



Data Use and Decision Making in Fort Worth ISD

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FOREWARD

This study was completed by doctoral students in fulfillment of the requirements for the doctorate of education degree from the Peabody College of Education and Human Development at Vanderbilt University in Nashville, TN.

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Dedications

To Jonathan, who drove me to and from the airport over thirty-six times in two years, forfeited fifty Friday nights and Saturdays to my classes, spent countless evenings watching me type from across the room, and missed out on innumerable travel adventures- all for the pursuit of my dreams. -Lora.

To G, who pushed me to keep going and constantly reminded me what a privilege it is to be able to pursue an advanced degree. To mi amorcito, who actually loved all the take-out over the last three years. And to my mom, without whom none of this would have been possible. -Molly

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Fort Worth Independent School District (FWISD) is the fifth largest public-school district in Texas. A highly diverse district, FWISD serves more than 84,000 students in 145 schools. 86% of students in the district are economically disadvantaged, compared to the state average of 60.6%. The district also serves more than one and a half times the state average of English learners. Compared to similarly sized districts across the state and districts with similar percentages of economically disadvantaged students, FWISD's performance on state achievement and growth measures ranks among the lowest. These results sparked an intense focus on improving student learning and increasing equity, as well as a series of initiatives to redesign and revitalize FWISD schools.

As a critical step toward achieving these goals, earlier this year the district adopted a data visualization platform, a potentially powerful tool to assist educators in sound data-based decision making. In this study, we utilized qualitative methods to gather information on the day-to-day decision-making activities of teachers, school leaders, and district administrators, and examined the nature and quality of data use in their decision-making processes. By understanding the complexities of data use, data culture, and equity in the context of their experiences, we seek to illuminate some of the complicated interactions that influence successful data use by educators. Through the analysis of our findings, we assess gaps between current practice and desired results to provide strategic recommendations that inform the ongoing rollout of the new data visualization system.

What is the nature and quality of the decisions that educators make about policy and practice?

In analyzing findings from individual interviews and focus groups with 77 educators from six schools and three central office departments, we found that stakeholders across the district experience inconsistent challenges with data literacy skills. Central office staff members experience the biggest challenges with data collection, while the

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biggest skill gaps at the school level appear in analyzing and interpreting data in order to transform information into actionable instructional knowledge and practices. Teachers largely learn data literacy from colleagues on the job and not necessarily through intentional professional learning.

What types of collaborative organizational routines and data leadership strategies are found in FWISD?

All stakeholders agreed there were explicit expectations for them to use data to make decisions. However, district administrators reported perceptions of organizational routines and goals for data use that school leaders viewed on a continuum of usefulness and supportiveness. Likewise, school administrators reported having visions for data use, routines, and collaborative structures on campus that teachers understood in different ways and to different degrees across the campuses in our case studies. The clarity of the vision for data use at the district and on each campus was inconsistent, as was the amount of structured time for collaborative data use and the role of the data analyst as a capacity-builder and facilitator of data use in instruction.

How do educators use data to promote equity for students?

Use of data to examine equity within and across schools in Fort Worth ISD was practiced inconsistently, and overall, most participants reported being uncertain or unaware of how to best use data to promote equity in practice. Central office teams had a stronger vision and could better articulate how to use data for addressing inequity compared with campus leaders and teachers, though they also reported more significant barriers to getting access to the right data to execute that vision.

Recommendations

To meet long-term goals of improving instruction and preparing all students for success in college, career, and community leadership, the district must enhance data use within a culture of collaborative decision making. Based on our findings and the extant literature on data literacy, data culture, and data use to promote equity, we therefore suggest the following recommendations:

Articulate a Vision for Data Use

Develop and communicate a clear and consistent vision for data use across the district.

Specifically, we recommend FWISD take steps to 1) develop and share common district definitions for data and data literacy, 2) work within and across central office and school contexts to ensure organizational structures support collaboration at all levels, and 3) ensure ongoing representation of all stakeholder groups throughout the design and implementation of data routines.

Develop Systemic, Sustained Professional Learning

Invest in systemic, sustained professional development for teachers and leaders that simultaneously addresses data collection via the new data visualization tool and builds the capacity of teachers and leaders to transform data into instructional and programmatic strategies.

Specifically, we recommend FWISD take steps to: 1) train school leaders to frame data analysis and interpretation within the context of organizational learning, as opposed to a strict accountability framework, 2) train and resource schools with instructional coaches and data analysts who can facilitate interactions that use shared expertise and inquiry-based dialogue to plan for instructional shifts in response to data, and 3) integrate training modules on attribution theory, beliefs about race, class, and teaching and learning, and deficit versus growth mindsets with skills and knowledge for data-based decision making.

Promote Equity with New Technology Tools

We recommend leveraging the new data visualization tool to promote equitable outcomes for all students in the district.

Specifically, we recommend that FWISD take steps to: 1) ensure the data visualization tool allows educators to disaggregate a wide variety of school and district data by race and ethnicity, special education status, socioeconomic status, gender, and English proficiency and 2) create an equity audit process or template to guide educators in uncovering areas for improvement across the district.

Reform-minded politicians, policymakers, and educational leaders in the United States promote data-based decision making (DBDM) as a strategic priority for K-12 school improvement, and have done so now for over three decades (Mandinach et al., 2011; Spillane, 2012). Adapting models of data use popularized in manufacturing and corporate improvement processes appealed to early proponents (Marsh et al., 2006). They argued systematic data use in decision making would incentivize excellence and decrease racial and socioeconomic inequity in education (Lasater et al., 2020). Data use was further legitimized and codified over the past twenty years by legislative and regulatory victories of standards-based accountability advocates, such as in the federal 2001 No Child Left Behind Act (NCLB), and later, Race to the Top Initiative (Marsh et al., 2010).

As a result of these efforts, laws, and related state-level mandates, data use in K-12 public schools is now ubiquitous (Schildkamp & Ehren, 2013). However, data points are ultimately only as good as how well, and not only how frequently, they are used (Coburn & Turner, 2011). Even the most eager champions of systematic data use came to acknowledge by the mid-2000s that they had been naive in believing a “lift and shift” of data practices into the education sector would be straightforward. Several complications and unexpected barriers to adoption and enablement have since been well documented by researchers. Issues with how individual educators engage in the process of using data, in how organizational and sociopolitical conditions either enable or constrain data use, and in how interventions interact with those processes and conditions in a given context have emerged consistently in research and practice over the past two decades (Coburn & Turner, 2011).

With a new respect for the rich complexities of the process of collecting, analyzing, and interpreting data in day-to-day educational practice, the federal Every Student Succeeds Act (ESSA) in 2015 and subsequent state-level laws and policies recognized the need to revisit and improve the mechanisms for promoting data use in schools



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and districts. These recent efforts to revise strategies and tactics only served to further solidify the place of data use in the education reform canon, reaffirming that the movement is here to stay, and able to withstand even substantial early failures and setbacks. Given this trajectory, schools and districts must grapple with how to use data well, and draw lessons from research and theory as they navigate better implementation in practice.

Existing research provides a foundation for understanding the specific skills and organizational cultures that work and best facilitate data use, but a distillation of the nature and quality of how, in what contexts, and under what conditions is prime for further exploration. This study first reviews the extant literature to distill key lessons learned to date, and then presents findings from qualitative case studies in FWISD to understand fully the best options given the rich nuance and detail of daily decision making and data use in practice.

Purpose of the Study

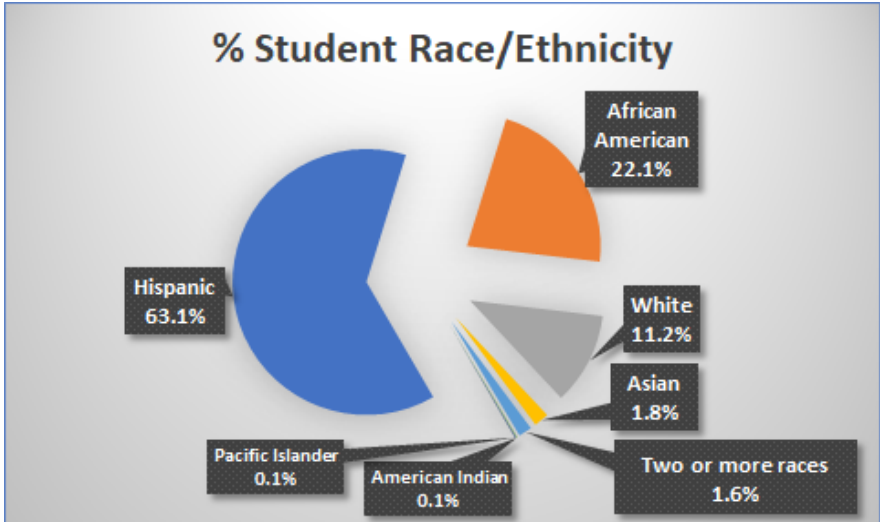
In this study, conducted in partnership with Fort Worth Independent School District (FWISD) in Fort Worth, Texas, we gathered information on the day-to-day decision-making activities of teachers, school leaders, and district administrators, and examined the nature and quality of data use in their decision-making processes. FWISD recently adopted a new data visualization system with the intent of streamlining the process of gathering relevant data to facilitate decision making, and to allow more time for using data to improve student outcomes. Using qualitative methodology, we held focus groups or structured interviews with 77 participants from 6 case study schools and 3 district teams to better understand if, when, how, and why they use data in their various decisions. By understanding the complexities of data literacy, data culture, and data use for equity in the context of their experiences, we hope to uncover rich nuance and details that can help illuminate some of the complicated interactions that influence data use by educators. Using this data, we will assess gaps between current practice and desired results to provide

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strategic recommendations that inform future activities and decisions. Assessing the gaps between current practice and desired results plays a critical role in the continuous improvement process, and this study is intended for FWISD practitioners seeking to develop research-based strategies for implementing data systems and data-based decision making within their EC-12 school system.

Institutional Context

Figure 1
FWISD Student Demographics by Race and Ethnicity



FWISD is the fifth largest district in Texas, serving more than 84,000 students in 145 schools, making it also one of the top fifty largest districts in the country. Located in North Texas near Dallas, FWISD serves a

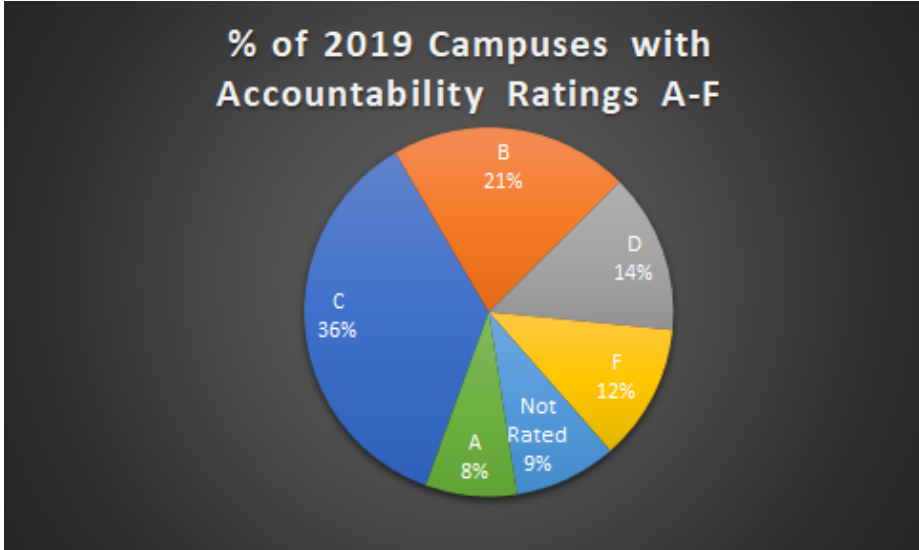
diverse student body. The largest groups include Hispanic, African American, and White students (see Figure 1). Students in FWISD have demonstrated needs that notably exceed state district averages. 86% of students in the district are economically disadvantaged, compared to the state average of 60.6%. The district also serves more than 1.5 times the state average of English learners (Texas Education Agency, 2019).

In 2018-2019, the most recently available data due to COVID-19, the district received a performance rating of “C”, while in the same year 80.5% of all districts in the state received A or B ratings (Texas Education Agency, 2019). FWISD issued an RFP to

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solicit bids from potential vendors of a data visualization platform. In the RFP, they stated that these performance rating results led to an intensified focus on improving student achievement and equitable outcomes in the district.

Figure 2
2018-19 Campus Accountability Ratings A-F



With the majority of campuses within the district also receiving a performance rating of C, D, or F (see Figure 2), district leadership launched a series of initiatives to redesign, transform, and

revitalize FWISD schools (Fort Worth Independent School District, 2020). As one tactic, FWISD adopted a data visualization platform as a key technological strategy to improve data-based decision making and positively impact student learning and equitable outcomes.

Historically, FWISD was a segregated district and initially resisted desegregation following the 1954 ruling in *Brown v. Board of Education*. The district maintained separate schools until the early 1960s, and then adopted a “stair step” plan to desegregate one grade at a time, starting with students in the first grade. It was only in 1994 that the district achieved unitary status and was released from court supervision (Fort Worth Independent School District, 2020). The long history of systemic racism in FWISD is not unique to Texas districts, but the history is worth noting, as the results of decades of unequal provisions of facilities, funding, staffing, and resources for African American, Hispanic, and limited English proficient students

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has had a lasting influence on the community today and likely contributes to inequities in district outcomes such as college readiness indicators (see Table 1).

Table 1
FWISD District College Readiness Indicators Compared to Subgroups

District	Avg. SAT Score	Avg. ACT Score	Dropout Rate Grades 9-12	Dual Credit Course Completion
FWISD	944	20.1	2.9%	38.7%
Subgroup	Avg. SAT Score	Avg. ACT Score	Dropout Rate Grades 9-12	Dual Credit Course Completion
African American	882	16.8	3.8%	28.5%
Hispanic	927	19.3	2.6%	39.1%
White	1091	25.3	2.5%	52.6%
SWD	N/A	30.1	4.8%	9.7%
LEP	N/A	25.4	5%	16.5%

Note. SWD = students with disabilities; LEP = limited English proficient; N/A = not available. Data from 2017-2018.

To improve outcomes, stakeholders need access to easy-to-use data visualizations to guide collaborative data use, increase student-centered decision-making, and to provide more effective instructional leadership. Currently, the district uses several different platforms to house student data, causing the collection of relevant data to be time consuming and cumbersome.

District officials envision a user-friendly, integrated data system that shows users both real-time results and trends over time, as well as data patterns at the school and district level that highlight potential inequities and act as an early warning system for needed interventions.

In order to meet long term district goals of improving instruction, particularly in literacy and math, and to prepare all students for success in college, career, and

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community leadership, FWISD aims to enhance data use within a culture of collaborative decision making. The district will focus in the short term on stakeholder enablement, which is the delivery of content, training, and services to make the data visualization system operational in service of meeting these greater goals, and on instructional leadership. The purpose of this formative evaluation is to equip district administrators with an understanding of how decisions are currently made using data today by educators in FWISD, and how the new data visualization platform can assist in meeting strategic district goals for learning and equity.

District data currently includes 1) input data such as student demographics, 2) process data such as T-TESS scores for quality of instruction, 3) outcome data such as test scores and graduation rates, and 4) satisfaction data in the form of teacher, student, or community surveys (Gummer & Mandinach, 2015; Marsh, 2012). With the adoption of a new data visualization platform, district and school-based leadership are in a position to leverage a new, integrated, and centrally supported system to strengthen the relationship between data, instruction, learning, and equity in FWISD.

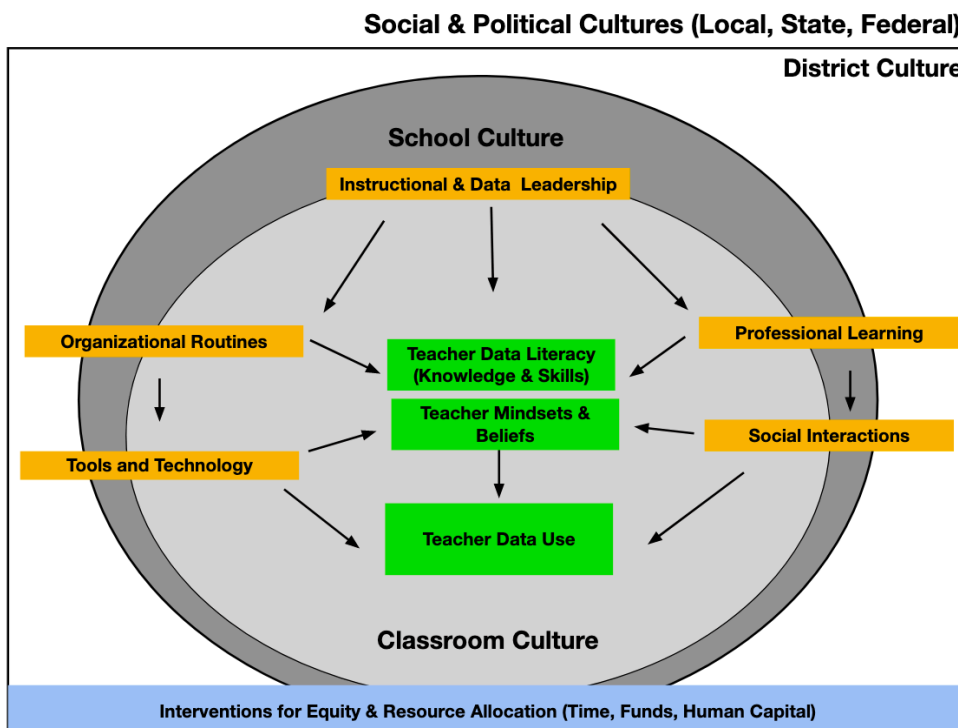
At the outset of our project, critical questions from the client included:

- How (e.g., who, in what situations) do various stakeholders use data to inform various types of decisions?
- What are current challenges in using data to inform decision-making?
- How can we evaluate the efficacy of the enablement strategies?
- How can we best clarify capacity needs & issues and sharpen roles?

Schools and districts today have access to a myriad of data and evidence at their disposal, from input data, such as expenditures or student demographics, to process data like quality measures of instruction (eg. teacher evaluation scores), to outcome data such as test scores and graduation rates, and perceptual data in the form of teacher or student survey responses (Gummer & Mandinach, 2015; Marsh, 2012; Marsh et al., 2015). Perhaps even more importantly, seemingly endless decisions occur daily in schools and districts, and are potentially bolstered by the use of data, like how to group students, plan for support, assign teaching loads, adapt new curriculum, or provide professional development on varying subjects. It does not automatically follow however, that the abundance of available data translates automatically into actions that improve outcomes for all students or change adult behavior in decision making.

FIGURE 3

Conceptual framework for the cultural conditions that enable or constrain data use for equity



Research and theory over the past several decades identified three key lessons that help enable effective data use in education toward these

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ends. One, that the knowledge, skills, and social interactions of an individual educator plays a significant role in how they engage in the process of data use, from initial noticing to interpretation to deciding on action, and that each of these must be attended to by data initiatives (Coburn & Turner, 2011). Two, that organizational and socio-political contexts play an equally important role in enabling or constraining how data is used, and therefore must be understood and intentionally examined (Spillane, 2012). Finally, three, that data use to improve educational equity is significantly influenced by educator beliefs and motivations (Bertrand & Marsh, 2015), and that the nature of interventions aimed at promoting effective data use, such as the introduction of new tools, technological systems, or professional learning, matters and interacts substantively with both existing conditions and individual approaches to processing data (Coburn & Turner, 2011.) The following literature review explores these findings further, and Figure 3 places these three lessons into interrelationship within a conceptual framework developed for this study (Mandinach & Gummer, 2015, Marsh, 2012, Spillane, 2012, Coburn & Turner, 2011).

Lesson One: Individual Factors Influence the Process of Data Use

The knowledge, skills, and social interactions of an individual play a significant role in how they engage in the process of data use, from initial noticing to interpretation to deciding on action (Coburn & Turner, 2011). Researchers have identified specific issues that can hinder data use by educators at each step if not explicitly addressed. The data an educator looks for in the first place, or is even noticed when presented with a slew of information for example, is influenced by each of the three individual factors reviewed below. Educators without appropriate training and support often only attend partially to data, and they routinely miss key patterns and overlook major information (Spillane & Miele, 2007). Furthermore, researchers found that the more data overloaded an environment becomes, the more likely educators are to not consider all available data when making decisions, and to narrow rather than expand

the pool of data they utilize in their process (Honig, 2003). However, by planning for and addressing the factors below, improvements to the data use process are not beyond reach.

