

Improving Data Use in NISD:
Becoming a Data-Informed District

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To protect district anonymity, pseudonyms are used for the district name and names of all data systems.

INTRODUCTION

Our Partnership

Our research team is partnering with the Nameless Independent School District on ways to improve uses of educational data district-wide. During this three-year partnership, we will work closely with NISD educators. Our work will be focused on helping educators use data in ways that fit their everyday work, tap into their professional judgment, and improve practice. In sum, this work should result in an improved experience for the student.

This report represents the first product from our partnership, a thorough evaluation of data use in NISD and recommendations for how NISD may become a Data-Informed District. Our research team has spent the Fall semester learning how data are used in NISD. We visited NISD schools, interviewed educators at all levels, and conducted a district-wide survey. Viewing our findings in light of prior research and our expertise in using data, we wrote a plan for implementing a data initiative in NISD that responds to educator and student needs.

We know data use has often been too hard, but we know it can be done in effective, enjoyable ways. We think our recommendations can help begin an exciting time in NISD, one where educational professionals make use of a vast amount of new information in fulfilling ways that fit their workday. We think our recommendations will speak to the reason that NISD educators entered the profession: to help kids.

In the following pages, we first outline the case for effective data use and describe what we mean by “the Data-Informed District.” Next, we provide a chapter that describes how we collected our data, followed by a chapter of our findings. Finally, we end with a chapter that outlines our recommendations.

We commend NISD leadership for undertaking this partnership. We believe they have taken a visionary step that will help your district for years to come. The time is right for this work – your district is ready and your educators are ready. We look forward to helping your district in this endeavor.

The Case for Effective Data Use

Accountability policies, improved technology, and increased interest in different forms of student assessment have spurred a recent increase in the amount of student data available to educators. On one hand, if used effectively, these data have been shown to help educators. For instance, these data can help educators know more and different things about students. Data can help support improved practice. Data can support increased communication within and across levels. And data can support leadership at all levels (Datnow, Park, & Wohlstetter, 2007; Hamilton et al., 2009; Lachat & Smith, 2005; Wayman & Stringfield, 2006). All of these benefits are associated with better student learning.

On the other hand, if used ineffectively, these data have been shown to hinder educators. For instance, these data may not measure what educators believe is important. Using these data can be overly time-consuming. And, using data may conflict with the everyday work of an educator (Ingram, Louis, & Schroeder, 2004; Valli & Buese, 2007; Wayman, Cho, & Johnston, 2007; Wayman, Cho, & Shaw, 2009a).

In our experience, educators are not resistant to using data, but rightfully, they are resistant to it being *hard*. In our experience, we have found that educators are in favor of

anything that helps them know more about their students, but understandably, they are resistant when they feel their judgment is ignored.

We know that educators are good at making decisions and adjusting practice based on the information (data) they have traditionally used (e.g., tests, quizzes, anecdotal observation), and we have observed that the integration of new data into this process has been hard. But these new data represent an important piece that provides an added dimension to understanding student learning. As a field, if we can just find a way to help educators incorporate these new data into their professional judgment – alongside the data they have traditionally used – we are certain that educators will become immediately more effective.

Our approach to this problem is the “Data-Informed District.” In the Data-Informed District, the use of data follows guidelines and definitions that educators build together. Practices are aligned throughout the district to encourage conversation, collaboration, and innovation. All educational decisions are based on the synthesis of appropriate data and professional judgment. And the focus is on the student – on teaching and learning – not on reporting and compliance.

The Data-Informed District

In the Data-Informed District, the definition of “data” is broad and encompassing. “Data” includes familiar student learning assessments such as TAKS and formal benchmark exams, but also includes elements such as tests, quizzes, locally-developed assessments, student background data, disciplinary information, building-level information, human resource data, and more – all as they relate to teaching and learning.

The uses of data in the Data-Informed District are characterized by integration and collaboration. Decisions and uses of data at any level are not made independently, but integrated with other levels. Thus, educators in the Data-Informed District understand how their roles, practices, and uses of data fit with each other and in the larger picture of the district mission toward improving student learning. We can put this in terms of the district as a whole: absent integration, the district is only as good as the individual contributions of each educator or level. But the district is better – “smarter” – when data are used in a way that connects well with other individuals or levels.

