**The Treatise Committee for Tracy Renee Epp Certifies that this is the approved version of the following treatise:**

**Data Use in an Era of Accountability: A Case Study of Data Driven Decision Making in High Performing Middle Schools in the Rio Grande Valley**

**Committee:**

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|---|
| Ruben Olivarez, Supervisor |

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|---|
| James Barufaldi |

| |
|---|
| Scott Hollinger |

| |
|---|
| Kerry Moll |

| |
|---|
| Victor Saenz |

**Data Use in an Era of Accountability: A Case Study of Data Driven Decision**

**Making in High Performing Middle Schools in the Rio Grande Valley**

by

**Tracy Renee Epp, B.A.; M.Ed.**

**Treatise**

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Dedication


To my students past, present and future—
I stay in this work because each of you deserves the opportunity
to fulfill your dreams and receive a world-class education,
as I have been so fortunate.


To my mother—
You instilled in me a belief that I can do anything I set my mind to.
Your struggles in life have pushed me to hurdle at full force over mine.
You are my hero.

## Acknowledgements

Over the past four years, so many people who helped me climb this mountain.   One does not accomplish a feat such as this alone and in addition to gaining new colleagues, this journey has led me to new friends.

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endeavor.  The patience with late nights and days/months away is unforgettable.  This

accomplishment is as much yours as it is mine.

**Data Use in an Era of Accountability: A Case Study of Data Driven Decision Making in High Performing Middle Schools in the Rio Grande Valley**

Tracy R. Epp, Ed.D

The University of Texas at Austin, 2011

Supervisor: Ruben Olivarez

This study examined how higher performing middle schools in the Rio Grande Valley use data to drive instructional decisions. Three research questions guided this study: (a) to what extent do higher performing, Title-1, middle schools in the Rio Grande Valley utilize data to make schoolwide instructional decisions; (b) how does the principal support data use for instructional decision-making; and (c) what do teachers perceive to be the processes that have led to the current level of data use in instructional decision making?

A mixed-methods multiple-case study included middle schools that were drawn from a list of higher performing schools according to Just for the Kids and the National Center for Educational Achievement. To be included in the study, schools had to be located in the Rio Grande Valley, Texas, specifically in the counties of Starr, Cameron or Hidalgo. Additionally, the schools needed to be designated a Title-1 school, according

to federal criteria. Data for the study was collected using a survey, followed by one-on-one interviews. Descriptive analyses was then conducted using the survey data. The interview data was analyzed using first-level coding followed by the use of cross case analysis to determine themes common to all cases.

The findings from this research revealed that data is used extensively in the schools studied; primarily to determine the instructional scope of what is taught. It was found that while data use was extensive, the source and purpose of data use was limited to that which was directly tied to the state-administered assessment (TAKS). The second major finding was that principals create the necessary conditions for data use that becomes an embedded practice, where teachers can take risks with their colleagues in reviewing and using data.

This study concludes that more principals can lead their schools to greater levels of data use by creating the necessary conditions for change. At the same time, the findings suggest that there is a need for leaders at all levels to examine and mitigate the unintended consequences of data use that is derived from a single-source and for a single purpose—that is, performance on the state exam (TAKS).

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**CHAPTER 1: INTRODUCTION TO THE STUDY**

Alarmed by recent cries about the state of education, a local state representative

visits a traditional middle school in small town at the western end of the Rio Grande

Valley of Texas. In an 8th grade classroom, the students appear disengaged and the

teacher seems tired. The state representative whispers to an adolescent boy in the back

row and asks, *"What are you learning?"* The boy looks up, still uninterested, and replies,

*"Nothing."*

Across town, later that afternoon, the state rep visits a 6th grade classroom, also in

a traditional middle school. The students are actively engaged and the teacher

communicates excitement about the subject. The legislator again asks a student, *"What*

*are you learning?"* and the student begins an animated explanation of the day's lesson.

The visitor continues by asking the student, *"How do you know when you've learned it?"*

and the student describes a number of formative assessment tasks and checks for

understanding that he has already mastered in the 45 minutes of today's lesson.

The difference between these two teachers in these two schools can be attributed

to a number of factors, but the students' responses describe how the two teachers have

very different ways of thinking about teaching. In the second case, it is likely that the

teacher as a matter of practice is looking at measures of her students' achievement and

asking herself how to push her students to achieve more, thinking about what students

have *learned*, not merely what she has taught. Students in this classroom are also aware

of what they are learning and what they are striving for. In the first case, it is likely that

the teacher is eager to "cover" the material.  He's not sure which students are learning, and what, exactly, they may have learned.

These scenarios repeat themselves across the United States in classrooms every day.  In those classrooms and schools where teachers don't know or in a few instances, don't care about the students' actual learning, the achievement gap continues between advantaged, high-performing students and disadvantaged youth.  In 2009, student performance on the National Assessment of Educational Progress (NAEP) showed a gap in student proficiency levels in math and reading between those who live in poverty and their peers who do not.  The U.S.  Department of Education's Institute of Education Sciences conducted a special analysis of education in high-poverty public schools.   The most staggering finding in the report was not only the existence of an achievement gap based on students' socio-economic background but the size of the gap, in achievement between students of privilege and students attending high-poverty schools.  In 4$^{th}$ grade reading, only half as many students in high poverty schools performed "at or above *Basic"* (45%) than students in schools of affluence (83%).  The performance gap nearly tripled when comparing the higher bar for performance of  "at or above *Proficient"* level. Only 14% of students in poverty reached this score, compared to 50% of students in more affluent schools.  In 8$^{th}$ grade, the gap remains, with 53% of students in high poverty schools scoring "at or above *Basic,"* compared to 87% of their more affluent peers. Again, when comparing achievement at a higher bar (at or above *Proficient),* the gap triples.  A mere 12% of students in poverty scored "at or above *Proficient,"* compared with 47% of students in non-poor schools (National Center for Education Statistics

[NCES], 2010).  Clearly, America has not yet ensured that every child will receive a quality education regardless of socioeconomic status.

For educators entering the profession prior to the year 2000, the now-legendary *A Nation at Risk* report provided the first major impetus for greater commitment to school reform in the United States (U.S.  Department of Education [USDOE], 2008).  However, the infinite references to *A Nation at Risk* in dissertations, trade books and journals that persisted for nearly twenty years have now been replaced by references to the Elementary and Secondary Education Act of 2001 (NCLB).  A search for the keyword "No Child Left Behind" in the online database Academic Search Complete[1] yields over 5,500 references.  Combined, *A Nation at Risk* and No Child Left Behind account for more than 25 years of demands for school improvement.  In a report issued by the United States Department of Education in 1998, then Secretary of Education Margaret Spellings wrote about the nation's progress since 1983, when *A Nation at Risk* found that 13% of 17-year-olds were functionally illiterate, SAT scores were dropping, and students needed an increased array of remedial courses in college.

Twenty-five years later, it's time to review the progress we have made since the report's release.  We remain a nation at risk but are also now a nation informed, a nation accountable, and a nation that recognizes there is much work to be done.

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[1] October 9, 2010
http://web.ebscohost.com.ezproxy.lib.utexas.edu/ehost/resultsadvanced?vid=2&hid=12&sid=fd6d8143-8f32-436d-900f-8f9f16a16e1e%40sessionmgr4&bquery=(%22no+child+left+behind%22)&bdata=JmRiPWE5aCZ0eXBlPTEmc2l0ZT1laG9zdC1saXZl

If we were "at risk" in 1983, we are at even greater risk now…. Yet, our

education system is not keeping pace with these growing demands. Of 20

children born in 1983, six did not graduate from high school on time in 2001. Of

the 14 who did, 10 started college that fall, but only five earned a bachelor's

degree by spring 2007. Fortunately, thanks to the recent standards and

accountability movement … for the first time in our country's history, we have

reliable data to evaluate student performance and address weaknesses in our

schools. We must leverage this information to achieve better results. (p. 1)

Despite the slow pace of improvement described above, success stories do exist.

Schools, school districts, and states across the country are beating the odds. Such

examples are described in *Yes We Can*, a report released by Education Trust (2006),

describes many examples of success in education reform:

In 2000, 70 percent of African-American eighth graders in both South Carolina

and Alabama performed below the basic level in math on the NAEP. Five years

later, math achievement for African-American eighth-graders in Alabama was

unchanged. But South Carolina made big strides. By 2005, 50 percent of

African-American students performed at or above the basic level in eighth-grade

math.… In the face of this data, we must look inside the schools and school

systems — at instructional policy and practice — not outside of them, in order to

explain the achievement gap. (p. 4)

What Spellings and Education Trust tell us is that 1) we must and can and do

better for our students and 2) we must leverage the data and best practices to actually do

better.   A review of the literature reveals that one of the most critical factors to

increasing student learning and thereby closing the achievement gap is the improvement

of teaching at the classroom level (Hanushek, Rivkin, & Urban Institute, 2010; Sanders &

Horn, 1998; Wayne & Youngs, 2003).   One of the ways to improve teaching is the use of

data-driven decision-making (Bernhardt, 2009; Blankstein, 2003; Wayman,  Rangel,

Jimerson,  & Cho, 2010).

  For purposes of the current study, DDDM is defined as "a system of teaching and

management practices that gets better information about students into the hands of

classroom teachers and school leaders, and is then used to make purposeful instructional

choices to improve student learning." Specifically, meaning that teachers analyze data

from externally administered tests and from internal teacher-based assessments, both

formal and informal, to make instructional choices about both instructional scope and

instructional technique (McLeod, 2005, p.  1).  It is suggested by recent studies that the

practice of DDDM is positively associated with schools and school districts that

experience success in increasing student learning (Bambrick, 2009; Datnow, Love, 2009;

Park & Wohlstetter, 2007; Wayman et al., 2010).

  As a review of the literature shows, significant efforts have been devoted to the

study of data-driven decision-making in schools and school districts.  The literature

review suggests that DDDM is a key strategy for improving student learning (Ingram,

2004; Moll, 2009; Wayman, Stringfield, & Yakimowski, 2004; Wayman, 2005; Wayman

& Stringfield 2006; Wayman, Cho, & Johnston, 2007; Valli & Buese, 2007).  These

studies report the importance of the school leader, the central office, professional

supports, and technological systems; however, there is still much to learn about how classroom teachers use data to improve instruction and student achievement and how those practices come into action.  In recent years, numerous scholars have argued for teachers to use student achievement data as a necessary element of school reform (Bambrick, 2009; Bernhardt, 2004; DuFour, DuFour, Eaker & Karnahek, 2004; Love, 2009; Schmoker, 1999).  Despite a growing body of research, DDDM has yet to become embedded in the work of all educators (Supovitz & Klein, 2003).

A review of the literature summarizes research on DDDM, how teachers can overcome skill deficiencies and address technical barriers.  Recent publications have called for a greater focus on the role of leadership and collaborative, inquiry-based school cultures to ensure that DDDM becomes an embedded practice for all members of the school community (Copland, 2003; Datnow, Park & Wohlstetter, 2007; Love et al., 2008; Wayman, Cho, & Johnston, 2007).  In the literature, there are also emerging reports (Datnow, Park, & Wohlstetter, 2007) that present exemplars of schools that have demonstrated how DDDM can be a key lever for school reform when embraced by teachers as a means to ensure that their students achieve.   What is not clear, however, is how schools that are experiencing success with student learning actually use DDDM as an embedded practice of their profession.  The literature has outlined basic practices, helpful technology platforms, and the importance of creating a professional learning community.  These parts of the whole are known, but it is not established what exactly defines a school as data-driven and how data-driven schools got that way.

**Purpose of the Study**

As described in detail in chapter two, the practice of data use to drive instructional decisions is found to be a key factor in school improvement but most schools do not engage in data driven decision-making in a manner that is embedded in their practice (Datnow, 2006; Earl & Fullan, 2003). The literature also suggests that data use is a common practice among higher performing schools and those that are closing the achievement gap for their students growing up in poverty. By studying the way in which higher performing schools use DDDM, more light can be shed on whether and how to expand the use of DDDM in all schools.

In addition to increasing our understanding of data use in higher performing schools, this study seeks to facilitate a deeper understanding of the data practices in schools, which serve a high percentage of students growing up in poverty. This increased understanding of DDDM is critical given the persistence of the achievement gap in schools and districts that serve a high percentage of students who come from low socio-economic backgrounds. The geographic region of the Rio Grande Valley, Texas, is home to many of the state's students growing up in poverty. Though geographically isolated from the rest of the state, the Rio Grande Valley is also home to several higher performing schools whose results require further study. The small group of schools in the Rio Grande Valley who are serving a high percentage of students growing up in poverty and achieving strong results can provide the right context for the broader purpose of why schools should be engaging in DDDM—to improve student achievement.

**Need for the Study**

The literature review establishes that student achievement needs improvement, and the learning gap among students narrowed. The practice of DDDM is a factor in improving student achievement. With the many reform strategies that teachers and leaders are asked to implement in an era of high-stakes accountability (Elmore, 2007), DDDM appears to be a particularly high-leverage strategy (Bambrick, 2009). Inherent in the concept of using data to drive any decision is the idea that one saves time by choosing what not to do as equally as important as choosing what to do (Marzano, 2009). Data can help in this decision-making. Therefore, it is necessary to better describe the practices of schools that use data to drive their instructional decisions and the path these schools traveled to arrive at their current level of data use.

## Context of Education in the 21ˢᵗ Century

Today, No Child Left Behind is regarded both as an impetus toward increased commitment to school reform and as a source of resistance against high stakes testing and data use. "The theory of action underlying NCLB requires that educators know how to analyze, interpret, and use data so that they can make informed decisions in all areas of education, ranging from professional development to student learning" (Datnow, Park, & Wohlstetter, 2007, p. 10). NCLB has fostered the advancement of standards-aligned assessments and teacher accountability for those outcomes. Through technology, teachers have real-time access to assessment data that can be cut in numerous ways to help them improve their instruction. Assessment, done right and used well, where actionable data is gathered, can be a critical tool for improving teaching and learning

(Chappuis & Chappuis, 2008).  At the same time, it has been argued that the implementation practices of NCLB (for which state agencies, school boards and educational leaders are responsible) can lead to an increasing fear and suspicion of assessments and data among teachers—the most important users of data in the improvement student learning (Elmore, 2007; McLeod, 2005).   This fear and suspicion can create a negative perception of data and impede its use to positively impact teaching and learning.  As McLeod (2005) argues, "many teachers reject the idea of DDDM because of its association with NCLB" (p.1).

If educators fear or reject data generated from assessments administered under NCLB and state accountability systems, such data will see little use for improving teaching and learning.  "The assessment will produce no formative benefits if teachers administer them, report the results, and then continue with instruction as previously planned" (Chappuis & Chappuis, 2008, p. 16).  Utilizing data derived from assessments is an important step in ensuring higher levels of student learning.  If the intended users of data are not able to use data effectively to drive instructional decisions and actions, then accountability and the increased testing that comes with it may be perceived as a policy with unintended negative impacts on teaching and learning rather than an important reform that results in improved student achievement.

**The Role of the Leader**

The role of the principal and other school leaders in creating effective schools has long been established (Manasse, 1983).  At the center of a school's use of data is the principal, who must also wrestle with whether, when, and how to use data in making

instructional decisions.  Fullan and Earl (2003) write that "school leaders are caught in the nexus of accountability and improvement, trying to make sense of the role that data can and should play in school leadership" (p. 383).  Similar to any school improvement effort, a successful data initiative that is embedded within an entire school must extend beyond the office of the individual principal or the walls of an individual classroom.  Copland's (2003) work on building and sustaining capacity for school improvement discusses the inadequacy of a traditional model of leadership for lasting change:

> What history tells us is that the traditional hierarchical model of school leadership, in which identified leaders in positions of formal authority make critical improvement decisions and seek, through various strategies, to promote adherence to those decisions among those who occupy the rungs on the ladder below, has failed to adequately answer the repeated calls for sweeping educational improvements across American schools.  While one can locate outposts of excellence where maverick principals or superintendents have resurrected dying schools or districts through these types of strategies, such efforts are recognizable only because they are the *exception, not the rule.*   (p. 375, emphasis added)

Leaders may be the critical lever for real success in any initiative, and especially so for the systemic and systematic use of data to drive decisions across a school. Wayman and Stringfield (2006) found that principals are the most significant factor for the success of a school to become data informed in their practice.  Salpeter (2004) found that "the most important element of an effective data-driven program is not the data, the analytic tools, or even the curriculum framework on which data analysis is based; rather

it is the school culture in which the data inquiry takes place" (p. 2).  It is well established in the research that leaders strongly influence the school culture and that collaboration in a school community is essential to a positive, trusting environment (Anderman, 1991; Habegger, 2008; Scribner, Madrone, & Hager, 1999).  In order to achieve a deep understanding of DDDM in higher performing schools, we must understand how school principals lead their teachers in adopting and implementing data-driven decision-making practices.

### Research Questions

The intent of this study is to describe the DDDM practices of those schools which serve a high percentage of students growing up in poverty and are successfully increasing student achievement.  This study also will explore the role the school leader plays in establishing a culture that promotes embedded data use, and the processes that teachers attribute to their school's current level of data use.  In order to understand the use of DDDM in schools, three research questions are explored:

1.  To what extent are higher performing Title I middle schools in the Rio Grande Valley[2] of Texas using data to make instructional decisions?

2.  How does the school's principal support data use for instructional decision-making?

3.  What do teachers perceive to be the processes that have led to the current level of data use in instructional decision-making?

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[2] See Chapter 3 for a full discussion of the selection of Title I middle schools in the Rio Grande Valley of Texas for the purposes of this study.

**Introduction to the Methodology**

This study used a mixed methodology to describe the DDDM practices used by schools that are experiencing success in student learning. Teddlie and Tashakkori (2002) found a mixed methods approach to have particular value when a research study is trying to solve a problem in a complex educational or social context. The data collection methods used a survey and a multiple-case study, with interviews conducted at three schools. First, survey results were used to rank the sample respondents and to choose three schools that reported the highest levels of data use, which then composed the multiple-case study. Descriptive analyses of survey data identified findings (school culture, faculty attitudes, and beliefs about data) related to the schools' level of data use. Second, interviews were conducted to collect qualitative data on the specific ways teachers at these schools use data; the precise role of the school principal in enabling the conditions for embedded data use; and the processes the faculty attribute to the school's current level of data use.

The participant schools were selected from a sampling of higher performing Title I middle schools in the Rio Grande Valley of Texas. These criteria were chosen for the following reasons: 1) embedded DDDM is only useful to school reform to the extent that it results in student achievement; 2) fewer middle schools earn Texas's highest school rating than elementary and high schools, making middle schools a focus of interest (Texas Education Agency, 2009); 3) schools that serve a high percentage of students from low-socioeconomic backgrounds (i.e., Title I schools) may experience a number of pressures around student achievement and accountability; and 4) while the contexts of

elementary, middle, and high school are unique, a study of middle schools may yield findings that can be applied at elementary and high schools.  Additionally, studying Title I schools, whose high percentage of low socioeconomic students is often cited as a reason for a lack of student achievement, can show that these practices, where successful, can be applied in a variety of school contexts, not merely those that are ideal.