Knowledge and Skills: Data Literacy & Data Based Decision Making

The first two individual factors that influence data use is the knowledge and skills of the educator. Data literacy is defined as the ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and interpreting data of all types to help determine instructional steps (Gummer & Mandinach, 2015). This framework outlines six components of the data use inquiry cycle (identify problems, frame questions, use data, transform data into information, transform information into a decision, and evaluate outcomes) and 59 discrete elements of knowledge and skills that are embedded within each of those components, revealing the full extent of the complexity of this domain of understanding. Scholars have consistently found that teachers do not always know how to use data in ways that lead to deep changes in instruction and often lack these very skills and knowledge to formulate effective questions, interpret results, and develop solutions (Cosner, 2012; Huguet et al., 2014; Means et al., 2014; Oláh et al., 2010). One study, for example, found that teachers struggled to interpret tables and graphs, to recognize the difference between longitudinal and cross-sectional data, and to define instructionally relevant questions based on the data. In addition, they reported that over a third of their case study teachers were unable to form questions about a data set that were relevant to their goal for looking at the data (Means et al., 2011).

In addition to data literacy skills, adequate knowledge of the subject matter and pedagogical practices is also necessary for the data use process to succeed as theorized. Through their instruction, teachers translate content knowledge through curricular materials and instructional strategies into experiences that facilitate learning, developing what Shulman (1986) calls pedagogical content knowledge.

Furthermore, teachers do not use data to inform decisions about instruction without considering instructional goals and objectives within their specific disciplines (Gummer & Mandinach, 2015). In order to use data effectively, educators must be able to diagnose the specific gaps in content or process knowledge students need to master and identify viable alternatives to existing approaches based on the data they have collected (Coburn & Turner, 2011).

Social Interactions

The final individual factor that influences an individual's data use is their social interactions and networks. In social network theory, data use is theorized as an interactive process and highly influenced by the characteristics of the individuals within a network and the dynamics of their social interactions (Coburn & Turner, 2011). Everything from the casual conversations of colleagues, to the daily routines of the school, to the dispositions and expertise present in any given group of educators can influence the meaning assigned to data (Blanc et al., 2010; Huguet et al., 2014; Little, 2012; Nelson et al., 2012). Accordingly, who educators interact with allows for or constrains their interpretation, framing, and decision making (Little, 2012). Power relations between individuals shapes what data is shared, what is noticed in the data, how problems are framed, and what solutions are deemed acceptable and actionable (Coburn & Turner, 2011; Daly, 2012; Spillane, 2012). Social network theory suggests that attention to the interdependent relationships, distributed cognition, and healthy flow of relational resources is important to promoting data use to improve instructional practice (Daly, 2012).

Accordingly, learning happens as a social process, occurring among network peers and within an environmental context (Huguet et al., 2014). Goren (2012) asserts that the assumption that collecting and organizing data will lead to improvement is much less certain than most advocates may think. As noted above, power relations, differences in individual expertise, and varying reactions to macro-social structures that influence policy and goals can cause the same data to mean different things to

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different people within different settings. Therefore, sociocultural learning theory underscores the necessity of collaboration for individuals to learn from one another in a cyclical and reflective data use process that improves instructional practice.

Collaborative spaces also allow for more robust sensemaking when individuals are faced with the complex task of data analysis and interpretation. Spillane (2012) describes the performative aspects of organizational routines when individuals are in conversation with one another during a task. These interactions, whether occurring within a formal structure or more informally, assist with the cognitive aspect of perceiving and processing information. In these spaces, participants improvise and negotiate meaning. It is within this framework that the performative aspect of organizational routines put the individual, with their specific knowledge, experience, and skill, in communication with others through their interactions. Therefore, what individuals notice as well as “how they frame and interpret what they notice is not just a function of their prior knowledge and beliefs but also a function of their interactions with others in which they negotiate what information is worth noticing and how it should be framed” (Spillane, 2012).

Lesson Two: Organizational & Sociopolitical Conditions Enable or Constrain Data Use

Data is meaningless absent the organizational and sociopolitical contexts that surround its use (Daly, 2012; Little, 2012; Nelson et al., 2012). It is the process of using data within a given context that transforms it into evidence that can be used as the basis for decision making. The ideal learning organization is theorized to comprise interconnected communities of practice, where peers engage in achieving a common goal and share habits of mind that involve thinking through problems of practice. When the goal therefore is whole school or district improvement, assisting practitioners to adopt a process-based perspective, where structures, relationships, and tools link activities and people into a feedback system that promotes shared

learning across groups and settings, would best enable them to use data in effective ways (Blanc et al., 2010).

Spillane (2012) further suggests that studying data use in practice requires holistic attention to organizational routines that structure the day-to-day work of educators. Organizational routines can provide or limit opportunities for collaborative data analysis, and influence the extent to which educators attempt to negotiate meaning, frame arguments about the nature of problems, and use their expertise to design solutions together (Coburn & Turner, 2012; Little, 2012). Organizational routines happen within the wider framework of a school or district's data culture. This framework includes attitudes, values, and goals within a learning environment, leadership's vision for data use, as well as the organizational structures that govern collaborative routines (Firestone & Gonzalez, 2007). Scholars have identified two types of data cultures that influence data use: a culture of accountability that is reactive and driven by a need to raise test scores as an end in and of itself, and a culture of organizational learning that is proactive and views test scores as just one indicator of student learning (Firestone & Gonzalez, 2007; Nelson et al. 2012; Garner et al., 2017). Data use cultures determine data use policies; that is, data use policies and practices privilege the norms, values, and behaviors that reflect either a data culture of accountability or a data culture based on organizational learning (Gannon-Slater et al., 2017).

When school and district leadership enable a culture of organizational learning, they intentionally utilize organizational structures to promote instructional communities that learn from data and use data to improve student learning (Blanc et al. 2010). An organizational learning stance focuses on process by emphasizing the importance of routine practices across school communities. These routines link tools such as data sets and protocols, people, and structures into a coherent feedback system to assist sensemaking about data.

Sociopolitical Contexts

In the United States, data driven decision making is shaped largely by test-based accountability policies at the federal and state level. Texas was an early adopter of accountability systems based on standardized testing of students. The most current iteration pivoted to using a system of letter grades to classify schools and districts from A-F, intending to make the system more transparent to all stakeholders. However, the stigma of failing grades is also widely perceived as a highly punitive and consequential label to which politicians, parents, and community members react strongly. While the intention is to further spur positive change, the reality is more often the creation of a sharply political and negative environment that focuses more on solving the issue of removing the label than on the underlying equity issues that contribute to the label in the first place.

Regulations that emphasize the test scores of historically marginalized subpopulations often re-inscribe existing power structures by reinforcing deficit-oriented perspectives toward non-dominant communities, rather than disrupting them to accelerate reform. Furthermore, just as in society, intersections of race, sex, citizenship status, language ability, and class must be considered in examining teachers' and administrators' interpretations of data. In one study, researchers found concerns about diversity and equity were rarely mentioned by teachers during data conversations, unless they were expressing deficit-oriented perspectives (Garner et al., 2017). Deficit thinking permeates society; schools and teachers mirror these beliefs (Garcia & Guerra, 2004).

Awareness of the school, district, political, and social culture is essential for any data driven discussion of institutional practices that may be discriminatory toward specific groups of students. As teachers who see themselves as nonracist, caring, and equity-oriented begin to realize that many issues contributing to the achievement gap are embedded in systemic practices and role definitions (Cummins, 1986; Kalyanpur &

Harry, 1999), they can begin to redefine these roles and explore ways to serve as change agents for school-wide reform.

Collaboration for Organizational Learning

Research shows that opportunities for collaboration and embedded professional learning opportunities to build data use capacity are essential to successful school improvement efforts (Huguet et al., 2014; Marsh, 2012; Means et al., 2011). Specifically, Means et al. (2011) found that collaboration with others during the data inquiry process resulted in more sound data interpretations, more clarifying questions, and the mitigation of harmful decision making biases. However, researchers noted that it is the quality of the collaborative dialogue that must be carefully fostered, and not just the creation of a meeting process. For example, building teachers capacity to use discussion protocols is a common intervention (Bocala & Boudett, 2015; Gerzon, 2015; Park, 2018), but some scholars warn that while structured discussion protocols help focus discussion and facilitate participation, they also lend themselves to ritualized enactment, privileging form over substance (Little, 2012).

Teachers' views toward what constitutes worthwhile information and toward the relationship between data, instruction, and learning, play a significant role in shaping interactions within collaborative groups (Nelson et al., 2012). A productive mindset includes an inquiry stance marked by a willingness to ask questions and seek understanding in collaboration with others in sensemaking activities. Nelson et al. (2012) explore the dimensions of inquiry stance beliefs and dispositions, arguing that learning communities are most effective at using data to improve instruction when groups seek to surface limitations in classroom practice through a careful examination of student-learning data while using inquiry-based talk that continually attempts to make common meaning and explicitly express wonder and uncertainty. The authors acknowledge that such stances may involve cultural, ideological, and intellectual shifts for many teachers, and school leaders can apply

their research when analyzing and supporting the development of an inquiry stance in collaborative groups.

Coaching & PLCs

Instructional coaches and PLC structures have also been found to play important roles in mediating teachers' responses to data in instances when teachers used data to alter their instructional approach (Marsh et al., 2015). Organizational structures and routines that facilitate collaboration promote horizontal expertise, knowledge that is co-created through interactions, as people analyze data, negotiate importance, and frame arguments about the nature of problems as well as potential solutions (Spillane, 2012). A major function of leadership, therefore, is framing the task of data-based decision making as one of organizational learning and then creating the structures to facilitate productive dialogue and decision making (Huguet et al., 2017). In addition, leaders must recognize the role of on-going professional learning to promote an organizational learning mindset and develop capacity for discrete data literacy skills.

Leaders' choices with respect to tools and routines may either foster an instructionally oriented use of data or inhibit it. Strategies for building and sustaining educator capacity that focus on leverage points such as access and collection of data, analysis, collaboration to promote understanding and share expertise, application in action, and assessing the effectiveness of action have been identified (Marsh, 2012). Marsh's study noted that capacity building activities in districts and schools often fell within five key domains: human support, technology support, data production, accountability and incentives, and norms and expectations. Other scholars have noted the particular importance of developing instructional coaches and coaching practices to assess teacher needs, model effective data use, provide feedback and expertise, engage in dialogue and questioning, and act as brokers between individuals in different roles (Huguet et al., 2014). Building organizational learning cultures that incorporate teacher and principal voice, are compatible with

communities of practice, and practice distributed leadership will support data use practices that improve instruction (Firestone & Gonzalez, 2007).

Leadership

Research on data informed leadership echoes the literature describing the interrelationship of social and political influences and internal structures, as well as theories of data use that are helpful to building our understanding of how information is transformed into actionable knowledge within the district and school setting. It is likely that individuals in school or district leadership positions are keenly aware of the inevitable tension present between external pressures focusing on outcome data use for monitoring and accountability, and the internal desire to foster true organizational learning feedback cycles through collaborative inquiry. Just as with teachers, data by themselves are not evidence of anything for school leaders until they use interpretive frames of reference to make sense of it, and no matter how systematically they gather data, leaders' decision making will be influenced by interests, ideologies, and their institutional context (Coburn & Talbert, 2006; Honig & Venkateswaran, 2012).

Knapp et al. (2006) suggest that data informed leadership must include efforts to increase the leader's own data literacy, to develop and sustain cultures of inquiry at various levels of the organization, and to create data infrastructures and instructionally focused data systems. Another study suggests that leaders focus on using data to identify aspects of organizational systems and processes, and to determine where outcomes are strongest and where improvement is most needed (Cosner, 2012). A third study emphasizes designing routines, allocating time, creating access to data, and fostering norms of participation as the most important leadership moves (Coburn & Turner, 2011). And finally, using a three-part framework, Wayman et al. (2012) argue that data-informed leadership creates common understandings and consistent language around expectations, focuses on routines that infuse professional learning into everyday work, and integrates centrally supported data systems.

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Leaders at the school and central office levels often function as boundary brokers that promote shared learning and span the work of people in a variety of settings, roles, and groups (Blanc et al., 2010; Honig & Coburn, 2008). They are particularly situated to facilitate or constrain the structures, routines, collaborative networks, professional learning and stance towards inquiry across an organization. Research on data use suggests that people with different levels of authority have differential influence on what data is noticed as well as the negotiation about the meaning and implications of data (Spillane, 2012). From this perspective, Park's (2018) work on data-informed leadership for equity and learning is particularly important. By equity, Park refers to how schools and educators work toward reducing both disparities in opportunities to learn and outcomes for all students, considering the structural, cultural, and historical factors that have led to disparate outcomes for marginalized students. With a focus on conversational moves at the micro-process level, Park builds on Nelson et al.'s (2012) work on beliefs and inquiry stances by adding a strength-based approach that reframes deficit thinking to build on student learning assets.

Data use for inquiry, learning, and equity require leadership that explicitly articulates equity values and facilitates data use processes to challenge rather than reinforce inequalities (Park, 2018). Other researchers focus specifically on leader's data use to reduce disparities in discipline data (McIntosh et al., 2018) or to include student voice in data use and decision making (Kressler et al., 2020), but Park's work challenges leaders to address how educator's preexisting beliefs and conceptions of race, class, gender, and ability are part of the sociocultural and political contexts through which they mediate data interpretation. The challenge for leaders is to balance the frameworks and theories that undergird the data use theory of action to create a coherent plan for effective data use that drives instructional improvement.

Accountability

Data is abundant in our k-12 educational landscape, and policy and lawmakers have constructed accountability models that articulate requirements for data use and

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incentivize data-based decision making to improve school performance. The shift to more frequent and explicit use of data began decades ago with the passage of the federal No Child Left Behind Act, continued with Race to the Top grants, and lives today with accountability provisions in the Every Student Succeeds Act. The sanctions and consequences built into accountability policies contribute to the perception of data as a threat, which may increase the stress response of educators and constrain, rather than enable, rational decision making and effective data use (Daly, 2012).

Accountability policy structures influence complex social and organizational structures inside of schools and districts, often creating tensions (Moss, 2012). When information gathered from data is used for monitoring, control, compliance, and accountability, there are strong incentives to impose decisions from afar on stakeholders within a particular school or district. Within such a context, locally relevant inquiry and professional or organizational learning as a driver of instructional improvement can play a secondary role if clear routines and expectations for the use of data are not established.

Teachers may feel pressure because of short-term goals to increase test scores because of accountability systems, yet district or school culture focused on organizational learning encourage inquiry stances that support teachers to co-create solutions around identified problems, design changes in instructional practices, and reflect their progress. This seeming disconnect between short-term and long-term goals produces the tension felt in the relationship between the macro and micro levels of data use policy and practice (Nelson et al., 2012).

Lesson Three: Technology Tools and Interventions to Promote Equity

Researchers have identified two primary types of interventions that can assist schools and districts in the endeavor of promoting effective data-based decision making, and help overcome the barriers that have been previously outlined. One, the adoption of

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adequate technology, tools, and information systems, and two, the enablement of human capacity, through initiatives that improve the knowledge and skills of educators and facilitate their effective use of data (Mandinach, 2012). Of the two, the former has received the bulk of funding and attention to date. Data warehouses, student information systems, computer-based instructional and assessment systems, and more are now available to K-12 schools to help educators collect, analyse, and report data (Wayman et al., 2012). Over \$500 million dollars of federal funding has gone specifically to creating technological infrastructure for state data as of the mid-2010s (Mandinach et al., 2011), and while 100% of districts have followed suit in investing in some technology for data information systems, not all districts are able to equally afford and implement these tools (Means et al, 2010).

The tools themselves have the capability to link data across contexts, report on performance metrics, and access to the technical tools of data information systems can expand or limit data use within a local context (Moss, 2012). Wayman et al. (2012) note that integrated, centrally supported, easy to access tools are essential to successful use of data to improve teaching and learning within schools and districts. It is then that initiatives promoting explicit data use professional development, requiring interim assessments, or utilizing specialized protocols are both influenced by the information system tools available and in turn influence individuals and organizations to adopt or abandon behaviors and routines within an organizational and political context (Coburn & Turner, 2011)

The latter component, developing human capacity for data use with an equity mindset, has proven far more difficult to do well and is often subordinated in importance to the technology aspect (Mandinach, 2012). In one 2010 national survey, over 90% of school districts said they offered some type of professional development on data use to at least some of their leaders and teachers, though this training was generally not systemic, and more principals than teachers received training (Means et al, 2010). Many educators continue to report they are inadequately trained to use data by their preparation programs, especially the type of data generated by

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standardized tests (Mandinach, 2012), and many more lack the ability to transform data into usable knowledge (Mandinach & Gummer, 2013). The idea that getting the right tools, technology, and systems in place limits the need for intensive and sustained enablement efforts is attractive, but researchers have consistently indicated that even with the right technology, the need to explicitly build educator capacity around data continuously on the job remains essential ultimately to success (Choppin, 2002, Ikemoto & Marsh, 2007, Mandinach, 2012).

Beliefs & Motivations

When it comes specifically to increasing capacity for data use for equity, understanding and shaping the existing beliefs and motivations of educators is immensely important (Coburn & Turner, 2011; Little, 2012; Bertrand & Marsh, 2015). Educators may more often rely on intuitive rather than systematic analysis when making decisions, rendering the data use process vulnerable to unconscious bias and unexamined assumptions (Hogarth, 2001). Sensemaking, a sociological theory, describes how people make sense of reality by creating meaning from their past experiences (Bertrand & Marsh, 2015). Some studies found that as teachers anticipated future events or behaviors for example, beliefs based on prior experience interfered with their use of data in decision making (Little, 2012; Means et al., 2011). They tended to pay more attention to data that confirmed what they expected to find (Spillane, 2000; West & Rhoton, 1994). New information, the researchers discovered, was filtered through existing lenses, leading educators to discount or downplay data that challenged current perceptions (Spillane & Miele, 2007). This cognitive phenomenon, in which individuals seek data to support rather than disrupt beliefs, is known as confirmation bias, and is found almost universally (Bertrand & Marsh, 2015).

It is also important to recognize other biases that impact beliefs and motivations. Similar to confirmation bias, educators, like most humans, are subject to what is known as the self-affirmation bias. This is a strong desire to create and maintain a

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positive self-image (Coburn & Turner, 2011). This bias leads some educators to seek and interpret data in ways that portray themselves in more positive terms, leading them to, for example, see low test scores as more likely the result of a student's effort, home life, or result of test construction rather than as a problem with their own teaching practices (Nelson et al., 2012). In some cases, this bias, paired with what's known as deficit thinking, leads educators to attribute student failure to internal or cultural deficiencies, rather than looking for solutions within the educational system itself (Nelson & Guerra, 2014).

There are real consequences for students of data driven interventions that do not also explicitly address equity. One study found that teachers' perceptions of low-income and African American students' academic capacity were lower than those they held for middle- and upper-income white students, which reduced their sense of responsibility for student learning (Diamond et al., 2004). School reform efforts stall or fail because deficit beliefs become a filter that blocks educators' abilities to examine their assumptions and look beyond traditional solutions for real and meaningful change (Garcia & Guerra, 2004). Since making the link between data and action requires a series of assumptions, conjectures, and judgments, effective data use necessitates that educators learn to recognize and mitigate their bias as they master new tools and technologies for supporting effective data use.

Effective interventions recognize that professional development in diversity is not just for White educators; that intercultural communication permeates every aspect of schooling; that cultural sensitivity and awareness do not automatically result in equity practices; and that professional development activities must systematically and explicitly link equity knowledge to classroom practices and data use. Staff development that identifies elements of the school culture and climate that lead to institutional practices that systematically marginalize or pathologize difference is critical in any effective data driven initiative intended to ameliorate inequities (Garcia & Guerra, 2004).



Research Questions

Based on our review of the literature, the districts initial inquiry focus, and our effort to support FWISD to meet their instructional improvement goals, we present the following research questions:

1. What is the nature and quality of the decisions educators make about policy and practice, and how are data used in those processes (or not) in schools and in central office departments in FWISD?
2. What types of collaborative organizational routines and data leadership strategies do educators report or lack in FWISD?
3. How do educators gather and use data in decisions to promote equity for students in FWISD?

Definition of Terms

The following terms will be used throughout this report, and definitions have been provided for reference.