Educational practices in the Data-Informed District are characterized by increased efficiency. On the surface, educators in the Data-Informed District may seem to perform their duties like educators who are not in a Data-Informed District. The difference, however, is in how these professionals access and leverage the wealth of data at hand: in the Data-Informed District, educators’ work does not carry the increased data burdens often borne by educators who are not in a Data-Informed District. Educators in the Data-Informed District know more about their students and align their practices according to a district-wide vision for teaching and learning *that they helped build*. Educators in the Data-Informed District are adept at tailoring and adapting their practices appropriately because they benefit from district-sponsored support in this area. Collaboration, district-wide support, and efficient access to the right data all combine to help these educators capitalize on their most important resource: their professional judgment. Perhaps most important, educators in the Data-Informed District use data *in the course of* their regular work, not *in addition to* their regular work. Thus, they are more effective and efficient educational professionals.

The tenets of the Data-Informed District are not unlike those of previously studied organizational improvement concepts applied to education, such as Organizational Learning

(Argyris & Schon, 1996), or High Reliability Organizations (Stringfield & Land, 2002). Many concepts such as these have advanced educational research, but are not necessarily in widespread application by practitioners. Given the current attention to data brought by accountability policies, information exchange in a “flat world” (Friedman, 2005), and new technologies for providing data access, the concept of increasing district organizational capacity through the lens of the Data-Informed District may well gain traction and scalability where other concepts have not.

METHODS

Introduction

We employed a mixed-method design in conducting this evaluation; qualitative data were collected through interviews and focus groups, and quantitative data were collected through a district-wide survey. Participants were selected to provide a broad coverage of perspectives on NISD data use. In this section, we describe our methods and procedures for collecting and analyzing data.

Procedure

Data collection for this evaluation occurred in Fall 2009. Individuals were interviewed by phone and in person, site visits were made to schools to conduct educator focus groups, and a confidential online survey was made available to all NISD educators. In conducting the online survey and in selecting participants for interviews and focus groups, we endeavored to include every role and context in NISD that might be supported and affected by efficient data use. The following sections describe the qualitative and quantitative data collection procedures.

Qualitative Sample

Qualitative data were collected through individual interviews and focus groups. Individual interviews were conducted using a semi-structured protocol that focused discussion on ways data were used and accessed, specific data systems employed, and wishes for future data use. Focus groups were conducted using a semi-structured protocol similar to that used in individual interviews.

All qualitative interviews were recorded. Each participant was offered the opportunity to decline having their response recorded; none chose this option. All responses were kept confidential and the data were only handled by the research team.

At the central office level, employees were identified through a review of central office positions and interviewed by telephone or in person. This list was then discussed with our primary district contacts to ensure proper coverage. Additionally, many interviewees were asked to suggest other individuals to interview.

Teachers and principals participated through focus groups conducted during site visits to seven NISD campuses, chosen to be representative of NISD. Included in these seven schools were four Elementary Schools, two Middle Schools, and one High School. School site visits consisted of two focus groups. In each school, one focus group consisted of the principal, assistant principals, or other individuals designated by the principal. On the same day, a teacher focus group was also conducted. Teacher focus groups included 3–5 teachers that were selected by the principal from a randomly generated list of 7–9 teachers. The high school had many more teachers on staff than the other schools; to ensure that we fully understood data use in the high school, we conducted two teacher focus groups.

The qualitative sample consisted of 65 total participants. Table 1 provides a description of this sample, disaggregated by educational role (see *Measures* for a definition of these categories).

Quantitative Sample

Quantitative data were collected by administering the *Survey of Educator Data Use* (Wayman, Cho, & Shaw, 2009b), a 67-item instrument assessing a variety of factors, including attitudes toward data use, support for data use, instructional practices, technology, and specific ways in which data are used by the respondent. The survey was given online. Responses were kept confidential and survey data were only handled by the research team. Teachers were asked to identify their school, but to protect confidentiality, other building educators were not. Participants were not allowed to leave any items blank.

The quantitative sample consisted of 1,406 individuals. Table 1 provides a description of this sample, disaggregated by educational role (see *Measures* for a definition of these categories).