<center>**Significance of the Study**</center>

The use of DDDM as a key lever for school improvement has great potential. However, the literature suggests that this strategy is currently underused in most schools. The reality of the achievement gap requires educators to gain traction in improving teaching and learning by working smarter through the use of data in order to create the schools our children need.  Considering the reality that educators face in an era of accountability and what we know about effective (and ineffective) reform efforts, we may be able to use the findings from this study to propel reform strategies toward institutionalization across all schools.  Datnow et al. (2007) make the case for the importance of embedding key data practices in the daily work of educators,

> Platitudes such as 'all students can learn' and 'leave no child behind' are common refrains espoused by educators, policymakers, and parents when discussing student achievement.   However, the reality is that children do get left behind and groups of students, especially those from low-income and minority backgrounds, are often failed by our school systems.  In an era of evidence-based practices, the use of data is an important tool in school improvement.   (p. 10)

<center>13</center>

The literature clearly demonstrates that there is a knowing-doing gap when it comes to DDDM.   The research on DDDM has led to the subsequent development of resources, software systems, and processes to enable the use of DDDM in schools. "Although the social process of sharing information and using it to produce knowledge is still not well understood, educators are recognizing that they need to use the data" (Fullan & Earl, 2003, p. 384).   This study aims to define specifically what principals and teachers do in schools to use data in making instructional decisions, thereby adding to the body of knowledge that may provide insight for moving schools another step closer to embedded data use and improved student learning.  The study will accomplish this in three ways:

1. Describe the data-driven practices in three higher performing Title I middle schools in the Rio Grande Valley of Texas;

2. Illuminate the characteristics and practices of principals who lead schools that are data driven and are successfully closing the achievement gap;

3. Describe the processes that teachers believe have lead to the schools' current use of data to drive student learning.

**Limitations**

Every research study presents limitations and the methodology was designed to minimize limitations such that they do not jeopardize the reliability of the findings.  Since this study utilized a survey of attitudes and perceptions around data use, one limitation involves the participants' interpretation of "data." The researcher took the necessary steps to ensure clarity of the definition of terms; however, the interpretation of survey

questions and interview questions may vary according to individual respondents' experiences. Interviews with teachers introduce the possibility of self-reporting errors. This is a second limitation of this study. A third limitation involves the sample set. This was a case study of a sample of a specific subset of middle schools in the state of Texas. Though the study was designed to maximize application of the findings in other situations, the results cannot be generalized to all schools in all contexts.

## Delimitations

This study focused on Title I middle schools in the Rio Grande Valley of Texas that were found to be higher performing by the Just For the Kids (JFTK)/National Center for Educational Achievement (NCEA) in 2009. The findings of the current study will lend an additional lens through which educational leaders and researchers may view DDDM.

However, the purpose of this study was not to establish a causal relationship between data use and student achievement. Rather, given that the literature suggests that DDDM is a promising reform, this study seeks to understand how DDDM works on the micro level, within a school, among and between a school leader and teachers, and how the school achieved an effective level of data use. It was not the intent of this study to examine other possible factors that enable or inhibit data use in schools. Therefore, while this study may add to the literature on how to increase data use in schools, alone it cannot provide comprehensive findings on what works or does not work in increasing DDDM in schools.

**Assumptions**

Three assumptions were present in the design of this study. First, the methodology was designed with the assumption that a place on the JFTK's Higher Performing Schools list implies a school's recent success in effecting student achievement. Thus, the study relies on the validity of the JFTK/NCEA methodology to identify schools that are higher performing. It assumes, within this same context, that the demographic data available from the Texas Education Agency's Academic Excellence Indicator System are correct.

A second assumption was that survey and interview respondents provided honest and accurate information on both self-assessments and their perceptions of the school culture and school leader. This study was designed assuming that participants would not intentionally mislead the researcher and would make every effort to provide thorough and accurate accounts of their experiences. A final assumption of the study is based on a review of the literature; that a positive association exists between schools with embedded data-driven decision-making practice and higher student achievement. Following this assumption, the schools selected for the case study had a proven record of higher student achievement than their peer schools.

**Definition of Terms**

The following definitions were used for this study:

1. *Data* (Wayman, Cho, & Johnston, 2007): "Any artifacts that helped educators better understand student learning, teaching practices, educational workflow, and other aspects of how districts are run and education is conducted" (p. 11).

2. *Data-driven decision-making (DDDM):* "A system of teaching and management practices that gets better information about students into the hands of classroom teachers and school leaders and is then used to make purposeful instructional choices to improve student learning" (McLeod, 2005).

3. *Data use* (Wayman, Cho, & Johnston, 2007): "Any practice that brought meaning, information, and knowledge out of data and used this learning to inform educational practice" (p. 11).

4. *Higher performing school:* A school that has been designated by JFTK/NCEA as one whose student learning results outperform those of peer schools with a similar demographic population.

5. *External assessment data:* Data that is derived from tests that are externally developed and require administration by federal, state or district mandates, such as the Texas Assessment of Knowledge and Skills (TAKS) or the Northwest Evaluation Association's MAP Test (NWEA) (Supovitz & Klein, 2003, p.2).

6. *Individual assessment data:* Data that is derived from individual teachers or requires administration only at the campus level, such as chapter tests, portfolios, running records, math journals, and quizzes (Supovitz & Klein, 2003, p.2).

7. *Schoolwide assessment data:* Data that is derived from assessments that are not only administered systematically across groups of students within a

school, but whose results are aggregated and systematically analyzed for

patterns that are then used to guide school and individual teacher decision-

making (Supovitz & Klein, 2003, p.2).

8. *Assessment literacy:* "The collective capacity of teachers and leaders in

schools to examine data, make critical sense of it, develop action plans based

on the data, take action and monitor progress along the way" (Fullan, 2001).

# CHAPTER 2: LITERATURE REVIEW

Data about student achievement can be associated with teacher accountability and the evaluation of educator performance (McLeod, 2005). In theory, this is not a negative association; it is conceivable that professionals want to be evaluated based on the quality outcomes of their work. However, in practice, some educators, for various reasons, resist using data to improve practice. Perhaps data is not presented in a useful way or the work educators are asked to do with data will result in even more to do for which there is little to no time to complete. Or, perhaps there is a fear that data will be used against teachers who work in schools with less supportive leaders. In studying teachers and data-driven decision-making, Wayman (2005) suggests that "teachers will embrace a properly supported data initiative when it is seen as an efficient way to improve education: Teachers in case studies often show quick enthusiasm for data when such data provide useful information for their classroom practice" (p. 303). Alternatively, McLeod (2005) reports that in the era of No Child Left Behind, teachers negatively associate data use with teacher evaluation and curricular restrictions that create an air of mistrust among educators. While more work needs to be done to determine the causes of a well-received data-use initiatives or the sources of mistrust, both can influence teachers' receptivity to data use and the critical conversations that must be a part of any attempt to increase DDDM among educators.

Additional factors influencing data use among K–12 educators as found in the literature include a) the context of education in the 21st century; b) existing organizational

and institutional cultures; c) the current skill and capacity of leaders and teachers; d) structural barriers; and e) the presence of technological and technical challenges.

The literature on DDDM suggests that a great amount of work has been done to better understand how schools use this practice to drive increases in student learning. At the same time, recent studies show that a gap exists between knowing what needs to be done and what is actually being done in schools. The gap between what we know and what we actually do is often referred to as the *knowing-doing gap.* The major themes in the literature address what is essential if data use is to become embedded into practice as well as the challenges that schools and school districts face in becoming data-driven organizations. What is not known, however, is exactly what leads successful schools to make the leap from pockets of data use to the institutionalized practice of DDDM. As Reeves stated in his 2002 guide:

> Most organizations know what works, but the failure of leadership to confront and remove obstacles to change prevents advances that would bring obvious benefits to the organization. This trend certainly is confirmed in education, when personal preference, tradition, and strong opinion remain frequent obstacles to a decision that is based on research and evidence. (p. 165)

While the lack of will in confronting challenges on the part of leaders may be one explanation for why there is not embedded data use across schools, additional literature on the topic suggests that the barriers to data use in schools are more nuanced.

Summarizing the challenges facing the use of data to drive decisions, Steifer (2004) found that "many of the so-called DDDM processes and toolkits used in the field

today are excellent overview of what is required, but most fail on one major point—the assumptions they make about our collective knowledge, skills and resources required to get the job done" (p. 2). In addition to describing the many challenges and barriers that educators face in using data to drive instructional decisions, the literature also describes what does work and provides descriptive examples of how some schools and districts are using DDDM. As such, there is an emerging body of research and resources on how educators are using data to drive improvements in student learning. At the same time, little is known about the steps schools can take to become more data driven in their practice.

## Barriers and Challenges to Data Use in Schools

Educational leaders today, and school principals in particular, face a significant shift in the requirements of their roles. Petrides and Nodine (2006) described the changing nature of school leadership in their research regarding the ways school districts are using data to improve student learning. Examples of required practices for school leaders include making adjustments to staff meetings so that they revolve around student data (Petrides & Nodine, 2006). For a role that has historically been used administratively, this could be a stretch for some school leaders. Scheurick and Skrla (2007) stated that one of the essential characteristics of school leadership is an understanding of the need to create schools that are equitable and excellent, and that using data systematically is a way to ensure equity and excellence for all students. This novel facet of the role of principal—that is, using data to lead towards systematic equity and excellence—requires a specific skill set that some leaders may not possess and that

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may impact the extent to which their teachers are able to embrace and use DDDM to drive their instructional practice. While leaders likely are aware that DDDM is critically important, they may also be daunted by the challenge of learning yet another skill set. Reeves (2002) wrote:

> Using data to inform decisions seems to be so obvious that only a leader belligerently indifferent to fact and reason would make a decisions without supporting data. Nevertheless, an astonishing number of educational leaders make critical decisions about curriculum, instruction, assessment, and placement on the basis of information that is inadequate, misunderstood, misrepresented, or simply absent. (p. 95)

While it can be argued that this failure to use data in making decisions is due to a lack of skill on the part of the school leader, or to the insufficient knowledge or access to technological infrastructure, the literature suggests that other forces may prevent embedded use of DDDM in schools (Ingram, 2004; McLeod, 2008). Among these are cultural norms about teacher autonomy and judgment; mistrust of the true intent behind use of data; the lack of time and structures to facilitate such use; the absence of a collaborative culture and the skills of key players (teachers, principals and district leaders). The literature identified each of these factors as barriers to data use to improve teaching and learning (Ingram, 2004; Moll, 2009; Wayman, 2005; Wayman & Stringfield 2006; Wayman, Cho, & Johnston, 2007; Wayman, Stringfield, & Yakimowski, 2004; Valli & Buese, 2007).

**A Culture of Mistrust**

In the era of high-stakes accountability, data use and the possible resultant negative judgments about teachers have combined to potentially create an environment of fear and mistrust.  This can lead to a chasm between policy and practice.   Reeves (2002) wrote:

>  Among the obstacles that separate knowing from doing are talk as a substitute for action, fear of speaking the truth, and internal competition, all of which can occur in an individual school and certainly in the central office of a school system.   (p. 165)

There is an important reality in an era of increased testing to also be considered. "Because testing is not well understood, it can be misused" (Streifer, 2004, p. 32). Teachers, in particular, fear that data gleaned from mandated testing can be used against them and this can prevent the embrace of any long-term effort to use data in instructional decisions.  The context of teaching in an era of reform must be considered when seeking to institute a given practice such as DDDM.  Imagine the veteran teacher sitting in yet another staff meeting where the leader has declared a new initiative or way of doing business.  In this hypothetical case, it is the proclamation that the school will now use data to make decisions.  The school now has new software that this teacher will be required to learn.  A suite of standards-aligned assessments will be administered, which the teacher must now find time for in an already full instructional scope and sequence; and she must now attend a host of new meetings during the teacher's conference period which will be centered on this new initiative.  In addition to the real possibility of more

work, educators worry that data will be used for surveillance, rather than to improve student learning. According to Earl and Fullan (2003), school leaders:

> Expressed unhappiness with what they termed the "surveillance" orientation of central school government and deplored the fact that data were being used inappropriately to "name and shame" schools and to direct the action to ensure compliance. (p. 390)

Perception, beliefs and organizational culture inform educators' behavior and influences their data use. While the accountability movement has resulted in positive improvements in student learning, it may have also exacerbated skepticism about the role of data in making instructional choices. In short, if educators associate data with accountability more than with improving student learning, they may be less likely to engage in DDDM as an embedded practice.

Ingram, Seashore, and Schroeder (2004) pointed out danger of a perpetual nature of educators being dismissive about externally generated student achievement data. According to Ingram et al, this attitude will be passed on from teacher to teacher, creating an institutional belief about data and its role. In their study of barriers to teachers' use of data to improve professional practice, they found that "teachers are not averse to using systemic data for decisions, but that they are more likely to do so when they are making school-wide decisions rather than individual decisions for their own classrooms" (p. 1272), in essence de-personalizing data use. When teachers experience data being used in a punitive or judgmental manner, they are less likely to embrace the use of data as relevant to their own practice. This is due in part to school leaders or policy makers that

have good intentions but do not have the skills or political support to create a climate and process for examining data in a non-threatening environment.

Ingram et al. (2004) found that much is unknown among policymakers "about how teachers make decisions about teaching and learning if accountability policies are to have a positive impact on teaching and learning" (p. 1259). Because accountability and data are culturally tied together in education, data use is falling beneath the umbrella of the negative feelings educators have associated with accountability practices. In their findings, Ingram et al. described the following cultural barriers to data use:

1) *Barrier 1:* Many teachers have developed their own personal metrics for judging the effectiveness of their teaching and often these measures differ from the metrics of external parties (e.g., state accountability systems and school boards);

2) *Barrier 2:* Many teachers and administrators base their decisions on experience, intuition, and anecdotal information—collectively referred to as professional judgment—rather than on information that is collected systematically;

3) *Barrier 3:* Stakeholders do not agree about which student outcomes are most important and what kids of data are meaningful;

4) *Barrier 4:* Some teachers disassociate their own performance and that of students, which leads them to overlook useful data (2004, p. 1281).

The literature suggests that addressing these cultural barriers can help educators perceive the use of data more positively as a tool that helps them do their job more

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effectively rather than a weapon to be used at the whim of policy makers or bureaucracy. For example, Earl and Fullan (2003) found that school leaders become more sophisticated and comfortable when using data "when they moved from a focus on numerical targets that the government required them to set to a careful description of curriculum targets" (p. 389).

In addition to the context of being an educator in the 21st century, the culture of the individual school matters greatly and it must be a foundation upon which DDDM as an embedded practice is built. In his book, *Tool and Techniques for Effective DDDM*, Streifer (2004) emphasized this point. Rather than grand promises or immediate solutions, he urges schools to build a culture of inquiry before introducing a series of tools and techniques for teachers to use. A focus on the culture of the school or system is presented as the first and ongoing step before any tool or technique can be effective:

> The staff member legitimately asks, "what is it about your agenda that is so vital to my work that I should change my schedule, my beliefs and values, and my practices?" At the core of this dance is the leader's professional and personal relationship with staff members. How principals and sometimes teacher leaders respond to this question establishes whether trust, openness, and personal affirmation will be the rule in their relationship or whether it will be marked by domination, required compliance, and fear.   (p. 37)

**Gaps in the Skill and Capacity of Leaders and Teachers**

The approach to school leadership as described above is in marked contrast to the days of merely stating and following directives, thereby creating a need for the

development of new skill sets among school principals.  This requires developing a culture of ongoing collaboration where the school leader is the key factor in developing such a culture for schoolwide DDDM. In shaping the culture of the school, the leader also can shape how teachers approach their work in general, and specifically with data.  The literature makes it clear that this type of leadership includes more than vision.  The leader must also ensure the time and space is available for a culture of inquiry, including structures for systemic data use.  Supovitz and Klein (2003) write,

> Systematic data analysis is about more carefully preparing for performance. Implicit to this idea is that systematic analysis of how teaching produces learning is at the core of teachers' inquiry into how to continually improve their practice. Yet, the structures and opportunities to engage in these inquiries are virtually absent in the American system of education.  Only when this occurs on a wide spread basis can American education come closer to reaching its goal of improving learning outcomes for all students.   (p. 43)

In order for DDDM to become embedded practice, users must first "possess an understanding and working knowledge of data analysis and the ways to use this analysis to improve teaching and learning in the classroom" (Creighton, 2007, p. 9).  Knowing what to do with data is not necessarily intuitive for educators or leaders.  In studying leaders' use of data, Earl and Fullan (2003) reported that leaders have a desire to use data to lead improvement but express concern about how to make the data usable for their constituents.  Earl and Fullan state, "even when [leaders] were positively disposed to looking at data as part of their decision-making, they expressed insecurity about their

skill in gathering, interpreting, and making sense of the information about their school"
(p. 388). According to Creighton (2007), many teacher and principal preparation
programs do not adequately prepare school leaders to use statistics and data in their work,
resulting in a skill gap.

Even when school leaders are trained in statistical methods, they may be ill
prepared to use achievement data in making instructional decisions. Streifer (2004)
writes:

> Number crunching needs to be followed up with observations and interviews to
> inform our understating of trends and identify potential actions… We are learning
> that results analysis followed up with discussion about their relevance is what is
> most persuasive and will more likely lead to meaningful actions and change.
> (p. 8)

Holding powerful conversations that effectively engage, encourage, and challenge
in a culture that is not comfortable with inquiry can be difficult and requires great skill
among the school principal, central office leaders, and other instructional supervisors.

**Managing Change**

With barriers such as cultural norms, mistrust, and the absence of basic skill sets,
it is necessary to consider the role change management plays in schools adopting a new
practice such as DDDM. Inherent in the concept of data use is the end goal of
improvement or positive change for students. Introducing any new skill or practice
requires real change; as Sergiovanni and Starrat (2007) state, "improving schools often
requires changing them" (p. 331). Sergiovanni and Starrat explain that change takes

place at two levels: "the way things look and the way things actually work" (p. 331). Sergiovanni and Starrat (2007)  further state:

> Changes at the first level are structural, resulting in altered arrangements. Changes at the second level are normative, resulting in altered beliefs.  When only first level changes are introduced in schools, it may appear that things are being done differently, but results seem not to be affected, at least not for very long. (p. 332)

A leader may be successful in implementing change in a structural way, in this case requiring certain forms and protocols around data, but not be successful in actually changing embedded practice.   The latter requires normative change.  Serigiovanni and Starratt (2007) discuss "normative changes that alter how teachers look at things, what they believe, what they want, what they know and how they do things.  Normative changes are much more likely to affect outcomes" (p. 332).  This point in managing change illustrates that the use of data in schools must occur at both levels if it is to affect student learning.  It must go beyond data systems, templates, and color-coded reports handed down from central office if schools are truly to be improved.

Given the reality of a pressure-filled environment, the role of the leader in ensuring high levels of implementation of a given practice—in this case, DDDM—is critical.  Good (2006) studied the implementation of a data-driven decision-making initiative and identified practices unique to high-implementation campuses and low-implementation campuses.  In her findings, the work of the principal influenced

perception and practice.  The leader sets the stage for what then becomes sustained use or yet another initiative that will likely pass.  Good (2006) writes:

> Although principals were more apt to say they understood and implemented the data decision-making model, teachers reported using tools and strategies at a higher rate.  This could be attributed to principals encouraging teachers to take part in the process, but not actually doing the components themselves.  (p. 106)

As a result, when DDDM tools are used, principals may not have the necessary depth of understanding to best use them to increase achievement, and may not then be able to establish themselves as instructional leaders or lead their schools past the structural, level one type change described by Sergiovanni and Starrat.  Good's study (2006) provided an example of the important role of the school leader in a school becoming data-driven:

> There seems to be a dichotomy when it comes to tool usage on the campus.  Of the principals, 83% claimed they understood and used certain tools, but only 20% of teachers said they used the same tool… This may be a reflection of either principals' thinking the tools are being understood and used on their campus or an exaggeration for the purpose of the survey.  (p. 107)

Either way, the lack of alignment of practice between leader and teacher can significantly thwart efforts to establish the practice of DDDM at a normative, second level type change; and therefore lose out on the resulting benefits to student achievement.

**The Skill of Analysis**

Even where a school culture facilitates continual improvement and risk taking through openly sharing data with colleagues, educators may still face a skill gap. Heritage, Kim, Vaendlinski, and Herman (2008) found that "teachers are better at drawing reasonable inferences about student's levels of understanding from assessment information than they are in deciding the next instructional step" (p. 1). This points to a major gap in the practice of DDDM among educators and further illustrates the layers of challenges schools may be facing when seeking to become data-driven. Even if schools are able to overcome the cultural barriers, which are complex, they still must develop the skill of knowing what to actually do instructionally as a result of the interpretation of the data. "Using assessment information to plan subsequent instruction tends to be the most difficult task for teachers as compared to other tasks" (Heritage et al., 2008, p. 14).

**Structural Challenges**

The structure of the school day may also constrain efforts to implement effective data use. "Put simply, schools are organized for teachers to teach students, not for adults to work together in a routine, centrally coordinated fashion" (Petrides et al., 2005, p. 43). It is easy to acknowledge the real time and structural constraints teachers have to face. Not only do teachers find themselves with more to do without the necessary space or time, it is rare that any responsibilities are removed to make room for new initiatives and practice. According to Donaldson (2006) the structure of the school day and year precludes the two most important partners—teachers and principals—from having significant interaction during which they could engage in data-driven dialogue.