Term	Definition
Data Use	The collection, organization, and analysis of data to become information, and the subsequent combining of that information with stakeholder understanding and expertise to become actionable knowledge
Data Literacy	The ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and interpreting all types of data to help determine instructional steps
Data Culture	A learning environment within a school or district that includes attitudes, values, and goals, norms of behavior and practices, accompanied by an explicit vision for data use by leadership for the importance and power that data can bring to the decision-making process.
Equity	How schools and educators work toward reducing both disparities in opportunities-to-learn and outcomes for all students, considering the structural, cultural, and historical factors that have led to disparate consequences for marginalized students
Deficit Thinking	Inclination to view certain groups of students as inherently deficient and that beliefs and standards of the dominant group are inherently correct
Horizontal Expertise	Knowledge that is co-created through interactions and movement across contexts
Stance	The habits of mind or ways of being that underpin teachers' group processes

Methods

The design of our study adopted a pragmatic approach to qualitative inquiry. As a qualitative inquiry framework, “pragmatism directs us to seek practical and useful answers that can solve, or at least provide direction in addressing, concrete problems” (Patton, 2015). As such, we carefully designed interview and focus group protocols to ask open-ended questions about how educators collect, analyze, and interpret data in order to make decisions in their professional contexts. Qualitative methods such as in-depth interviewing and document analysis were used to examine current practices as they relate to data use and organizational structures in FWISD. Within the pragmatic qualitative framework, we integrated a comprehensive needs assessment to provide our client with an overview of the gaps between their current practice and their desired outcomes. Our literature review and study of best practices regarding data use and organizational culture informed our gap analysis and subsequent recommendations.

Sample

School sites were selected through a process of convenience sampling based on an existing relationship between our district contact and the campus leadership. Six schools (two elementary, two middle, and two high schools) were selected as sites for interviews and focus groups. Once the schools were identified, we employed purposeful sampling by group characteristics to identify information-rich participants at each school in order to illuminate the questions under study. Individual interviews were conducted with school principals and data analysts, while focus groups were conducted with teachers and support staff such as counselors and coaches. By focusing on group characteristics at the school sites, we were able to gather information that revealed important group patterns within each role. In addition to the six school sites, three central office departments (Teaching and Learning, Student

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Support Services, and Data Quality and Assessment) were identified as high-impact cases due to their frequent use of district data and their direct roles in working to support individual school sites. For each of the three central office departments, we contacted the department director and asked them to select members of their department to participate in a focus group. In total, 77 educators participated in the study (see Table 2).

Table 2
FWISD Study Participants

Group	n
Principal	6
Data Analyst	8
Coaches & Support Staff	13
Teachers	30
Central Office Staff	20

School-based study participants included staff in elementary, middle, and high schools. The teachers in our focus groups taught a variety of subjects, including math, science, ELA, social studies, Pre-AP, Dual Language, ELL, Spanish, computers, and special education inclusion and self-contained life-skills. Our school-based focus groups also included principals, data analysts, high school counselors, assistant principals, reading coaches, and a post-secondary success specialist. Educator experience across the three tiers ranged from zero to thirty-nine years of experience. A more detailed analysis of teacher experience across our school sites can be found in Table 4. In total, 53 female educators and 24 male educators participated in our study.

As school sites were chosen by our district contact based on their availability, school site demographics were compared to the district as a whole to determine the extent to which the individual schools reflected the district demographics in terms of race and ethnicity, the percentage of students who are economically disadvantaged, the percentage of students who are limited English proficient, and achievement

performance (see Table 3). Although demographic data from some school site populations contain outliers when compared to district averages, overall, performance ratings and scores from state assessments closely aligned with district averages. In addition to looking at demographic data, we were interested in looking at the years of experience of teachers at each school site as compared to the district. Table 4 shows a wide range of experience among sites. Dolores Huerta and Rosemont have the highest percentage of first year and beginning teachers while Burton Hill and Southwest have the highest percentage of teachers with more than twenty years’ experience.

Table 3
FWISD District Demographic and Performance Data Compared to School Sites

District	Grades	District Enrollment	Hispanic	African American	White	Asian	ED	LEP	State Performance Rating	State Performance Score
FWISD	EE-12	84,332	63.1%	22.1%	11.2%	1.8%	85.8%	32.8%	C	79
School	Grades	School Enrollment	Hispanic	African American	White	Asian	ED	LEP	State Performance Rating	State Performance Score
Burton Hill	EE - 05	513	54.2%	8.2%	32%	1.8%	60.4%	14.2%	A	94
Dolores Huerta	PK - 05	567	96.5%	1.4%	1.9%	0%	96.5%	59.1%	C	74
Riverside	06 - 08	973	87.3%	5.2%	5%	1.4%	96.5%	37.6%	D	69
Rosemont	06 - 08	921	91.1%	5.4%	2.1%	0.9%	96.7%	40.3%	C	79
Southwest	09 - 12	1,334	41.7%	39.7%	12.9%	3.1%	80.2%	15.1%	C	78
Western Hills	09 - 12	864	47.3%	32.5%	16.1%	0.9%	83.6%	13.9%	C	78

Note. ED = economically disadvantaged; LEP = limited English proficient. Demographic data from 2019.



Table 4
FWISD District Teacher Experience in Years Compared to School Sites

District	0 Years	1-5 Years	6-10 Years	11-20 Years	20+ Years
FWISD	6.2%	31.4%	18%	29.7%	14.6%

School	0 Years	1-5 Years	6-10 Years	11-20 Years	20+ Years
Burton Hill	0%	11.3%	25.8%	42.9%	20%
Dolores Huerta	7.4%	28.5%	10.7%	40.1%	13.4%
Riverside	7.4%	42.9%	11.5	18.4%	19.8%
Rosemont	1.8%	30.1%	22.1%	29.4%	16.6%
Southwest	3.1%	25.4%	15.1%	35%	21.4%
Western Hills	1.5%	25.4%	22.8%	33%	17.3%

Note. Data from 2019.

Data Collection

Quantitative

To answer our research questions, we used qualitative methods to conduct interviews and focus groups in order to assess current data use practices and data culture in FWISD. Descriptive statistics were analyzed to describe the district's current performance on state achievement measures as well as compare our sample school sites to the district as a whole.

Publicly available data from the Texas Education Agency were used to analyze FWISD's current performance on state achievement measures as compared to districts with comparable size and overall percentage of students who are economically disadvantaged. We used achievement data from 2019, the most recent achievement data available as 2020 achievement data was not available from the state of Texas due to a stop to state testing resulting from the COVID-19 pandemic. Achievement data in the analysis includes the district's overall score, student achievement score, school progress score, academic growth score, and closing the gaps score. When comparing FWISD other Texas districts of similar size, FWISD scored the lowest overall, and scored the lowest of all similarly sized districts

in student achievement, school progress, academic growth, and gap closure (see Table 5). When comparing FWISD achievement to districts across Texas with similar percentages of economically disadvantaged students, FWISD scored the lowest overall, and scored the lowest of all similarly sized districts in student achievement, school progress, academic growth, and gap closure (see Table 5 and Table 6).

Table 4
Texas District Demographic and Achievement Data by Similar Enrollment

District	Enrollment	ED	LEP	District Overall Score	Student Achievement Score	School Progress Score	Academic Growth Score	Closing the Gaps Score
Fort Bend ISD	75,797	43.2%	15.9%	89	89	89	85	89
Katy ISD	79,710	31.6%	16.9%	92	89	91	90	95
Austin ISD	79,787	53.5%	27.2%	89	88	89	76	88
Fort Worth ISD	84,332	85.8%	32.8%	79	73	83	60	71
Northside ISD	105,797	49.5	9.2%	87	87	86	79	88
Cypress-Fairbanks ISD	116,245	54.5%	14.2%	89	89	91	85	89
Dallas ISD	155,030	86.2%	44.7%	86	79	89	80	78

Note: Data includes 7 Texas Independent School Districts where Fort Worth ISD has the median number of students in 2019. ED = economically disadvantaged; LEP = limited English Proficient

Table 6

Texas District Demographic and Achievement Data by Similar Percentage Economically Disadvantaged

District	Enrollment	ED	LEP	District Overall Score	Student Achievement Score	School Progress Score	Academic Growth Score	Closing the Gaps Score
Galena Park ISD	22,262	85.5%	34%	88	83	90	79	83
Weslaco ISD	17,253	85.6	27.1	88	86	91	79	81
Fort Worth ISD	84,332	85.8%	32.8%	79	73	83	60	71
Dallas ISD	155,030	86.2%	44.7%	86	79	89	80	78
Pasadena ISD	53,157	86.3%	28.9%	86	81	89	79	78
Mission CISD	15,577	86.3%	32.8%	88	85	92	76	78
Edinburg CISD	34,066	85.8%	33.7%	89	85	93	73	85

Note: Table includes all Texas Independent School Districts over 15,000 students and within one percentage point of FWISD percent economically disadvantaged in 2019. ED = economically disadvantaged; LEP = limited English proficient

Qualitative

This capstone project used a qualitative design focused on obtaining useful answers to practical questions. Instruments for data collection included interview and focus group protocols. Principals and data analysts were interviewed individually while teachers, central office administrators, and school support staff participated in focus groups. The wording and sequence of questions for each stakeholder group was determined in advance, and each category of interview participants was asked the same open-ended questions in the same order. Interview and focus groups utilized a semi-structured protocol that was developed in direct response to our conceptual framework. Questions were designed to illuminate the nature and quality of data literacy skills and data culture as they related to assessing the needs for development and training related to the new data visualization tool. Specifically, questions asked about organizational learning and organizational routines, social networking and

collaboration, data collection, analysis, and interpretation skills, and instructional leadership. Separate though related interview and focus group protocols were developed for principals, data analysts, teachers, central office administrators, and school support staff such as instructional coaches and school counselors.

As interviewers, we left open the possibility of asking probing questions during the interview and conducted the first focus group together in order to calibrate facilitation style and pacing. After the first set of school-based interviews and focus-groups conducted individually, we met and made agreed upon adjustments to the interview protocol to more fully investigate theoretical concepts as they emerged. Interviews and focus groups were conducted virtually over Zoom video conferencing between November 5, 2020, and December 18, 2020. Each interview was digitally recorded and transcribed with additional notes on the location of the interview, duration, who was present, and other observations. There was no intentional sequencing of the interviews and focus groups; each was scheduled with attention to availability and convenience for FWISD school based and central office personnel.

To analyze the data, first we each reviewed our individual interview transcripts and made notes and identified quotes based upon the concepts, themes, and examples in our literature review and conceptual framework. Next, we created an organizing set of codes, which included attitudes and beliefs, vision for data use, ability to transform data into actionable knowledge, sensemaking, collaboration, equity, leadership, and professional learning, to label our data more finely. Then we developed a matrix for each school site or central office group summarizing contents by participants, types of decisions made using that data, themes, and notable quotes in aggregate. Finally, we reorganized and combined data from across the sites by data source, concept, and by theme to identify trends and patterns across case study sites. We synthesized our results to generate our findings on the current status of data use in FWISD.

The following analysis presents our findings in three sections as they relate to each of our research questions and their alignment with the existing literature. Major themes, illustrative quotations, and evidence that best captured the perceived current state of data use and decision making are presented within each section. Often, the views of district administrators, campus leaders, and teachers differed from one another, and as much as possible, the researchers included the contrasting perceptions to represent the diversity of experiences today across the roles. When there were important outliers, either individuals or campuses, those have been noted as well.

Research Question 1

Our first research question asks: *What is the nature and quality of the decisions educators make about policy and practice, and how are data used in those processes (or not) in schools and in central office departments in FWISD?*

Findings

Stakeholders across the district experience inconsistent challenges with data literacy skills. Central office staff members experience the biggest challenges with data collection, while the biggest skill gaps at the school level appear in analyzing and interpreting data in order to transform information into actionable instructional knowledge and practices. Teachers largely learn data literacy from colleagues on the job and not necessarily through intentional professional learning.

Knowledge: Data Literacy & Data Based Decision Making

Totally Frustrated. Educators across the district shared information about how they collect data. Central office staff members and principals were more likely

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than teachers to report that they asked members of the Data Quality and Assessment Department or others to generate specific reports for them, in addition to using data technology tools themselves to collect relevant data. These stakeholders discussed collecting achievement and growth data, as well as data on attendance, behavior, grades, and program outcomes. Data Quality and Assessment department team members noted that school board members, central office and school leadership also requested trend data that has been collected over multiple years within the district, as well as data sets from other districts in Texas.

Central office administrators reported multiple barriers to creating cultures of data inquiry across departments and with campuses in the district. Challenges they named include the lack of holistic views of data in the tools and systems they use, the inability to aggregate and correlate data easily, and analytical inefficiencies such as tools that either generate separate individual reports for each campus or dump data into a massive spreadsheet. One central office administrator called the inability to gather holistic data that included intervention services, academic data, and attendance data a “real concern”. The following conversation between central office administrators illustrates this point.

District Administrator 1: An interventionist or a case manager can get into Focus, and they can pull an individual student record and they can review all of the entries from anyone within students support services that has created records within that system. However, they don't have access to be able to pull all of the data for all of the students that they have served during a specific reporting time. And that's where I think we have a real gap. It's great when you can see an individual student. But it's super beneficial when you can look at the bigger picture...It's helpful, especially when we may be talking about personnel cuts next year and you may not see what's making an impact. It's really hard to show the impact of an intervention when you don't have concrete data to make those decisions.

District Administrator 2: Right. So I think a quick story is helpful here. One year we had a young man who was having a lot of trouble in the sixth and seventh grade. But his behavior improved tremendously in eighth grade and so he

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wasn't put in the [intervention] program. There were a limited number of spots, and the principal's response was that he doesn't need to be in the program anymore because he scored really well on high stakes accountability testing. Well that's really not the only measure of success or the full picture. We knew why he performed so well last year in his behavior, and his academics improved tremendously. So we need to have a system where we have real time data that includes different kinds of data, not just academic data.

District Administrator 3: You know, this team represents a collaborative group of people that do a lot of different complementary things for kids and not having a data system where we all plan in real time is a huge disadvantage. If I can't see all on one screen what this team is doing for this student versus what this other team or what school-based health center might have done for them, it makes it very compartmentalized.

Other central office staff members commented that the amount of data returned when they try to create broader views is “overwhelming”. Study participants agreed that lacking the right data and the ability to control the amount of data as needed, created friction in the strategic decision-making process and inhibited their ability to have meaningful conversations with campus leaders based on data. For example, focus group participants noted the difficulty of collecting data by specific subgroups of students. The following two comments from district administrators illustrate the nature of their concerns:

District Administrator 1: We do [an intervention] for middle school kids who are not passing courses at a particular point in the year. To gather the data of which kids needed that, it was pretty labor intensive. And then we ask, “What percentage of these kids are black? What percentage of these kids are special ed?” And the drilling down into said data points to have more robust conversation stops because of the labor intensiveness. We just don't have time.

District Administrator 2: I'd appreciate some sort of visualization where I can just click, click, click and pull up algebra one district wide and see a visualization of who's failing a particular course or percentages per school,

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number of kids per school, and then you could drill down per school. But we don't have that.

A conversation between district administrators from the Data Quality and Assessment team described challenges in collecting data for stakeholders when there may, in fact, be data overload (Honig, 2003). Their comments also touch on the difficulty that some stakeholders have with framing questions that allow them to collect data that is relevant to their goal for looking at the data:

Administrator 1: We have a whole lot of data and sometimes that actually adds to the challenge in helping [stakeholders] refine their question in a way that you can answer it. You have to probe them about what they're really trying to find out from the question. It's usually to meet a need so that they can take some type of action.

Administrator 2: I totally agree. We get the age-old problem of, 'Thank you so much. It's just what we asked for but it's not what we wanted.' They don't know how to ask for what they want.

Administrator 3: It's about access and where do I go to find the data? What's the platform I should be using? I help with a lot of access concerns as far as principal stakeholders, ensuring that their team has access to the resources they need. The more complicated the systems are and the more data they have, the more they struggle to find the one little tiny view they want.

This specific conversation illustrates the challenges that some stakeholders have with the complex task of collecting, analyzing, and interpreting the data that they need to make effective decisions within their specific contexts.

Central office staff from Teaching and Learning and Student Support Services indicated that they use the data that they collect and analyze to make a wide range of decisions about policy, programs, personnel, resource allocation, district strategy, and school-based supports. There were positive examples where data collection and analysis resulted in increased funding for afterschool programs. For example, one program director shared that his team analyzes student outcomes every summer,

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conducts focus groups with teachers and outside providers, and uses that data to make decisions about how to improve programming each year. However, when describing the nature of the decisions they make using data, others continued to describe the impact of challenges with collecting. For example, another district administrator noted:

I am totally frustrated that the data is hard to access. If I'm trying to look at trends, say by a feeder pattern or by a grade level or by elementary versus middle versus high, whether it's prevention guidance education, academic advising counseling services, case management, or prevention education, I have to run separate reports for each of those because we operate in four different delivery systems. And when the data comes out, it is then converted to an Excel spreadsheet that is so massive. My team needs that data to make decisions about next steps but we need something to make it easier for us.

At the school level, one principal noted that the lack of consistency in data tools and collection requirements year over year was challenging, and data analysts described challenges with collecting data with trends of time for individual students in order to make appropriate instructional and programming decisions. High school counselors, graduation coaches, and data analysts recounted extreme frustration with the collection of annual Texas Success Initiative (TSI) and CCMR data for state reporting. The following comments illustrate the nature of their concerns:

High school data analyst: At the beginning of the year, someone pulled all this CCMR data from different sources and put it in an Excel file. But it's not a living document and it doesn't update. So not only are there errors, but it's potentially obsolete in a matter of weeks. We went through and caught a lot of those [errors], but I'm talking at least 50 transcripts were incorrect and had incorrect data, which is a lot. And I need to decide what prep students need at what point plus I have new students arriving, and it makes it really stressful. I should just be able to log into a system and look up a kid and see all of [the CCMR data] in one spot. But I have my one Excel spreadsheet and my brother makes fun of me because he works for Microsoft. He's like, 'Who still uses Excel like that? What year do you live in?'

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High school counselor: The CCMR piece is kind of a nightmare. They give us a spreadsheet that's 50 miles long, and you can't print it. It's just awful. And we counselors have to look for all of this data and try to place students in the correct class for accountability purposes. I tried to do my own spreadsheet last year, and I just gave up. I tried to keep track of the TSI scores and it was just a total nightmare. That just made me say forget it, they don't care. I can't do this by myself, and the kids are the ones that are getting hurt. We're spending time checking boxes for compliance and keeping up with it could be a full-time job. It's the kids I'm more concerned about, whether the kid is prepared and if we need to try to help that kid raise their TSI so they can go to college.

These educators shared frustrations with both accessing and collecting this data, as well as analyzing it. The nature of the spreadsheet itself significantly contributed to their concerns. While they acknowledged that someone at the central office likely spent significant time aggregating CCMR data for school use, it was delivered in a format that was nearly unusable to school-based staff. High schools in Texas are accountable for CCMR data, and lack of access to real-time data for both individuals and groups of students made it challenging for educators to analyze the data to make the best decisions on behalf of students.

Have Data, Now What? In contrast to central office staff members, school-based teachers, coaches, data analysts, and many principals generally reported that they had access to the data needed to make decisions. Data analysts at the school level were responsible for providing campus administration with on-going reports for progress monitoring, building staff capacity to perform their own data analyses, and identifying data trends to help teachers meet the needs of students. They also organize and supervise state-mandated testing and local interim and benchmark testing. The data analysts in our study reported spending the majority of their time collecting and aggregating data for school staff to use. They collected STARR (State of Texas Assessments of Academic Readiness), TELPAS (Texas English Language Proficiency Assessment System), district benchmark, MAP (Measures of Academic Performance), and CCMR (College, Career, and Military Readiness, high school only)

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into spreadsheets for school leaders and teachers. However, given their various responsibilities, including with testing administration, many felt their time for regular participation in PLCs or professional development related to assessment and the use of data to support new teacher growth and development was limited. Similar to data analysts, instructional coaches are tasked with engaging in data-driven conversations to support student and teacher growth by planning and leading subject area teachers in regular PLCs, as well as preparing data and leading data analysis discussions in PLCs.

Some of the greatest challenges discussed by stakeholders in the school-based roles, however, were interpreting data and transforming information into actionable instructional knowledge and practices (Gummer & Mandinach, 2015). Principals and coaches across tier levels noted challenges in using data to inform instructional practice. One instructional coach commented, "I think that one of the struggles we have is being able to spend time looking at that data and then actually put forth into action." Similarly, a principal noted, "I think we're collecting data at different points along the lesson better, but I still think we struggle with, 'How do I change? What does this mean regarding instruction?'" School staff may be able to identify gaps in student learning, but a lack of pedagogical content knowledge (Shulman, 1986) seems to limit teachers' ability to translate content knowledge through diverse instructional strategies.