Measures

Comparison Categories

Educational role and district experience were each used to compare educators on aspects of data use. For comparison purposes, some roles were combined, resulting in five categories: (1) campus administrators (principals and assistant principals), (2) central office staff, (3) instructional support staff (campus staff such as counselors, academic deans, school psychologists, and instructional coaches), (4) teachers, and (5) other roles (any educator who did not fall into one of the previous categories). The “other” category was not used in analyses because it represents a combination of many different roles and is thus hard to make inferences from.

District experience was evaluated through responses to the survey question, “Including the current school year, how long have you been employed in education?” Responses were collapsed into a four-level variable: (1) 5 years or less, (2) 6–10 years, (3) 11 – 20 years, and (4) 20 or more years.

Selected Survey Questions

Selected survey items were singled out to help describe how NISD educators used data. These items asked about frequency of various actions and were set on a 4-point Likert scale with the following options: *less than once a month*, *once or twice a month*, *weekly or almost weekly*, or *a few times a week*. Each response option was numbered 1 – 4, with 1 corresponding to *less than once a month*.

One block of 14 items asked how often participants engaged in specific data uses, such as identifying individual students who need remedial assistance, setting school improvement goals, and evaluating district achievement trends and performance.

Another block of four items asked participants to estimate how often they used specific types of data: (a) state achievement test data (TAKS); (b) formal assessments (e.g., DRA, TPRI); (c) other student data (e.g., attendance, disciplinary data); and personal assessments (e.g., tests, quizzes).

Survey questions also were employed to assess how often educators used specific data systems. Systems reported here include: (a) DW for collecting, reporting, and analyzing state and district-level assessment data (e.g., TAKS and district benchmarks); (b) SIS for handling various types of day-to-day student information, such as scheduling, grades, and demographic information; (c) ASSM for administering and managing formative reading and math

assessments; and (d) other systems not specified on the survey, with a field to write in specific systems.

Data Use Scales

Seven scales measuring different attitudes and uses of data were formed from groups of survey items. The individual survey items within these groups asked how much the respondent agreed with a statement, offering the following options: *strongly disagree*, *somewhat disagree*, *somewhat agree*, and *strongly agree*. Each response option was numbered 1 – 4, with 1 corresponding to *strongly disagree*. To create each scale, responses were averaged across the group of items in that scale. Scales thus ranged from one to four.

The *Attitudes Toward Data* scale was a four-item scale that asked participants whether they liked data, found it useful, and whether it helped them. The alpha reliability of this scale was 0.893.

The *Computer Data Systems* scale was a four-item scale that asked participants to rate the quality of the technology they are provided for accessing student data (e.g., easy to use, provide access to lots of data). The alpha reliability of this scale was 0.860.

The *Data's Effectiveness for Pedagogy* scale consisted of five items that asked about the contributions that data can make for improving educational practice (e.g., helping to plan instruction, reveal new insights, or identify learning goals). The alpha reliability of this scale was 0.935.

The *District Vision* scale consisted of two items that asked how much participants agreed there was a clear direction for teaching and learning, and clear direction for what should be taught. The alpha reliability of this scale was 0.923.

The *Principal Leadership* scale was a five-item scale that described actions that principals and assistant principals took to promote data use. This scale evaluated how school leaders led with data, encouraged teachers to use data, or created opportunities for improving data use. The alpha reliability of this scale was 0.878.

The *Support for Data Use* scale was a six-item scale assessing structures that provide support for educator data use. This included adequate preparation and professional development, as well as support from knowledgeable individuals. The alpha reliability of this scale was 0.893.

The *Time to Use Data* scale consisted of four items assessing various time structures offered educators for using data, such as time to use data and time to collaborate with others about data. The alpha reliability of this scale was 0.951.

Analyses

Emergent themes from data analysis suggested the results were best understood when grouped into five general categories: (a) a summary picture of NISD, (b) uses of data, (c) attitudes toward data, (d) computer systems for using data, and (e) district supports for using data. Quantitative and qualitative analyses for this evaluation were conducted in support of each other in describing these categories.

Qualitative analyses followed methodology suggested by Miles and Huberman (1984). Drawing upon prior research on educational data use, an a priori list of potential analytic themes was generated, and as qualitative data collection progressed, these themes were updated and refined during research team meetings. This collaborative and inductive process resulted in a conceptually coherent set of themes that was used for coding interviews and focus groups. The

research team used this set of themes to code participant responses. Themes were examined by role (e.g., district role, parent, or student) and by school level to identify emergent patterns and explanations regarding NISD data use.