Thus, the structural challenge manifests itself in two ways: lack of time and lack of time together.   This is a solvable challenge.  The popularity of professional learning communities (PLCs) and the subsequent professional development of leaders in the field has led to myriad tools to restructure the way colleagues in the school system spend their time, collaboratively (DuFour et al., 2004).

**Technical Challenges**

Similar to the skill gap of teachers and leaders, technical challenges can also impede data use.  "Given the time demands educators face, and the fact that many are not computer experts, it is logical to assume that teachers and other school professionals will more and better use analytic software if it is presented in a familiar form that requires little or no training" (Wayman, Stringfield, & Yakimowski, 2004, p. 13).  Schools and school leaders that want to make effective use of student achievement data must install the technological infrastructure required for instant data manipulation and must train teachers and faculty to use the technology for the purpose of asking and answering questions about student learning.

In addition to building positive, supportive cultures where data-use is seen as a safe endeavor, technical skills must also be developed.   In their case study to identify the practices of performance-driven school districts, Datnow et al. (2007) found that "sustaining a culture of continuous improvement through the use of DDDM requires a continual investment in data management resources, including human and social capital" (p. 6), areas of development that tend to be overlooked in lieu of purchasing software and technical trainings.   While the technical how-to and infrastructure to support it is critical

to effectively using data to drive instructional improvement, if it is without a clear definition or the consideration of the culture and complexity of schools as organizations, the effort will likely fail or merely be practiced sporadically and not become embedded in daily practice.

## Overcoming Barriers and Obstacles to Data Use

In order for teachers to view data as an ally rather than an enemy, and to apply promising research findings to close the achievement gap, a significant culture shift in the field of public education is needed.  Leaders are the critical lever for success in any initiative, and specifically the systemic and systematic use of data to drive decisions at every level.  This thinking can be extended to the system level and all the leaders who must be invested in the use of data for an entire school district—every position, every teacher, every school—to drive important decisions about teaching and learning.

However, vision and commitment are not enough.  Based on the work of experts in this field thus far (Ingram, Seashore, & Schroeder, 2004; Petrides & Nodine, 2005; Wayman, Rangel, Cho, & Jimmerson, 2010), it is clear that in order to truly become a data-driven school district, many seemingly disparate parts must come together strategically to create lasting change.  Among these are (a) the right technology and infrastructure; (b) agreement on what data is to be collected and how it used to be used; and perhaps most significantly, (c) capacity and culture.  Examples exist of schools and districts that are accomplishing this shift (Datnow et al., 2007) but less is known about how that shift occurred that led the school or school district to its current state of data use.

**Overcoming Cultural Barriers**

One way to address the aforementioned barriers is to take the mistrust out of data use and frame it as a necessary element of organizational inquiry and learning. Teachers are learners, and taking the organizational learning approach may be a way to overcome cultural barriers. There are an array of resources for leaders on how to build a culture of inquiry and learning. Copland (2003) calls for "a system level perspective, this new way of seeing is rooted in principles of distributed expertise, mutual dependence, reciprocity of accountability and capacity, and the centrality of instructional practice" (p. 377). Using Elmore's five leadership domains: (a) policy, (b) professional, (c) system, (d) school, and (e) practice, Copland describes a system level perspective, where authority and responsibility for teaching and learning are relocated from the tradition. Authority and responsibility for teaching and learning are moved from "the sole control of those 'up the chain' of the administrative hierarchy, and embed that authority and responsibility in the daily work of all those connected to the enterprise of schooling" (p. 377). Copland expands on this view of distributed leadership, calling for a "strong consensus regarding the important problems facing the organization" (p. 379); one that involves teachers as well as administrators. Identifying the problems facing the organization with observable data clearly surpasses speculation and personal opinion.

Ingram et al. (2004) argue that this consensus was critical to overcoming traditional cultural barriers:

Unless better agreement can be reached among stakeholders on fundamental

goals, there will be little agreement on what constitutes meaningful data. Without

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debate and discussion among all involved parties, it is difficult for the school to

learn effectively and accumulate knowledge about its success over time.

(p. 1273)

Wayman, Cho, and Johnston (2007) term this critical step "calibration" (p. 41).

Similar to the fundamentals of a professional learning community, shared purpose and

goals are a must for any culture shift. In this context, Wayman et al. write:

> The process of calibration is critical to establishing a data informed district.
>
> Similar to how a mechanic might calibrate the numerous working parts of an
>
> engine to create synchronous efficiency, so must district personnel and entities
>
> commit to a calibration process to define education and how data support
>
> education. (p. 41)

Wayman et al. (2007) suggest beginning with a focus on teaching and learning,

engaging in the following questions:

a.  What do we mean by learning and achievement?

b.  How will we conduct and support teaching and learning?

c.  How will we know teaching and learning when we see it?

d.  What action will we take based on our results?

This process of calibration is critical to laying a cultural foundation that bases

reflection and analysis of learning in the context of a learning community. The work on

professional learning communities (Dufour, et al., 2004) lays out similar questions to

those above with a focus on specific learning outcomes:

a.  What do we want each student to know and be able to do?

b.  How will we know they have learned?

c.  What will we do when they have not learned it?

As illustrated through the aforementioned examples, the literature is rich with solutions for overcoming one of the most significant barriers to data use in our schools.

**Building a Culture of Inquiry**

To thoroughly engage in the calibration process and adequately address the challenges of culture, capacity, and structure, school leaders need quality time with their staff to build momentum for the desired practice of data use.  The challenges facing schools make the need for strong leadership even more clear.  Consider Donaldson's (2006) findings on  this reality of schools:

> The busyness of school—unquestionably a positive attribute of a responsive, student-centered school—conspires against the model of leadership that requires regular, concentrated time from all constituents for communication, planning, coordination of efforts and policy, and uniformity of practice.   (p. 17)

While more research is needed to determine the factors that enable some leaders to overcome embedded challenges and implement changes in practice, methods are already known for finding time for the faculty to communicate, plan, and coordinate efforts.  Salpeter (2004) found that "the most important element of an effective data-driven program is not the data, the analytic tools, or even the curriculum framework on which data analysis is based; rather it is the school culture in which the data inquiry takes place" (p. 2).  As we have already established, leaders wield immense influence on the school culture.  Countless examples exist of islands of excellence, where leaders have

been able to overcome the structural challenges that seem inherent in schooling (DuFour, et al., 2004).

As the context of public education shifts to one of equity and excellence for all students, school leaders must ensure that their schools and school districts are no longer the sum of individual, isolated practices. To ensure that every student in every classroom in every school will have a chance at a quality education, schools and school districts must ensure that reform efforts are scaled effectively and practiced by each staff member. "Scale is largely a property of organizations, not the preexisting traits of the individuals who work in them. Organizations that improve do so because they create and nurture agreement on what is worth achieving" (Good, 2006, p. 110). This is the essence of calibration and requires deliberative leadership. Imagine a determined leader cutting down obstacles and challenges, one after another, to ensure that his faculty has time together to agree on what is most important. This process in itself can have a powerful impact.

As a result of establishing shared practices, schools will improve. "Developing better ways to analyze and use information lies at the heart of systemic and meaningful school reform" (Petrides, 2005, p. 44). This comes only from colleagues talking to one another about shared goals and practices. Collaboration cannot happen if each player is working towards a different end or taking a completely different path.

### Conclusion and Summary

Petrides and Nodine's (2005) definition of DDDM underscored that using data is about improvement for students; "continuous learning practices; clear and rigorous

student achievement goals; efforts to gather and assess information; action plans based on performance results; and an ongoing feedback loop" (p. 46). Reeves's (2002) definition is equally aligned to the end goal of improved student achievement:

> Data driven decisions are not about making popular decisions, rather it is about finding the decision that is most likely to improve student achievement, produce the best result for the most students, and promote the school's long-term goals of equity and excellence. (p. 95)

To this end, envision a faculty meeting where the teachers have fully embraced the positive effects of DDDM and, therefore, the way they spend their time aligns to this culture. Reeves (2002) paints a picture of such a faculty meeting, dubbed the Learning Forum:

> Juxtaposed against traditional meetings where information and decisions are communicated one way, the learning forum is an opportunity for many people to address complex issues and conduct the debate, constructive confrontation, and detailed examination that rarely occur in a meeting where, most participants conceded, the decisions are preordained. Successful learning forums include new information, using previously untapped sources of data. They encourage different points of view, sometimes assigning this role to a participant so that no idea, premise or conclusion goes unchallenged. This bestows analytical rigor on the process, and it also creates an atmosphere in which contention becomes a normal, welcome, and necessary part of the decision making process. (p. 163)

In a school, where a culture such as this exists, DDDM can thrive and become a part of daily practice.  The role of the leader in creating a culture that supports data use as an expected daily practice cannot be understated.   However, the literature suggests that the culture of inquiry and data use in schools can likely be affected by fear and anxiety around data.

The work to embed DDDM in a school's practice does not end with the establishment of a culture of inquiry.   As the review of the literature shows, there are also technological and skill barriers to DDDM that affect implementation of a data initiative.  It has been found that the principal matters a great deal in a school's level of data use.   However, the literature does not fully explore three critical issues when seeking to understand the lack of traction this potential reform is facing.  How exactly do higher performing schools that consider themselves data-driven use data for student achievement? In these schools, what specific role does the school leader play in the school's current level of data use and to what do the faculty and leadership attribute the processes or events that led to their school's current level of data use?

**CHAPTER 3: METHODOLOGY**

This study focused on the use of data-driven decision-making in higher performing schools as an embedded practice; the role of the school leader and other processes that led to each school's current level of data use. Specifically, the study researched Title I higher performing middle schools located in the Rio Grande Valley of Texas. The intent of the study was to determine the extent to which higher performing schools use DDDM to drive instructional improvement, how the principal supports data use, and what processes teachers attribute to the current level of data use in instructional decision-making. Though quantitative methods were used in the selection of the cases, the study was primarily qualitative in nature and used a multiple case study method. This chapter describes the specific methodology that was used, the rationale for the design of the study, and the case selection process. Additionally, this chapter describes the sampling procedures, the data collection instruments used and analysis that was conducted to identify themes and draw final conclusions from the research data.

**Background for the Study**

The current literature suggests that the practice of data use to drive instructional decisions is found to be a key factor in school improvement. Additionally, the research suggests that while this practice enables schools to improve student achievement, most schools do not engage in data-driven decision-making in a manner that is embedded in their practice. Of those schools that do engage in data-driven decision making, the literature is still emerging on the specific practices of these schools and the process by which they came to be data-driven. Additionally, while the influence of the principal in

establishing school culture is clearly established, it is not clear what role the principal may play in effecting embedded data-driven decision-making in schools.

## Purpose of the Study

The purpose of this study was to uncover the DDDM practices of higher performing middle schools, determine the role of the principal team in such practice, and identify the processes that have enabled such practice to occur.  The study addressed these purposes through the following research questions:

1.  To what extent are higher performing Title I middle schools in the Rio Grande Valley of Texas using data to make instructional decisions?

2.  How does the school's principal support data use for instructional decision-making?

3.  What do teachers perceive to be the processes that have led to the current level of data use in instructional decision-making?

## Research Design

The specific actions that comprise the use of data to drive instructional improvement and specifically the extent to which higher performing schools use this practice to close the achievement gap are not yet defined.  To best uncover these practices, a mixed methods approach was used with a heavy emphasis on qualitative design.  Once eligible schools to be studied were identified, they were ranked according to the teachers' self-reported use of data in driving instructional improvement.  The highest ranked schools were then studied in depth using responses to the survey, interviews, and both quantitative and qualitative analyses were conducted.

Teddlie and Tashakkori (2002) found mixed methods to have particular value when a research study is trying to solve a problem in a complex educational or social context.   Miles and Huberman (1994) concluded that in using a qualitative research approach, "the main task is to explicate the ways people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations" (p. 7).   This study was designed to deepen understanding around how educators use data to take action and manage their day-to-day situations to ensure student learning.

During the qualitative phase of this study, the researcher collected and analyzed data through a multiple case study method.  Yin (2003) defines a case study as "an empirical inquiry that investigates a phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). The existing research on data-driven decision-making and the use of reform strategies in schools, as detailed in the literature review, support that the case study method is a logical choice to address the research questions.

The design of the multicase study was guided by Stake (2006), who characterizes a set of cases being studied as a "quintain." For the multicase study, the quintain represents the collective target to be studied.  As Stake explains, "multicase research starts with the quintain.  To understand it better, we study some of its single cases.  But it is the quintain we seek to understand.  We study what is similar and different about the cases in order to understand the quintain better" (p. 6).  Thus, the quintain in this study was the three case schools, and common themes were discovered regarding their use of DDDM to drive instructional improvement.

A key feature of "qualitative data is their *richness and holism*, with strong potential for revealing complexity; such data provide 'thick descriptions' that are vivid, nested in a real context, and have a ring of truth that has strong impact on the reader" (Miles & Huberman, 1994, p. 10). The work of schools does not occur in a vacuum, and therefore contextual factors other than those being studied are likely at play. The research design was selected to enable the discovery and description of such contextual factors as the school leadership and the history of other initiatives. The school culture that comprises modern day accountability, the range of teacher development needs and backgrounds, and the impact of the leader are deeply complex; and a mixed methods approach helps to reveal a more accurate picture how schools use data and how their data use developed over time.

Miles and Huberman (1994) describe another major feature of qualitative methods relevant to this research; "qualitative data are useful when one needs to supplement, validate, explain, illuminate or reinterpret quantitative data" (p. 10). So while the cases were selected according to their ranking based on survey responses, further information was necessary to discover the extent to which these schools use data to drive instructional improvement and the factors that led to such practice.

In addition to the multiple case study, descriptive analyses were conducted on quantitative data derived from a survey of educators in the schools studied. As described by Gay et al. (2006), "when qualitative methods are dominant, qualitative researchers might decide to include survey, census, and Likert-scale data along with narrative data" (p. 491). Thus, the mixed methods approach was selected to uncover practices and

context common among higher performing Title I middle schools in the Rio Grande

Valley of Texas.

## Rationalization for Selection of Methodology

An important premise to using a case study method is that the subjects have been

selected against some criteria.

Quantitative data can help with the qualitative side of a study during design by

finding a representative sample.  It can help during data collection by supplying

background data, getting overlooked information, and helping avoid bias.  During

analysis, quantitative data can help by showing the generality of specific

observations, correcting the holistic fallacy, monolithic judgments about a case,

and verifying or casting new light on qualitative findings.  (Miles & Huberman,

1994, p.  41)

Beyond being a helpful resource in case selection, quantitative data can work in

concert with qualitative data to provide a more complete picture.  "The purpose of mixed

methods research is to build on the synergy and strength that exists between quantitative

and qualitative methods in order to understand a phenomenon more fully than is possible

using either or quantitative or qualitative methods alone" (Gay et al., 2006, p. 490).  It is

the multicase study that adds to the depth of understanding of a phenomenon or set of

practices and seeks to generate findings that can be extended within specific local

contexts as well as beyond local conditions.  In the case of DDDM as a practice to drive

instructional improvement, this study sought to identify the themes across different

schools while also keeping in mind local distinctions.  Stake writes, "comprehension of

the phenomenon requires knowing not only how it works and does not work in general, independent of local conditions, but how it works under various local conditions" (p. 40).

## Strengths and Limitations of Methodology

Specific to the design of this study, the strengths of the methodology include the focus on a specific subset of schools, the use of a published survey instrument, the use of quantitative data to select the cases, and the yielding of data that is both descriptive and explanatory through interviews.  Additionally, the multiple-case study adds to the research literature by explaining in greater detail the use of data in higher performing schools.  Stake (2006) explains, "An important reason for doing the multicase study is to examine how the program or phenomenon performs in different environments.  When cases are selected carefully, the design of a study can incorporate a diversity of contexts" (p. 23).

This methodology does not come without limitations.  Most significantly, while the study yielded themes in common practice that can be shared, due to the qualitative nature of the study, no correlation or causation can be established between data use and the level of school performance through this study.  Another limitation is the possibility of observer bias and observer effect:

> For example, a situation may be seen differently than it would have been through the eyes of a different researcher or may be a somewhat different situation than it would have been if the research were not present.   (Gay et al., 2006, p. 423)

**Participants and Case Selection**

This study examined multiple cases identified using pre-determined criteria based on the research questions.  Specifically, the cases and participants were drawn from a list of higher performing schools as determined by Just for the Kids and the National Center for Educational Achievement based on state test scores and student demographics.  See Appendix A for a description of the method that Just for the Kids uses to identify higher performing schools.  The study was designed to include only higher performing schools in the Rio Grande Valley of Texas, specifically in the counties of Starr, Cameron, and Hidalgo, and are also considered Title-I according to federal guidelines.  This total set of qualifying schools under these criteria, the Initial Sample Set, consisted of six schools. The researcher sought permission at all six schools to conduct research.

The criteria for the Initial Sample Set were chosen for a number of reasons:

1)     *Higher-performing*.  Based on the assumptions articulated in Chapter One, higher performing schools were selected for the study.  Embedded DDDM is useful to school reform only to the extent that it contributes to increased student achievement.  The higher performing schools in the Initial Sample Set had demonstrated higher student achievement, and this study sought to discover the extent to which DDDM might have been used in achieving these positive results.

2)     *Rio Grande Valley of Texas*.  The Rio Grande Valley of Texas is historically under-represented in educational research and has a small percentage of high performing schools when compared with other

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regions across the state.  This makes the region all the more important

in describing the context within which these schools are finding

success.

3)   *Title I*.  Schools that serve a high percentage of students from low-

socioeconomic backgrounds are more likely to have a number of

pressures around student achievement given the nature of the

accountability system required by NCLB.  Additionally, higher

performing schools with a high percentage of low socioeconomic

students throw into doubt the popular notion that poor students cannot

achieve at rates equal to their wealthier peers.

4)   *Middle schools*.  Finally, middle schools were selected because the

findings regarding schools serving children in the middle years might

more easily be applied to schools serving both younger and older

children.

## Summary of Respondent and Case Selection

The researcher sought and obtained permission to conduct the study in each of the

six schools in the Initial Sample Set.  Permission was obtained by the researcher from a

various authorities; including the superintendent, school principal, or the central office's

research and evaluation department.  After receiving permission to conduct the study, the

researcher coordinated all activities through the principal.  The researcher arranged to

make a short presentation to the teachers during an already planned faculty meeting.  The

goals of the study were described, and informed consent was obtained from each teacher

and participant.  After the presentation, the teachers and principal of each of the schools in the Initial Sample Set completed an electronic online survey, the Survey of Educator Data Use (Wayman, Cho, & Johnston, 2007).  More information on the survey is provided in the 'Instrumentation' section of this chapter.

The data from these survey responses were analyzed and used to determine the schools' rankings on one part of the survey, the Data Use Scale, according to the teachers' self-reported current levels of data use, from highest to lowest.  The top three schools, based on the rankings, were then selected for the multicase study.  These case study schools, the Study Sample Set, were further studied using individual interviews. Thus, the first phase of respondents included participants who would ultimately make up the Study Sample Set.   The Study Sample Set was comprised of three middle schools for the case study, whose teachers and principals then participated in the full study.

**Process for Respondent and Case Selection**

The first step in the case selection process was to identify those schools which met the four criteria of this study: (a) middle schools; (b) higher performing; (c) located in the Rio Grande Valley of Texas; and (d) serving a high percentage of students from low-income homes, as defined by Title-I federal criteria.  Most of these criteria were easily verifiable by readily available data and geographic information.  Criteria A, C and D were verified by the Texas Education Agency's Academic Excellence Indicator System.[3]

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[3] http://ritter.tea.state.tx.us/perfreport/aeis/

The definition for criterion B was less obvious and since it was not the goal of this study to determine what makes a middle school "higher performing," the decision was made to identify an existing method of school ratings that was credible and could be verified.  Based on current data and existing school rating systems, two viable options were available from which to choose.  One option was to use the Texas Education Agency's Accountability Ratings and choose schools that were rated "Exemplary," the state's highest school rating.  However, the year this study was initiated there were no middle schools in the Rio Grande Valley that had achieved this designation from the Texas Education Agency.  The second option was to use the National Center for Educational Achievement's Just for the Kids initiative, which issues annual reports on Higher Performing Schools in Texas.  The latter option was selected as a means to identify the schools to be included in the Initial Sample Set from which the three case schools would be selected.