At the school level, any changes to instruction appeared to involve using data to plan interventions or to plan for circular review during bell-ringer or warm up activities. Some accepted this as a natural next step after data analysis, but others expressed frustration. For example, principals indicated that the focus should be on strategies for quality tier I instruction, but acknowledged that data analysis often leads to grouping and remediation. One principal noted, "We have to get away from interventions, there's only so much tutoring and stuff you can do. It's great, but it shouldn't ever replace high-quality first-time instruction." Another principal recognized that "we keep kind of falling back into the same rut of 'I'll just use it as the

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next bell ringer, let's just keep spiraling it back in and we'll just keep touching on the bell ringer.”

Teachers also reflected on the need to improve their data analysis skills to inform instructional strategies, expressed frustration to move through the curriculum quickly, and acknowledged gaps in data analysis training. The following comments from middle and high school teachers echo some of the concerns noted above by principals and coaches, and they further illustrate an acknowledgment that teachers are wondering how to best transform data into actionable knowledge in their classrooms and schools.

Teacher 1: There are some older teachers here who will just roll their eyes and act like oh my god, we've done all this before. But there are a lot of newer teachers who really genuinely need this training. I need retraining, honestly, in how to analyze the data and to implement changes efficiently. Not just like, 'Oh, I guess I should spiral in this topic into my warm ups.' We need to do better than that.

Teacher 2: We look at data a lot of times in hindsight, because we've done that work and taken that assessment. And so we're looking at the data, but we have to move on because we feel like we're just really pressed for time. So I think we try to spiral in as much as we can and reteach when we can...but a lot of times the drive for my instruction is the curriculum and TEKS."

Teacher 3: Analyzing data is a mystery unless you are taught how to do it. And I think it's a bit of a mistake to throw a teacher, particularly a brand-new teacher, into the mix and say here, analyze the data because most are not equipped for this. It requires skills, and oftentimes you're expected to figure it out on your own. In my own experience, I found that to be rather daunting. Sometimes we get stuck knowing exactly what to do with the data.

Taken together, these comments from principals, coaches, and teachers illustrate challenges in school staff's ability to transform data into changes in instructional practice. Gaps in analysis skills may be due to a lack of training. However, teachers may be thinking about data strictly in terms of content, rather than the relationship

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between content and pedagogical moves. If educators are not actively developing and discussing pedagogical content knowledge as part of their data use, they may be able to diagnose gaps in students' content knowledge but will continue to struggle with designing and implementing alternative instructional strategies.

Social Interactions

We Make Meaning Together. Data use is an interactive process, and practitioners often analyze and interpret data to make decisions in collaborative groups. Whether central office staff work with principals or their own teams, or teachers work with coaches, data analysts, and colleagues, these interactions either allow for or constrain their interpretation, framing, and decision making (Little, 2012). Dialogue between teachers becomes a central mediating factor between their individual expertise and the development of horizontal expertise, defined as knowledge that is co-created through interactions and movements across contexts (Marsh et. al, 2015). As such, we found that many stakeholders reported learning about data use through informal processes with colleagues. One conversation among teachers at the same school is particularly illustrative. They described how interactions with colleagues have both facilitated or constrained the sharing of expertise about data use:

Teacher 1: My colleague and I have the same off period on A days. She has taught me everything I know about putting data together. I learned a lot from her. She's been teaching 41 or 42 years, so this is just what she's come up with over time, which is amazing because this is my 4th year teaching. We look at what we can reteach because of the data and what it has told us. we keep a constant track of their STARR testing going back to middle school. We take the data of all of the tests that we have taken in class so we can see if each student is progressing, if they're regressing, or if they didn't take the test at all. And then we try and build our lessons off of what we think they can do and what we can spiral back to. We're going to share some of the things we do during our math department meeting today.

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Teacher 2: I used to have data meetings all the time when I was teaching 8th grade math since it was a tested subject area. But since moving to high school and being in a non-state tested area, I haven't had a data meeting with anyone. None of the non-tested areas are doing data analysis. I'll speak for my department: no one above Algebra I is doing it, so I'm really looking forward to learning from you all in the department meeting.

Teacher 3: As science department chair, I'd love to be able to show more examples of how to analyze the data and find ways to adjust instruction, especially for Biology since it's a tested subject. I'm familiar with all the state's expectations and skills even though I don't teach Biology, and I want to be able to help where students need more support.

Within a social network, data use in practice focuses our attention on social interactions among participants, and the opportunity exists for distributed cognition and shared expertise through a collaborative process (Spillane, 2012; Coburn & Turner, 2011). Teachers' interactions have the potential to build capacity within and across teams if the conditions are present to facilitate such an exchange of knowledge and skills.

Teachers' interactions with data analysts and instructional coaches can also facilitate skill building across contexts. Data analysts and coaches with specialized individual expertise are an important resource on any campus. Though the role of data analyst seemed to include various duties, several interviews with data analysts revealed a vision for the role that recognized the benefits of leveraging individual expertise to promote horizontal expertise across contexts. Three distinct comments from different data analysts across sites reflect on their own perceived strengths and the potential benefits of their collaboration with teachers:

Data Analyst 1: I have the ability to look at data and see the relationship that it has with other data. When I'm looking at TEKS or I'm looking at STAAR scores, I can see how English scores reflect on Math scores. I think a lot of teachers, a lot of my teachers, just can't see that relationship.

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Data Analyst 2: In our role, we should be constantly available and be a perceived expert. We should be a member of the team that's there to help drive instruction, to help collect data, analyze it, and make sure that teachers use it consistently.

Data Analyst 3: I think one of my favorite parts of the new data protocol that we came up with is the instructional part because there's a potential cause section. Like, what was the potential cause of these results? What practices or instructions may have contributed to this outcome? And being data literate is to reflect on what I did to produce this outcome and what I can do to produce the outcome that I want. I think the reflection part of it for teachers is really difficult. But if I can help them get good at that, I think that makes all the difference.

Sharing expertise and co-creating knowledge through interactions was identified as a strategy for learning from colleagues. For the educators in our focus groups who did have that experience, it was described as positive and worthwhile.

A Little Bit of an Issue. Impacting productive data collaborations among educators, however, were instances when data analysts and instructional coaches acknowledged gaps in their own skills that could constrain their ability to facilitate data use and build teacher capacity to use data. Differentiating supports for teachers with different levels of data literacy was mentioned as a specific challenge by some data analysts. For example, one data analyst noted:

We have a huge range of understanding of how to use data. It's kind of hard for me to go in and work with teachers because you've got person A, who is probably as professional as I am working with the data. And then you've got someone who is not even close, doesn't even know how to pull their own data yet. For me, finding that middle ground is a little bit of an issue.

The district expects data analysts to assist teachers and administrators in using data to develop campus-wide strategies for intervening with at-risk students and help facilitate teacher and grade level team PLCs through collaborative inquiry and using data as evidence. Therefore, if a data analyst struggles with differentiating supports

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for teachers, their capacity to leverage collegial networks for analysis and sensemaking is inhibited.

Providing another example of constraining behavior, one instructional coach lacked conscious awareness that examining student work to drive instructional planning was a decision-making activity based on data. When asked about the school's PLC meeting focus, she commented,

I probably need to have a bigger role than I do, but we don't get a lot of training. I don't want to sit down and look at data on a regular basis. I would love to sit down and look at student work and look at how they're doing. But I don't necessarily think of that as data. I feel more comfortable sitting down and looking at students' written work and trying to find ways to improve it than looking at a big spreadsheet and breaking it down by TEKS and making a plan for it.

In such instances, the benefits of distributed cognition and embedded professional learning are limited because people in the roles that should hold some expertise have gaps in their own skill set.

Opportunities to build capacity through district professional learning opportunities were described as limited. Stakeholders either couldn't recall specific professional development on data use, or their experiences were not necessarily helpful in addressing skill gaps. Teachers in particular could not recall training on analyzing and utilizing data. Data analysts felt training did not go deep enough. For example, a data analyst described a training that "showed us how to view data as far as raw score versus total score so that we can go back and speak intelligently about what we're looking at. But that was pretty surface level, just like how to analyze it. We don't really get into strategies about going deep and thinking about what to do with it." Dialogue about instruction is especially important in supporting teachers to make changes to the delivery of instruction, and we found that gaps in expertise in these areas impacted stakeholder's ability to effectively make decisions based on data.

Research Question 2

Our second research question asks: *What types of collaborative organizational routines and data leadership strategies do educators report or lack in FWISD?*

Findings

All stakeholders agreed there were explicit expectations for them to use data to make decisions in Fort Worth ISD. However, central office leaders reported perceptions of organizational routines and goals for data use that school leaders viewed on a continuum of usefulness and supportiveness. Likewise, school administrators reported having visions for data use, routines, and collaborative structures on campus that teachers understood in different ways and to different degrees across the campuses in our case studies. Teachers had a more difficult time describing the types of decisions they made daily and often lacked conscious awareness of their own role in collaborative routines. The clarity of the vision for data use at the district and on each campus was inconsistent, as was the amount of structured time for collaborative data use, and the role of the data analyst as a capacity-builder and facilitator of data use in instruction.

Culture is King

Because culture influences every aspect of teaching and learning in a school (Deal & Peterson, 2010) and as data use is no exception (Firestone & Gonzalez, 2007), our framework contextualizes data use within the school, district, social, and political environment that surrounds it (Spillane, 2012). Based on the literature, we asked interview participants to describe their experiences and perceptions of organizational culture, including the values and vision for data use, the structured time allotted for collaboration, the daily, weekly, and monthly routines for data use on campus, and finally, the strategies and tactics of their instructional leaders.

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Teachers repeatedly shared perspectives that a positive school culture for students, faculty, and families made the most difference in outcomes, and identified any routines or systems of data use as auxiliary contributors, if they were named at all. One teacher explained, “I think we've always been a school that no matter what the background of the student, we just expect that you're going to act right and you're going to do your work and you're going to do your best.” Another teacher shared, “I think building relationships with kids is the key to get them to produce for you.” A third attributed their success to the support of families. “Here we have parent buy-in. And I think it helps with the (choice-based) Spanish immersion and dual language (programs), those parents are really 100% into the school.” These quotes are typical of most teachers in our sample, who were observed to be more likely to attribute their success in instruction to the type of rapport and understanding they had with their students than to the information they gathered as part of their decision-making practices.

Furthermore, teachers felt their personal knowledge of students from observations, classroom quizzes, and interaction in instruction comprised the bulk of necessary information they needed to make daily decisions. A majority of teachers in our sample used the term “data” to only refer to systematically collected data by the district, such as that on an interim or standardized test, seeing it as completely distinct from the useful and rich information they gathered on an ongoing basis. As one teacher shared, “Until you get really in the classrooms every day, and you see what data is effective and what's not effective, sometimes I feel like it can be a little heavy on the data that is not realistic.” Teachers consistently felt that their classroom-based insights into students were just as valuable and accurate, if not more so, compared to data gathered through standardized or interim testing:

I'm not the biggest fan of data, I'm not going to lie to you. because like for social studies, the kids will know the content...I don't need the district to inform me about that. I know the students know the content, but they'll have these

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words in there that I know they don't know, we won't cover it, and that one word will throw it completely off. I'll use the data, but more, the stuff I make up.

Time, Tests & Tension: Constraints on Collaboration and Organizational Routines

Time & Tests. Teachers in our study described the varying structured opportunities for collaboration and professional learning they have on their campuses. Both within and across schools in our sample, the time available for partnerships between instructional leaders, coaches, and data analysts with teachers, as well as for collaboration between horizontal and vertical teaching teams, was highly inconsistent.

Collaborative time for data use, such as weekly PLCs, team data meetings, or data days were mentioned by the majority of teachers across the schools, with teachers who taught core tested subjects reporting far more structured time in their schedules to use data than others and more access to support such as data analysts. At one school, a teacher described how each day of the week they had a team meeting with a particular focus, and data was the focus of one of the days each week.

Non-tested subject matter teachers reported far less structured time to collaborate on data with others, and were more likely to say they did not have any required or monitored data routines on campus. Teachers in non-tested subjects and grades, as well as special education teachers, reported having fewer expectations about their data collection, analysis, and use from leaders, and described less frequent touch points about student performance and instruction with administrators or coaches. When asked about it, one teacher shared, "Honestly, sometimes it just depends if you're a tested subject or not. Like, I'm a seventh grade Texas history teacher. I'm not

“Time. God, yeah. That’s the problem right there.”

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tested so they won't stress over me too much.” Administrators and analysts were aware of this discrepancy, as one shared:

I'll be honest, if you're not a tested subject, you're not meeting with your data analyst. So that's officially our roles, the tested subjects are where a lot of the data would be analyzed. Now, not to say that if I'm a Geography teacher, I'm never looking at data, but with the data analyst, probably not.

Several of the principals also shared their experiences with the persistent dilemma of finding time for routine data use and collaboration. On one hand, they acknowledged a need to cultivate data routines and allot dedicated time to collaborative data use, and on the other, shared concerns about overwhelming their teachers with time-intensive tasks and additional meetings, and constraints caused by competing priorities. For all of the principals in our sample, these were the two primary challenges to finding time for systematic decision making and data use.

Planning & Protocols. Despite these challenges, we found overall that teams within sample schools implemented routines like a weekly PLC meeting for collaborative planning, more similar methods were reported by teachers in their decision-making activities, and the use of common tools or templates and systematic data collection became more prevalent. These meetings almost exclusively focused on analyzing standardized data from interim or growth assessments. While many teachers mentioned using exit tickets, student work products, classroom quizzes, and their own observations as part of their individual practice for planning and assessing progress, none had experiences bringing these types of data to collaborative meetings like PLCs.

Protocols, in particular, came up when we asked how teachers structured their discussions with colleagues. Several schools in the sample were very new to using protocols, whereas others were much more seasoned. As one teacher shared, “He (the principal) has given us a guide for talking about data in our PLC. It's like a document with guiding steps. It's fairly new. So I think we've only used it only once,

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but I would say it's a protocol." Consistent with the research, however, we found that building teachers' capacity to use discussion protocols can lend itself to ritualized enactment, at times privileging form over substance (Little, 2012). One member of a campus leadership team acknowledged this, sharing that analysis protocols and PLCs can feel like "one more to do", or provide little to teachers they did not already know. Yet, at two other schools (both elementary level), teachers had a protocol that they recognized was time intensive to complete but beneficial. They were encouraged to use data to make changes to upcoming lesson plans, student groups, and reteaching strategies. For them, the benefit of the protocol outweighed the time it required.

There was a difference in the levels of support reported by teachers in having conversations about data in PLCs or other routine meetings. Having an administrator or data analyst present to facilitate or support use of the protocols was far more often reported by tested than non-tested subject teachers. Administrators acknowledged making difficult trade-offs and settling on working primarily with core teaching teams as a compromise to managing limited time and human resources. As one administrator described:

My tested areas have an extra planning period designed in their day just because they have more data and more things they are required to keep up with. So they meet every other day in regards to structured PLC, and somebody from administration is usually there with them...a lot of electives probably once a week, but that's the hard part.

Another analyst described the challenges they faced being consistent reaching all teachers, even outside of regular data meetings:

When we do come to see them, so few and far between, that when we're coming, they're [teachers] almost like 'We're in trouble,' or 'They got some data that doesn't look good.' You know what I mean? Whereas if I could be like Tuesdays are my English days and, on every Tuesday, they know it's just part of our routine. I could be like, 'Hey, how'd it go from last week? Did we meet our goals? Where are we at?'

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Limited time, competing priorities, external pressures to focus on tested subjects, and a lack of human resources all contributed to campuses in our sample underutilizing the tools and knowledge at hand to organize collaborative routines and structures.

Tensions. Consistent with the literature, two types of data cultures were noted by our interview respondents: a culture of accountability, that is primarily driven by a need to raise test scores, and a culture of organizational learning that views test scores as just one of many indicators of student and school performance (Firestone & Gonzalez, 2007; Nelson et al. 2012; Garner et al., 2017). Furthermore, as suggested by the framework of Lasater et al. (2020), the existing practices and procedures of the district and our sample schools are more accurately portrayed on a continuum of data culture, with most teachers, school leaders, and central office administrators reporting a mix of practices that fall somewhere between the two polarities, rather than a strict binary existing that separates the two types of cultures.

One teacher reflected on her own journey, and how her perception of data changed over time with her experiences, but how she also still sympathized with other teachers and their feelings toward data:

I have been teaching here and a teacher for eight years. And I'll be honest, I had a love hate relationship with data. The way that I feel now right, as a matter of fact, the first couple of years that I was teaching, I was really against that. Feeling that the data driven approach, like, it made me angry. Right? And I feel like a lot of teachers still feel that way. I think it's the fact that they feel like it's taking away from good teaching that they could be doing and good relationships that they could be having with the kids.

Principals in our sample named values such as teacher empowerment, shared ownership, and collaboration when describing their visions for how decisions with data should be made on their campus, suggesting a desire to move toward a learning culture of data use. As one principal described their vision, "I personally would not just use it [data] to say, here are your kids to do interventions with, I would use it as a tool to collaborate with my teams."

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A data coach on one campus highlighted how there was an ongoing effort to introduce a more positive data culture there, a sentiment that was echoed by most campus administrators and data analysts across the sample schools. Another leader on a different campus recognized that teachers could still be quite defensive about discussing data at times, and that it took time to build trust and an improvement focus:

I like to be very collaborative with teachers and own it [data] with them. I don't want it to be scary. I don't want them to think data is bad. I want them to see it as a tool of good. So now you know here's our baseline. This is where our kids are. Let's go from there. I'm not wanting to be shiny and perfect. I want us to have glaring holes because that's the only way that we're going to improve. You've got to see those things to keep moving forward.

They anticipated the work might take several school years to fully overcome the negative connotation of data for teachers on their campus, yet felt fully committed to making that change gradually over time. Another principal summarized this commitment and how it impacted the way they chose to lead on their campus:

I think you have to have a collaborative leadership style, and I think you have to lead where you facilitate things. But again, it comes back to, especially in high school, kids, all stakeholders want to be a part of the process at a high school. That's what's worked for me. I've allowed them opportunities to steer everything. We identify the problem, I will tell them how much money we have, and then we work together around the table to put a plan in place and create a product. But at the end of the day, it's got to be a collective product.

Teachers across campuses however had differing perceptions of the extent that these values and visions were currently enacted in organizational practice. At one campus, for example, though the principal spoke at length about steps they were taking to move away from a compliance-based vision for data use and toward a learning and improvement orientation, teachers still reported mostly on an accountability culture perception. As one teacher lamented, “kids aren't gonna survive if we keep focusing on data.”

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Despite some new initiatives by the leadership team to provide positive feedback on instructional practices and to be collaborative in some ways with data use, other campus expectations and routines ran counter to these efforts. As an example, one group of teachers described how a leader on their campus assigned them a predetermined passing rate as a target for the state test for their students:

Teacher 1: Basically, we've been told, well, my department (math) has been told, that we need this percent (of students at) mastery, this percent (at) meets, and this percent (at) approaches, or otherwise our rating or our ranking in the state will go down.

Teacher 2: They asked for record numbers during the pandemic, so that's gonna go well, yeah.

The teachers felt this was both unrealistic and not grounded in doing what is best for their particular students, but primarily driven by a need to raise test scores. The teachers felt this created undue pressure to perform on both the faculty and the students, and undermined trust in other learning culture-orientated efforts the leadership team had initiated. Other teachers pointed out that administrators did not, in fact, include them in key decisions such as student placement and assignment from year to year:

Every year when we go to schedule the kids, the teachers *beg* the administrators to talk to the current teachers (about assigning students). They always dump them back in. And then the same problems happen, year after year, and the kids don't grow very well as learners... It holds them back because problems continue and they're not being addressed, and that affects the data and the kids' learning.

Despite leaders emphasizing how they were moving toward using standardized tests as only one data point and not the sole source of information, teachers felt that it was still overly emphasized, and at the expense of truly digging in to student outcomes:

Being a low performing school, all we've done and even up to today, all they're worried about is data, data, data, data, data. When you know, we have teachers that

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(feel like) ‘yeah data is important but, you know, seeing how the kids are going to be successful in real life is a better situation.’

One campus appeared to be an outlier in terms of how aligned the perception of the vision for data use for learning was between the instructional leaders and the faculty. The leader described their vision for data use as empowering teachers to own their own data. They described a routine where teachers analyzed their data prior to conversations with an administrator, using either a provided template or their own customized tool. Then teachers would meet with a school leader to discuss their plan and get input. Leaders used questioning and coaching methods to facilitate the conversation, adjusting the level of their directive based on the needs of the teacher. The data analyst supported teachers who needed additional guidance and not only those in tested areas.