Quantitative analyses were conducted using descriptive statistics. In the following paragraphs, we describe qualitative and quantitative analyses used for each section.

A Picture of NISD

Quantitative data from the online survey were used to provide an overall picture of NISD. Averages were calculated first for the each of the seven data use scales, for the entire sample. These averages then were examined descriptively by role. In these analyses, “other” was omitted from because it included a wide mixture of educators, and the Principal Leadership scale was omitted for central office members since these questions were targeted at building staff. Finally, scale averages were disaggregated by the four-level experience variable. The Principal Leadership scale was omitted from this analysis because it did not apply to many educators in the overall sample.

Uses of Data

In describing how NISD educators used data, analyses from quantitative and qualitative data were synthesized, then presented separately for campus administrators, teachers, central office, and instructional support roles.

Quantitative analyses examined 14 survey items that asked the degree to which participants engaged in specific data uses (e.g., identifying individual students who need remedial assistance, setting school improvement goals, and evaluating district achievement trends and performance). These 14 items were ranked by mean response separately for campus administrators, teachers, and instructional support staff. Rankings and means were compared descriptively to compare and contrast data uses by role. Central office staff were not included in these analyses because the questions typically pertained to building-level issues. In addition, two questions were omitted from the campus administrator rankings because the questions dealt with classroom issues. Qualitative data for this section were integrated from comments that educators made about their own specific uses of data.

Attitudes Toward Data

Attitudes toward data were described by examining comments offered by NISD educators, then casting these in light of the *Attitudes Toward Data* and *Data’s Effectiveness for Pedagogy* scales. These data were examined by role. Emergent themes included professional judgment, barriers to data use, and hesitance to use data.

Computer Systems for Using Data

In examining NISD computer systems, an inventory of systems was provided. First, a list of all computer data systems mentioned in interviews was compiled, and counts of the number of participants who mentioned each system were provided. In addition, this list was combined with a list of systems cited on the online survey to provide a comprehensive list of systems used in NISD.

Second, survey items asking about use of four specific computer systems (DW, SIS, ASSM, and “other”) were examined. For this analysis, “frequent use” of a system was measured by combining the percent of survey respondents who reported using a system “weekly or almost

weekly” or “a few times a week.” Frequent use of each system was examined and compared for teachers, campus administrators, and central office staff, and instructional support staff. Interview responses were integrated with survey responses to provide triangulation.

Qualitative data indicated that disparate data systems were a barrier, so these data were analyzed for themes regarding system integration. These data also included analyses regarding a potential solution, the data warehouse.

Finally, interview data were examined to discern themes that described how NISD educators used their computer systems. Main themes included using data systems to help change practice, creation of personal data systems, and attitudes toward NISD systems.

District Supports for Using Data

Interview data were analyzed to determine the nature and availability for varied supports for effective data use. Major themes included district vision, professional learning, collaboration, and principal leadership. Comments about district vision, professional development, and the roles of specific district support positions were examined and identified by role when appropriate. To triangulate these comments, means on the data use scales were observed. All data were examined by role where appropriate.

RESULTS

Introduction

In this section, we present the results of our analyses. Results are divided into five sections: (1) an overall picture of NISD data use, (2) uses of data, (3) attitudes toward data and data use, (4) computer systems for using data, and (5) district supports for using data.

A Picture of NISD Data Use

We begin the presentation of our results by providing an overall view of how data are used in NISD. The data for this illustration are created by summarizing survey data into seven scales dealing with various aspects of district data use.

Table 2 shows means for seven scales from the *Survey of Educator Data Use*, broken down by district role. Overall, NISD educators were most positive in their ratings of district vision for education ($M=3.49$) and the utility of data for informing pedagogy ($M=3.47$). While positive about the utility of data for pedagogy, they rated their general attitudes toward data and data use lower ($M=3.19$). Similarly, they were somewhat less positive about various supports about data use: principal leadership ($M=3.22$), the computer systems they use ($M=3.05$), and general forms of support ($M=2.99$). Educators in NISD were negative in their perception of the time they are afforded for using data ($M=2.34$).

