5. Is there anything else you want to tell us about data use in your school?

6. How do you ensure the implementation of your school improvement plan?

7. What is the greatest obstacle you encounter in creating your school improvement plan?

8. What is the greatest obstacle you encounter in implementing your school improvement plan?

9. How many years have you been principal of the campus indicated in Question 1 including the 2016-2017 school year?

10. How many total years have you been a school principal including the 2016-2017 school year?

11. What is your gender?

- ◯ Male
- ◯ Female

12. What is your race / ethnicity?

Data Driven Decision Making Readiness Survey: Teachers

Cover Letter

Dear Teacher:

Greetings! You are being solicited to complete the *Data Driven Decision Making Readiness Survey: Teachers* survey. The purpose of this survey is to examine practices you and your colleagues employ as you use data to make decisions. The survey results will be used to help identify data-driven decision making practices that lead to increased student learning.

Please try to answer all the questions. Filling out the attached survey is entirely voluntary, but answering each question will make the survey most useful. This survey will take approximately 10 minutes to complete and all of your responses will be kept completely confidential. No obvious undue risks will be endured and you may stop your participation at any time. In addition, you will also not benefit directly from your participation in the study.

Your cooperation is greatly appreciated and your willingness to participate in this study is implied if you proceed with completing the survey. Your completion of the *Data Driven Decision Making Readiness Survey: Teachers* survey is not only greatly appreciated, but invaluable. If you have any further questions, please feel free to contact me or my faculty advisor, Dr. Michelle Peters (petersm@uhcl.edu).

Thank you!

Sincerely,

Zack Bigner

Data Driven Decision Making Readiness Survey: Teachers

In order for your responses to be correlated to other data (e.g. responses to the principal survey), it is necessary for you to indicate your campus. All results will be reported using pseudonyms to maintain confidentiality.

1. I was a teacher at the following [redacted] campus in 2016-2017:

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Acting upon Data

2. Please indicate your level of agreement with each statement based on the 2016-2017 school year.

	Disagree Strongly	Disagree Moderately	Agree Moderately	Agree Strongly
Teacher teams meet regularly to look at student data and make instructional plans	○	○	○	○
When I meet with other teachers, we usually focus on student learning outcomes	○	○	○	○
Teachers in this school work collaboratively to improve curriculum and instruction	○	○	○	○
Teachers are given adequate time for collaborative planning	○	○	○	○
Teachers in this school regularly discuss assumptions about teaching and learning	○	○	○	○
I use assessment data to identify students who are not experiencing academic success	○	○	○	○
I know what instructional changes to make when data show that students are not successful	○	○	○	○
I use assessment results to measure the effectiveness of their instruction	○	○	○	○
In this school I am encouraged to try out new teaching strategies	○	○	○	○
I use data to verify my assumptions about the causes of student behavior and performance	○	○	○	○
I have clear criteria for determining the success of instructional activities	○	○	○	○
If I propose a change, I bring data to support my proposal	○	○	○	○
I make changes in my instruction based on assessment results	○	○	○	○
Our district's goals are focused on student learning	○	○	○	○
Our school improvement goals are clear, specific, measurable, and based on student data	○	○	○	○
Teachers and principals have access to good baseline data from which to set annual instructional goals	○	○	○	○
I use data from student assessments to set instructional targets and goals	○	○	○	○

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Support Systems

3. Please indicate your level of agreement with each statement based on the 2016-2017 school year.

	Disagree Strongly	Disagree Moderately	Agree Moderately	Agree Strongly
I can easily access the information I need from school and district data systems	○	○	○	○
Teachers and parents communicate frequently about student performance data	○	○	○	○
Student performance data available to me are accurate and complete	○	○	○	○
Student performance data are easily available to the individuals that need them	○	○	○	○
Parents and community members know what our school is doing and what is needed to improve student achievement	○	○	○	○
Successful educational practices are widely shared in the district	○	○	○	○
My school uses multiple data sources to assess the effectiveness of educational programs	○	○	○	○
Teachers have significant input into data management and analysis practices	○	○	○	○
I know how to use technology to monitor student progress	○	○	○	○
I have adequate access to the technology necessary to monitor student progress	○	○	○	○
My professional development has helped me use data more effectively	○	○	○	○
I have received adequate training to effectively interpret and act upon yearly state assessment results	○	○	○	○
Professional development has improved my skill in developing classroom assessments	○	○	○	○
Teachers have significant input into plans for professional development and growth	○	○	○	○
Student achievement data are used to inform school and district improvement initiatives	○	○	○	○
Whole-school staff meetings focus on measured progress toward data-based improvement goals	○	○	○	○
Student achievement data are used to determine teacher professional development needs and resources	○	○	○	○
School and classroom improvement efforts are aligned with state standards	○	○	○	○
Student achievement data are used to determine resource allocation	○	○	○	○