Teaching teams, and not the principal alone, made decisions on this campus. Teachers and administrators attributed this to years of steady leadership from the current and previous principal, with both leaders focusing on using data for school improvement, and both having strong data literacy skills and the ability to teach them to the rest of the faculty. Also contributing to a successful data culture, the teachers themselves were experienced with nearly 90% of the staff having 6 or more years of teaching experience. As one teacher summarized, “We've had stability in our principal and our leadership. We've really had that consistency. They (the leaders) have also had high expectations of the teachers.”

Data Leadership & Professional Learning

Knapp et al. (2006) suggest that data informed leadership should include efforts to increase the leader’s own data literacy, develop and sustain cultures of inquiry at various levels of the organization, and create data infrastructures and instructionally focused data systems. However, principals reported little systematic access to professional development on data literacy, and that there is very little time set built into their schedules or their principal meetings to collaborate or use data with their

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colleagues. One principal described what they called the “Island Effect”, the feeling of isolation between each campus within the district in terms of data sharing, data use, and discussion across schools of student performance and data practices.

Both central office team members and principals also spoke about the decentralized district culture, in which each of the eighty campuses have developed unique routines and processes. This is both viewed as a good thing, as campuses have a great deal of autonomy to make change and ability to customize themselves for the communities and children they serve, and a challenge, as a lack of standardized processes and systems across eighty campuses makes district-team support and data collection far more difficult.

Teachers reported that the lack of consistent adoption of a standard set of data practices and tools was frustrating. “We have things and then they're gone, and no one tells you why or explains (it) to you.” In addition, teachers felt that the constant change from system to system made it hard to adequately utilize available technology, and hindered their own skill development and effectiveness for students.

You don't even get a chance to master what they want you to do, and then the next year they just throw it out, 'here is a new one!' and it's like, yeah, always juggling and nothing makes sense and nothing's coherent. Yeah, it's a mess most of the time.

Another example of this lack of centralization from our sample influenced the varying ways data analysts entered into the role, were trained, and the types of tasks they were asked to perform at their campuses. No two analysts in our sample had overlapping experiences, with some coming directly from teaching, others from instructional coaching roles, and others moving from other campus leadership support roles. While almost all had other administrative duties like testing, Rtl, or LPAC coordinator, none of them split their time or structured their work in the same way between their multiple duties. One of the coaches was dedicated first and foremost to capacity-building, but the other five had a more tactical and operational focus for their role, creating spreadsheets, running reports, and manually

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aggregating data from multiple systems. One expressed that if time and resources allowed, they ideally would spend more time working to build teacher capacity, and that their leadership would want this as well, saying:

If my principal could have it his way, my job would be more like an instructional data coach than an actual data analyst that's constantly finding the data and pulling it and collecting it. That's how I feel. I feel like the collection agency and not teacher support.

Teachers expressed deep appreciation for their analysts, with the majority saying they highly valued the analyst on their campus and counted on them for help:

If we asked her (the DA) if she can separate data for us, or if she can pull data in a bigger Excel sheet for us or teach us how to work with it, she's always been great to do it for us, or even teach us how to do it.

Even though most of the analysts were not able to build capacity systematically for all teachers on campus, the ad hoc development they provided was also widely recognized and appreciated by teachers. As one second year teacher put it, “She (the data analyst) is the one that makes the data makes sense to me at least, but if it's not for her, it's over my head. I don't know what these numbers mean.” Another shared, “I've worked with (the DA) because that was one of my weaknesses, is how to look at data, how to analyze data, what am I looking at? Like one on one, she's always available for me.” It was clear across the six campuses that the role was viewed as an important resource to teachers and that the individuals serving in them were skilled at providing data and information that helped teachers.

Like we found with data routines, collaborative planning times, and the vision for data culture, the role of the analyst was varied and in flux, as schools and the district as a whole move along the continuum toward positive data cultures that can better support organizational learning.

Professional Development. We found that most schools did not offer systematic access to intensive and sustained professional development for data use, either on

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the job or in the form of structured training. Most teachers reported learning about data practices informally and primarily from peers or veterans, or through trial and error over time. As one teacher put it, “A lot of times it’s ask a friend.” And another teacher further explained, “I don’t think I’ve ever had formal training on where to get data or how to look at data. It’s been from my co-teacher, my mentor, and the other teachers in my department. And then just kind of playing with it back and forth and making it up my own.” Across the campuses, new and experienced teachers alike reported primarily learning about decision making and data use mostly from on-the-job experiences in this way. They also shared that the expectation for working with data outside of structured time was challenging. “The data that we have, we’re supposed to do it on our planning periods or at home. So just for me, I think that it would be great to kind of have that.”

What Happens When Teachers Have Access to Sustained and Intensive PD on Data Use?

One set of teachers in our sample had differing perspectives on the power of their decision making with data and the impact of organizational routines on their instruction. This campus had a unique opportunity to have administrators and teachers participate in a multi-year intensive professional development program with an education nonprofit called The Teaching Trust.

Teacher: “I love data. I mean, that’s what guides all of my lessons, like I *like* looking at the benchmarks. But I don’t necessarily feel that everyone feels the same way about that. And also, you know, we went through the Teaching Trust program. And so we have a slightly different way of looking at data than I think, I’m going to go out on a limb and say, the majority of our campus and maybe the majority of teachers in general.”

Participating teachers typically spent a day or two each month in training learning to use protocols that collaboratively looked at assessment items, unpacked standards, and then helped teachers with planning a reteach. Part of this included time for modeling instruction and receiving feedback from administrators and the teaching team prior to delivering the lesson.

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Teacher: “You know, in a normal year we would be having our data meetings. We (her grade level team) would break the questions apart by the standards, and see which questions they were missing the most... Then we’d plan out how we were going to reteach it to the kids. And we’d have, you know, an administrator come in and watch that reteach.”

Teachers reported that this protocol was intensive, and some teachers found it more helpful than others. All teachers and school leaders who participated, however, all articulated the exact steps of the protocol with a degree of clarity and alignment that was distinct from other campuses in the study.

Teacher: “My first year as a teacher at this campus is the year they started doing Teaching Trust. They invited me to be part of the team, and just everything that I was learning from that program, I was just taking it in and it became, like, my way of teaching, everything that they taught me.”

Like this teacher, most on campus had a more developed vocabulary and sense of awareness about methods and reasons for collecting, analyzing, and using data for instruction. Teachers reported having changed their views or developed more positive views toward the use of data as part of their instructional practice as a result of the experiences they had with the Teaching Trust on this campus.

Research Question 3

Our third research question asks: *How do educators gather and use data in decisions to promote equity for students in FWISD?*

Findings

Use of data to examine equity within and across schools in FWISD was practiced inconsistently, and overall, most participants reported being uncertain or unaware of how to best use data to promote equity in practice. Central office teams had a stronger vision and could better articulate how to use data for addressing inequity compared with campus leaders and teachers, though they also reported more significant barriers to getting access to the right data to execute that vision.

Data Use for Equity

Studies over the past decade consistently find that even with the right technology, tools, and processes in place, increasing educator capacity to effectively use data also requires systematic investment in professional development (Choppin, 2002, Ikemoto & Marsh, 2007, Madinach, 2012). Intensive training is all the more necessary when the primary intention of data use for decision making is to identify and disrupt systemic inequities for historically marginalized student populations (Diamond, Randolph, & Spillane, 2004). One principal candidly confessed:

I'm struggling with the data part of it, as opposed to just general decisions of, 'do we consider race when we are making policy changes or school practice?' I just don't know how to tie that to data besides looking at the achievement gaps.

Educators across all six campuses in our study shared examples with the researchers that were in fact missed opportunities for making decisions to promote equity, that revealed invisible inequities that have yet to be identified, or shared perceptions of colleagues who held deficit mindsets and beliefs about students. However, they also shared examples of how in some areas, specifically around student discipline and attendance, a stronger vision of data use to promote equity is already well ingrained in the culture of Fort Worth ISD. Details of each of these findings are further explored below.

Missed Opportunities & Invisible Inequities. Interview participants expressed positive intentions to help individual students and all students to do their best in FWISD. “Doing what's right for the kids” was a refrain expressed over and over. However, most teachers and administrators in our sample were either not consciously aware of how their daily decisions promoted or limited equity, or unable to articulate a clear connection between their actions and increased access and opportunity for all students.

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Teachers, for example, primarily discussed examples of using data as a way to go to extra lengths to meet individual needs, or equated equity with equal treatment for all students. As one teacher explained:

Data is something I use to build a bigger picture around a student. And so I know what I see in class, but sometimes I have to say, okay, is there something I'm missing? Is there something in their background? Are they consistently struggling in math or only struggling with this lesson? And so I use the data to give me a better picture of each student and their history, and how I might be able to help them improve.

Only two non-administrative participants, one teacher and one counselor, brought up examples that acknowledged the need to examine the impact of teacher biases and white privilege in the classroom when asked about equity. Both of them had attended district diversity training in prior years. As the counselor explained, “We talked about that (white privilege) and discussed what that looks like and how that pertains to us, and how that, you know, projects into the classroom.” While both mentioned this experience and expressed that it was “an eye opener”, neither went further to say how they personally had transferred this knowledge into their own work on their campus or with their own student populations.

Teachers and school leaders also discussed efforts regarding multiculturalism in curriculum and instruction when asked about decisions that promote equity and inclusion. As one principal explained, “I put in their suggestions that they look at other holidays, not just Christmas, or if they're going to do something just Christmas, what needs to be Christmas around the world, not what we just do here.” While efforts to adopt culturally inclusive materials and instructional methods are important, they are distinct from efforts to improve equitable opportunity and outcomes for students, a difference which only a handful of educators in our sample were able to identify to the researchers.

Teachers and administrators did not discuss several of the critical equity issues referenced in the literature. For example, administrators did not have processes in

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place for looking at gaps in access to strong teachers for students of color, non-native English speakers, or students from lower socioeconomic backgrounds. Campuses also did not look at academic opportunity and outcomes, such as disparities in graduation rates, college-going rates, or advanced class-taking rates (like AP classes) for students of color or special education students. When asked about equity decisions and data that impact academic outcomes, a counselor shared, “Quite frankly, we really don't care what color you are. I mean, we're just trying to get more kids into college and get where they need to be. To the same line of inquiry, a teacher commented, “I would say we just kind of look at it kid per kid to try and get every kid to do what we know that they can do.” A data analyst recognized the need to go further to get at equity issues and the lack of data use to understand gaps:

We're always looking at state data and never, SAT, PSAT, ACT or any of that because they're not correlated with the state data. So [we need] that one stop shop that correlates all that together with demographics, attendance and behavioral issues so we can see those trends and see those [students] who are not being served properly.

We found, consistent with the literature, that changes in data use practice will consistently fail without a simultaneous attempt to change tacit beliefs and assumptions held by educators (Park, Daly, Guerra, 2012). Across most campuses in the study, educators reported the perception that serving a homogenous student group (ie, majority Hispanic, or majority economically disadvantaged students) eliminated issues of equity, diversity, and inclusion. One principal on a Title I, majority Hispanic campus shared, “I mean, it's just, there's not a whole lot of diversity. So my equity conversations focus on, are we meeting the needs of our students?”. Another principal independently echoed this sentiment, saying, “So we are in a school where it's 98, 99 percent Hispanic. We don't have a lot of that kind of issues (sic).” It was not only administrators who held this view toward homogeneous populations in a school eliminating issues of equity. An instructional coach shared:

When I look at our data, it's usually like 99% of students are economically disadvantaged at our school, so I could be wrong in thinking this, I tend to

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think of all of our students kind of being in this same struggling group and there's not like this group of students who are treated any differently at our campus.

Trailblazers for Equity

One campus leadership team did use data differently than others, in particular to look across teacher grading practices for inequities between classroom grading policies. Because student grades matter for future placement in advanced coursework, as well as eligibility for awards, athletics, and a slew of beneficial opportunities, this is a strong example of an issue of equity. The campus team described how they recognized it was critical to monitor variance across teacher failure rates and intervene. The principal described their efforts:

So what we started doing was looking really closely at grades. Phase one was looking at teacher success rates or teacher failure rates. And teachers that had a percentage over, in this case I said 25, which was really high, by the way, but it sort of isolated our top 10, and we were able to have discussions around that data.

Another school leader on a different campus described another example of a decision they made using data to promote equity. In this case, they described a resource allocation decision they were in charge of, where they had to determine how to schedule the campus Title I teacher. On their campus, the majority of students across all grades were eligible, so she had to further look at student outcomes beyond their socioeconomic status. Ultimately, they used data including student reading levels and English language proficiency to make the decision.

We also found that there were a few areas where data use for equity has gained traction. When asked about using data to promote equity, instructional leadership teams and teachers discussed looking at student discipline and attendance data. One team detailed how they identified inequities in student referrals for behavior, as well as the subsequent disciplinary outcomes, such as detentions and suspensions.

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We look at discipline...do we see any trends there? We have an overrepresentation of young African American females getting discipline referrals. But we led efforts to reduce suspensions and some of that was as a result of the data, and from looking at those weekly reports on discipline and then breaking it down by ethnicity, and recognizing that we need to have some real talks around equity.

Several campus leadership teams discussed similar audits of discipline referrals and interventions with teachers who had disproportionate rates to address potential classroom-level structural issues, such as improving classroom management or adopting restorative discipline practices.

I think there's been an emphasis and focus in the last couple years about disciplinary action and infractions for kids being disproportionately assigned. Since then there has been such awareness, such open conversation, and in some cases, tough individual conversations with individual teachers.

Through these comments and many others, there was clear evidence across all the campuses in our sample that discipline was understood as a system and set of internal processes that could create systemically disparate student outcomes. Furthermore, it was clear that participants in our interviews saw it as their responsibility to investigate and change the adult responses to student behavior, rather than place the blame on the students or families.

The most common example of looking at data to promote equity in our sample however was student attendance patterns. Administrators gave examples of disaggregating differences by student sex, grade level, classroom teacher, and by race and ethnicity. As one principal shared:

My admin team would meet weekly to look at attendance. We would find ourselves having this conversation constantly of, 'It's our African American students [who are disproportionately impacted].' It's hard, I don't have an answer to it. I don't have a fix for it. We try to do mentoring and clubs and connect in the community with different churches and things like that. But it's a tough one. We look at that data, but I don't have answers.

Interview participants had an awareness of barriers or situations beyond the immediate control of students and families. Furthermore, they saw it as their role as administrators, teachers, and support staff to try to adjust the systems in place or to provide additional resources or support to identified student groups in need, even if they weren't always sure those actions would ultimately improve student outcomes.

Teachers and campus leaders reported an “abundance of data” that is available to them in Fort Worth ISD, but because of the perceived emphasis on accountability, only a narrow amount of it is actually being examined. Central office teams, compared with campus leadership teams and teachers, had a far stronger vision and could much better articulate how to use data for addressing inequity. Unfortunately, they also encountered far more difficulties getting access to the right data to execute efficiently and effectively on the conversations they would want to have. Unlike campuses, central office teams consistently felt they had too little data to be effective in their roles, especially when it comes to promoting equity:

We can dig into the schedules, but it is labor intensive... I want to drill down per course, per school, and at my fingertips have the number of Black and Brown students in every single AP course within a matter of 10 minutes. That drives data conversations at each school to say, so you have a student population of 1700 and 4% of your students of color are in advanced academics. What are you doing about that?

District leaders also reported that campus leaders needed more help framing problems and requesting the right data to help with their decisions. While campus leaders may be able to use reports that disaggregate state tests into various views, they may not know, for example, how to use existing data to determine if their students are equitably assigned to classes to ensure that access to more experienced and highly qualified teachers is not restricted to only honors or AP students. Training the users of new integrated data systems to use the data to examine equity will

accelerate the success of the tool in meeting district goals for student achievement and growth.

Expectations and Explanations. Educator mindsets and beliefs shape their interpretations of data and influence their decision-making process (Bertrand & Marsh, 2015). All of the leaders and teachers in our sample spoke either directly or indirectly of the need to have high expectations for all students to learn at high levels. As one teacher stated:

We have to come with an open mind, an open mindset and not allow our minds to be clouded by some hidden personal or preconceived ideas. The belief would be that the student is capable and that no matter where the student is at this point that they do have the capability and the drive to succeed and be successful.

Consistent with the findings in the literature, however, school leaders and data analysts in our sample also perceived that while all or almost all their teachers would say this, when pressed, a subset on every campus remains hesitant to share data, and to at times blame students for outcomes when data does not look good. “Teachers will often make excuses for the day right when they see it [data]. They say certain things have happened in their class or with their students or our kids.” Deficit thinking, or the inclination to view certain groups of students as inherently deficient (Nelson & Guerra, 2014), may best explain this contrast between what teachers might think they should say and believe, and what they actually say and do in response to information that their instruction is not working as intended.

One campus principal relayed a story about the results of interviews they’d held with all the teachers on his campus at the beginning of this year.

Coming into this year I had meet and greets...and really what I was trying to get to the center of was, ‘What are your beliefs about our students here?’ A lot of it was deficit minded. A lot of it was, ‘We try hard. We, the adults try hard. In spite of the students.’

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The principal went on to describe their actions following this discovery:

I tallied it all up. I had, you know, sticky notes, and I made my little beautiful mind chart, you know, on the wall, and I was able to sort of, share back out to the staff and say, guys, these are your words, not mine. So just take it for what it is. But when 34 out of 37 teachers say what makes (our school) great, it's the adults on campus, there's a problem. What I was hoping to hear, it's the kids.

A data analyst described how similar beliefs on her campus resulted in limited and surface-level interaction with student data by teachers. Teachers with these beliefs might run a report, superficially sort students, and then move to solutioning without actually looking at root causes or examining their own instruction as a contributing component to the results. The principal and analyst both agreed that they needed to shift mindsets and ensure that equity was a lens used to look at practices and policies as well as decisions. They envisioned embedding conversations about implicit bias and unpacking assumptions about students into every conversation, but also felt all leaders and support staff needed additional preparation and support to effectively have those types of conversations.

As FWISD seeks to improve data-based decision making for instruction, policy, and programming, Wayman et al. (2012) suggests important organizational considerations to become a more data-informed learning organization: create common understandings, professional learning opportunities, and integrated technology systems. As the district is currently launching a new data visualization system that is integrated, centrally supported, and easy to access, this technological tool can help educators manage a large quantity of complex data and address many of the concerns raised about data collection under the current systems. However, the district must work intentionally to address Wayman et al.'s other considerations of creating common understandings around data literacy and professional learning opportunities.

Data literacy requires competencies in a wide range of discrete skills. Currently, evidence collected from focus groups and interviews in FWISD indicate that stakeholders across the district have gaps in literacy skills. Central office stakeholders experience the biggest challenges with data collection, yet the largest skill gaps at the school level appear in analyzing and interpreting data in order to transform information into actionable instructional knowledge and practices. Effective data use requires educators to go beyond reading numbers and statistics and to make sense of the data. For teachers, this means transforming numbers and statistics into instructional strategies that meet the needs of specific students; for administrators, knowing how to use data means examining the data to make decisions about programs, staffing, resource allocation, personnel, or policies (Mandinach, 2012). Developing and sharing a common vision for data use in the district that includes definitions and goals for data literacy would support strategic planning and capacity building efforts.

Central office administrators play an important role as brokers of school-level information. As FWISD works to improve data-based decision making, central office

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staff span across boundaries to both develop and communicate the vision for data use, and also work with school-based colleagues to make sense of what data is most important to consider, what the data means, and what strategies might be helpful to address priority issues (Honig & Venkateswaran, 2012). Central office has the potential to provide key resources and assistance with the sense-making processes within schools. In this way, the district can promote the co-creation of knowledge through interactions across contexts that is essential to the improvement process. Marsh et al. (2015) also found that the dynamic relationship between individual expertise and horizontal expertise may help explain the ways in which PLCs and coaches facilitated deeper level changes in pedagogy. As such, identifying key instructional leaders in schools such as administrators, data analysts, and coaches and building their capacity to collect, analyze, interpret, and, most significantly, transform data into instructional practices that promote growth and achievement has the potential to expand horizontal expertise across the district.

Finally, strategic planning should attend to the nature of the interactions between educators when working with data. Currently, interactions among practitioners are inconsistent and do not always result in robust dialogue about instructional practice. The social interactions that facilitate sensemaking and translating data into decisions about practice center on dialogue that is exploratory and inquiry-based. These types of dialogic interactions attend to the perceiving, processing, and negotiating of question framing, meaning making, and pedagogical strategy (Nelson et al., 2012). Central office staff, school-based instructional leaders, and teachers who approach interactions centered on data with an inquiry stance are more likely to build on each other's comments, make explicit efforts to come to a common understanding, and make decisions about instructional shifts to promote student learning.