Table 2 shows differences by role: campus administrators were generally the most positive of all roles about data use, while teachers were least positive. Some differences were reflective of the structure of the role. For instance, instructional support educators often have jobs that are structured toward data use, and thus, they were the most positive about the time they are given for using data. Others indicate potential problem areas: central office personnel ranked data systems lowest of all roles, and teachers were substantially lower than campus administrators in their attitudes toward data's effectiveness for pedagogy (.50 points lower) and their attitudes toward data (.58 points lower).

Table 3 shows that experience matters little in how NISD educators perceive issues related to data use. Across all categories of experience, educators were very similar in mean rankings of scales.

Uses of Data

In examining how educators use data in NISD, it is important to delineate how data use varies by role (Table 5 shows negligible difference based on experience). There were similarities across roles; for instance, we observed that uses of data often focused on helping struggling students, regardless of role. Additionally, teacher data use was at the center of many uses of data, as many of the other roles were directly or indirectly supporting teachers in their data use. In the following sections, we first describe how campus administrators use data, followed by descriptions for teachers, central office staff, and instructional support professionals.

Campus Administrators

Our findings indicated that campus administrators tended to focus data use toward improving learning for struggling students. In contrast, these leaders focused data use far less on

the learning needs of other students. These administrators also reported meeting with other educators in their building around data, but the frequency and depth of these meetings vary widely from building to building.

Campus administrators used a variety of data, most frequently employing achievement test data (e.g., TAKS, curriculum-based assessments) and daily transactional data (e.g., disciplinary information, attendance). Table 4 shows that administrators most frequently used transactional data such as attendance and demographics ($M=3.37$), and infrequently used self-created assessments ($M=1.95$). These patterns also were reflected in our focus group data.

Helping struggling students was a primary focus of administrator data use. Table 6 shows that, on at least a weekly basis, administrators who participated in the survey reported using data to identify learning needs of struggling students ($M=3.16$) and to identify special services such as tutoring ($M=3.03$) for students. Similarly, administrators interviewed for this study most frequently mentioned using data for these purposes. For instance, one administrator described his work with the campus' special education department, noting how together they used data to determine the intensity and duration of an intervention for a student. Another administrator noted that they examined the previous year's TAKS scores in order to identify those students who might be at risk of performing poorly again. This use of TAKS scores was similarly articulated by several campus administrators at all levels. Many tied this use of TAKS to accountability, stating or implying an aim of improving the AYP ratings of their campus and district.

In contrast, we heard very little mention in the interview data about data use to identify learning needs of students who are not struggling (performing adequately or better). This finding is corroborated by the survey data, in which this type of data use is ranked last (see Table 6). In our interviews, administrators often mentioned or alluded to a focus on closing achievement gaps and raising accountability rankings.

Not all of the reported uses of data centered on individual student needs. For example, in the interviews, three administrators said that they use data to make decisions about hiring and staffing needs or about special programs. One administrator cited using data to evaluate the effectiveness of a particular math program the campus had adopted. He explained that, "for us, we can measure a kids' progress, how far they are progressing along the grade level, how much they are accessing it, their success rate." Furthermore, several campus administrators described using data gathered from classroom walkthroughs¹ to gauge the level of implementation of the district's curriculum.

Finally, many of the campus administrators described meeting with other educators around data, a use also frequently cited in the survey ($M=3.13$). Though many of these meetings or conversations centered on the learning needs of particular students, some campus administrators also said that they met with teachers to discuss problem areas more broadly. For instance, one administrator reported using data to help teachers reflect on their practice, saying, "we got good at school level data, and we started looking at teacher level data. We said that even though have different kids this year, this is where the strengths came out in your teaching, because the kids were really getting this or not that objective. Each year, we get a little closer to knowing every student and their needs." At another campus, the administrator used CBA data to "have a data analysis day where [teachers] pull their particular student group and the look at

¹ In classroom walkthroughs, administrators briefly observe a classroom lesson to determine whether the content being taught is appropriate for the scheduled material and whether the cognitive complexity at which the students are engaged is appropriate.

which SEs were weak, and what they're going to do as a group to address that weakness as a department, as a course.”

Teachers

The data show that teachers also frequently focused their data use toward improving learning for struggling students. Teachers also reported tailoring their instruction to meet the needs of individual students, though very few examples of this practice emerged from the interviews.