Eight schools on the Just For The Kids list were eligible for inclusion.  Of those, permission was obtained to conduct the study in six schools, which were located in four school districts in South Texas.  The school districts ranged in size from 1,215 students to 48,542 students; the schools ranged in size from 290 students to 1,354 students.  Table 1 provides demographic information on the Initial Sample Set.

Table 1

*Initial Sample Set District and School Enrollment*

| School | District Enrollment | District % Low Socioeconomic | School Enrollment | School % Low Socioeconomic |
|--------|--------|--------|--------|--------|
| A | 48,542 | 92.40 | 1,023 | 100 |
| B | 48,542 | 92.40 | 1,064 | 100 |
| C | 48,542 | 92.40 | 1,354 | 100 |
| D | 2,526 | 89.20 | 514 | 88.70 |
| E | 11,193 | 81.60 | 678 | 93.10 |
| F | 1,215 | 92.80 | 290 | 92.40 |

**Survey Procedures on Initial Sample Set**

After determining the schools in the Initial Sample Set, a survey was administered to all instructional faculty and members of the school's administrative team. The survey administered to the Initial Sample Set was the Survey of Educator Data Use, which includes basic demographic data, such as years of teaching experience, and the grade level and subject matter of teaching assignments. The survey's questions were designed to gauge the educators' frequency and types of data use, beliefs and attitudes about data use, and perspectives on their school and district's support of data use to drive instructional decisions. The results from one section of the survey, the Data Use Scale, were analyzed to determine the ranking of schools for selection in the Study Sample Set. The three schools that had the highest self-reported levels of data use selected to be studied further using the case study method described herein. The selected schools were

School A, School D, and School F (described in Table 1), and were then designated as School 1, School 2, and School 3 for the next phase of study. These represented three different school districts, ranging from one of the smallest to the largest in the Initial Sample Set.

**Context of Selected Cases**

**School 1.** Located in a large city on the Texas-Mexico border, School 1 was the largest studied with 1,023 students, and represents a typical large middle school in the Rio Grande Valley, with 97% of students who are identify as Hispanic and 100% of whom come from low-socioeconomic backgrounds. The school faces with a 16% student mobility rate and 16% of its students are considered Limited English Proficient (LEP). In 2009, the school received a *Recognized* Accountability Rating. In 2010, though it received an *Exemplary Rating,* overall achievement remained fairly constant from 2009 to 2010, as measured by the percent of students meeting the standard on TAKS. At the personnel level, the teaching force is relatively very experienced. The average years of experience for teachers is 13.7 year, with 85% having 6+ years of experience; more than half, 54%, have over 11 years of experience

**School 2.** The second school in our study is half the size of School 1 and is the only middle school in the district. School 2 serves 514 students; 88.7% of who qualify for free/reduced lunch and 84% of whom are Hispanic. The mobility rate is 12.9% and 17.1% of students are identified as LEP. In 2009, the school received a *Recognized* rating from the state's accountability system. In 2010, the school received an *Exemplary*

rating where the percentage of students meeting the standard on the TAKS test increased in every subject with the exception of writing (96% in 2009, 94% in 2010).

Teachers at School 2 are less experienced than teachers at School 1, with 9.0 being the average years of experience. At School 2, 40% of teachers have less than five years of experience, though 37% have more than 11 years of experience.

**School 3.** Representing a small, rural Texas middle school, School 3 serves just 290 students and is the only middle school in the school district. In 2009, School 3 received an *Academically Acceptable* rating. In 2010, achievement rose slightly in every subject based on the percentage of students meeting proficiency on the TAKS; whereas the school earned a 30-point boost in science achievement. Similar to School 1 and School 2, School 3 has a mobility rate of 13.9% and 14.8% of students are LEP. The teacher experience is similar to School 2 in that 45% of teachers have less than five years of experience, with 10 years being the average and 37% having over 11 years of experience.

### Instrumentation

This study used two methods to collect data: an electronic survey and individual interviews.

**Quantitative Instrumentation**

The Survey of Educator Data Use [Appendix B] is a twenty-item survey with sub-questions (53 items total). Each item is set on a 4-point Likert scale with response categories appropriate to the nature of the question (e.g., *strongly disagree, somewhat disagree, somewhat agree, strongly agree)*. Reliability tests were run by the survey

authors and factor analysis was used to group the survey questions into ten scales

assessing different areas of data use.  Table 2 provides the reliability on each of these

scales.

Table 2

*Scales and Reliability of Survey of Educator Data Use*

| Scale | Cronbach's Alpha | N items |
|-------|------------------|---------|
| Scale 1: Data's Effectiveness for Pedagogy | 0.949 | 5 |
| Scale 2: Principal Leadership | 0.91 | 5 |
| Scale 3: Support for Data Use | 0.918 | 6 |
| Scale 4: Computer Data Systems | 0.895 | 4 |
| Scale 5: District Vision | 0.947 | 2 |
| Scale 6: Data Attitudes | 0.892 | 4 |
| Scale 7: Time | 0.962 | 4 |
| Scale 8: School Level Calibration | 0.963 | 4 |
| Scale 9: Instructional Resources | 0.952 | 8 |
| Scale 10: Data Use Practice | 0.959 | 5 |

*Survey of Educator Data Use,* Wayman, Cho and Johnston, 2007.
*Used with permission.*

**Qualitative Instrumentation**

For the Study Sample Set, an interview was designed with two purposes.  First,

questions were developed to follow up on responses from the Survey of Educator Data

Use.  Second, questions were developed to gain more information about research

questions two and three.  In conducting the interviews, the researcher began each session

with a common set of questions and then employed an iterative process once the

interview was under way to determine follow-up questions.  The actual questions were

developed by the researcher and were informed by concepts and themes found across the

literature (McLeod, 2005; Scheurick & Sklra, 2003; Sergiovanni & Starratt, 2007;

Supovitz & Klein, 2007; Wayman, Cho, & Johnston, 2007).

<div align="center">**Data Collection Procedures**</div>

This study researched data use at three schools using a survey and face-to-face

interviews with the researcher.   After selecting the schools to be studied, the researcher

used purposive sampling to determine the faculty that would be interviewed.  The

procedures used for each type of data collection is described below.

**Quantitative Data Collection Procedures**

When preparing for the use of a survey, the target population, locations,

characteristics, and possible barriers to survey research must be identified (Gay et al.,

2006).  The criteria for determining these steps were described above, and six schools to

be surveyed were identified.  At the outset of the study, the survey was sent via email to

all instructional faculty and school administrators at each of the six schools.  The survey

was administered online.  Faculty were sent an email with instructions for completing the

survey, a description of informed consent, and a statement of confidentiality, along with a

link to the online survey tool.  The time frame allocated for the administration of the

survey was two weeks.  A reminder email was sent to all potential respondents on the

fourth day and eighth day after the initial survey link was sent.

Prior to the administration of the survey, the researcher presented the purpose of

the study and made an appeal for participation at each school during a faculty meeting.

An explanation of informed consent was also provided to potential respondents at this

time.  The online survey tool, Qualtrics, enabled the data to be aggregated and prepared

for analysis.

At the end of the two weeks, the online survey was closed.  The responses were

then analyzed to determine an overall score for each school based on frequency of data

use and the most promising attitudes and beliefs about data use.  The responses were

analyzed to determine mean scores on the Data Use Scale.  The six schools were then

ranked from highest to lowest and the schools with the three highest mean scores were

selected as cases for the Study Sample Set.   After the Study Sample Set was identified,

the survey responses from the case study schools were reserved for further examination

after the interviews had been conducted.

**Qualitative Data Collection Procedures**

Once the three schools comprising the Study Sample Set were determined, the

researcher used a purposive sampling technique to determine which teachers would be

interviewed.  "When choosing a sampling technique, the researchers need to remember

the primary goal: selecting participants who best add to the phenomenon under study, not

participants who necessarily represent some larger population (Gay et al., 2006, p. 114).

In determining the number of participants, the guidelines provided by Gay et al were

used.  Of first importance was the extent to which participants would represent the range of potential participants in the setting, in this case, an entire instructional faculty for a school.  Second was the consideration of when data saturation might occur, that is, the point of redundancy from the participants where the researchers would no longer be learning additional information or perspectives.  For each case school, the following steps were taken to identify the participants:

1. The principal at each school was interviewed.

2. A representative sample of teachers from each grade and subject was selected, according to the size of the school.

3. Teachers were approached who indicated on their survey that they were willing to be interviewed and those who agreed were scheduled and interviewed.

**Potential participants based on school size.**   Regardless of school size, the researcher interviewed one teacher for every three in a particular core subject area (English Language Arts, Math, Science, and Social Studies).  In small schools with a total of three teachers in a subject area, the researcher interviewed only one teacher in that subject; in large schools with as many as nine teachers in a subject area, the researcher interviewed three teachers in the subject area.  In addition to core subject teachers, the researcher interviewed the school principal and at least one elective teacher, with as many as four elective teachers interviewed in the largest school.

**Interview process.**   Interviews were conducted at each school during a time agreed upon by the selected respondents.  The researcher audio-recorded the interviews,

and then transcribed them to prepare for analysis.  Each interview lasted for

approximately fifteen minutes and focused on questions developed by the researcher to

obtain specific examples of how each interviewee used data, the interviewee's

perspective on the role of the school leader in supporting data use, and the interviewee's

perspective on how the school had achieved its current level of data use.  In conducting

the interviews, the researcher applied standard practice from the field of qualitative

research.  As recommended by Mertens (2005), a semi-structured protocol was used

when conducting interviews.  See Appendix C for the full interview protocol.   Response

rates are described below in Table 3.

Table 3

*Study Sample Set Respondents and Participants*

| School | *n* survey responses | survey response rates | *n* teachers interviewed | *n* school leaders interviewed |
|---|---|---|---|---|
| School 1 | 22 | 29% | 12 | 1 |
| School 2 | 25 | 60% | 8 | 1 |
| School 3 | 14 | 58% | 4 | 1 |
| *Total n* | 61 | 43% | 24 | 3 |

**Data Analysis**

According to Gay et al.  (2006), "data analysis and interpretation are critical

stages in the research process that require the researcher to both know and understand the

data" (p.  467).   Both qualitative and quantitative analyses were conducted in this study.

**Process for Quantitative Data Analysis**

The survey used in this study included several scales that allowed the researcher to evaluate the extent to which certain aspects of data use are widely adopted (or not). By conducting descriptive statistical analysis on the survey data, the qualitative findings could be confirmed or potential discrepancies could be raised for further exploration. The use of survey data in this study was limited explicitly to descriptive analyses.

Specifically, this study analyzed the mean responses to the following scales based on each research question. For Research Question One, the Instructional Resources Scale and the Data Practices Scale were utilized for analysis. Research Question Two utilized data from the Leadership Scale. Research Question Three examined data from several scales; a) Data's Effectiveness for Pedagogy Scale; b) Support for Data Use Scale; c) Computer Data Systems; d) Data Attitudes; e) Time and f) School Level Calibration. The analysis of these scales focused on comparison of mean scores for each scale and select survey items within each scale.

**Process for Qualitative Data Analysis**

Miles and Huberman (1994) define analysis "as consisting of three concurrent flows of activity: data reduction, data display, and conclusion drawing/verification. Data reduction is not something separate from analysis. It is *part of analysis*" (p. 10). Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in field notes or transcriptions. Data display is "an organized, compressed assembly of information that permits conclusion drawing and

action" (Miles & Huberman, 1994, p. 10). As with data reduction, the creation and use of displays is not separate from analysis. It is part of analysis.

In the current study, Stake's (2006) cross-case analysis was used to understand the data and draw conclusions. Following Stake's recommendation, the multicase research began with the quintain, studying first what was similar and different about the cases in order to understand the quintain better. To understand the cases better, each school was also studied individually.

Using this method, the researcher sought to understand the DDDM practices at each school and the impact of the school principal in enabling DDDM. While much was learned about each individual case during this study, the analysis was designed to also identify cross-cutting themes. "Each case is studied to gain understanding of that particular entity as it is situated" (Stake, 2006, p. 40). After cross-case analysis, the assertions were made about the quintain, taking evidence from the case studies to show how uniformity or disparity characterized the quintain.

To analyze the data and the findings that are specific to the quintain and that which was unique to each school, Miles and Huberman's (1994) method for gathering qualitative data was used to review information gathered from interviews and to prepare it for analysis. In coding responses, the specific approach entailed the following:

1. Affixing codes to a set of field notes drawn from observations or interviews.

2. Noting reflections or other remarks in the margins.

3. Sorting and sifting through these materials to identify similar phrases, relationships between variables, patterns, themes, distinct differences between subgroups, and common sequences.

4. Isolating these patterns and processes, commonalities and differences, and taking them out to the field in the next wave of data collection.

5. Gradually elaborating a small set of generalizations that cover the consistencies discerned in the database.

6. Confronting those generalizations with a formalized body of knowledge in the form of constructs or theories (p. 9).

In preparing for coding the qualitative data, the researcher developed a list of preliminary themes, while remaining open to revising the themes if proved to be inaccurate based on the data.

During first-level coding, responses for every interviewee were reviewed to determine if additional or different themes were needed. The second-level coding focused on the themes unique to each school. The third-level coding then focused on identifying the themes common across the quintain. During each level of coding, responses were coded by research question along with theme. The themes were categorized according to alignment with each research question; and then prepared for reporting and analysis.

**Summary**

This chapter has explained the methods used in this mixed-methods study of how higher performing middle schools in the Rio Grande Valley, Texas use data to drive

instructional decisions.  Quantitative methods provided the data for descriptive analysis

and allowed for a broader number of teacher responses per school to be captured in a way

that the interviews would not be able to (given the extensive time required to interview a

greater number of respondents).  In this way, the survey responses provide more

information as to how the schools are using data overall.  The qualitative methods

provided more detailed data for a smaller subset of teachers, which was used for the

identification of themes grouped to answer the research questions. Using the two types of

data provide a more in depth picture of how these schools are using data. The next

chapter presents the results of the study.

# CHAPTER 4: RESULTS OF THE STUDY

As stated in Chapter 1, this study examined how teachers in higher performing Title I middle schools in the Rio Grande Valley of Texas use data to make instructional decisions. Using surveys and interviews, the study generated data to answer the research questions. In this chapter, the results and analyses are presented. This chapter is organized according to the three specific research questions posed in Chapter 1. For each research question, quantitative results are reported followed by qualitative results.

The research design of this study, as described in Chapter 3 employed a mixed-methods design, administering a school-wide survey on data use and conducting one-on-one interviews with teachers and school leaders. Data from both the online survey and the interviews provided an overall picture of the ways in which teachers in these schools use data, how they feel about data use, and to what they attribute their current levels of data use. Ten scales measuring uses of data, beliefs and attitudes were formed from groups of survey items (see Appendix D for the questions that comprise each scale). Each survey item within these scales asked the respondent for a level of agreement with a statement, offering the following options or the level of frequency of a given practice: strongly disagree, somewhat disagree, somewhat agree, and strongly agree; or a few times a week; weekly or almost weekly; once or twice a month; and less than once a month. Each response option was numbered 1 – 4, with one corresponding to strongly disagree and four corresponding to strongly agree. To create each scale, responses were averaged across the group of items in that scale. Accordingly, scales ranged from one to four (Wayman et al., 2010).

The data from the interviews provided an in depth picture of the ways in which educators at higher performing middle schools in South Texas use data to drive instructional improvement; data collected from the survey provided additional insight into a broad range of DDDM practices in these schools. The following sections report results of both the qualitative and quantitative analyses of how these schools use data; the role of school leader in supporting data use; and the processes that are attributed to these schools' current use of data. Results are organized by each research question. Within each research question, the findings are organized first by quantitative data, followed by qualitative data. Within both types of data, each school's individual findings are reported in addition to the themes that cut across the cases.

**Results for Research Question 1**

Research Question asked, "to what extent are higher performing Title I middle schools in the Rio Grande Valley of Texas using data to make instructional decisions?" To answer this question, data from survey responses and interviews were analyzed. In summary, four themes emerged to describe how educators in these schools use data; 1) to make decisions about the instructional scope of what is taught at various points in the school year; 2) to determine which students receive additional support, primarily through tutorial assignments; 3) to collaboratively make decisions as a grade level or department team and 4) to increase student performance on the Texas Assessment of Knowledge and Skills (TAKS), the statewide achievement test administered annually to all middle school students.

**Quantitative Results**

The findings presented provide an overall representation of how the case study schools use data to make instructional decisions. In general, teachers and leaders in these schools reported high levels of data use and, overall, positive beliefs about data, the support they receive and the importance of data use as educators.

The mean scores on all scales for each school are reported in Table 4.

Table 4

*Mean scores on all survey scales*

|  | PED | LEAD | SUPP | COMP | VIS | ATT | TIME | CAL | INST | PRAC |
|---|---|---|---|---|---|---|---|---|---|---|
| School 1 | 3.6 | 3.0 | 2.9 | 2.9 | 3.3 | 3.4 | 2.8 | 3.1 | 3.0 | 3.5 |
| *n=22* | (0.56) | (0.83) | (0.69) | (0.74) | (0.87) | (0.63) | (0.77) | (0.75) | (0.84) | (0.56) |
| School 2 | 3.3 | 3.3 | 3.1 | 3.4 | 3.5 | 3.0 | 2.7 | 3.4 | 2.5 | 3.1 |
| *n=25* | (0.67) | (0.66) | (0.58) | (0.59) | (0.58) | (0.54) | (0.91) | (0.59) | (0.76) | (0.76) |
| School 3 | 3.4 | 3.4 | 3.2 | 3.3 | 3.5 | 3.2 | 3.0 | 3.2 | 2.6 | 3.4 |
| *n=14* | (0.61) | (0.56) | (0.57) | (0.66) | (0.72) | (0.62) | (0.86) | (0.69) | (0.80) | (0.58) |

Note. Values in parenthesis are standard deviations.

For purposes of research question one, the following scales were used, 1) the *Instructional Resources Scale* (INST) and the 2) the *Data Use Practices Scale* (PRAC). These scales comprise eight and five survey items, respectively (see Appendix D).

The survey asked respondents to report on how often they use various types of data as well as the frequency of use given a range of instructional choices. All three schools reported using data frequently, however the purposes for that data varied. The top five uses of data as self reported are displayed by school in Table 5. While the use of

data to tailor instruction to individual student needs was ranked high across the three

schools, the other top uses were different for each school.

Table 5

*Top uses of data by frequency*

| Rank by frequency | School 1 | School 2 | School 3 |
|---|---|---|---|
| 1 | Use data to identify learning needs of students who are struggling (3.18) | Use data to identify instructional content to use in class (2.69) | Use data to form small groups of students for targeted instruction (3.57) |
| 2 | Use data tailor instruction to individual students' needs (3.12) | Use data tailor instruction to individual students' needs (2.68) | Use data tailor instruction to individual students' needs (3.5) |
| 3 | Use data to identify instructional content to use in class (3.12) | Use data to identify learning needs of students who are struggling (2.65) | Discuss data with a student (3.5) |
| 4 | Use data to set learning goals for individual students (3.0) | Use data to develop recommendations for tutoring or other educational services for students (2.62) | Use data to identify instructional content to use in class (3.43) |
| 5 | Use data to develop recommendations for tutoring or other educational services for students (3.0) | Discuss data with a student (2.42) | Use data to identify learning needs of students who are not struggling (3.36) |

*Mean scores are in parentheses*

## Qualitative Results

According to the survey responses, teachers across all three schools reported

using a broad range of data for a variety of purposes.  When comparing the survey data

with the interview data, a slightly different story emerged regarding the extent to which

teachers reported using data to make instructional decisions.  The interview results

showed that data use in these schools was more narrowly focused than the survey results

conveyed and that in general, data use was limited to a single-purpose-- ensuring

increased levels of student performance on the state administered TAKS test.   Four

qualitative themes describe the extent to which teachers in the schools studied use data to

drive instructional decisions; 1) data drives instructional scope 2) data drives student

grouping; 3) data use is aligned to the state test; and 4) collaborative decisions are made

using data.