Because everything, including effective data use for decision making is influenced by culture, creating positive district and school data cultures must be an ongoing priority for Fort Worth ISD (Deal & Peterson, 2010). Our findings suggest that the schools

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and central office teams in our sample from FWISD are making strides toward becoming effective learning-oriented data cultures, but that there is wide variation in the degree and success of implementation today. Some campuses have made important gains in critical areas highlighted in the research about using data to improve: they've become more interconnected communities of practice, where at least some groups, typically of core subject teachers, regularly engage in collaborative data use and planning with peers and members of the instructional leadership team (Blanc et al., 2010). Others have not yet been able to overcome the constraints of time, competing priorities, or still rely more heavily on the norms and practices of accountability culture for data use.

Moreover, Fort Worth has a decentralized structure that allows each campus to create their own unique sets of processes and practices. Because organizational routines happen within the wider framework of a school or district's data culture (Firestone & Gonzalez, 2007), it will be critical to discuss the potential benefits and harms of continuing to keep data practices unstandardized. If the district does ultimately adopt a more unified approach, significant change management should be considered alongside the rollout of any systems, tools, or processes. Ultimately, the question to explore is to what degree the customization happening at each campus is beneficial and necessary, and to what extent does it introduce valueless variation into the system and prevent central office coordination of a strategic priority?

The discrepancy between the perceptions of campus leaders and district leaders, as well as between teachers and campus leaders is also a meaningful finding. This study is a good initial step, and provides leading indicators of the views of varying stakeholders. Ensuring ongoing representation of all groups throughout any design and implementation of data routines and collaborative structures, or the redesign of data analyst roles or professional development offerings, will be necessary for future success. Enabling the adoption of the new data visualization platform within the context of the school and district data use cultures will make or break the return on the investment.

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Campus and district leaders play an important role in not only increasing educator capacity for data use and in shaping cultures, but in ensuring culturally responsive practices that promote equity for linguistically and culturally diverse students are integrated into each and every daily decision made in FWISD (Hammond, 2014). Our finding that many teachers today are unsure of how their classroom decisions influence equitable outcomes for students supports the recommendation from research to pair new data technology, tools, or systems with intensive professional development on data use for equity to ensure success (Choppin, 2002, Ikemoto & Marsh, 2007, Mandinach, 2012).

Furthermore, when teachers are asked to validate student performance, it is worth considering how the district can foster cultures and conversations that are disruptive of the unconscious biases that may influence data interpretations (Nelson et al., 2012). Our finding that every campus in our study reported at least some teachers who display deficit thinking toward students demonstrates the need for equity work to be front and center and hand in hand with data use. Practices anchored by equity values must be explicitly articulated for data use to challenge rather than reinforce inequalities (Park, 2018).

This study also discovered that teachers and leaders on campuses with homogeneous populations see themselves as exempt from issues of diversity and equity. Teachers and administrators need tools to assist them in recognizing that there are substantial and persistent patterns of inequity internal to schools embedded within the assumptions, beliefs, practices, procedures, and policies of the campus, even if the population is singular (Skrla et al., 2004). Helping educators audit teacher quality and programmatic equity within their schools will be crucial in uncovering areas for improvement on homogenous campuses. For example, are there gaps in achievement between Hispanic students who are native English speakers and Hispanic students who are English learners? Or are there differences between student outcomes for special education students and general education students? Is there a difference in outcomes between beginning teachers and their

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more experienced counterparts? We found that district staff recognized that by and large, campus leaders are not yet able to frame exactly these types of questions, or seek the data they need to illuminate patterns and trends beyond state achievement results.

Based on our finding and the extant literature on data literacy, data culture, and data use to promote equity, we suggest the following recommendations to enhance data use within a culture of collaborative decision making in order to meet long term district goals of improving instruction and preparing all students for success in college, career, and community leadership.

Recommendation 1: Articulate a Vision for Data Use

Our first recommendation is for FWISD to develop and communicate a clear vision for data use in the district. This includes the following strategies: 1) develop and share common district definitions for data and data literacy, 2) work within and across central office and school contexts to ensure organizational structures support collaborative spaces at all levels, and 3) ensure ongoing representation of all stakeholder groups throughout the design and implementation of data routines. In addressing the recommendation to develop and articulate a clear vision for data use across the district, FWISD should attend to relevant research and include a variety of stakeholders in the development of the vision. As the literature reports and our study found, developing an effective data culture is a direct result of the vision as articulated by leadership. The district should adopt a unified vision in order to minimize variation among campuses and communicate effective data use as a strategic priority. Further, district and school leaders should explicitly outline all components of data use and create processes to evaluate educator strengths and areas for growth in order to tailor on-going supports.

Wayman et al. (2012) suggest that creating common understandings about data use is an important organizational consideration to become a more data-informed learning organization. Yet FWISD educators in our study had inconsistent understandings about where and how to collect data, what actually counts as data,

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and when and how different data sets should be used for different purposes. In addition, the data literacy skills necessary to transform information into actionable instructional practices seemed lacking within school practice. By developing and sharing common district definitions for data and data literacy, FWISD will communicate clear expectations for data use. Leaders can leverage common understandings to clarify when and how different data sets should be used for various objectives, and educators can also utilize a common language to assess their own strengths and areas for growth when working with data.

An essential piece of data use includes both the structures and the social networks that enable collaborative inquiry among educators working with data. Data use is theorized as an interactive process and highly influenced by the characteristics of the individuals within a network and the dynamics of their social interactions (Coburn & Turner, 2011). As such, FWISD should develop teams to work within and across central office and school contexts to ensure organizational structures support collaborative spaces at all levels. No single schedule is going to work for all schools, but district vision for data use can communicate expectations for creating both the time and the space for inquiry-based collaboration. This should include time and space for educators of like roles and across roles and contexts to collaborate and benefit from horizontal expertise.

Finally, we found that study participants from across the district had a wide range of knowledge and skills, experience and training, and attitudes towards data use, and ensuring ongoing representation of all stakeholder groups throughout the design and implementation of data routines will lay the foundation for lasting and meaningful improvements. FWISD can create a sense of ownership in its vision for data use by seeking input from all stakeholders. School based personnel such as teachers, coaches, and data analysts may resist top down imposition of data use routines, especially if they are perceived as ineffective or a waste of time. A collaborative effort across district contexts to create and communicate a shared vision

for data use and routines is a critical first step for creating the conditions for FWISD to leverage the benefits of their new data visualization system.

Recommendation 2: Develop Systemic, Sustained Professional Learning

Our second recommendation is to invest in systemic, sustained professional development for teachers and leaders that simultaneously addresses data collection via the new data visualization tool and builds the capacity of teachers and leaders to transform data into instructional and programmatic strategies. We recommend that professional learning opportunities focus on: 1) training school leaders to frame data analysis and interpretation within the context of organizational learning as opposed to a strict accountability framework, 2) including modules on attribution theory, beliefs about race, class, and teaching and learning, and deficit vs. growth mindset in professional learning on data-based decision making to promote equity, and 3) training and resourcing schools with instructional coaches and data analysts who can facilitate interactions that promote horizontal expertise and inquiry-based dialogue to plan for instructional shifts in response to data. In addressing this recommendation, FWISD should take time to create a professional learning plan that builds stakeholder capacity in the areas of data literacy and data culture.

Park et al. (2012) note that district and school leaders play a strategic, active role in the process by which individuals and groups make meaning of experiences and ideas. Therefore, it is particularly important that district and school leaders learn the skills needed to promote an organizational learning culture that cultivates a more productive environment for equity-focused data use by permitting teachers to explore pedagogical strategies that resonate with diverse learners and attend to factors that affect learning, including race, class, home life, motivation, and ability status (Gannon-Slater, 2017). As noted in our findings, stakeholders largely experienced data use within a culture of accountability, often negatively impacting their beliefs and attitudes about data. Firestone and Gonzalez (2007) argue that data

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use accountability cultures and organizational learning cultures both take the need for organizational change seriously, but motivations for and need for changes are different. Importantly, they note that organizational learning cultures incorporate teacher and principal voice, are compatible with communities of practice, and promote distributed leadership. Accountability culture often penalizes failure, creating a culture that may stifle innovation. We believe that training school leaders to frame data analysis and interpretation within the context of organizational learning as opposed to a strict accountability framework will promote effective data use cultures that enable rather than constrain data literacy to improve student outcomes.

Attribution theory posits that motivation to act is associated with individuals' perceptions of the causes of outcomes, and in education, we see this in the way in which teachers explain or make sense of the root causes of the outcomes observed in data (Bertrand & March, 2015). It follows that how teachers attribute outcomes shapes future instruction and expectations for students. For example, do teachers attribute outcomes to prior instruction or perceived student deficits? As our study found multiple examples across school sites of teachers engaging in deficit thinking by blaming students for their poor performance, we recommend that FWISD include modules on attribution theory, beliefs about race, class, and teaching and learning, and deficit vs. growth mindset in professional learning on data-based decision making to promote equity. Successful professional learning on transforming data into instructional shifts requires that educators perceive a connection between their instruction and student outcomes. We believe this connection must be intentionally discussed and explored within the context of professional learning that simultaneously addresses data use and its relation to mindset and beliefs.

Increasingly, coaches and professional learning communities play important roles in mediating teachers' responses to data and are often associated with instances in which teachers used data to alter their instructional delivery as opposed to surface-level changes in materials and topics (Marsh et al., 2015). For this reason, we recommend an intentional focus on building the capacity of instructional coaches and

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data analysts to serve as key facilitators of the collaborative inquiry process. Educators in these roles are poised to provide significant support and expertise to teachers and principals alike, but our study found that some coaches and data analysts lacked specific skills or time to work effectively with teachers. A new data visualization tool that collects data efficiently and presents information in a format that facilitates analysis will render itself useless as a strategy for district improvement if educators are unable to transform that information into actionable instructional shifts. FWISD must train coaches and data analysts not only to facilitate collaborative, inquiry-based dialogue, but also to work with teachers to strengthen their pedagogical content knowledge.

Recommendation 3: Promote Equity Through New Technology Tools

Our third recommendation is to intentionally leverage the new data visualization tool to promote equitable outcomes for all students in the district. Specifically, this includes steps to: 1) ensure the data visualization tool allows educators to both access and disaggregate a wide variety of school and district data by race and ethnicity, special education status, socioeconomic status, gender, and English proficiency and 2) create an equity audit process or tool to assist educators in uncovering areas for improvement across the district. Interestingly, the district strategic plan draft does not contain any specific strategies for addressing achievement and opportunity gaps among student subgroups. We believe that data use for equity should be a central focus of platform rollout by enabling stakeholders to collect and organize student data in ways that were previously impossible or prohibitively time consuming. The adage of ‘What gets measured gets managed’ should be considered in this context. If FWISD hopes to improve student outcomes for all students, the new data visualization system must be used to promote equity across the district.

Many study participants expressed frustration at the lack access to individual trend data across time, the inability to drill down into student results by subgroup across

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the district and within specific school or regions, or the time-consuming process of collecting multiple pieces of student data from multiple platforms to access a wholistic picture of performance, growth, and supports. We recommend that a committee of diverse stakeholders be formed in order to inform the development of future report customizations that will allow educators to access and utilize data to specifically enable discussion and decision making to promote equitable outcomes for students. Waymen et al. (2012) make a clear link between integrated technology systems and the development of an effective organizational learning culture. Data informed leadership for equity and learning requires that FWISD have the technological tools to collect and organize data and an effective data culture that promotes analysis, interpretation, and the transformation of information into actions that positively impact achievement and access to opportunities for learners who have been historically marginalized. Stakeholders must have the access to the data they need to begin addressing inequities.

The new data visualization system can also be used to organize specific data needed for equity audits. Skrla et al. (2004) describe an equity audit as a leadership tool that can be used to uncover, understand, and change inequities that are internal to schools and districts. We recommend the development and use of such an equity audit tool as a means to embed conversations about equity into the process of continuous improvement at the district and school level. Though FWISD stakeholders would need to create a tool with indicators that reflect district priorities and goals, an equity audit process would provide a means by which the district systematically examines data and plans to eliminate inequities. Technology tools should be used to reduce the burden of collecting and organizing data, thereby maximizing educator time and resources to focus on using the data to plan, implement, and evaluate strategies to improve equitable outcomes.

Policymakers and educational leaders in the United States have long promoted data-based decision making as a key strategy in K-12 school improvement efforts. In the state of Texas, for example, state laws and guidelines have encouraged the development of robust systems to collect data on student achievement and growth, school and educator performance, and programmatic outcomes. Yet despite these data reporting systems, districts and schools have struggled with how individual educators engage in the process of using data and how to best create the organizational conditions that promote effective data use (Coburn & Turner, 2011).

Our findings suggest that educators in FWISD experience similar challenges. Individual considerations such as data literacy skills, content and pedagogical expertise, and mindsets can determine whether collaborative spaces constrain or enable data use. Furthermore, leaders must consider how they frame data tasks within organizational contexts that allow for both the time and space to meet collaboratively to analyze and interpret data, as well as the inquiry stance necessary to transform information into shifts in instructional practice.

This study offers district leaders within FWISD key findings on the current state of data-based decision making across six school sites and three central office teams. Our findings informed our recommendations, as did extant literature on data use and data literacy, frameworks for understanding data culture, and data use to promote equity and learning. A new, integrated data visualization platform by itself will not improve data-based decision making or student outcomes without consideration of crucial next steps. For this reason, we recommend that FWISD develop and communicate a clear vision for data use in the district, invest in systemic and sustained professional development for teachers and leaders, and intentionally leverage the new data visualization tool to promote equitable outcomes for all students in the district. We acknowledge that our findings may be limited to the six

CONCLUSION [8]

school sites and three central office teams that participated in our interviews and focus groups and cannot necessarily be generalized to the district as a whole. However, the findings and recommendations may offer important insights to FWISD leaders as they navigate next steps beyond this evaluation.

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Appendix A

Interview Protocols

School Site Principal Interview.

Data Use/Data Literacy (ability to collect, analyze, interpret)

1. Tell us about the school and student data that you look at most often (formal or informal)?
 - What are your main sources of data?
 - What are all the different types of data that are at your disposal?
2. Are you responsible for collecting your own data or is there someone at your school or central office who helps with this?
3. Are there reports or technology that you rely on regularly? Which ones do you utilize the most or find most helpful?
4. What challenges do you run into when collecting useful data you need to make decisions?
5. If you were in charge of making changes for the school/district, what tools or tech would you want to have to assist with data collection and analysis?
6. What are some examples of decisions that you regularly make about school practices? policies? How do you use data in those decisions?
 - Are there decisions that you make that don't require data?
 - Can you give me some examples?
7. What are teacher strengths when it comes to analyzing or interpreting data? Are there specific data analysis skills that they could improve?
8. What type of professional development is available to teachers to build their capacity to collect, analyze and interpret data? To make decisions with data?
9. How do district admin support decision making with data on your campus?
10. What type of training or PD have you received on data informed decision making?
11. How do you utilize the analyst on your campus to facilitate data use?
12. How do you use data to determine what steps you need to take next?
13. Are these collaborative efforts? Who do you work with to discuss and interpret data?

Do you talk about data practices and data policies with other campus principals?
How do you share practices with one another?

Data Culture (vision, goals, routines & norms of behavior, learning environment - trust, attitudes)

1. Who is on your leadership team? How often do you meet with your team? At those meetings, how frequently do you review data?
2. What types of data are reviewed and analyzed at these meetings?
3. Does your team use a specific protocol for analyzing and interpreting data?
4. Do teachers have regular times set aside in their schedules to collaborate with their colleagues to make decisions using data? How often and for how long?
5. Who is present at those meetings?
6. What are the expectations for data use at those meetings?
7. What types of data are examined at those meetings?
8. How is data used in those meetings to determine instructional steps?
9. Besides teacher teams, are there other configurations of teams that meet regularly to look at data?
10. If so, what is the goal/purpose of those meetings?
11. What data is used and who collects the data that is used in those meetings?
12. What is your role in creating and fostering a culture of effective data use in your school?
13. What is your vision for data use on campus? How do you communicate that vision? Do you have set goals for using data to inform instructional decision making? If so, what are they?
14. Do you require teachers to use data for some decisions? Which ones? How do you model data use?
15. How do you/your leadership team guide teachers and teaching teams to look at student data to find evidence of learning? How do you help them assess the effectiveness of their instruction?
16. What has the district communicated to you about how data should be used? What expectations have they set for data use?
17. How do you use data for decisions about equity? (to reduce both disparities in opportunities-to-learn and outcomes for all students, taking into account the structural, cultural, and historical factors that have led to disparate consequences for marginalized students.)
18. How do you use data for teacher assignment, student placement, or resource allocation?

19. How is data incorporated into your Campus Improvement Plan? Is it used as part of other planning processes (staffing or strategy?)
20. What attitudes and beliefs are important for educators to have when working together to analyze and interpret data?

School Site Teacher Focus Group.

Data Use/Data Literacy (ability to collect, analyze, interpret)

1. Tell us about the classroom and student data that you look at most often (formally and informally)? (i.e. demographics or attendance; diagnostic, interim, formative; summative test scores, behavior)
2. Are there specific reports or technology that you rely on regularly? Which ones do you utilize the most?
3. Once you have data, how do you use it?
4. Can you describe the processes you use to analyze data?
5. Do you use any particular protocols? What is the goal/purpose of those protocols?
6. What are some examples of decisions that you regularly make about your instructional practices? Classroom policies? How do you use data in those decisions?
7. Are you responsible for collecting all your own data or is there someone at your school who helps with this?
8. Do you work with others to make decisions with data about your students? Who? How? (If present) Do you work with the data analyst on your campus? How?
9. What do you feel are your strengths in using data to make decisions? Are there specific data analysis skills that you feel you could improve?
10. What types of training or PD have you received on where to go to get the data you need to make decisions? What about professional development to build your capacity to analyze and interpret data?
11. What challenges do you run into when collecting useful data to inform your practice?
12. What new data technology or tools would you find most helpful? Why?
13. Is there data that would be helpful to you that you don't have access to?

Data Culture (vision, goals, routines & norms of behavior, learning environment - trust, attitudes)

APPENDICES [10]

1. Has your principal shared a clear vision or goals for how they want you to use data? Can you tell me a bit about it?
2. How would you describe the relationship between data, instruction, and learning at your school?
3. How does your principal work with you or your team to analyze student learning (w or without data, formal or informal data)?
4. Are teachers required to use data for some decisions? Which ones? How do leaders model data use?
5. Do teachers have regular times set aside in their schedules to collaborate with their colleagues specifically to use data? How often and for how long?
6. Who is present at those meetings?
7. What are the expectations and goals for those meetings?
8. What types of data are examined at those meetings?
9. How is data used in those meetings to determine instructional steps?
10. Are there protocols teachers use together for those meetings you could tell us a bit about?
11. What attitudes and beliefs are important for teachers to have when working together to analyze and interpret data?
12. What is your role in creating and fostering a culture of effective data use in your school?

School Site Specialist/Counselors Focus Group and Data Analyst Interview.

Data Use/Data Literacy (ability to collect, analyze, interpret)

1. Tell us about the school and classroom data that you look at most often (formally and informally)? (i.e. demographics or attendance; diagnostic, interim, formative; summative test scores, behavior)
2. Are there specific reports or technology that you rely on regularly? Which ones do you utilize the most?
3. Once you have data, how do you use it?
4. Can you describe the processes you use to analyze data?
5. Do you use any particular protocols? What is the goal/purpose of those protocols?
6. 2. What are some examples of decisions that you collaborate on about instructional practices? School policies? How do you use data in those decisions?
7. Do you collaborate with classroom teachers on data collection? How?

8. Do you work with others to make decisions with data about students? Who? How? (If present) What is your role as a data analyst on your campus?
9. What do you feel are your strengths in using data to make decisions? Are there specific data analysis skills that you feel you could improve?
10. What types of training or PD have you received on where to go to get the data you need to make decisions? What about professional development to build your capacity to analyze and interpret data?
11. What challenges do you run into when collecting useful data to inform school practice?
12. What new data technology or tools would you find most helpful? Why?
13. Is there data that would be helpful to you that you don't have access to?