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School Culture

4. Please indicate your level of agreement with each statement based on the 2016-2017 school year.

	Disagree Strongly	Disagree Moderately	Agree Moderately	Agree Strongly
As a school we have open and honest discussions about data	○	○	○	○
I have the knowledge and skills necessary to improve student learning	○	○	○	○
Student achievement data are used primarily for improvement rather than teacher evaluation	○	○	○	○
Administrators in this school trust the professional judgments of teachers	○	○	○	○
Administrators model data-driven educational practices	○	○	○	○
My school adequately supports teachers' use of data to improve classroom instruction	○	○	○	○
My building's administrator(s) buffer my school from distractions to our school improvement efforts	○	○	○	○
My success as an educator should be determined primarily by my impact upon student learning	○	○	○	○
I routinely use data to inform instructional practices and understand student needs	○	○	○	○
Teachers in this school have a sense of collective responsibility for student learning	○	○	○	○
My school uses data to uncover problems	○	○	○	○
I conduct self-assessments to continuously improve performance	○	○	○	○
I am a valued member of my school's data-driven reform efforts	○	○	○	○
I have access to high-quality student assessments to evaluate student progress	○	○	○	○
My success or failure in teaching students is primarily due to factors beyond our control rather than to our own efforts and ability	○	○	○	○
Using data has improved the quality of decision-making in my school	○	○	○	○
By trying different teaching methods, I can significantly affect my students' achievement levels	○	○	○	○
There is a strong sense of trust among teachers and administrators in my school	○	○	○	○
If we constantly analyze what we do and adjust to get better, we will improve	○	○	○	○
I feel some personal responsibility when our school improvement goals are not met	○	○	○	○
Students in our school believe that they will succeed at learning if they keep trying	○	○	○	○

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Open-Ended Items

5. Is there anything else you want to tell us about data use in your school?

6. How many years have you been a teacher at the campus indicated in Question 1 including the 2016-2017 school year?

7. How many total years have you been a teacher including the 2016-2017 school year?

8. Which grade level did you teach in the 2016-2017 school year?

9. What is your gender?

- ◯ Male
- ◯ Female

10. What is your race / ethnicity?

APPENDIX C

SIP QUALITY RUBRIC

School Improvement Plan Scoring Rubric
Adapted from *The Learning Leader: How to Focus School Improvement for Better Results* (Reeves, 2006)

Campus:

Scored by:

Category	Performance Dimension	Score				Notes
		Exemplary (3 pts.)	**Proficient (2 pts.)**	**Needs Improvement (1 pt.)**	**Total for Category**	
A. Comprehensive Needs	1. Strengths					
	2. Assessment results					
	4. Acts of leadership					
B. Inquiry Process	6. Possible cause-effect correlations					
	7. Strategies driven by specific needs					
	8. Analysis of adults' actions					
	9. Achievement results (effects) linked to causes					
C. S.M.A.R.T. (Specific, Measurable, Achievable, Relevant, Timely) Goals	10. Specific goals					
	11. Measureable goals					
	12. Achievable goals					
	13. Relevant goals					
	14. Timely goals					
D. Design	16. Multiple assessments documented					
	18. Frequent monitoring of student achievement					
	19. Ability to rapidly implement and sustain reforms					
	20. Results indicators aligned to goals					
	23. Strategies linked to specific student needs					
	24. Professional development driven by student needs					
	Totals:					

APPENDIX D

INFORMED CONSENT

Informed Consent to Participate in Research

You are being asked to participate in the research project described below. Your participation in this study is entirely voluntary and you may refuse to participate, or you may decide to stop your participation at any time. Should you refuse to participate in the study or should you withdraw your consent and stop participation in the study, your decision will involve no penalty or loss of benefits to which you may be otherwise entitled. You are being asked to read the information below carefully, and ask questions about anything you don't understand before deciding whether or not to participate.