**Data Drives Instructional Scope**

The process of deciding what to teach and to what level of rigor is one of the most

important decisions a teacher makes.   To be sure, many school districts in Texas require

their teachers to use pre-developed, state-standards aligned curriculum.  The presence of

such resources, however, does not take the away the need for day-to-day; week-to-week;

unit-to-unit decisions all effective educators make.  Such decisions include determining

in greater detail than what is provided in state standards and curriculum maps what

exactly it is that students will learn in a given course, in a given year.  As such, teachers

decide the instructional scope of what is to be taught in their lessons and consequently

what is to be learned.  For purposes of this study, *instructional scope* refers to what is

taught at the teacher and school level.

**Beginning of year.**   Throughout the interviews, teachers described three ways in

which they used data to determine instructional scope.   First, data was used at the

beginning of the year to determine high priority standards.  In this case, data from the

previous years' TAKS scores were used to determine the instructional scope of what was

to be taught, specifically the TAKS objectives.  During the interview, teachers described a process whereby they analyzed prior years' TAKS results at the beginning of the school year, when available, to adjust the scope and sequence of their courses.

**Post-major assessments.**  The second way in which teachers used data to determine instructional scope was after each major district assessment and in some cases, teacher-level assessments, though this was less common.   Teachers used the data from "benchmark" tests (which were described by teachers as past years' TAKS tests released to the public by the Texas Education Agency) to adjust the scope and sequence of instruction during the school year, especially as the administration of the state test drew near.  As described by one teacher

> After the benchmark, we break out into subject area clusters [departments], look at the data and the lowest objective.  From there, we identify the objectives that need to be addressed, and that information is used to develop lessons that emphasize the TEKS [Texas Essential Knowledge and Skills, the state's legislated curriculum] that need to be pushed a little more; if students are doing well, we move on.  If they are not, we spend more time with it.

This type of response was common across all three schools.

**Tutorial content.**  The third way in which data was used to determine instructional scope was to decide what was to be taught during tutorials, typically offered after-school or on Saturdays.  Put another way, teachers reported using data to determine what needs to be taught initially and later what needs to be retaught.   The theme that ran

through each of these uses of data to determine instructional scope was the need to create efficiency on instruction by prioritizing standards.

Teachers at each school explained that they gain ground on their instructional scope and sequence when the data shows students have mastered an objective, as measured by the TAKS-formatted assessments they administer.  They use this banked time to spend more time on objectives that the data shows students have not yet mastered. As one teacher described the value of such practice, "I do not have to waste time teaching something the students already know."  Another teacher explained, "I use data from previous test scores to gauge exactly where I'm hitting the TAKS objectives and what I'm not hitting, what is being missed and what is not, when I can move on and who I need to send to tutoring."  As explained by a teacher at School 2,  "we do not want students coming to tutoring on the days we're not covering a certain objective.  For example, if I have ten kids who are low on objective two, and two who are low on objective five, I don't want those two coming when I'm discussing objective two."

A theme that did not emerge from the interviews was the regular, day-to-day, week-to-week use of data to determine student mastery of a given lesson or series of lessons.   Though the survey data revealed that teachers report using teacher-created assessments most frequently, teachers did not convey that they actually use this data to make instructional decisions?

**Data Drives Student Grouping**

In addition to using data to determine instructional scope, the schools studied use data for various types of student grouping, ranging from tutorial rosters to teacher or

classroom assignments.  Several teachers described how the school moves stronger teachers to work with students who are struggling, but not until very near the state test administration date.  In two of the three case schools (School 2 and School 3), teachers described how the school reassigns teachers and students as the state test draws near, based on data from the benchmark exams.  Each of the schools gives a November benchmark exam, which is a state-released former version of the TAKS test.   Data is then analyzed to determine student tutorials and in-class grouping.   In some cases, as the state test draws near, schools reassign students and teachers temporarily based on data from the benchmark exams.

**School 1.**   After each benchmark exam, students who are in danger of not meeting the standard on the state exam are assigned tutorials using data from the exams. The principal also described that the school uses student performance data from the previous year's TAKS test as a consideration in the creation of schedules and rosters, with students who failed the state exam being placed in an extra math or English language arts class.

**School 2.**   At School 2, students are grouped homogenously at the beginning of the year based on TAKS data.  Though the use of data to make student grouping decisions has benefits, it may also have limitations.  As expressed by one teacher,  "we take everything from the TAKS data.  Our schedules are all based on the results, our tutoring is based on the results, so we do not take into consideration other things we know about the students.  We assign them to certain classes based on this one piece of data and then wonder why a month later they're not in the right class."

**School 3.**  The use of data to determine student grouping was most prevalent at School 3.  While most teachers were positive about the way in which data was used to group students for tutorials or small-group instruction, some teachers and their students were more negatively affected.   At School 3, the grouping decisions based on data helped schools compensate for ineffective teaching.

 "Some teachers, after the benchmark will say to students, '*Okay, you're in this group, just work on this worksheet, I have to work with this group from now on.*'  So the lower performing kids get more attention than these other kids.   We say, '*You got the number we wanted, good enough, I don't have to worry about you.*' But are they really growing and progressing? These students could learn more.  Why aren't we pushing them, too? We're hung up on this one batch of kids over here that isn't passing the test at the expense of all students."

> We all have our own set of students, except when it gets closer to TAKS time, I get moved to the grade level that is the weakest or to the class that has the weakest scores.   I don't like it because my students are left alone with a substitute or the weaker teacher and they do worksheets for a month.  They essentially do not get real math instruction for the month of April.  Last year after the benchmark scores, they took the highest scoring students away from me and put them with the teacher whose students scored the lowest and they do not do anything during that time; they then gave me the lowest scoring students.  This is done because there is pressure to get the scores.

In this way, School 3 used data to compensate for gaps in certain teachers' effectiveness.

**Increasing Student Success on the TAKS Test**

The survey and interviews validated a wide range of practices that educators in these schools employ when armed with data and highlights how data is used to help students succeed, particularly on the state exams. However, teachers self-reported on the survey that they use a variety of data sources for a range of purposes, such as determining instructional methods, while the interviews revealed a more focused purpose, specifically those practices which are related directly to increasing student performance the state TAKS test.

In answering the interview question, "*When you think about data driven decision making, what most comes to mind,*" 20 out of 24 responses focused on data use for ensuring student success on the TAKS test. It should be noted that in nearly all of these cases, the response was a positive one in which the educators seemed to really feel empowered. That is, teachers expressed a sense of satisfaction when using data from TAKS-related benchmark assessments that predict students' likely achievement on the state test in the spring. At the same time, survey responses indicated a belief that the TAKS test is not a valid measure of student learning.

The interview data reveals the juxtaposition. When asked how he uses data to drive instructional decisions, a teacher at School 2 replied, "TAKS benchmarks. I use the data from them to strengthen my teaching methods and target those weak areas that the data shows. That's the first thing that pops into my head." But another teacher at the same school responded, "Test results; everybody is so concerned with numbers right now. That is really all we look at or the majority we focus on. I must play the game

because it is what we all do. And we do; we push the students until they get there. In my mind, I'm not all about the numbers. I'm about them learning something."

Having a clearly defined goal, such as a certain percentage of students passing the TAKS test, can encourage data-driven decision-making. The findings of this study reveal that while positive uses of data can keep educators focused on student outcomes, potential limitations exist regarding the way in which schools use data, such as constraining the educational experience of students to a narrow curriculum defined by the state's testing system. The majority of the teachers interviewed described their data use exclusively in terms related to their students meeting the objectives as assessed on the TAKS test. As described by a teacher at School 2, "I guess [DDDM] means you're only going to rely on the TAKS data for all the decisions that you make and you're not taking into consideration other things that are important." When asked to expand on what other types of things, respondents were hard pressed to be specific.

When designing and using their own assessments, teachers express that they are confined to approaches specific to the state test, such as multiple choice question format. This constraint was not perceived as something negative. At School 2, the math department chair explained, "I use a special program to create our six-weeks tests and benchmark exams so that it is TAKS-formatted and specific to how the objectives are assessed on the state test."

At School 3, a math teacher who feels that the school's use of data has helped her be more effective, described how she uses data to drive her instruction:

I look at the released TAKS test to see if, let's say, 7.13A [from the state's TEKS] gets tested throughout the test, so we look at the questions see if there is another way to test the question because on the TAKS, the objectives are tested differently, so we want to make sure we use different forms of the questions. That way they see different forms of that objective tested.

Sometimes teachers reported being pressured to change their teaching behavior within their own classrooms in response to TAKS-related data. At School 2, a reading teacher shared this specific example:

I was told not to use novels for students who were not passing the benchmarks or for those who were on the bubble [scoring between 50-69%]. Only the 'high kids' got to read actual books. We were told not to use novels in reading class. Instead, we were told to use TAKS passages. We could use novels for the advanced kids, but for the rest of the kids it was only passages, passages, passages.

While the teacher responses at School 2 and School 3 conflated DDDM with TAKS-related data, School 1 responses framed data use in a more nuanced manner, though generally still within the confines of student performance on the TAKS test. A 7th grade science teacher at School 1 described DDDM in this way, "I look at what the data says and I try to use it to pinpoint and then make a roadmap for the deficiencies and the strong-points of the students and where we need to get to the ultimate goal." When pressed further, however, the TAKS focus become more evident:

Researcher: "And for you, when you say, 'ultimate goal,' what is that for you?"

Teacher: "Whatever the mission is for student success?

Research: "And what is that mission?"

Teacher: "More than anything, the state assessments, because everything is geared to the state assessment."

The teacher responses at School 1 followed this pattern, where general statements about data use were made initially and when pressed for specifics, the link to outcomes on the TAKS test was made. At the same time, School 1was the only place where teachers began to push beyond the TAKS-based definition of student success. The school has recently adopted College Board's Springboard curriculum in math and the math teachers expressed that they will using data from the assessments that come from the College Board curriculum in addition to the data that they receive from the TAKS-aligned assessments.

**Collaborative Decisions are Made Using Data**

The qualitative results revealed the extent to which teachers use data collaboratively with their colleagues. Similar to the findings presented in the quantitative results, during the interviews teachers reported that they frequently used data in discussing students' progress with one another. As described by teachers this interaction between teachers occurred informally more often than collaboration through the use of formal structures. In each school, structures did exist for reviewing, discussing, and acting on data. However, the extent to which these structures were mentioned as a frequent avenue for collaborating around data varied. In some cases, where formal structures did exist, the teachers did not perceive them to be formal but

rather just a way of going about their daily work as educators. Of the three schools, School 1 and School 2 both had in place substantively structured and consistently opportunities for collaborating around data, whereas School 3 did not have formal structures in place for collaborating about data use

**School 1.** The structures in place at this school were described as purposeful and required. Teachers meet as a subject-department team each week where a member of the school leadership team attends. For example, the principal attends the math meetings every week and the department chair leads the team through the review of data from the benchmark exams and the preview of upcoming instructional objectives. During these meetings teachers described conducting a form of item analysis, whereby they review the questions students most struggled with and then try to figure out why students had difficulty with that instructional objective.

Teachers could also describe how they engage with their colleagues informally around data. "When we get our benchmark data back, we sit down and compare notes. We tend to identify where we are and if we notice a difference in one teacher's students' performance; let's say another teacher's students did better on objective one than my students did, I will ask, 'hey, how did you teach that objective?" Teachers in every subject interviewed described a similar form of informal collaboration using data.

The principal at School 1 explained that he is able to facilitate rich conversations with his staff because of the information central office provides him. For example, "right now, central office is sharing data on special education through the Performance Based Monitoring Assessment System. We are in danger of Stage 3 of AYP so I show teachers

the percentages of where we're supposed to be, all of the indicators that affect this rating and make them away so they can make good decisions."

**School 2.** Teachers at this school described the most specific structures for collaboratively using data. The principal at *School 2* requires grade level teams to conduct data analyses each six weeks on a range of data, including benchmark results, course grades, attendance and discipline rates. The team reflects on the data, develops an action plan, and submits the plan to the principal. Though teachers described formal structures, they stated that no such formal structures for data collaboration were in place at their school. As captured by one teacher, "I don't know if there are any formal structures, maybe because we have been doing this for so long, it's become a way of business." This same teacher, in describing the collaborative practices of the school, "as a faculty, we have weekly meetings as a grade level, as a subject area. We're constantly talking about students: *Does he need tutorials? Do we need a parent conference? What do we need to do to help that student?*"

The principal at School 2 describes that he requires the staff to use all of this data because he believes in the power of data. "Having been a social studies teacher and department chair who had really strong TAKS passing rates, I knew that using data was key to our success and I knew it would be key to leading a school to success. Good principals should stress the use of data, the importance of knowing your students and understanding their needs. I require teachers to do this analysis so I can ensure they know these things."

**School 3.**  Teachers at this school were not able to describe examples of formal or informal collaborative structures, though they did describe a positive peer culture at their school.   While the school did bring teachers together after each district-administered benchmark tests (administered twice during the school year), teachers described that time being utilized mostly for planning purposes.  A science teacher explained, "the science department has a conference period together and we use that time to plan.  We have periodic meetings where we go over data and adjust what we're teaching."  A common planning period was built in the schedule for each core class, however the extent to which that time was used to formally utilize data was not clear.  As described by a reading teacher,

> We have the same conference period.  It's not's formal but it's like, *'Hey, I have this student, what can I do?'* It's more casual.  We will, on occasion, spend a whole day planning and going over all the data with other teachers and we usually do that after the November benchmarks.  We will have a whole day planning just to look at data.

The principal at School 3 was candid that in her previous role as instructional facilitator she had more time to meet with teachers and set up structures for data use.  This year, as a new principal, she is not doing this as much.  "My hope is that I have taught my department and grade level chairs the importance of data but we have not spent enough time in staff meetings looking at data.  I look at it all the time and I know my teachers do, but we haven't set up those structures yet."

**Summary of Q1 Results**

In summary, teachers in these schools appear to be using data as a regular practice to make thoughtful instructional choices. Data is used to determine the instructional scope of what is taught and which students receive additional tutoring. There is an embedded culture of collaborative data use, where grade level teams and content teams use data to make decisions beyond one's individual classroom. At the same time, though data use is happening fairly extensively, it appears to be towards a single-purpose. The decisions being made with data both helps teachers use instructional time more wisely while potentially limiting what is taught to that which is directly tied to student performance on the state test.

It should be noted that there is a distinction to be made between focusing on student performance on the state test and focusing on ensuring students learn the state standards. In the interviews, teachers did not mention state standards unless they were part of what was assessed on the state exam. Or, when they did, they did not consider such a practice as being data driven. Of those teachers who stated explicitly that they did not believe they were "data driven teachers," during their interviews they went on to describe the use of multiple sources of data such as using rubrics, in class assignments and tracking growth of student mastery over time. As one teacher who said she did not consider herself data driven, described, "I look at the child who starts with a 30% proficient and makes it to 60%. This is a tremendous increase, so I want to look at what made that improvement happen, what is it that I did or what did we do as a team to make

this happen and what can do to continue the improvement." This paradox will be explored in Chapter 5.

## Results for Research Question 2

The second research question in this study was, 'how does the principal support data use for instructional decision-making?' Similar to the results presented for research question one, this section reports the quantitative findings followed by the qualitative findings.   In summary, principals in these schools play a significant role in supporting the use of data in their schools.  The data from both survey responses and the interviews showed that principals do play an integral role in the extent to which these schools use data to drive instructional improvement.

**Quantitative Results**

On the survey, teachers report the important role their principals play in supporting their data use, specifically the extent to which they provide encouragement direct resources, and support faculty.  For this research question, the results from the survey were analyzed using three scales; 1) the *Principal Leadership Scale;* 2) the *School-Level Calibration Scale;* and 3) *the Support for Data Use Scale.*  Overall, responses on each of these were positive.

**Principal leadership scale**.   This scale is comprised of five questions that describe actions that principals and assistant principals take to promote data use.  This scale evaluates how school leaders led with data, encouraged teachers to use data, or created opportunities for improving data use.  The alpha reliability of this scale was 0.910.  For School 2 and School 3, responses on this scale were among the highest across

the scales; School 1 (*M*=3.10*);* School 2 (*M*=3.32*);* School 3 (*M*=3.41*).*

 **School-level calibration scale.** This scale is comprised of four items that describe how aligned respondents perceive their fellow educators to be around certain core understandings of learning; such as "educators in my school share a common understanding about effective ways to evaluate student learning". This scale evaluates how the extent to which a school is calibrated—or normed on these common understandings. The alpha reliability of this scale was 0.963.

 The level of school-wide calibration is noted in response to research question two because it is presumed that principals as the leaders, facilitate shared understandings and shared vision amongst their faculty and staff. As discussed in Chapter 2, calibration has been found to be an important indicator of positive levels of data use within schools (Wayman, et al 2007). The mean scores for this scale were; School 1 (*M*=3.15*)*; School 2 (*M*=3.4) and School 3 (*M*=3.22).

 **Support for data use scale.** The Support for Data Use scale is a six-item scale which assesses the supports provided for educator data use. Items on this scale asked about levels of adequate preparation, professional development, and access to help in using data. The alpha reliability of this scale was 0.893. The results for this scale are noted here as it is the principal and/or other school leaders who ensure these types of supports exists for their teachers. The mean scores for this scale were; School 1 (*M*=2.91); School 2 (*M*=3.41) and School 3 (*M*=3.31).

**Qualitative Results**

In each of the schools studied, teachers consistently attributed their use of and focus on data to the leadership of the principal. The qualitative data reveals a more detailed picture of the role the principal plays in their school's current level of data use. In essence, principals in these schools created the conditions for DDDM. This was uncovered during the interview in the following themes: 1) principal as pacesetter; 2) reciprocity; and 3) empowerment.

**Principal as Pacesetter, with District Support**

When describing the role their principal plays in supporting data use, the majority of teacher respondents described how they only came to use data because their principals required them to do so and that such requirements were tied to a broader vision. These requirements also came with support, encouragement and a high degree of engagement from the leader. Specifically, as described by teachers, principals first set the expectation that data use was a non-negotiable. When teachers were reluctant, the principal was persistent and followed up. When asking teachers to use data, the principal also modeled using data. These actions, as described by teachers, led them to ultimately use data on their own accord. Put another way, these principals had created buy-in because of data use rather than seeking buy-in to use data. As described by one teacher, "I was resistant to using data at first. But she (principal) was very persistent and she was always asking. She would catch me in the halls and ask me if I had reviewed the data and what did I think. When I couldn't respond, she would say, 'Okay, you think about that and come find me tomorrow.' Then I realized, 'I really need to know this

stuff.' At first I was frustrated but then eventually you realize, 'Okay, this works.  I like this.  This is good."

        **Presence, engagement, and modeling.**  Being present and engaged with the data is a theme that cuts across all schools studied.  As described during the interviews, the teachers reported a belief that the principal was willing to sit down and look at the data with them if needed.  At School 1, the principal promoted data use at the campus level during faculty meetings and then began attending department meetings to engage more deeply with each subject area.

> The principal would do the work to analyze the data and present it in a faculty
>
> meeting.   He would say, 'Okay everyone, according to the data, this is where we
>
> are right now and we all know where we want to be, so what can we do?' Now,
>
> we do the same thing but at the department level and we pull the data.  It's a very
>
> important role he plays in setting the tone for using data.

While these themes were present in each of the schools, School 2 stood out in the degree to which the principal was hands-on with teachers' collaborative use of data.  At this school, like the others, teachers described how they used data during department meetings.  This particular school, however, provided numerous examples of just how involved the principal is in these meetings.  For example, the math team for one grade level meets daily, at the principal's request, to ensure they are all aligned in their instruction and in their use of data to determine how to teach certain concepts.  The principal joins these meetings at least twice a week, as described by one of the teachers.  "He sits down and the same way we dissect the data and talk about it, he also takes the

time to sit with us, go over the data, and ask us, 'what are you interpreting, what are your ideas, what are you planning?' He will guide us in the right direction as best as he can. He might say something like, 'you may want to try this' or if we ask him for support say, to run a tutorial, he will provide that. If we feel a need for it, and the data backs it up, he will make it happen for us."

When creating the conditions for successful implementation of a practice such as DDDM, the impact of the leader being present is critical. At School 2, teachers describe the impact of the leader being present, "in my old school I barely saw my principal, rarely talked to him. Here, he meets with us, he wants to know what is going on, he is in the hall all the time, we talk every day and that goes a long way to me doing what he asks me to do."