Teachers were far more likely to use their own assessments (e.g., tests, quizzes, assignments) than formal assessments. For teachers, Table 4 shows the mean of personal assessment use is 3.38 (weekly or more), as opposed to 1.97 for formal assessments and 1.79 for TAKS (roughly monthly). Formal assessments commonly mentioned in interviews included CBAs and reading inventories such as TPRI and DIBELS, depending on the grade taught.

Teachers focused most of their data use on helping struggling students. Table 6 shows that, on nearly a weekly basis, teachers used data to identify learning needs of struggling students ($M=2.72$) and to tailor their instruction to meet individual student needs ($M=2.68$). In the interviews, teachers confirmed these findings, describing that they used data to help their struggling students in various ways. For example, one elementary school teacher reported using data from a math program to figure out which students were struggling with which concepts. A middle school teacher described using data to design tiered intervention for struggling students. A high school teacher used data to see if students struggling in one class were struggling in other classes as well. Although on the surveys teachers responded that they tailored instruction to meet the needs of their students ($M=2.68$), teachers rarely discussed this use of data in the interviews.

The interviews also highlighted some important differences between elementary and secondary teachers. In the interviews, elementary teachers repeatedly described using data to form small groups, whereas secondary teachers more frequently used data to discern which student objectives to re-teach, and to whom. For example, an elementary school teacher described using the results of reading inventories to “make my small groups and pull kids for guided reading;” this type of response was very common throughout the interviews with elementary teachers. In contrast, a secondary teacher gave an example common to secondary teachers, reporting using the district CBA because “it shows us how our kids did, what particular TAKS objective we didn't reach, and what we need to re-teach.”

Finally, it is interesting to highlight some of the less common uses of data among the teachers. Notably, teachers in our focus groups infrequently described using data to plan or to change their practice. Although some planning or practice change must result from the uses described above, the fact that interviewees infrequently described using data to do so indicates that it is not a direct, conscious focus. Additionally, survey data indicated that teachers very rarely (once a month) used data to contact or talk to parents ($M=1.83$), and more rarely meet with their principal around data ($M=1.66$). Similarly, our focus group teachers rarely mentioned either of these uses.

Central Office

Unlike teachers and campus administrators, central office administrators reported using data to pursue broader campus- and district-level goals. Central office administrators appeared to use the widest variety of data as they sought to monitor and support campus performance.

Table 4 indicates that central office administrators use TAKS ($M=2.12$) about twice a month, district assessments ($M=2.18$) about twice a month, and other student data a little more ($M=2.59$) than twice a month. Not surprisingly, these administrators did not use their own assessments frequently ($M=1.68$). Interview data supported these trends.

In interviews, central office administrators reported using data for two primary purposes: to monitor campus performance and to support campuses. Monitoring campus performance included analyzing student achievement data from TAKS and the district CBAs, and using resulting campus ratings to support campuses. For example, one central office administrator said, “I think we’re very good at looking at our state assessments, determining how well our students are doing. We can identify areas where we need to improve. I think we’re doing a good job, too, in terms of taking that data and tying it back to the curriculum and saying, ‘these are areas that we really need to focus on.’” Another central office administrator described using campus Adequate Yearly Progress (AYP) ratings to monitor campus performance, explaining that, “We had six or seven of our campuses not make AYP the year before this previous one. I started putting the data tables together and asking questions. Based on that, we came up with a strategy and a plan on how do we monitor and help campuses.”

Supporting campuses consisted of three main activities: conducting walkthroughs, identifying professional development needs, and supporting principals in using data. Central office administrators told us that they worked with principals to conduct walkthroughs that allowed them to monitor the implementation of the district’s curriculum and to identify areas of improvement.

In supporting campuses, central office administrators also used data to make decisions about professional development, and in a variety of ways. Some of these data came from surveys distributed at the end of trainings, but other data come from walkthroughs, conversations with principals, and student achievement data. This was described by one central office administrator, who noted, “We look at areas of greatest needs, where students aren’t performing well and that’s where we focus and really encourage, and work with those principals to get their teachers into staff development. As far as what we currently do, we look at scores, whether they’re CBAs or TAKS scores, to see who’s doing well or not as well with their students, and encourage those principals to get their staff involved.”