Data Culture (vision, goals, routines & norms of behavior, learning environment - trust, attitudes)

1. Has the principal shared a clear vision or goals for how they want you to use data in your role? Can you tell me a bit about it?
2. How would you describe the relationship between data, instruction, and learning at your school?
How does your principal work with you and your teaching teams to analyze student learning (w or without data, formal or informal data)?
3. Are you required to use data for some decisions? Which ones? How do you as a leader model data use?
4. Do you have regular times set aside in your schedules to collaborate with classroom teachers and other colleagues specifically to use data? How often and for how long?
5. Who is present at those meetings?
6. What are the expectations and goals for those meetings?
7. What types of data are examined at those meetings?
8. How is data used in those meetings to determine instructional steps?
9. Are there protocols teachers use together for those meetings you could tell us a bit about?
10. What attitudes and beliefs are important for educators to have when working together to analyze and interpret data?
11. What is your role in creating and fostering a culture of effective data use in your school?
12. What has the district communicated to you about how data should be used? What expectations have they set for data use?

Central Office Focus Groups.

Data Use/Data Literacy (ability to collect, analyze, interpret)

1. Tell us about the district and school data that you look at most often (formal or informal; input, process, outcome, satisfaction?)
2. What are your main sources of data? What are all the different types of data that are at your disposal?
3. Are you responsible for collecting your own data or is there someone in the central office who helps with this?
4. Are there reports or data technology that you rely on regularly? Which ones do you utilize the most or find most helpful?
5. What challenges do you run into when collecting useful data you need to make decisions?
6. If you were in charge of making changes for the district and its schools, what tools or tech would you want to have to assist with data collection and analysis?
7. What are some examples of decisions that you regularly make about district or school practices? policies? How do you use data in those decisions?
8. Are there decisions that you make that don't require data? Can you give me some examples?
9. What are principal strengths when analyzing or interpreting data? Are there specific data analysis skills that could improve?
10. What type of professional development have school leaders received (this past year)/exist to build their capacity to collect, analyze and interpret data? To make decisions with data?
11. How does the district support school-based staff in building their capacity to collect, analyze, and interpret data?
12. What type of training or PD have you received on data informed decision making?
13. How do you use data to determine what steps you need to take next?
14. Are these collaborative efforts? Who do you work with to discuss and interpret data? Do you talk about data practices and data policies with other campus principals? How do you share practices with one another?

Data Culture (vision, goals, routines & norms of behavior, learning environment - trust, attitudes)

1. How often do you meet with your central office team? At those meetings, how frequently do you review data?
2. What types of data are reviewed and analyzed at these meetings?
3. Does your team use a specific protocol for analyzing and interpreting data?
4. Do principals have regular times set aside in their schedules to collaborate with you or their colleagues to make decisions using data? How often and for how long?
 - a. Who is present at those meetings?
 - b. What are the expectations for data use at those meetings?
 - c. What types of data are examined at those meetings?
 - d. Besides principal teams or your central office team, are there other configurations of teams that meet regularly to look at data?
 - e. If so, what is the goal/purpose of those meetings?
 - f. What data is used and who collects the data that is used in those meetings?
5. What is your role in creating and fostering a culture of effective data use in FWISD?
6. What is your vision for data use on campus? How do you communicate that vision?
7. Do you have set goals for using data to inform instructional decision making? If so, what are they?
8. Do you require principals/team members/other schools staff to use data for some decisions? Which ones? How do you model data use?
9. How do you/your team guide school based teams to look at data to find evidence of learning? How do you help them assess the effectiveness of their instruction?
10. How do you use data for decisions about equity? (to reduce both disparities in opportunities-to-learn and outcomes for all students, taking into account the structural, cultural, and historical factors that have led to disparate consequences for marginalized students.)
 - a. For Teacher assignment? Student placement? Resource allocation?
 - b. How is data incorporated into your District Improvement Plan? Is it used as part of other planning processes (staffing or strategy?)
11. What attitudes and beliefs are important for educators to have when working together to analyze and interpret data?

Appendix B

Document Review

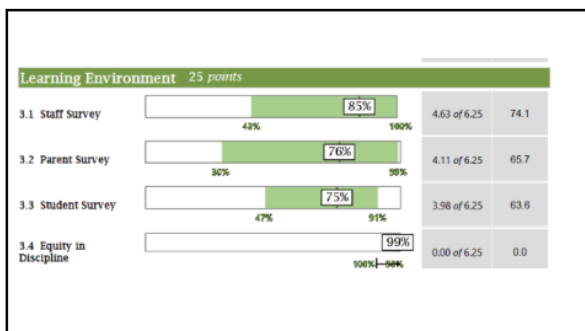
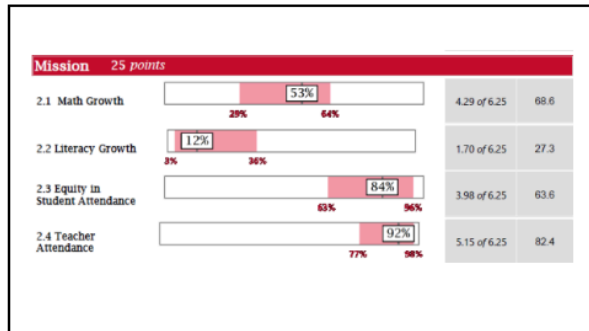
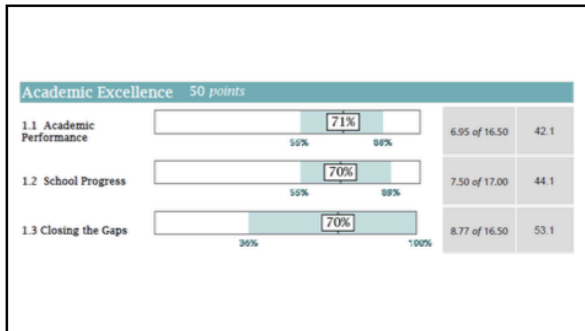
District Strategic Plan.

SP / Initiative #	Description
SP #1:	Provide a clear vision of excellence and expectations for literacy and math instruction, and implement aligned and high-quality curricular materials, assessments, training, and support.
1.1	Literacy: Develop and publish a K-12 literacy framework and vision of excellence with specific grade level descriptions/expectations and develop/curate aligned K-12 scopes and sequences, unit plans, exemplar lessons, interventions and enrichment, and assessments. These must support English Language Learners and be culturally responsive.
1.2	Literacy: Implement realigned and improved literacy PD and classroom-embedded coaching.
1.3	Math: Develop and publish a K-12 math framework and vision of excellence with specific grade level descriptions/expectations and develop/curate aligned K-12 scopes and sequences, unit plans, exemplar lessons, interventions and enrichment, and assessments. These must support English Language Learners and be culturally responsive.
1.4	Math: Implement realigned and improved math PD and classroom-embedded coaching.
1.5	Implement FWISD Learning Model as a component of classroom instruction at all campuses, with focused support at tiered campuses as needed.
SP #2:	Provide schools with the resources and training needed to meet students' social-emotional needs and maintain safe and productive learning environments.
2.1	Student Support Services, in collaboration with School leadership and Curriculum and Instruction, will provide ongoing universal and targeted training and support for campus based personnel to utilize best practices in Positive Behavioral Interventions and Supports (PBIS), Response to Intervention (RTI), Restorative and Trauma Informed Practices, and Social Emotional Learning (SEL) strategies to identify and address the root causes of students' social, emotional and behavioral challenges.
SP #3:	Strengthen recruitment, development, and retention of teachers and school leaders, with an explicit focus on cultural competence and racial equity.
3.1	Leaders: Define leader competencies and research and develop a plan to build our pipeline of APs/principals/principal managers, evaluating current partnerships and determining the best focused solution moving forward (funder willing to fund this work).
3.2	Develop a common definition of equity and define and embed the mindsets to create an inclusive, culturally competent work environment at the district and school level through the ongoing training and hiring processes.
3.3	Teachers: Create or partner with one or more teacher residency programs and/or certification programs, including for hard to fill positions.
SP #4:	Tier schools based on a common definition of excellence, providing opportunities to increase autonomy and launch new school models.
4.1	Establish and roll out a school performance framework (SPF).
4.2	Establish a systematic approach to tiering schools (using SPF), communicate what autonomies and accountability measures are associated with each tier, and design and implement a school portfolio review and planning cycle to place schools in tiers.
4.3	Organize the central office to serve a tiered set of schools and develop Service Level Agreements by functional area to outline services and expectations of central teams.
4.4	Create and implement systems to identify, select, empower, and support leaders of new schools (district schools, school partnerships, and innovative school models).
4.5	Expand opportunities for high school students who are off-track academically to get back on track.
SP #5:	Improve customer service and communications between central office, schools, families, and the community.
5.1	Establish communications expectations and protocols that streamline, coordinate and improve internal communications between departments and between central office and schools. (Look back at the specific issues cited in the challenges survey.)
5.2	Develop and implement a social media strategy and community engagement plan to build understanding about FWISD's goals and plans.
SP #6:	Ensure fiscal health and sustainability.
6.1	Assess effectiveness and efficiency of existing programs and operations services, align resources to investments that produce the greatest outcomes, and implement sunset plan for less effective practices.
6.2	Design and implement a campaign to increase enrollment in the District.

School Performance Framework.

School Performance Framework
SPF
 Principals' Meeting
 September 16, 2019

		% of bucket	% of overall score
Academic Excellence 50% of overall score	Domain 1 - Achievement	33%	16.5%
	Domain 2 - Progress	34%	17.0%
	Domain 3 - Closing the Gaps	33%	16.5%
Mission 25% of overall score	Math Growth	25%	6.25%
	Literacy Growth	25%	6.25%
	Equity in Student Attendance	25%	6.25%
	Teacher Attendance	25%	6.25%
	Student Survey	25%	6.25%
Learning Environment 25% of overall score	Teacher Survey	25%	6.25%
	Parent Survey	25%	6.25%
	Equity in Discipline	25%	6.25%

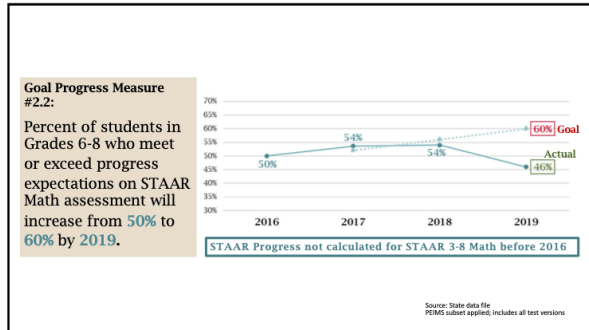
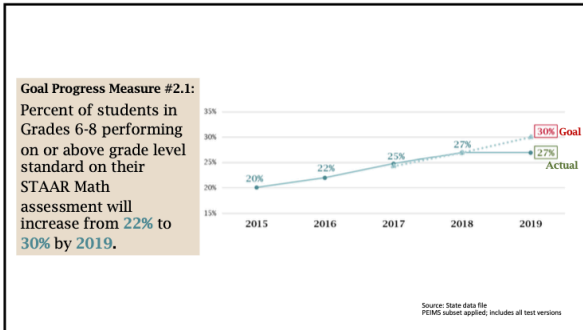
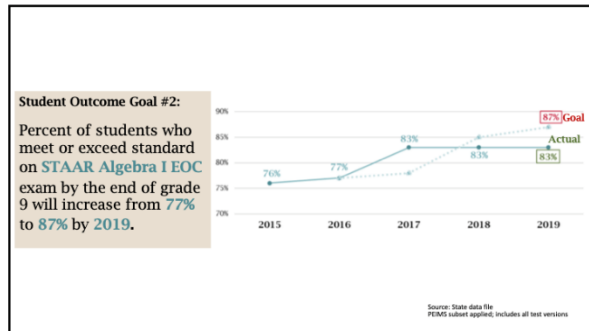
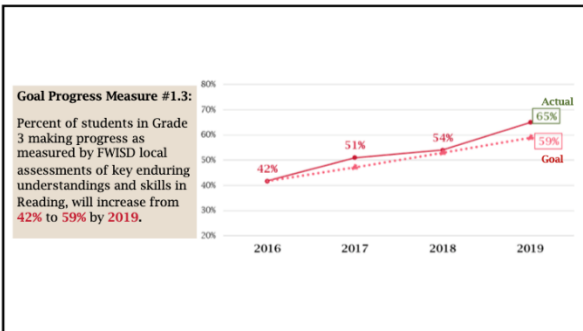
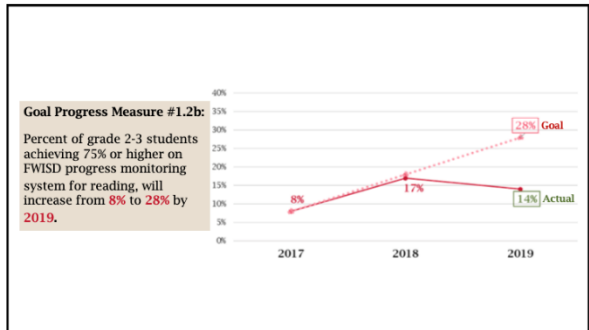
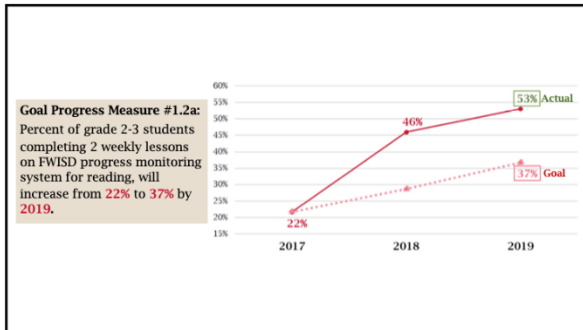
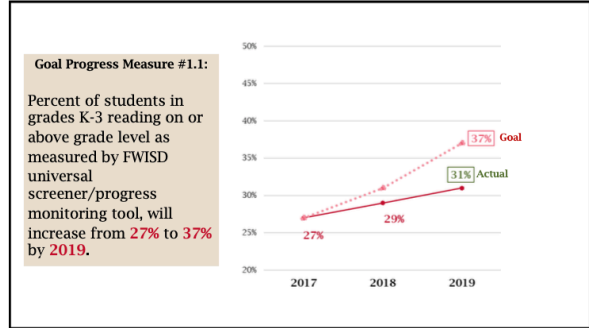
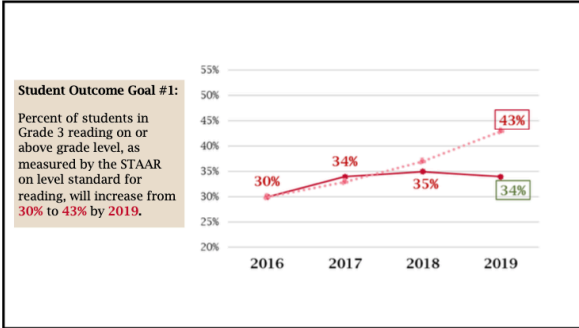


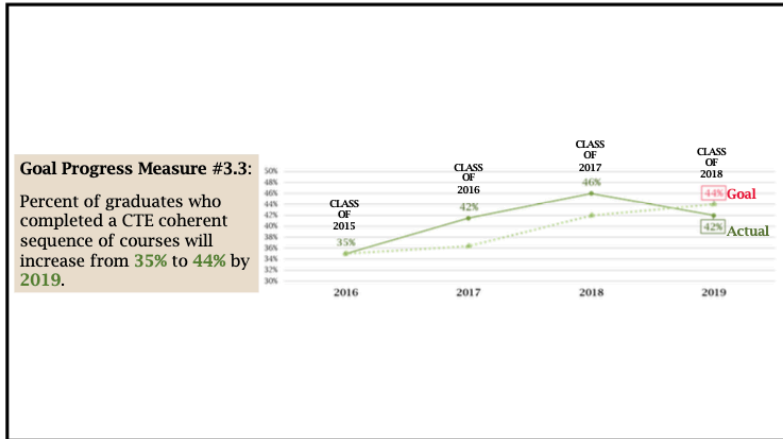
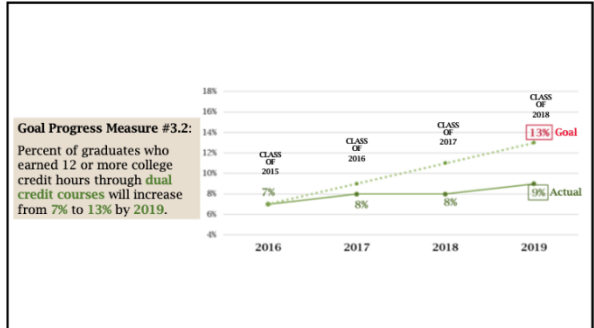
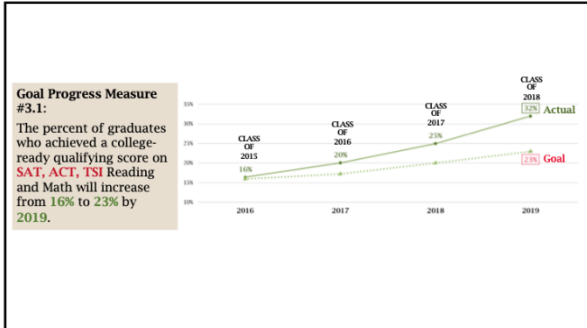
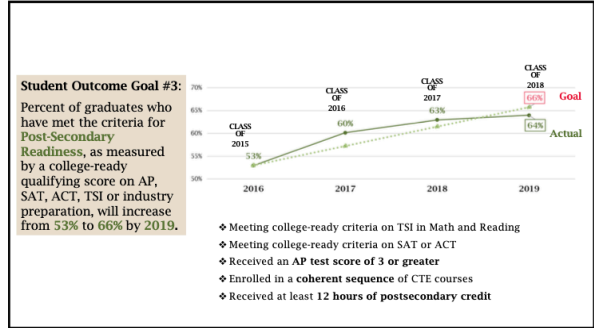
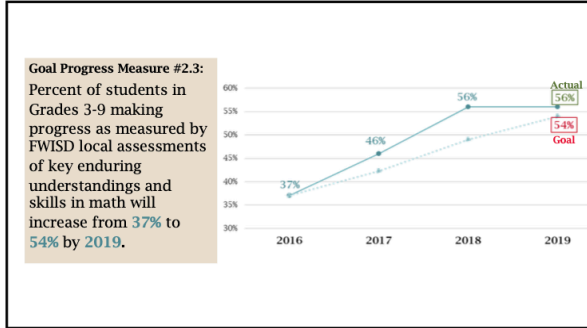
TOTAL SCORE Tier 3 54.49 of 100 54.5

Tier Cuts for 2018-19

	Overall Score	
	Elementary	Secondary
Tier 1	80.01 - 100	83.01 - 100
Tier 2	66.01 - 80	62.01 - 83
Tier 3	49.01 - 66	40.01 - 62
Tier 4	38.01 - 49	25.01 - 40
Tier 5	0 - 38	0 - 25

FWISD Board Outcome Goals & Goal Progress Measures May 2020.





Data Visualization Request for Proposals.

Fort Worth ISD – Data Visualization Solution

RFP Project Title: Fort Worth ISD – Data Visualization Solution

Performance Period: The actual period of performance for these services will be outlined in the awarded contract.

Submittals: Please submit one (1) original and four (4) copies of your proposal clearly marked original and copy in a sealed envelope prior to the time and date as stated on page one (1) of this document.

TIMELINE

Develop in collaboration with purchasing:

RFP Issued:
Vendor Q&A:
Vendor Responses Due:
Submission Review:
Vendor Presentations/Selection:
Contract Negotiations:
Board Agenda:

ORGANIZATIONAL BACKGROUND

With more than 84,000 students in 82 elementary schools, 24 middle schools and 6th grade centers, 21 high schools and 16 other campuses, Fort Worth ISD is a large urban school district that enjoys a diverse student population and strong community partnerships.

INTENT

Fort Worth ISD is seeking proposals from qualified vendors for the integration, development, and implementation of a comprehensive data visualization solution. The solution must be secure, web based, and display both dynamic (dashboard) and static (reports) visualizations to authorized users. An ideal system would include both types of visualizations and allow the District to choose which users see which visualizations. Additionally, it would adhere to existing data and technology standards. Vendors must demonstrate knowledge, expertise, and the capacity to provide an integrated, hosted solution (preferred) including customization with proven experience working with public schools, grades Pre-K - 12.

PURPOSE

The purpose of a data visualization dashboard is to enable data-driven decision making through Fort Worth ISD that will ultimately result in improved outcomes for FWISD students. Currently, too many hours are spent at Fort Worth ISD, in classrooms, offices, and at the district headquarters, manually compiling data from different systems and producing reports focused primarily on compliance rather than supporting instructional improvement. Our data sources are not integrated and Fort Worth ISD is not able to put the pieces of data together in one place and in a way that enables educators and administrators to see how our students, schools, and districts are doing – and to respond in ways that improve student outcomes.