**Reciprocity**

The theme of support was evident in both the survey data and the interview data. However, further analysis of the interview data led to a theme that was a bit more complex than simply the importance of the principal providing general support. Reciprocity, a concept applied in education by researcher and professor, Richard Elmore (1997), is a more nuanced type of support. Reciprocity refers to the concept that for everything one is asked to do, the amount of support equal to the effort you will exert in meeting that expectation will be provided.

Throughout the interviews, teachers stated that their principal provides them with the support and resources they need to use data to drive instructional decisions and this in turns makes them willing do to it, even if it means more work at times. While this theme

existed at each of the three schools, it was more pronounced at School 2 and School 3.

At School 2, a teacher describes the principal's support in the following way,

> He backs us up, always asking, 'what do you want to do? Do you need more workbooks? Do you need a supplemental curriculum? When do you want to start Saturday Academies?' He asks for our input, 'what do you think is best, what ideas should we use, what interventions?' This really helps.

In addition to the specific support teachers felt from their leaders on data use specifically, they also stated that in general the principal is someone they could go to for support. They expressed that this feeling of support made it easier to power through the hard work of using data.

The teachers at School 3 described their principal as being available and willing to work through challenges together, "He is very knowledgeable about the curriculum and the objectives and is involved with us. He doesn't just come and give us advice. He sits with us and is always there for us. Whenever we need something, we go to him and he will meet with us and let us know if we're going in the right direction or not and actually help us out."

**Support through resource allocation.** In addition to providing support generally, teachers cited examples of specific resources that were provided as a result of data use at their schools. Data was used explicitly to make purchasing decisions. While a principal might be expected to describe this use of data, during the interviews, several teachers described how budget decisions are made based on data.

At School 2, a science teacher described it this way:

As a science department, we look at data at the beginning of the year and determine what money we need so that we can put that money towards those particularly weak objectives; we use data to decide which equipment to buy. For example, students this year were coming in weak on Objective 1, the nature of science, so we prioritized our purchases for equipment that would help us reach that objective.

**Empowerment**

Teachers in two out of three schools conveyed a real sense of empowerment and agency in using data. While teachers in School 3 conveyed that they went along with mandates because they just "had to," teachers in School 1 and School 2 were enthusiastic about their level of commitment to the use of data and how their principals supported them in using DDDM. Though there were a few exceptions in School 2, teachers generally expressed positivity regarding the support they received from their principal. Specifically, in discussing how their principals were involved in data use, teachers explained that their principal's actions left them feeling empowered. It appeared that data use was not something done to them but something teachers really owned and had agency in the plan moving forward. In School 1 and School 2, teachers gave examples of how they make decisions about when and how to offer tutorials, deciding which specialized professional development they may need and decisions on which resources needed to be acquired. Time and again teachers stated, "if we need something after reviewing the data to address the needs, he/she will get it for us."

While this is similar to the reciprocity theme discussed above, this theme is unique in that teachers express that they have the power to choose these things.  At School 2, each department and grade level determines when they offer tutorials.  For example, the English Language Arts department holds tutorials after school during the week because they prefer not to work during Saturday tutorials.  At School 1, teachers cited an example of when they wanted to rearrange the school day schedule to pull students for small group tutoring and the principal made it happen.  The idea that these teachers can actually propose solutions that will be implemented makes them truly own the data and see their agency in responding to it.

**Rapport facilitates support.**  In addition to the tangible support and actions of principals, teachers described having an overall positive rapport with their principals.  For example, teachers expressed that they could engage with their principal regarding professional decisions.

**School 1.**  "He is very approachable, calm and listens and that is a good thing.  A teacher should not have a knot in your stomach every time they see the principal, which I have experienced in the past.  Now, I don't.  I definitely trust and respect my boss." This level of rapport was apparent in all three schools.

**School 2.**  It also appears that principals in these schools are skilled at framing data use and the focus on results as something that is decided by the teachers, even if it is not.  A teacher describes it this way, "He's all about the data, he's always telling me, 'look at *your* students, make sure you're looking at the data compared to where *you* want them to be." This slight shift of words, making the decision a choice point for the teacher

rather than a mandate appears to empower the faculty at these schools to deeply own their use of data.

Even for those few teachers who expressed negative perspectives on their school's data use practice, they did not attribute this to their principals. In all but one case they provided examples of how the principal supports them. Instead, they seemed to blame a larger system of high pressure rather than their individual principals.

**Summary of Q2 Results**

In summary, the support provided, and the way in which it is provided by the principal, matter greatly to the teachers at these schools in how they use data. Principals at these schools, School 2 and School 3 in particular, have taken specific steps and lead in a way that creates the conditions for successful data use. Principals in these schools set the expectation for data use and model it. They persist when teachers are not quick to get on board with the practice and they do this by being present and engaged in data use with teacher. Additionally, because teachers feel there is a real partnership, a sense of reciprocity between them and their principals, they feel they have the support they need to use data to drive instructional decisions.

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**Results for Research Question 3**

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The third research question addressed in this study was, 'what do teachers perceive to be the processes that have led to their school's current level of data use in instructional decision-making?' At a high level, the processes and structures that have led to these schools' current level of data use are rooted in supportive, collaborative cultures characterized by shared values of continuous improvement and a sense of pride around

each school's accountability rating on the state's report card.  The results from both the survey and the interviews were analyzed for this research question.

**Quantitative Results**

From the survey, the following scales were used for analysis of this question: *Data's Effectiveness for Pedagogy, Support for Data Use, Computer Data Systems, Data Attitudes, Time,* and *School Level Calibration*.  These scales were chosen because they appear to be correlated with the schools' level of data use as reported in the findings on research question one.  A brief description of each scale is described below and the specific survey items that comprise each scale are listed in Appendix D.

**Data's effectiveness for pedagogy.**   This scale (PED) consisted of five items that asked about the positive effects data can have on improving educational practice (e.g., helping to plan instruction, identify struggling students, or identify learning goals). The alpha reliability of this scale was 0.910.

**Support for data uses.**   This scale (SUPP) consisted of six items, which assess the supports provided for educator data use.  Items on this scale asked about levels of adequate preparation, professional development, and access to help in using data.  The alpha reliability of this scale was .918

**Computer data systems.**   This scale (COMP) included four items that asked participants to rate the quality of the technology available for accessing student data (e.g., easy to use, provide access to lots of data).  The alpha reliability of this scale was 0.895.

**Data Attitudes.**  This scale (ATT) consisted of four items that asked educators how they felt about data use.  The alpha reliability of this scale was 0.892

**Time.**   This scale (TIME) consisted of four items, which assessed the availability of time and structures for educators to use data, such as time to review data and time to collaborate with others about data.  The alpha reliability of this scale was 0.962

Table 4 herein presents the mean scores on each of these scales for each of the schools studied.

## Qualitative Results

Interview data that illuminates the survey results will be discussed below, according to relevant themes.  This section organizes the findings by the following themes that are common across schools: a) a culture of possibility and success; b) foundational attitudes and beliefs; and c) the role of the state assessment system.

## A Culture of Possibility and Success

At each school interviewed, data use was viewed as a skill that could be learned and where support was available when needed.   Throughout the interviews, teachers noted the importance of having mentors and patient helpers as they worked to gain proficiency in data use.  This theme was especially prominent, though not exclusively, among teachers with more than ten years of experience.   Teachers who had been in education for some time expressed initial hesitation due to lacking skill sets and/or a discomfort with numbers.  They said they made the leap when someone showed them— in some cases a colleague, in some cases the principal—how to actually look at the data.  As described by a teacher at School 1,

> The first time I got a data report from the benchmark, I just shut down.  I needed
> to meet with someone who could explain it to me.  So I sat down with the

instructional specialist and we went through line by line and she explained what it

all meant.  I felt like I had help to do something I was required to do but did not

know how.

At School 3, another teacher described a similar turning point.

Everybody talks about it…data, data, data.   But if you really don't know to look

at it and what it means, you won't use it.  I needed someone to walk me through it

to help me understand it, to show me how they used it and then say, 'okay, now

it's your turn, practice.

Feeling a sense of possibility is key to paving the road for data use at these schools.   At

School 2, a teacher describes her path to increasingly using data:

There was a lot I didn't understand for a long time.   It wasn't that I didn't care

about using data but you would get this big stack of papers and wonder, 'what am

I supposed to do with this?' Now, I get the reports and I know exactly what to

look for because of all the staff development we did on how to use data.


In each of the schools, teachers described their trajectory of data use to what it is today

and each placed a high value on the level of support they received.   Because this was a

skill that was possible for them to learn successfully, they embraced it.

**Tools make data use possible.**   In addition to the support these teachers

received, in all cases, these schools provided teachers access to a software system that

analyzed test data.  The teachers described how this changed their view and use of data.

"We no longer have to go through big binders or file after file.  We can go to the system

and 'poof' there it is. We have such easy access to a student's historical and current performance on TAKS and benchmark exams." Though two of the three schools are part of a relatively small school districts and as such do not have access to a robust data management software system, both schools did have basic systems that allowed for the scanning and reporting of data by learning objective. This capability was highly valued by the teachers interviewed.

**Success fosters success.** When teams of teachers first began using data, those interviewed spoke of challenges and resistance but concluded that over time, as they experienced success, they bought into collaboration and discussion around data and instruction.

> At first, we all had our different ideas and it was difficult. But it has helped us because now we can use three different ideas to address the same challenge presented by the data. We could then pick and choose the ideas that were going to be better for our own groups of students, so now, we like it.

As described briefly in the results to Research Question Two, respondents shared that while the reason they started to use data to make instructional decisions was often out of mandate, they continued to do so, and without prompting because this practice helped them do their jobs more effectively. In addition to attributing data use to the collaborative culture that helps them be more effective, teachers said that using data makes them better educators. At School 3, a teacher shared, "I am a better teacher

because of the way we use data. Without that data I would not know my weak areas and I wouldn't be the teacher I am now."

This theme continued across all three schools. A teacher at School 1 shared, "it's fear of the unknown at first but we do it because we have to and then we get the hang of it and we see it work, so we use it to our advantage." At School 2, a teacher described the reason behind his shift towards being data driven; "I make more sound decisions with the data provided; in order to be effective we need to look at the data for each student, in order to instruct most effectively." A teacher at School 3 shared,

> At first, our department complained and we all said we wouldn't do it. It's too
> time consuming and we didn't have the time. But we've seen our areas of
> strength and weaknesses and though it is time consuming, we do it because we're
> learning a lot from each other. When we meet as a team we share a lot of
> solutions around the data. I get to hear from the whole math department, get
> feedback from more experienced teachers and I'm then a better teacher." Data use
> in these schools appears to help teachers do their jobs more effectively. Nearly all
> interviewees attributed the success the school has experienced to their use of data
> as a major factor.

Because these schools had a range of teacher experience, there was a unique opportunity to talk with teachers who had been in education for over twenty years and have witnessed the rise of data use in the profession. Each of these veteran teachers (15 years or more) described their trajectory of embracing data use as core to their practice. A veteran teacher at School 2 shared,

I did not always use data; I started doing so in the late 1990s. I started using reports from the benchmark exams to shift my lessons and it worked. At that time, it was mandated but now it is something I must do because it is key to my success as a teacher. In the beginning we used data because we had to but then we found out that there is a correlation between data use and student success.

**Foundational Attitudes and Beliefs**

The attitudes and beliefs around data at all three schools were consistently positive though each school had at least one outlier who expressed concern about the way in which data was used to make certain decisions. The findings presented here demonstrate that attitudes and beliefs about data do in fact affect data use at these schools. First, there was an overall belief that the state accountability system, where it pertains to state testing, was a positive force that provided historical data on student performance as well as a reflection of their hard work. There was clear buy-in from teachers and principals into the accountability system and an acceptance of the state testing as part of how they do their jobs in order to help students be successful. In the case of the outlier respondents, they described doing enough to keep their jobs but did not express data use as something they would do even if they did not have to nor did they attribute their students' success to their use of data.

In contrast to the results on the survey, the interviewees seemed to equate student learning with state test results. While this finding could be a source for further research and the question of what teachers believe demonstrate student learning, it is relevant to this study as it points to a potential core belief, that the most important data teachers use

is that which is directly derived from and drives towards performance on the state test. This basic belief or acceptance could be why teachers in these schools were so open to using data related to the TAKS test to drive their instruction.

**Continuous improvement is valued.** In addition to a positive attitude towards standardized testing and an acceptance of the state tests, there was a belief that continuous improvement was both a requirement of their jobs as well as way to be more effective. These schools consistently connected their use of data to improved instructional choices that were informed by data as well as by colleagues. This belief, that improving one's practice is both important and can come from knowledge outside oneself, is a foundation from which to build a school where data use is an embedded practice. This sense of continual improvement and 'looking for a better way' was cited by interviewees as a reason for why they now use data to the extent that they do. When asked why their school uses data to the extent that they do, teachers conveyed that data helps them see what works so they can be better. "If something we're doing is not working, we'll dump it and we keep what works. We are always looking for the data to show us ways we can tweak our approach to meet the needs of a particular group of students for a particular year."

**Focused on student success.** Despite questions about how student success in learning is actually defined, in each of the schools interviewed there was a belief that using data was a responsible thing to do because "it's all about student success." All three schools cited student success as the reason why they worked so hard to respond and adjust based on the data but this was mostly inferred. School 1, in particular, stood out in

the explicit description of their culture being student centered.  While interviewees at the other schools were certainly moved by student success, the 'why' (students) was implied, but not explicitly described.  It cannot be suggested that these other schools did not care as much about student success but it was an explicit theme that was present in every interview at School 1.

> Our school is very unique in that our culture has always been student centered. I've worked in two different districts and in five different schools.  We are different here.  We work at it, we always ask, "what is the best interest of the student?' That has made us successful.  It's what we do." Another teacher shared, "the children drive us.  They come first, they are our air, that's our goal and we do it because of them.

> Each of these examples of beliefs and attitudes were cited as foundational to the schools using data in the way that they do.   Through the interviews, these findings revealed that there is a certain degree of psychological safety in these schools that enables the faculty to openly discuss data that is not always promising.  While it is beyond the scope of this study to suggest a causal relationship between these attitudes/beliefs and the schools' current level of data use, the faculty expressed that these attitudes/beliefs account for why and how they currently use data.

**The Role of the State Assessment System**

In addition to the perspectives the faculty at these schools held regarding the state testing system, as described above, the responses suggest that the assessment system itself is a process that has led to these schools' current use of data.   The role of the state

accountability system as related to student performance on the TAKS test could not have been more pronounced in each interview. With the exception of one principal, performance on the TAKS and earning an Exemplary rating were cited in every interview as the primary reason these schools use data to the extent that they do.

Data use for this purpose was not conveyed by most of the teachers as a negative factor, though there were a small number of teachers who did express concern about being overly focused on the test to the detriment of students. The majority of interviewees' acknowledgement of the state accountability system as a factor contributing to their data use ranged from a basic level of acceptance, "that's just the way it is and we have to play that game" to enthusiasm – "we all just want to be Exemplary so badly. It's just something we want."

The findings for Research Question 1 suggest that while these schools are using data extensively, their data sources are limited to focusing on TAKS related data. The schools are not extensively using other significant data to describe student learning or to inform instructional choices. The findings here suggest that the state testing system itself is a factor in how data is used in the schools studies. In response to why she uses the data she does, a teacher at School 1 shared,

> The growing pressure that the state is putting on schools to perform at certain
> levels on the test, it's all about the numbers and you have to jump through the
> hoops to meet these numbers, so it trickles down and the school has to meet these
> certain numbers and the district has to meet these numbers." When asked what

was the goal the teacher was driving to, he replied, "well, the state assessments,

because everything is geared to the state assessment.

Similarly, it seemed that if the state did not assess a particular subject or grade level, then teachers and schools did not have data they felt they could rely on to make instructional decisions.   For example, a 7th grade English Language Arts teachers expressed that she could not really use data until the middle of the year because the last time writing had been assessed was in fourth grade.  Similar stories emerged from the 8th grade science teacher and 8th grade social studies teachers.  These examples illustrate the role the state accountability system can play in setting the process by which student learning is assessed and possibly account for the limited view of data availability perceived by teachers.

**Summary of Q3 Results**

The results presented here describe the factors that faculty attribute to their schools becoming data driven to the extent that they currently are.  These factors illustrate the importance of supportive cultures and the power of seeing benefits to one's effectiveness at work.  Additionally, while attitudes and beliefs certainly seem to have enabled teachers in these schools to be open to using data, external forces appear to also have an effect on how quickly schools embrace data use.

**Summary of Results**

The results presented herein indicate that teachers in these higher performing middle schools use data extensively to drive their instruction.  The specific role the principal plays in the schools' current level of data use was described in detailed and the

data suggest that the principal is a critical factor in the use of data.  Finally, there appears

to be foundational processes as well as core attitudes and beliefs, that when in place, can

facilitate an extensive us of DDDM.  In the next chapter, a more detailed summary and a

discussion of the findings and implications are presented.

**CHAPTER 5: DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS**

The purpose of this study was to better understand the extent to which higher performing middle schools in the Rio Grande Valley use data to drive instructional decisions; the role the principal plays in the school's current level of data use; and the factors that faculty attribute to their school's data use. A mixed-methods approach was used to conduct a multi-case study of three middle schools identified as higher performing by Just for the Kids Foundation/National Center for Educational Advancement. Data was collected from three schools using a survey and in-person interviews of teachers and principals.

The existing literature on this topic has examined the impact data use can have on school improvement, the practices of data-driven districts, the challenges and barriers schools face in becoming data driven and the importance of school leadership in an initiative to become data driven. This study adds to the literature on data use in schools by describing the data driven practices of schools that are experiencing success with a student demographic in a geographic region that has historically lagged when it comes to increasing levels of achievement. Additionally, while the literature suggests that principals are a key factor in schools using data, this study provides insight into the specific role of the school leader in building a data driven school. This study also provides a deeper understanding of the factors that each school's faculty believe have led the school to become deep users of data in making instructional decisions.

**Statement of the Problem**

As outlined in earlier chapters, the review of the literature shows that the practice of data use to drive instructional decisions is found to be a key factor in school improvement (Supovitz & Klein, 2003). The literature also suggests that this practice enables schools to improve student achievement but that most schools do not engage in data driven decision-making in a manner that is embedded in their practice (Datnow, 2006; Earl & Fullan, 2003). Consequently, schools are not capitalizing on this critical school improvement practice, which has the potential to improve teaching and learning for students. This study set out to understand the way in which higher performing schools use DDDM, so that more light can be shed on how to expand the use of DDDM in all schools. Specifically, this study set out to answer the following: the extent to which higher performing Title I middle schools in the Rio Grande Valley of Texas use data to make instructional decisions; the role of the school's principal and leadership team in supporting data use for instructional decision-making; and the processes, which teachers perceive, to have led to their school's current level of data use in instructional decision-making.

## Discussion of Major Findings

The first research question asked how higher performing middle schools in the Rio Grande Valley used data to drive instructional decisions. This study found that educators in these schools also used data in the following ways: 1) to determine instructional scope 2) to determine student grouping; 3) to increase student success on the TAKS test; and 4) to make collaborative decisions about teaching.

The analysis of the data revealed that while these schools used data extensively and regularly in making instructional decisions, they primarily used data towards a single-purpose. Specifically, data that is explicitly linked to the state administered TAKS test, to the exclusion of other data points. While respondents conveyed through the survey that they used multiple forms of data, including data from teacher developed assessments, in class assignments, disciplinary data and attendance data; when interviewed, teachers conveyed that they nearly exclusively used TAKS-aligned data to drive instructional decisions.

The second research question was designed to better understand the role of the schools leaders in how the teachers utilized DDDM. While the literature has established that principals play an important role in the way their faculty use DDDM, this study sought to better describe what specifically it is that principals in these higher performing schools do to impact the school's level of data use. The results of this study revealed that faculty very much attribute their schools' data use to their leaders' ability, specifically to; 1) set the tone and focus on data use; 2) establish a reciprocal relationship of support and 3) to empower teachers in data-driven decisions about instruction. The results verified what the literature has suggested—principals are a critical factor in schools using DDDM as an embedded practice. This study adds to the literature in that the findings add detail to *how* exactly principals matter. Specifically, they create the conditions that make data use expected, supported and in an atmosphere where risk-taking appears safe.