Title: Relationships between Teacher and Principal Experiences with Data-Driven Decision Making, School Improvement Plan Quality, and Academic Growth

Student Investigator(s): Zack Bigner

Faculty Sponsor: Michelle L. Peters, Ed.D.

PURPOSE OF THE STUDY

The purpose of this research is to examine the influence of data-driven decision making on student achievement.

PROCEDURES

The research procedures are as follows: Selected principals who previously completed a brief survey regarding their experience with data-driven decision making will be interviewed regarding data-driven decision making and school improvement planning.

EXPECTED DURATION

The total anticipated time commitment will be approximately 45 minutes.

RISKS OF PARTICIPATION

There are no anticipated risks associated with participation in this project.

BENEFITS TO THE SUBJECT

There is no direct benefit received from your participation in this study, but your participation will help the investigator(s) better understand how data-driven decision making influences student achievement.

CONFIDENTIALITY OF RECORDS

Every effort will be made to maintain the confidentiality of your study records. The data collected from the study will be used for educational and publication purposes, however, you will not be identified by name. For federal audit purposes, the participant's documentation for this research project will be maintained and safeguarded by the Faculty Sponsor for a minimum of three years after completion of the study. After that time, the participant's documentation may be destroyed.

FINANCIAL COMPENSATION

There is no financial compensation to be offered for participation in the study.

INVESTIGATOR'S RIGHT TO WITHDRAW PARTICIPANT

The investigator has the right to withdraw you from this study at any time.

CONTACT INFORMATION FOR QUESTIONS OR PROBLEMS

The investigator has offered to answer all your questions.

If you have additional questions during the course of this study about the research or any related problem, you may contact the Student Researcher, Zack Bigner, at phone number [redacted] or by email at [redacted]. The Faculty Sponsor Michelle L. Peters, Ed.D., may be contacted at phone number [redacted] or by email at petersm@uhcl.edu.

SIGNATURES:

Your signature below acknowledges your voluntary participation in this research project. Such participation does not release the investigator(s), institution(s), sponsor(s) or granting agency(ies) from their professional and ethical responsibility to you. By signing the form, you are not waiving any of your legal rights.

The purpose of this study, procedures to be followed, and explanation of risks or benefits have been explained to you. You have been allowed to ask questions and your questions have been answered to your satisfaction. You have been told who to contact if you have additional questions. You have read this consent form and voluntarily agree to participate as a subject in this study. You are free to withdraw your consent at any time by contacting the Principal Investigator or Student Researcher/Faculty Sponsor. You will be given a copy of the consent form you have signed.

Subject's printed name: _____

Signature of Subject: _____

Date: _____

Using language that is understandable and appropriate, I have discussed this project and the items listed above with the subject.

Printed name and title: _____

Signature of Person Obtaining Consent: _____

Date: _____

THE UNIVERSITY OF HOUSTON-CLEAR LAKE (UHCL) COMMITTEE FOR PROTECTION OF HUMAN SUBJECTS HAS REVIEWED AND APPROVED THIS PROJECT. ANY QUESTIONS REGARDING YOUR RIGHTS AS A RESEARCH SUBJECT MAY BE ADDRESSED TO THE UHCL COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS (281-283-3015). ALL RESEARCH PROJECTS THAT ARE CARRIED OUT BY INVESTIGATORS AT UHCL ARE GOVERNED BY REQUIREMENTS OF THE UNIVERSITY AND THE FEDERAL GOVERNMENT. (FEDERALWIDE ASSURANCE # FWA00004068)

APPENDIX E

INTERVIEW GUIDE

1. How important is data to you in making decisions?
    a. What types of data are used?

2. What is most helpful to you in using data to make decisions?

3. What frustrates you most in using data to make decisions?

4. How important is your school improvement plan to your leadership of your campus?
    a. How important is your plan to your supervisor or other district leaders?

5. What are the first steps you take to create the plan?

6. What is most helpful to you in creating the plan?

7. What frustrates you the most in creating the plan?
    a. Integrating district initiatives and mandates?

    b. Beneficial or just a “hoop” to jump through?

8. How are other staff members involved in creation of the plan?
    a. Asst. Prin., specialists, team leaders/dept. heads, teachers, parents – ask about each not mentioned

9. How do you monitor the implementation of the plan throughout the year?
    a. When/how is plan modified during the year?

10. How do you know if the plan has been successful?