Fort Worth ISD seeks assistance from a vendor with the development and implementation of the Ed Fi Operational Data Store (ODS), Dashboards, and Reports. We need help pulling together student data (including unique ID), performance data (including assessment results, courses, and grades), behavior data (including attendance) and postsecondary success indicators (including remediation and credit accumulation), and then reflecting these data back to support quality instruction and campus improvement processes at the local level, as well as to support school report cards, teacher evaluation, and reporting systems at the state level.

By adopting the Ed-Fi ODS and its associated Application Program Interface (API), Fort Worth ISD will enable more effective data management and interoperability between systems of record. Fort Worth ISD intends to place the ODS at the center of its system architecture, receiving transactional data from sources such as the Student Information System (SIS), Special Education system, assessment systems, teacher licensure and class roster systems, and annual feedback reports from higher education. In turn, the ODS will supply data to multiple analytical/reporting applications, dashboards and the Fort Worth ISD data warehouse. In later phases, Fort Worth ISD anticipates incorporating additional data in the ODS, such as financial data and data from federal programs.



As part of the integration approach, Fort Worth ISD will require new applications to adopt the Ed-Fi Data Standard for transmitting data between disparate systems. Over time, this will simplify and standardize the process of extracting, transforming, and loading (ETL) data to and from the ODS. The Ed-Fi Data Standard represents a widely adopted and supported standard that organizes the different types of educational data at an enterprise level. Fort Worth ISD will begin to require its vendors to support interoperability using the Ed-Fi format, and to use the standard to share data with other educational organizations. This practice will encourage the interoperability of systems used at Fort Worth ISD, allowing new systems to be adopted and implemented (and older systems retired) much more quickly than is possible today.

OBJECTIVES

The major objectives resulting from the web-based data visualization solution included but are not limited to the following:

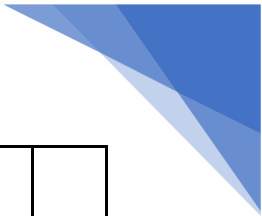
- Provide access to accurate, timely, and meaningful student data for all stakeholders for the purpose of enhancing student outcomes.
 - Data and analytics in a visual format with minimal need for interpretation.
 - Reduce the time administrators, teachers, and District stakeholders currently spend manually collecting information.
 - Provide links between current data and long-term results to ensure the District is serving its students well.
 - Display district-wide and school-wide trends in student performance and associated data.
 - Provide leading indicators and early warnings to stakeholders at all levels.

Fort Worth ISD – Data Visualization Solution

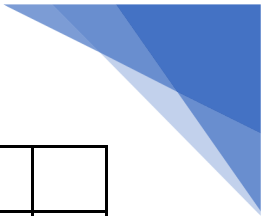
QUALIFICATIONS AND OTHER REQUIREMENTS

All proposals submitted in response to this RFP must include information that clearly articulates whether the proposed solution meets each of the following qualification requirements and explains in detail how it will support each requirement.

Description	Y/N
Visualizations must excel at the integration of information.	



Visualizations must provide the ability to “drill down” with minimum clicks on indicator components to provide details and context about individual students that are relevant to the indicator.	
Visualizations must provide summary information and listings for natural groupings of students (class, school, and district).	
Individual student visualizations with profile pages supporting metrics appropriate for elementary, middle and high school levels.	
Visualizations must support varying degrees of “tolerance for complexity” by displaying the same information in different ways. Ability to toggle display formats. For example, toggle a bar chart to grid.	
Visualization must be responsive and perform in a capacity that allows users and educators to make productive use of their limited time.	
The visualization indicators must be used to quickly focus the user on individuals or groups most needing attention.	
Visualizations will support a user identity management system to provide customized user access, including school board, parents, and community partners.	
Visualizations must be customizable to meet stakeholder needs and interests, and will be designed to provide the necessary data and context to inform common decisions made by each stakeholder group.	
Visualizations will feature an easy-to-use, customizable reporting tool, which will enable users to select, compare, and filter statistics/indicators for each school or District (with privacy protections in compliance with FERPA.)	
School and district rollups of the student metrics with comparison against school and district goals	
Ability to customize metrics by district and school levels.	
Ability to subscribe or unsubscribe from a list of available visualizations.	
User friendly interface that is easy to navigate and facilitates effective use of visualizations.	
Visualizations and the solution should require minimum training to get up and running.	
Ability to export dashboard information to various formats (Spreadsheets, Presentation Slides, PDF etc.)	
Support for common windows actions like resizing, maximize/minimize, re-ordering of zones, printing and hide/visible.	
Ability to build parameterized scorecards, graphs and notifications.	



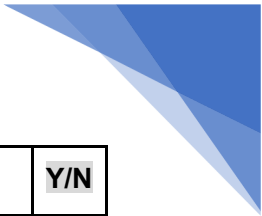
Ability to create cascading parameters.	
Ability to create generic dashboards that can be personalized based on target audience.	
Ability to create generic KPI's that can be used in multiple scorecards with different parameters.	
Ability to build visualizations where the components in different zones can interact with each other.	

Fort Worth ISD – Data Visualization Solution

Description	Y/N
Ability to annotate visualizations and provide help on how a metric or trend is calculated. In some cases, this would mean linking to page on an external web site using query string parameters.	
Ability to version control visualizations.	
Ability to define security on visualizations.	
Ability to publish visualizations to different groups of target audience	
Minimal Impact if the underlying data source metadata/structure changes.	
Ability to create cascading KPI's linked to multiple data sources throughout the district (excel, student information system, CSV)	
User configurable pages.	
Internal and external pages. (Public and Private)	

TECHNICAL REQUIREMENTS

All proposals submitted in response to this RFP must include information that clearly indicates that the proposed solution meets each of the following technical requirements:



Description	Y/N
Authentication & Security	
The system must integrate and authenticate with the District’s Active Directory using modern authentication methods. (non-negotiable). Describe.	
System must be web-based and provide secure web sessions (https).	
Describe maintenance activities that require service interruption and provide back-up plan.	
System must be fault tolerant; Provide disaster recovery plan.	
Describe how new releases and updates are managed and when they occur, and how they are communicated to users.	
The program meets all FERPA and HIPAA security requirements.	
The system logs the user off automatically after a specified number of minutes of inactivity	
Management	
Explain how user accounts are administered - included how accounts are created/activated and deactivated.	
Describe the security that is provided at all user levels (authorization).	
Describe tiered level management controls in detail for the type of information users can access and the licensing required for each tier level.	
Describe how outages are reported and system administrators notified.	
The system supports scheduled data archiving.	
Accessibility	
Describe the processing time during high volume usage.	
The system must be functional on any solution or operating system.	
Describe technical specifications (web browser compatibility, bandwidth requirements, etc.).	
The system is capable of supporting simultaneous use of at least 7,000 concurrent users.	
ADA compliant.	



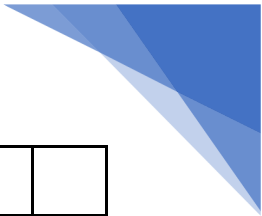
Fort Worth ISD – Data Visualization Solution

Description	Y/N
The product does not require special downloads to interface with the system.	
The system has an intuitive and easy to navigate interface.	
Browser agnostic.	
Technical Support	
Detail the level of technical and user support.	
System must provide online help and/or tutorials are included.	
Integration and Rostering	
Capable of connecting to SQL databases; must be Ed-Fi compliant	
System utilizes automated data imports at no additional cost.	
Describe methods of system integration with other reporting systems.	
Student data can be exported for integration into other FWISD systems.	
Data can be downloaded in multiple formats, such as CSV, Excel, PDF.	
Reporting	
The system provides metrics collection capabilities such as usage reports (average time per user, total time, bandwidth, etc.).	
Reports are generated in predefined formats, but system has the capability to produce ad hoc or query-based reports.	

PROFESSIONAL DEVELOPMENT AND TRAINING SUPPORT

All proposals submitted in response to this RFP must include information that clearly indicates that the proposed solution meets each of the following professional development and training support requirements:

Description	Y/N
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Implementation training is provided and includes resources	
Training (onsite and on-demand) district and campus administrators	
Ongoing support for district and campus administrators through webinars or other web-based resources	
The system provided video tutorials with demonstrations	
Online help and/or tutorials are included	
Technical training for the District's administrative support team (on-demand, webinars, or other web-based resources)	
Online support portal, live phone chat, email support, 8-5 support during local business hours	

Fort Worth ISD – Data Visualization Solution

COST AND FEES

Vendor must include a breakdown of all proposed costs associated with the proposed system solution and related services to be provided. Please identify all recurring costs beyond the first year.

Description	Y/N
One-time costs including integration, configuration, and set up.	
Annual Per student pricing, if applicable.	
Detail licensing cost for each tier level license.	
Annual Renewal.	
Annual Maintenance, if applicable.	
Annual Hosting fee, if applicable.	
Professional development and Online Training and Support.	



DELIVERABLES

The following summarizes the project deliverables.

Description	Y/N
Final Scope Document: Documentation of the scope, objectives and overall approach to the project, to be used for project control and execution.	
Final Project Work Plan: Plan and supporting narrative identifying the phases and tasks of the project, along with schedule, duration, dependencies and resource assignments.	
Operational pre-production environment.	
Project Status Report: The Vendor will be responsible for scheduling and running project status meetings during the implementation and launch of the project.	
Professional Learning Plan: The Vendor will develop a training curriculum for District stakeholders.	

Instructional Coach Description.

Job Title: Instructional Coach – Instructional Initiatives

Reports to: Executive Director – Instructional Initiatives

FLSA Status: Exempt Pay Grade: 604

This is a grant-funded position

Position Purpose

Works with teachers through the use of high-leverage coaching tools and protocols. Collaborates and coordinates the alignment of campus instructional practices. Engages in data-driven conversations to support student and teacher growth. Facilitates campus level Professional Learning Communities (PLCs); participates in PLCs with other coaches. Creates, presents, and supports presentations for professional development offerings in collaboration with the core content directors.

Essential Job Functions

- Demonstrates a growth mindset in working with and building strong relationships with teachers.
- Collaborates with teachers on planning and preparing standards-aligned lessons.
- Conducts classroom observations; provides evidence on instructional indicators that have been pre-selected with teachers and/or administrators.
- Debriefs and conducts professional conversations with teachers regarding instructional delivery.
- Co-analyzes student work with teachers to gauge standard-alignment of assignments and implications for future instruction.
- Plans and leads subject area teachers in regular PLCs; prepares data and leads data analysis discussions in PLCs.
- Participates in PLCs with other Instructional Coaches to share best practices.
- Maintains accurate and timely records to document weekly coaching schedule, and log weekly coaching contact minutes and tool usage.
- Attends meetings, trainings, and professional learning.
- Responds promptly to telephone and email inquiries from campus staff and central administration.
- Maintains cooperative and professional working relationships with peers, students, administration, and other school/district employees.
- Attends instructional planning meetings for content teams and provides input regarding effective management strategies.

Personal Work Relationships

- All Fort Worth ISD employees must maintain a commitment to the District's mission, vision, and strategic goals.
 - Exhibits high professionalism, standards of conduct and work ethic.
 - Demonstrates high quality customer service; builds rapport/relationship with the consumer.
 - Demonstrates cultural competence in interactions with others; is respectful of co-workers; communicates and acts as a team player; promotes teamwork. Responds and acts appropriately in confrontational situations.

Other Duties as Assigned

- Performs all job-related duties as assigned and in accordance to the Board rules, policies and regulations. All employees are expected to comply with lawful directives in rare situations driven by need where a team effort is required.

Knowledge, Skills & Abilities

- Knowledge of federal and state guidelines and District policies and procedures regarding education and students.
- Knowledge of current teaching methods and educational pedagogy, as well as differentiation of instruction necessary to create effective and productive student-centered learning environments.
- Knowledge of assigned content facts, concepts, theories, and principles that are being taught.
- Knowledge of data information systems, data analysis, and the formulation of action plans.
- Skill at the intermediate level, working with Microsoft Office 365, especially Outlook, PowerPoint, Excel, and Word.
- Skill in demonstrating multicultural experiences and experience with second language learners.
- Skill in planning and providing professional learning, technical assistance, and consultation; lesson planning with multiple core-area teachers; leading and developing professional learning.
- Skill in researching and interpreting relevant data.
- Skill at the college level, in writing, speaking, and interpersonal communication skills, including principles of English and grammar usage.
- Ability to be flexible with personal time, to work after school and /or on Saturdays to provide professional learning activities and/or facilitate/accomplish other needed activities.
- Ability to conduct classroom observations and decide what professional learning to provide for teachers and staff.
- Ability to consider academic, social, and emotional needs of students in making decisions about academic settings and accommodations for individual students.
- Ability to facilitate and conduct group meetings.
- Ability to handle office files and records of a confidential nature.

- Ability to schedule dual language participants into appropriate learning activities.
- Ability to aggregate and analyze student outcome data, gain insights, and communicate those insights to teachers.
- Ability to work effectively in collaborative teams and to lead and direct PLCs.
- Ability to communicate effectively, both orally and in writing with staff and the community in a multi-ethnic educational environment.
- Ability to engage in self-evaluation with regard to performance and professional growth.
- Ability to establish and maintain cooperative working relationships with others contacted in the course of work.

Travel Requirements

- Travels to school district buildings and professional meetings as required.

Physical & Mental Demands, Work Hazards

- Tools/Equipment Used: Standard office and instructional equipment, including computer, peripherals, and Promethean Board.
- Posture: Prolonged sitting and standing; occasional stooping, squatting, kneeling, bending, pushing/pulling, and twisting.
- Motion: Frequent repetitive hand motions, including keyboarding and use of mouse; occasional reaching.
- Lifting: Occasional light lifting and carrying (less than 15 pounds).
- Environment: Works in an office or classroom setting; may require occasional irregular and/or prolonged hours.
- Attendance: Regular and punctual attendance at the worksite is required for this position.
- Mental Demands: Maintains emotional control under stress; works with frequent interruptions.

Minimum Required Qualifications

- Education:
 - Bachelor's degree from accredited college or university required;
 - Master's degree from accredited college or university preferred;
 - Major in Education, a content area, or a related field to subject being taught preferred.
- Certification/License:

- Valid Texas Teaching Certification required;
- ESL or Bilingual Certification preferred.
- Experience:
 - 4 years' teaching required;
 - Experience with diverse student population, especially in a large multicultural urban district preferred;
 - Experience facilitating or presenting professional learning preferred;
 - Experience as an instructional coach, department head, team lead, grade level-lead, or school leader preferred.
- Language: Bilingual (English/Spanish) preferred in some settings.

Data Analyst Job Descriptions.

Job Title: Assessment Data Analyst (Campus Testing Coordinator)

Reports to: Principal

FLSA Status: Exempt Pay Grade: 604

This is a grant-funded position

Position Purpose

This position supports one campus. Provides campus administration with on-going reports for progress monitoring. Builds staff capacity to perform their own data analyses and to identify data trends to help teachers meet the needs of students.

Assists teachers in examining data to identify instructional strengths and weaknesses and identify areas of student need; facilitates teacher Professional Learning Communities (PLCs) and data meetings.

Organizes and supervises state-mandated testing, national norm-referenced testing, and local interim and benchmark testing.

Serves as the campus testing coordinator and provides training for state testing.

Essential Job Functions

Test Administration & Monitoring

- Directs campus testing program to meet students' needs; facilitates the use of technology in the testing process.
- Serves as the main resource in providing testing services to the campus; keeps principal informed on the testing affairs of the campus.
- Ensures the security and confidentiality of test materials are maintained before, during, and after testing.
- Actively monitors every testing room on campus for each day of testing; safeguards test security, optimal testing environments, and test facilitation for state, local, and norm referenced tests and assessments.
- Observes the administration of the District's testing program as specified by the state of Texas and the District Assessment Calendar.

Training, Facilitating & Presenting

- Attends all test training and orientation sessions on test security and confidentiality, proper administration procedures, test processing, interpretation of tests, and signs annual TEA *Oath of Campus Testing Coordinator*.
 - Conducts assessment training sessions for campus administrators, staff, and test administrators.
 - Supports and trains the campus faculty and other appropriate staff in analyzing assessments and other relevant District/student achievement data using appropriate technology tools.
 - Designs, develops, and delivers reports and presentations on key assessment findings.
- Contributes as a team member in the development, implementation, and follow through on the campus Continuous Improvement Plan.
 - Conducts staff development workshops on data analysis in conjunction with the campus principal.

School/Organizational Improvement

- Participates in development of campus improvement plans with staff, parents, and community members.

Professional Learning Community

- Helps facilitate teacher and grade level team PLCs through collaborative inquiry and using data as evidence.
- Establishes professional development opportunities related to assessment and the use of data to support new teacher growth and development.
- Assists with regular faculty and department meetings; analyzes instructional and assessment data for the purpose of improving teaching and learning; assists teachers and administrators in using data to develop campus-wide strategies for intervening with at-risk students.

Assessment Program Management

- Receives, verifies, distributes, and returns secure test materials for the campus.
 - Reports test security and confidentiality violations, and test irregularities immediately to the Department of Accountability & Data Quality.
 - Ensures that data is collected, organized, and verified in an appropriate format, and accompanied by an effective analysis, to be used by campus administrators and teachers in instructional planning efforts and accountability.
 - Develops resources for the administrative team and teachers as needed to guide data dialogue.

School/Community Relations

- Articulates the school's mission to the community and solicits its support in realizing the mission.
- Demonstrates awareness of school-community needs and initiates activities to meet those needs using appropriate and effective techniques to encourage community and parent involvement.

Personal Work Relationship

- All Fort Worth ISD employees must maintain a commitment to the District's mission, vision, and strategic goals.
 - Exhibits high professionalism, standards of conduct and work ethic.
 - Demonstrates high quality customer service; builds rapport/relationship with the consumer.
 - Demonstrates cultural competence in interactions with others; is respectful of co-workers; communicates and acts as a team player; promotes teamwork; responds and acts appropriately in confrontational situations.



Other Duties as Assigned

- Performs all job-related duties as assigned and in accordance with Board rules, policies and regulations. All employees are expected to comply with lawful directives in rare situations driven by need where a team effort is required.

Knowledge, Skills & Abilities

- Knowledge of applicable federal and state laws regarding assessment in education, as well as District policies and procedures.
 - Knowledge of data information systems, data analysis and the formulation of action plans.
 - Skill in Windows-based computer applications, specifically with word-processing, Excel, PowerPoint, databases, Internet, and web-based scoring and reporting systems.
 - Skill in interpersonal relationships, including using tact, patience, and courtesy.
 - Skill in using qualitative and quantitative data to make decisions about teaching and learning, including student and teacher assessments.
 - Skill in collecting and analyzing complex data.
 - Ability to interpret policies, procedures, and various types of data.
 - Ability to interpret test results and deliver analysis to various audiences.
 - Ability to process and handle confidential information with discretion.
 - Ability to organize multiple tasks and conflicting time constraints.
- Ability to use computer network system and software applications as needed.
 - Ability to organize and coordinate work.
 - Ability to communicate effectively, both oral and written forms, with students, parents, staff, community, and stakeholders.
 - Ability to engage in self-evaluation with regard to performance and professional growth.
 - Ability to establish and maintain cooperative working relationships with others contacted in the course of work.

Travel Requirements

- Travels to school district buildings and professional meetings as required.

Physical & Mental Demands, Work Hazards

- Tools/Equipment Used: Standard office equipment, including computer and peripherals; classroom equipment including Promethean Board.
- Posture: Prolonged sitting and standing; occasional stooping, squatting, kneeling, bending, pushing/pulling, and twisting.
- Motion: Frequent repetitive hand motions, including keyboarding and use of mouse; occasional reaching; frequent walking.
- Lifting: Occasional light lifting and carrying (less than 15 pounds); occasional moderate lifting and carrying (15-44 pounds).
- Exerting: Occasional 20-50 pounds of force; frequent 10-25 pounds of force, and/or greater than negligible up to 10 pounds of force constantly to move objects.
- Environment: Works inside; may require occasional irregular and/or prolonged hours; may require districtwide travel.
- Attendance: Regular and punctual attendance at the worksite is required for this position.
- Mental Demands: Maintains emotional control under stress; works with frequent interruptions.

Minimum Required Qualifications

- Education:
 - Bachelor's degree from accredited college or university in Education, Computer Science, or related field required;
 - Master's degree in a relevant field preferred.
- Certification/License: Valid Texas Teaching Certification.
- Experience:
 - 4 years' classroom teaching required;
 - Experience working with data and with diverse student populations preferred.