The third research question examined the processes that the faculty at these higher performing middle schools attributed to the schools' current level of data use. Using both

survey and interview data, this study found that the faculty attribute their schools data use to the availability of support and systems for analyzing and using data, the feeling that there is a culture of success at their school which drives them to use data, the positive attitudes and beliefs they have around data use and the importance of the outcomes measured by the state accountability system.

The next section discusses the findings that emerged from each of these three research questions.   There were two overarching findings to this study, each with sub-findings.   The first finding concludes that the schools studied use data extensively, particularly that which is aligned towards improving student performance on the TAKS test.  The second finding concludes when principals create the necessary conditions for embedded data use, teachers will use DDDM to inform their work.

**Finding 1: DDDM is Aligned to Student Performance on the TAKS Test**

One of the values of a mixed-methods design is that it allows the researcher access to a deeper understanding that quantitative data alone could not provide. Were this study to have utilized a quantitative-only methodology, the results would have been incomplete related to this study's specific research questions. The survey results revealed that teachers at the schools studied use data for a range of purposes (see Table 6). However, the interviews provided a more complete picture of data use.  When asked to describe how they use data-driven decision-making, teacher responses nearly exclusively conveyed a focus on data use that was specifically tied to what was assessed on the state-administered TAKS test.

Though teachers reported using many types of data, they honed in on the use of

data directly aligned to increasing performance on the TAKS test.  The results of this

study revealed that these schools used TAKS-aligned data extensively to make

instructional decisions and that teachers actually only viewed themselves as data driven

teachers if they used data for the explicit purpose of increasing TAKS performance.

Additionally, the study revealed that the scope of what was taught and assessed –and as

such, which data was being utilized- at these higher performing schools was driven by

what was assessed on the state-administered TAKS test. Absent from teacher descriptions

of how they used DDDM was how they used in-class observational data, how they used

authentic or alternative assessments, in-class assignments or data that was beyond the

scope of what and how a learning objective was assessed on the state test. While there

were a small number of outliers who described their use of multiple-source data, the

strong theme that emerged was that educators in these higher performing schools use

data—a lot; though they only use one type of data extensively in making schoolwide

decisions about instruction.  In fact, a small number of teachers said that they would not

describe themselves as "data-driven" even though they described using multiple forms of

teacher-level data to inform their instructional choices.

Having a clearly defined goal, such as a certain percentage of students passing the

TAKS test, can foster drive data-driven decision-making. The findings of this study

reveal that, while positive uses of data can keep educators focused on student outcomes,

potential limitations exist regarding the way in which schools use data, such as

constraining the educational experience of students to a narrow curriculum, as defined by

standards that are assessed via the state's testing system. The majority of the teachers interviewed described their data use exclusively in terms related to their students meeting the objectives as assessed on the TAKS test. As described by a teacher, "I guess [DDDM] means you're only going to rely on the TAKS data for all the decisions that you make and you're not taking into consideration other things that are important."

Through a curriculum developer's lens, this may appear to be a great example of aligning the written, taught and tested curriculum. However, during the interview, there was no indication that the teachers were thinking about the broader question of aligning the rigor of instruction to the level of assessed rigor. Using the state exam to drive instructional decisions is an example of being standards-driven. However, the state test does not assess mastery of every state standard. Therefore, if teachers focus only on those standards that are assessed and no others, students will not be exposed to anything learning beyond the tested curriculum. In this sense, educators may inadvertently be teaching to the "floor" rather than the "ceiling" of all that students are expected to learn during their time in a particular grade and subject.

**Unintended Consequences**

Such a reality, though well intentioned, presents possible unintended consequences. These include 1) a limitation of what is taught to students, if a standard is not tested, it is not taught and 2) students become triaged as they are grouped based on the data. The extensive data use by the schools studied is to be commended and this finding can be either promising or one that provokes caution. One the one hand, these schools use data regularly and extensively and this practice can be applied to new and

additional sources of data. On the other hand, there can be real limitations to a single-source and single-purpose approach to data use and the potential for unintended consequences is clear.

*Limited scope of instruction.* Using data from a single-source, for a single-purpose, in a way that limits the instructional scope is a distinct difference from instruction being driven by state standards. The state assessments are not able to assess every single standard for mastery and as such, the test developers have to make choices about which standards are assessed and to what level of rigor. These choices, provided in the TAKS Information Booklets, are available publicly and provide teachers with much needed guidance on how the exams are structured. Because every standard cannot be assessed to mastery or assessed at all, there are state standards that do not get formally assessed by the TAKS test. If teachers only use data to teacher what is tested, the scope of what is taught and what drives instructional choices at the school and classroom level can be fundamentally limited. Supovitz and Klein (2003) make this caution clear, "the data required for more precise decision-making come from systematically exploiting a variety of student performance data at both the individual classroom and school levels" (p. 1). These findings suggest that while DDDM is a regular practice at these schools, they are also not exploiting a variety of student data to address a range of student learning needs.

Because the findings suggest that the only data which matters and is used extensively is that which is directly tied to the state test, there is a danger that this could result in a narrowed scope of what is taught and as a consequence, what is learned. The

findings of this study suggest that while these schools are using data to increase student proficiency as measured on the state exam, such practice is to the exclusion of other important measures of student learning, the implications of which could be troubling.

*Triaging students.* As described in Chapter 4, educators in the schools studied used data to group students for tutorials or in some extreme cases, to change teacher assignments. While grouping based on data can be useful in meeting students' needs, there is danger of putting students into categories that result in changing the scope of what they learn or how they perceive their own success. As described by an interviewee, there is a danger that students feel like a number and nothing more. "It's like a little nightmare to some of the kids. You tell them they have to score this much and you make them feel like they're just worthless if the can't achieve a certain score on a test."

This type of thinking and grouping of students can lead to teachers and principals to triage situations where students with the lowest scores were given priority but to the neglect of other students. For example, the math teacher whose students were left to worksheets with a substitute while she was reassigned to teach the students who had the lowest benchmark scores just one month before the test, resulting in, as she described, "my students were not learning math for the entire month of April." Though this experience did not pervade the interviews, the danger of such an unintended consequences is valid.

Despite the questionable efficacy of practices such as these, as reported in Chapter 4, teachers in the schools studied were overall positive about the way in which data is used to determine instructional scope and the grouping of students.  This finding is

in contrast to what was posited in the Literature Review, whereby scholars suggested that the accountability movement has led to a fear and skepticism around data. To the contrary, teachers in these schools have embraced their own particular brand of DDDM, whereby they use data to ensure their students' success on the state tests and consequently can feel successful in their work as educators.   Given what the literature shows about the role of data use in improving student learning and school performance, this narrow form of DDDM is necessary but not sufficient.

**Finding 2: Principals Create the Necessary Conditions for Embedded Data Use**

Though the nature of data use in the schools studied was limited to a single-purpose, these schools still very much used data to drive their work with students and this has many positive effects on student learning, as the literature has suggested.  Principals and the school leadership team were cited as the pacesetters when it came to data use in their schools, the people who made data use happen.  In addition, the principal is the person who sets the focus and tone for the school, the teachers attributed their positive viewpoints around data to the culture and environment their principals had established, as well as the support and resources they were provided in order to effectively respond to the data, once analyzed.  The results of this study showed that when educators feel supported, they are willing to be vulnerable and take risks.  Despite the single-source and single-purpose of data, teachers at these schools were willing to use data openly and share where they were struggling.  This study shows that when principals create supportive, collaborative environments, teachers will generally embrace data use.

As detailed in chapter 4, teachers expressed empowerment and reciprocity from their school leader.  These factors could create a climate where data can be used to push teaching practices forward even further.  At the heart of data use is the reflective practice where educators consider what is most needed, what is most effective and what will most likely increase their students' achievement.  "When teachers and administrators engage in continuous learning practices as they analyze and use information to build and share what they know, they are more likely to shape reforms to fit the needs of their schools" (Petrides, 2005, p.  44).   This then creates a mutually reinforcing cycle of improvement. "The gathering and examining of data is merely a starting point to developing culture and system of continuous improvement that places learning at the heart of its efforts" (Datnow et al., 2007).   What is promising about his finding is that with reciprocity, support and a collaborative environment, teachers will embrace data.

**Navigating High-Stakes Accountability**

Though a small number of interviewees expressed concern and frustration with their schools being overly focused on test results and the data use that drives those results, the dominant theme was that teachers at these middle schools viewed their data use as a way to achieve success on the state test and consequently a way to feel effective in their jobs.   This, combined with what was uncovered about the conditions principals create to enable data use, shows that principals at these schools have found a way to frame the state accountability system as a positive force that their school will embrace. Counter to the cautions presented in the literature review, this finding suggests that the

fear associated with accountability and data, while potentially still present, is not a factor limiting teacher's data use in the schools studied.

**Understanding Change Management**

Related to the ability to navigate leadership in an era of high-stakes accountability is the skill of leading change management throughout a school.   The increased availability of data due to computer-based software as well as a better understanding of the state tests means that teachers' jobs are impacted by new information on a constant basis.  The results of the study pointed to two key themes that are related to effective change management, applicable to all types of organizations, including schools.  The importance of reciprocity, that is, for everything an employee is asked to do that they will have an equal amount of support to make that work possible, is one that is essential when asking educators to change or adjust their practice.  The educators in the schools studied continually described how important it was that they were supported and had the resources and training to respond to data.  The principals at these schools were able to ask their teachers to do more with data because they understood the importance of not only setting the direction, but also providing the support to make the work possible.

In addition to demonstrating support to their teachers, school leaders appeared to execute decisions based on data in a manner that empowered their staff.  Again, while a few exceptions were counter to this, there were significantly more examples of teachers conveying just how much they themselves played a role in deciding how to move forward based on data and the wide range of choice given in how to execute on next steps.  This enabled schools to make tough decisions based on data and have the staff feel positive

about these decisions.  As Reeves (2002) describes, "data driven decisions are not about making popular decisions, rather it is about finding the decision that is most likely to improve student achievement, produce the best result for the most students, and promote the school's long-term goals of equity and excellence"( p. 95).  What these principals understood and demonstrated was that it was not enough to make the decision and subsequent shifts in how their staff approached their work.  They also knew that just as important was providing the conditions by which their faculty could do the difficult work.  The principals at these schools did this by findings ways to empower and support their staff in making the decisions that would most likely improve student learning, as defined by the state assessments.

## Implications

The pressure schools face to deliver good test scores is likely not going away and will be a permanent fixture in our school systems.  While a study limited to the work of three schools in south Texas cannot provide a conclusive basis for the practice of DDDM in all schools, the findings of this study raise important issues for how schools will continue to use DDDM in the current context of school reform and in an era of accountability.  First, the training and development of school leaders who are able to lead a cultural shift in their schools is necessary.  Second, because what gets measured matters, an examination of the unintended consequences of DDDM in an era of high stakes accountability, as well as a responsibility to mitigate them is the responsibility of policy makers and educational leaders at all levels.

**Training and Development of School Leaders**

The findings from this study suggest that there are many lessons to be learned from the school leaders about how they create conditions for data use that include positive faculty attitudes, a culture of continuous improvement and a tolerance for risk taking with colleagues. The educators in these schools are using data to ensure students are successful on the state exams and the faculty's intentions are rooted in what they believe are valid measures of success for themselves and for student learning. Within the context of high stakes accountability there are also pressures that leaders must balance and convey such an image to their staff. "School leaders are caught in the nexus of accountability and improvement, trying to make sense of the role that data can and should play in school leadership" (Earl & Fullan, 2003, p. 383).

The ability to navigate such a nexus requires a unique skill set for which all school leaders may not be required. The skillset that school leaders require in leading a school that is data driven goes beyond the technical, though it certainly includes such skills. The findings from this study show that in addition to procuring the resources, tools and budget allocations necessary for teachers to act on data, principals also must be able to handle data use within the context of change management. These findings have implications for how schools of education rework their courses of study for preparing school leaders in the current context of education—one that is data rich and one that is vastly public and impatient.

**Balancing Accountability in the Short Term with Achievement in the Long Term**

It is an old adage that what gets measured matters and the findings of this research verify that this is the case in the schools studied. Educators in the schools studied focused their instruction on the standards that were assessed on the state exam, and as described by them, even to the specific level of rigor (not more or less). This practice leads to two opposing outcomes. On the one hand, it in effect, narrows the scope of what is taught and learned. While it is promising that schools are using data extensively, this practice raises concern. Were the proficiency standards on TAKS, as required for a strong accountability rating, representative of all that students needed to learn to be prepared for college and the workforce, this may not be a concern. On the other hand, this suggests that schools will work towards the bar that has been set for student learning and use data to do so. While the state of Texas has recently undergone an initiative to introduce college readiness standards, as well as change the proficiency standards on their assessments to increase the rigor of the state assessments, in the meantime, schools whose instructional scope is narrowly focused only on what is currently assessed risk limiting their students' learning.

*The New Achievement Gap.* Though the state of Texas has plans to ratchet up the rigor of its assessments to better reflect workplace and college readiness, a recent study (Phillips, 2010) found that the gap between what is expected on state exams across the United States is twice as large as the achievement gap between black and white students. The report's authors describe this as the *expectation gap*, that is the variance between the highest state's proficiency standards and level of rigor on their state's test and that of the

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lowest state.  For example, the study found that what Tennessee defines as proficiency for an 8th grader in math is equivalent to what Massachusetts defines as proficiency for a 4th grader in math.  The state of Texas ranked slightly above Tennessee suggesting that the proficiency standards and level of rigor on the TAKS test are among the lowest in the country (Phillips, 2010).  The expectation gap is potentially the source of the achievement gap.  If teachers use data, especially geared only to state exam proficiency, there is both opportunity and danger in the impact such practice could have on student achievement over the long term.  This recognition should cause pause for policy makers and school leaders at every level.

Currently, proficiency on the state assessments is not an indicator of college or workforce readiness and even if they were, a single assessment cannot effectively assess every standard for mastery.  As such, test developers have to make choices about which standards are assessed and to what level of rigor.  These current choices, provided in the TAKS Information Booklets, are available publicly and provide teachers with much needed guidance on how the exams are structured.  Because every standard cannot be assessed to mastery or assessed at all, there are state standards that do not get formally assessed by the TAKS test.  This can fundamentally limit the scope of what is taught and what drives instructional choices at the school and classroom level.  Supovitz and Klein (2003) make this caution clear, "the data required for more precise decision-making come from systematically exploiting a variety of student performance data at both the individual classroom and school levels" (p.  1).

Because the findings suggest that the only data which matters and is used extensively is that which is directly tied to the state test, there is a danger that this could result in a narrowed scope of what is taught and as a consequence, what is learned. The findings of this study suggest that while these schools are using data to increase student proficiency as measured on the state exam, such practice is to the exclusion of other important measures of student learning.

Additionally, there is danger of putting students into categories that result in changing the scope of what they learn or how they perceive their own success. As described by an interviewee, there is a danger that students feel like a number and nothing more. "It's like a little nightmare to some of the kids. You tell them they have to score this much and you make them feel like they're just worthless if they can't achieve a certain score on a test." As described in chapter four, there were multiple examples where teachers expressed concern that the focus on single-source data use results in teachers only being concerned about certain students to the detriment of others. For example, the math teacher whose students were left to worksheets with a substitute while she was reassigned to teach the students who had the lowest benchmark scores just one month before the test, resulting in, as she described, "my students are not learning math for the entire month of April."

Another teacher described how the focus on single-source data impacted not only what she taught but her instructional methods as well

I was told not to use novels for students who were not passing or on the bubble. Only the 'high kids' got to read books. We were actually discouraged from

reading novels in class. No more novels, the district said, they wanted the

students to do TAKS passages. We could do novels for the advanced kids, for the

rest of the kids it was only passages, passages, passages.

While these findings should lead educators to thoroughly consider the unintended

consequences of single-source and single-purpose data use, they should not be construed

to negate the important role DDDM plays in effectively educating all children,

particularly those who have historically been unaccounted for. However, when data use

is limited to a single-source such that it narrows the scope of what and how standards are

taught, educators must be cautious. In any high stakes environment, there will always be

a temptation to take short cuts to make quick perceived "wins" at the expense of actual

student learning. It is the role of the school and district leaders to ensure such practices

are not part of teaching and learning at their schools and it is the role of policy makers

and state officials to actively guard against such unintended consequences of the

accountability system.

*Promising Uses of Data.* Despite the cautions outlined above, the findings of this

study suggest that there is real potential for schools to use data to truly close the

achievement gap. This study shows that at least for teachers in these schools, that fears

about data use are unfounded and there is a positive view of data use when combined

with a supportive and safe environment for teachers to use data. In an era of high stakes

accountability, where the state sets the bar matters for that is the bar educators work

towards. Though there were a couple of questionable instructional practices, educators at

the schools studied seem to have the best intentions for their work and their students and they are working within the context that has been set for them. Leaders can use this understanding to confidently raise the bar on proficiency and rigor levels. Combined with a robust practice of DDDM, this could be a powerful lever for increasing the achievement of all of Texas' students. For example, if the state set the bar for proficiency at a commended score, teachers would use data towards this end. If the state set the proficiency bar at true college readiness levels, these schools would use data to drive towards that bar. This implication is not intended to critique the state assessments but rather to raise the caution that when combined with single-source data use, there are important issues to be examined and to highlight the potential positive force that increased standards of rigor could have on student achievement across the state. As described by the authors of the study on the variance in state assessment performance standards,

> By setting low performance standards, states commit the educational equivalent of short selling. Rather than betting on student success, the educators sell the students short by lowering standards. What the educator gets out of this practice is the illusion of high rates of proficiency, which have a palliative effect on public opinion and meets the requirements of state and federal accountability. What the student gets outs of it is a dumbed-down education with little opportunity to learn college-ready and career-ready skills. (Phillips, 2010, p. 1)

**Recommendations for Further Research**

Although much insight around the use of DDDM has been gained as a result of this study, there are several areas for further research within the context of data use in schools. In particular, additional research in this area is needed to explore the unintended consequences of DDDM as well as the opportunity for the state assessment system to positively impact what is taught and learned. Specifically, there is an opportunity and need to explore the following: 1) the impact of external forces on how teachers use data; 2) to what extent educators are expanding their use of data beyond that which is aligned directly with state standardized testing and 3) the impact that the use of single-source data to drive instructional choices is having on student learning and college readiness. As noted in the literature review and this study's findings, on the one hand, DDDM is a promising practice that the educational community should be seeking to establish where such practices do not exist. One the other hand, as noted in this study's findings, data use can have unintended negative consequences for student learning and leaders must take care to anticipate and prevent such unintended consequences.

In addition to the study of unintended consequences of DDDM and opportunities that the state assessment system has given the acceptance of DDDM, the field could benefit from further research on the preparation of school leaders in the realm of leading data driven schools. As discussed earlier, increasing data use in schools seems correlated with the principal's skills at navigating change-management and balancing the day to day schooling with the demands of public accountability. District leaders and supervisors of principals must also consider these implications for how they support and

continue the development of their school leaders.  The principals interviewed conveyed

that their superintendents set a vision and approach from which they worked and it is to

what they attribute their current use of data.  As the literature has added much to the field

on how schools and districts can overcome technical and informational barriers to data

use, the work to be done now seems to focus on how school leaders create the climate

and conditions for effective and powerful changes in working with their faculty and how

district leaders can support principals in doing so.

There is also an opportunity to determine the extent to which the DDDM practices

uncovered in this study are representative of a broader sample of middle schools,

particularly in the state of Texas where DDDM has become a popular and oft-cited

initiative of schools looking to improve learning, or at the very least, move the test scores

upward.  This study was limited to how three specific types of schools in one specific

geographic region used DDDM and this study's questions could be applied to a broader

cross section of schools, including those that are not yet considered higher performing.

This study explicitly decided to focus on how higher performing schools use data.  It

would be interesting to explore what is the same or different in how lower performing

schools use data.

One of the surprising findings was that "data-driven" was the equivalent to

"TAKS-driven."  As noted in Chapter four, in all but four interviews, when asked what

DDDM meant to them, their responses focused solely on TAKS.  Even the few teachers

who had a negative view towards how their school was using data did not describe

themselves as data driven teachers.  Though they described in detail how they use many

forms of teacher level data (e.g. quizzes, student work, in-class assignments), they said that they did not consider themselves data driven because they associated such a descriptor with being only concerned about the TAKS test. While it is likely that these teachers use much more data than they give themselves credit for, it was interesting that they only associated DDDM with the state exam.

Finally, much work remains to establish DDDM as a causal link to increasing student learning, as well as detailing the type of DDDM that have the greatest impact on student learning. While the literature review establishes that DDDM is a practice that is common to many high performing schools, additional research is needed to establish this link more deeply.

## Conclusion

The presence of data use in schools that are higher performing is well established. The literature in recent years has enabled educators to more deeply understand how to use data to increase student learning. The rapid development of sophisticated software has made many forms of data available in an instant and a comprehensive picture of a students' performance can be easily accessed by all of the adults who serve that student. As a result, where such tools and practices exist, educators are able to target their teaching and provide focused instruction to students who need additional support. Schools are able to develop comprehensive plans of action based on data, including the assignment of students to certain teachers and redesigning school day schedules to align with the areas of greatest need. Tutorial periods or those that are conducted after school

or on weekends are more strategic because of data use.  All of these facts were validated

through this study.

This study also showed that teachers do embrace data when they are supported.

At the same time, there are real limitations for data use and if not used carefully, could

result in unintended consequences that ultimately jeopardizes student learning.  Data is a

powerful starting point for educators but it cannot be the only point of information.  Data

alone does not diagnose.  Data can show educators where students are 'healthy' and

where they are 'sick' but it alone cannot tell us why.  In addition to using data to

determine what needs to be taught or retaught, educators must use data to do deeper

levels of analysis.  Specifically, educators must use data to analyze their own teaching

and planning as a factor in student mastery of specific objectives.  This is why

collaborative time among teachers where they discuss instructional strategies and other

points of data are so critical to any DDDM initiative.  Additionally, because of the

context of the accountability era, great care must be taken to preemptively identify and

guard against the uses of data that limit what students learn or cause educators to abandon

common-sense instructional methods, such as the replacement of novels for test-

formatted passages, for short term wins on state assessments.  This requires the incredible

skill of a leader who understands such complexities and can effectively lead their faculty

to both use data well and ensure students receive the maximum benefit to their learning—

in the short and the long term.

This study is contributing a much deeper understanding about data use in schools

and the conditions that must be in place for data use to become a standard practice among

teachers.  More importantly, this study is highlighting both the opportunity and dangers of overly narrow data use in an era of accountability, especially when combined with a state's low bar for student performance.  This study adds to the field by showing that we can leverage teacher data use by raising the bar on expectations for student proficiency on the state exams, while also working to ensure school leaders are properly trained to mitigate short-term practices that jeopardize actual learning.

There is an opportunity to close the achievement gap by leveraging data use and increasing the rigor of state assessments.  If we know that teachers will use data to meet the bar that is set by the state exam; and the current bar low (and not leading us to close the achievement gap), then we need a new bar.  This study suggests teachers will work towards that bar when they have school leaders who will push and support them and will ensure they have a professional environment that is safe and collaborative.  This study also shows that when leaders attempt to short-change instructional quality for quick wins on the state test that teachers will resist such change and equate data use with negative impacts on student learning.

# Appendix A: JFTK 2009 Methodology

*JFTK/NCEA Methodology for Identifying Just for the Kids Higher Performing Schools: Middle School Grades*

*General Approach*

NCEA's analysis included student test results from spring 2007, 2008, and 2009. For Grades 4 through 11, NCEA used an academic growth analysis that examines whether the students in each school perform above predicted based on their prior year's scores. Since students are not tested prior to third grade, NCEA looked at achievement levels of students from third grade who have been continuously enrolled in the school or district for three years or more, rather than prior test scores. In all cases, student and school demographics were taken into account in determining whether a school's students performed above predicted. For elementary schools, rather than aggregating the results of two different models, NCEA identified separate lists of higher performing schools in third grade and upper elementary grades.

The commonly used statistical technique of Hierarchical Linear Modeling (HLM) was used in both analyses. This technique makes a statistical adjustment to take into account the greater uncertainty of school results measured for smaller groups of students. The analysis was conducted separately for each subject, so that schools are ranked separately for reading/English Language Arts, mathematics, writing, science, and social studies.

Schools with many students close to the ceiling on the state test can't be measured well on growth. For this reason, and to include schools whose students are the highest performing in absolute terms, NCEA added to the list the top 5% of schools in the state based on the percentage of students scoring at or above NCEA's college readiness benchmark in reading, mathematics, or science. The state's advanced standard was used in any subject where no college readiness benchmark has been established by NCEA or ACT.

The steps in the analysis are as follows:

**Step 1: Dataset creation**
For students who took the English version of TAKS, merge each student's current-year test results with those of the same student from the previous year. Current year scores are merged with prior-year math and reading scores. For example, Grade 11 mathematics scores are matched with Grade 10 math and reading results.

Current-year fall enrollment records were also used to identify whether the student was enrolled at the same school during the current school year. Students without prior-year

scores in the relevant subjects, or who were not enrolled in the same school in the fall of the current year, were not included in the analysis.

**Step 2: Performance measure**
For each subject, regress each student's converted scale score (z-score) in each grade and year on the following variables: the student's prior year z-scores in mathematics and reading; the student's low-income status; whether the student is African American or Hispanic; the percentage of full academic year tested students in the student's grade; the percentage of tested students who are low-income; the schoolwide percentages of English Language Learners (for elementary schools only), African American, and Hispanic students and whether the school was a magnet school.

Hierarchical Linear Modeling (HLM) software will be used to calculate, for each school in each subject, a separate set of grade-and-year school measures and a combined school effect across grades and years.

**Step 3: Identification of eligible schools**
Identify those schools that were eligible to be ranked for a given subject based on their having an adequate number of students in the analysis in each grade and year in that subject. A school is eligible if it has no missing grades in the most recent school year and no more than the maximum allowable number of missing grades shown in the table below for the previous two school years.

| Number of grade-year combinations in the school in previous two years | 2-4 | 5-6 |
|---|---|---|
| Maximum allowable number of missing grade-year combinations in the previous two years | 0 | 1 |

A grade is missing for a given school year if either a) test score records are available for fewer than ten continuously enrolled students; or b) more than 20% of the records in that grade are deleted based on masking rules applied by the state.

**Step 4: School rankings**
Divide the eligible schools into four low-income groups (0–25, 25–50, 50–75, and 75–100% low-income students). Rank the schools within each of these low-income groups by their combined school effect across grades and years—the performance measure calculated in Step 2.

**Step 5: School selection**
Select schools that meet the following criteria:
   1. The school was in the top 10% of schools in its low-income group based on the combined school effect across grades and years, and the school had better-than-predicted performance across grades in all years.

2.  If the school was in the top 5% of the state based on the percentage of students meeting NCEA's college readiness benchmark.  The website will inform users about which set of criteria the school made the list.

3.  In the case of reading/English language arts and mathematics, the school met federal Adequate Yearly Progress (AYP) requirements in the current year.

4.  In the case of writing, science, and social studies, the percentage of students enrolled taking the test was 90% or greater.

5.  The school was not on the state's "watch list" based on the state accountability system in the current year.

Retrieved May 10, 2010
http://www.just4kids.org/en/texas/higher_performing/middle_identification_criteria.cfm

# Appendix B:  Survey of Educator Data Use

Q1   Including the current school year, how many years have you been employed in education?

Q2  What is your position?
      Teacher
      Principal
      Assistant Principal
      Counselor
      Central Office
      Other _____

Q3 If you are a teacher, what grade(s) are you primarily teaching this year?

Q4 In which school do you primarily work?     Please write your answer here:

Q6 In a typical month, how often do you use the following forms of data? *     Please choose the appropriate response for each item:

| |
|---|
| 1. State achievement test data (TAKS). |
| 2. Formal assessments (examples: district benchmarks, TAKS release tests, national norm referenced assessments). |
| 3. Other student data (examples: disciplinary info, ELL status). |
| 4. Your own assessments (examples: test, quizzes, assignments). |

Q7 The remainder of this survey asks about the specific types of data to inform your educational practice. For the rest of this survey, please consider only the following when you think of data:     State achievement test data (TAKS)  Formal assessments (examples: district benchmarks, DRA, TPRI, NWEA/MAP); and other student data (examples: disciplinary info, ELL status).

Q8 These questions ask about your use of educational data.  Please indicate how much you agree or disagree with the following statements.*

| |
|---|
| 1. I use data to diagnose student learning needs. |
| 2. I adjust my instruction based on student data. |
| 3. I use multiple data sources to understand student learning. |
| 4. I use data to plan lessons. |
| 5. I use data to set student learning goals. |

Q9   In a typical month, how often do you do the following? *     Please choose the appropriate response for each item:

| |
|---|
| 1. Use data to identify learning needs of students who are struggling. |
| 2. Use data to identify learning needs of students who are not struggling. |
| 3. Use data to set learning goals for individual students. |
| 4. Use data to tailor instruction to individual students' needs. |

5. Use data to develop recommendations for tutoring or other educational services for students.

6. Use data to assign or reassign students to classes or groups.

7. Use data to form small groups of students for targeted instruction.

8. Use data to identify instructional content to use in class.

9. Use data in discussing students' progress or instructional strategies with other educators.

10. Discuss data with a parent.

11. Discuss data with a student.

12. Interact with your principal about data use.

13. Meet with a specialist about data (e.g., instructional coach).

14. Use data to choose which parents to contact.

Q10 These questions ask about your attitudes and opinions regarding data. Please indicate how much you agree or disagree with the following statements: *Please choose the appropriate response for each item:

1. Data can help educators plan instruction.

2. Data can offer information about students that wasn't already known.

3. Data can help educators know what concepts students are learning.

4. Data can help educators identify learning goals for students.

5. Students benefit when teachers' instruction is informed by data.

6. Data can help evaluate the quality of student work.

7. Data can help evaluate the quality of instruction.

8. State assessments (i.e., TAKS) are valid measures of student learning.

9. Formal assessments (e.g., district benchmarks, DRA, TPRI, NWEA/MAP) are valid measures of student learning.

10. Local assessments (e.g., school-or teacher-created) are valid measures of learning.

11. My students are learning more because of my data use.

12. Students at my school are learning more because of data use throughout our school.

13. Students in our district are learning more because of data use throughout our district.

Q11 These questions ask about your attitudes toward your own use of data. Please indicate how much you agree or disagree with the following statements: *Please choose the appropriate response for each item:

1. I am good at using data to diagnose student learning needs.

2. I don't need data to diagnose student learning needs.

3. Using data helps me be a better educator.

4. I am good at adjusting my instruction based on data.

5. I don't need data to help me improve my instruction.

6. I feel more professional because I use data.

7. I am good at using data to plan lessons.

8. Using data isn't part of my job.

9. I think it is important to use data to inform educational practice.

10. I am good at using data to set student learning goals.

11. It's not worth my time to use data.

12. I like to use data.

13. I find data useful.

14. Too much emphasis is placed on data use.

15. I respect colleagues who use data.

16. Data help me collaborate with other educators.

17. I would like to collaborate more with other educators about using data.

Q12 These questions ask about your district.  Please indicate how much you agree or disagree with the following statements: *Please choose the appropriate response for each item:

1. In my district, there is a clear direction about what students should learn.

2. In my district, there is a clear direction, about what should be taught.

3. In my district, there is a clear direction about how data should be used to improve education.

4. The data provided by my district are accurate.

5. The data provided by my district are useful.

6. The data provided by my district are easy to interpret.

7. The data provided by my district are good measures of student learning.

8. My district returns data (e.g., test results) in a timely manner.

Q13 These questions ask about supports for data use. Please indicate how much you agree or disagree with the following statements: *Please choose the appropriate response for each item:

1. I am adequately supported in the effective use of data.

2. I am adequately prepared to use data.

3. There is someone who answers my questions about using data.

4. There is someone who helps me change my practice (e.g., teaching) based on data.

5. My district provides enough professional development about data use.

6. My district's professional development is useful for learning about data use.

7. I am given enough time to use data effectively.

8. I am given enough time to use data to reflect on my teaching.

9. I am given enough time to use computer data systems.

10. I am given enough time to use data in collaboration with others.

11. There is specific time set aside for me to use data.

12. I am required to use data with others in a group (e.g., small groups, grade-level teams, PLCs).

13. My district or school has procedures to guide my use of data.

Q14 These questions ask about your school.  Please indicate how much you agree or disagree with the following statements: *Please choose the appropriate response for each item:

| |
|---|
| 1. Educators in my school share a common understanding about what good teaching is. |
| 2. Educators in my school share a common understanding about what student learning is. |
| 3. Educators in my school share a common understanding about effective ways to evaluate student learning. |
| 4. Educators in my school share a common understanding about how we can respond to student learning needs. |
| 5. My principal or assistant principal(s) encourage data use as a tool to support effective teaching. |
| 6. My principal or assistant principal(s) create many opportunities for the faculty to use data. |
| 7. My principal or assistant principal(s) have made sure the faculty has plenty of training for data use. |
| 8. My principal or assistant principal(s) are good examples of effective data users. |
| 9. My principal or assistant principal(s) discuss data with me. |

Q15 These questions ask about the computer systems you are provided for data use.  Please indicate how much you agree or disagree with the following statements: *Please choose the appropriate response for each item:

| |
|---|
| 1. I have the proper technology to efficiently examine data. |
| 2. The computer systems in my district provide me access to lots of data. |
| 3. The computer systems (for data use) in my district are easy to use. |
| 4. I would like my district to improve its computer systems for accessing student data. |
| 5. The computer systems in my district allow me to analyze various types of data at once (e.g., attendance, achievement, demographics). |

Q16  In a typical month, how often do you access data through the following means? *Please choose the appropriate response for each item:

| |
|---|
| 1. Personally accessing data from a computer system. |
| 2. Requesting data from someone in my school or district. |
| 3. Someone in my school or district gives me data without me asking. |

Q19 Do you have any comments about data use?   Please write your answer here:

Q22 Would you be willing to participate in a 15 minute interview regarding your data use, if your school is selected?  Interviews are confidential and scheduled at your convenience.  If so, please indicate your email address below.  Thank you!

**Appendix C:  Interview Protocol**

1.  When you hear the phrase DDDM, what do you think of?

2.  Do you consider yourself a data-driven teacher?  If so, how did you come to be a data-driven teacher?  If not, what holds you back from doing so?

3.  To what extent do you attribute your data driven practices to the success students in this school experience?

4.  What structures or systems are in place at this school or district that support your use of data?

5.  Describe for me how and when, if at all, you engage with your colleagues around data and student achievement.

6.  How would you describe the culture surrounding data use at this school?

7.  What does your principal or other school leaders (assistant principals) do to support your data use?

8.  How involved would you say the school leadership is in the use of data?

9.  How would you describe your colleagues' use  of data to drive instructional improvement?

10. Are students involved with data and their achievement level?  If so, how?

11. Which types of data and in what format do you find most useful in making instructional decisions?

12. Is there data that you do not find useful in making instructional decisions?

**Appendix D:  Scale Descriptions for the Survey of Educator Data Use**

**Scale:  Data Effectiveness for Pedagogy (PED)**
*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*
Data can help educators plan instruction.
Data can offer information about students that was not already known.
Data can help educators know what concepts students are learning.
Data can help educators identify learning goals for students.
Students benefit when teacher instruction is informed by data.

**Scale:  Principal Leadership (LEAD)**
*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*
My principal or assistant principal(s) encourage data use as a tool to support effective teaching.
My principal or assistant principal(s) create many opportunities for the faculty to use data.
My principal or assistant principal(s) have made sure the faculty has plenty of training for data use.
My principal or assistant principal(s) are good examples of effective data users.
My principal or assistant principal(s) discuss data with me.

**Scale:  Support for Data Use (SUPP)**
*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*
I am adequately supported in the effective use of data.
I am adequately prepared to use data.
There is someone who answers my questions about using data.
There is someone who helps me change my practice (e.g. teaching) based on data.
My district provides enough professional development about data use.
My district's professional development is useful for learning about data use.

**Scale:  Computer Data Systems (COMP)**
*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*
I have the proper technology to efficiently examine data.
The computer systems in my district provide me access to lots of data.
The computer systems in my district are easy to use.
The computer systems in my district allow me to analyze various types of data.

**Scale:  District vision (VIS)**

*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*

In my district, there is a clear direction about what students should learn.
In my district, there is a clear direction about what should be taught.

**Scale:  Data Attitudes (ATT)**

*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*

I think it is important to use data to inform education practice.
I like to use data.
I find data useful.
Using data helps me be a better educator.

**Scale:  Time (TIME)**

*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*

I am given enough time to use data effectively.
I am given enough time to use data to reflect on my teaching.
I am given enough time to use computer data systems.
I am given enough time to use data in collaboration with others.

**Scale:  School-Level Calibration (CAL)**

*Response Options:  Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree*

Educators in my school share a common understanding about what good teaching is.
Educators in my school share a common understanding of what student learning is.
Educators in my school share a common understanding about effective ways to evaluate student learning.
Educators in my school share a common understanding about how we can respond to student learning needs.

**Scale:  Instructional Resources (INST)**

*Response Options:  Less than once a month, Once or twice a month, Weekly or almost weekly, A few times a week*

How often do you use data to identify learning needs of students who are struggling?
How often do you use data to identify learning needs of students who are not struggling?
How often do you use data to set learning goals for individual students?
How often do you use data to tailor instruction to individual student needs?
How often do you use data to develop recommendations for tutoring or other educational services for students?

How often do you use data to assign or reassign students to classes or groups?
How often do you use data to form small groups of students for targeted instruction?
How often do you use data to identify instructional content to use in class?

**Scale:  Data Use Practices**
*Response Options:  Less than once a month, Once or twice a month, Weekly or almost weekly, A few times a week*
I use data to diagnose student learning needs.
I adjust my instruction based on student data.
I use multiple data sources to understand student learning.
I use data to plan lessons.
I use data to set student learning goals.

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**Vita**

Tracy Renee Epp was born on September 18, 1975 and raised between Southern Maryland and Northern Virginia.  She graduated from Colonial Beach High School in Colonial Beach, Virginia.  She was the first in her family to graduate from college and her seven siblings have followed suit.  She earned her B.A.  from Case Western Reserve University in Cleveland, Ohio, double majoring in history and political science, with honors.

Tracy began her career in advocacy for equity in education in 1997 when she joined Teach For America (TFA) upon graduating from Case Western.  As a TFA corps member in the Rio Grande Valley, she taught eighth grade social studies at Cuellar Middle School in Weslaco, Texas.  She then worked on staff with Teach For America for four years, in the capacity of program director for the Rio Grande Valley regional team and later as a member of the national program team.   During this time, she assisted in the founding of IDEA Academy, a public charter school in Donna, Texas, by co-authoring the charter and serving on the founding Board of Directors.  During this time she earned her M.A.  in educational leadership from the University of Texas-Pan American.

In 2003, Tracy formally joined the IDEA team as the founding principal of IDEA's first high school, IDEA College Prep, in Donna, Texas.  That school has gone on to be ranked in the top twenty high schools in America by U.S.  News and World Report for three consecutive years.  In 2005, she assumed the role of Chief Academic Officer to help lead IDEA in its ambitious five-year growth plan.  During her tenure as CAO,

IDEA grew from two schools to ten schools.   As the instructional leader of the network, Tracy launched the campaign to have all schools authorized as International Baccalaureate schools.   IDEA College Prep became the first open-enrollment school to be authorized in the IB-MYP and IB-DP Programs where 100% of students participate in the program.

In 2007, Tracy was accepted into the Cooperative Superintendency Program at the University of Texas at Austin to pursue a doctoral degree in Educational Administration. In 2009, she left IDEA to consult with several leading education reform organizations, including Citizen Schools, The Texas High School Project and The New Teacher Project.

She currently works to close the achievement gap as a Regional Superintendent at Achievement First, a charter management organization serving 19 schools in Connecticut and Brooklyn, New York.

Permanent Address:  185 A 8th St.  Apt #1; Brooklyn, New York 11215

tracyepp@mail.utexas.edu

This treatise was typed by the author.