Central office administrators also frequently described supporting campus principals in using data. They cited providing such support during official data days, such as one held over the summer, and during campus visits. Speaking very generally, one central office administrator said, “I work with principals on how to use their data, how to go to depth with their data, how to break it down into individual items.” More specific examples of how central office administrators support principals included campus visits to discuss achievement data and areas of improvement, and monthly principal meetings to discuss data.

Instructional Support

People who provide instructional support (e.g. instructional coaches, specialists) reported focusing their data use primarily on discussing instructional strategies with other educators and working with struggling students. Both Table 4 and interview data indicate that people in instructional support roles used different kinds of data with similar frequency.

According to both the survey and interviews, instructional support people used data primarily to address the needs of individual students. Table 6 shows that several times a month, instructional support professionals used data to identify the learning needs of struggling students

($M=2.70$), to tailor instruction to individual student needs ($M=2.65$), and to set learning goals for individual students ($M=2.55$). Interviews with instructional support professionals confirmed these findings. For instance, one instructional coach described using data to identify student weaknesses, saying that, “We’re looking at those individual skills and how we can address if a child has a difficulty with this, then what can we do to intervene with that need and build those foundational skills.” Another instructional coach told us, “We looked at specific kids and areas, choosing what areas needed to be addressed. We did a camp for specific activities and TEKS, grouping kids based upon their data and working them through based upon what they needed.”

Instructional support professionals also worked directly with teachers by providing ideas and strategies. The survey showed that instructional support professionals used data to discuss student progress or instructional needs with other educators several times a month ($M=2.74$), a finding that reappeared throughout the interviews. For example, one instructional coach described using data from a primary reading inventory to help a teacher form small reading groups. Another instructional coach said that she had helped teachers put together sessions to focus on specific skills.

Several instructional support people also noted that not only did they help teachers access and organize data, but they also worked with teachers to analyze their data. For instance, one instructional coach said, “I try to help teachers understand the data for kids, looking at last year’s data for their current kids. It’s difficult for them to understand that they need to set time apart for that. Time is the big issue. They don’t understand it’s not going to get better.” Another instructional coach noted how lack of time afforded to teachers also affected the support she provided to them. “We set up the situations for [the teachers] to test, then we get the information. At this school, we actually input the data for them and then we input the data sheets.”

One caveat is in order: while these uses of data were consistently raised during interviews with instructional support professionals, interviews with teachers did not display as much consistency. Teacher interview data suggested that instructional support for data use was helpful, but often implemented and used inconsistently.

Attitudes Toward Data

In NISD, we found attitudes toward data to be generally positive, but mixed. We heard many positive statements about the service of data for educational improvement, but we also heard skepticism borne from current difficulties in using data. An educator’s role seemed to play a part in their attitudes toward using data. We can summarize by saying that the farther a role was from the classroom, the more positive the attitude toward data.

We found that central office personnel and campus administrators were the most positive about data use and were similar in their attitudes. Teachers were the least positive (though positive overall), and instructional support staff fell in between. This trend is seen in the survey data by examining means of two scales. Table 2 shows that central office staff and campus administrators strongly agreed that data were beneficial to them, both responding with a mean of 3.71 on the *Attitudes Toward Data* scale. Further, both of these groups expressed confidence regarding data’s benefits to practice. On the *Data’s Effectiveness for Pedagogy* scale, the average response for central office staff was 3.84 and the mean for campus administrators was 3.92 (almost the maximum). In contrast, teachers were less positive, averaging 3.13 on the *Attitudes Toward Data* scale and 3.42 on the *Data’s Effectiveness for Pedagogy* scale. Averages for

instructional support personnel were 3.52 on the *Attitudes Toward Data* scale and 3.69 on the *Data's Effectiveness for Pedagogy* scale.

Interview data further describe role differences. Central office members described the importance of data in supporting professional judgment, and school administrators spoke frequently about the potential for data to help individualize instruction. In fact, when these two groups voiced concerns about data, their concerns related to their capacity to share and access data, not how hard it is to use data. To illustrate, central office members described some challenges in integrating data, relying on other people for data, getting the right data into the right hands, and being able to use technology. We heard no comments from either group that indicated any skepticism that data were useful or not worth educators' time.

Teachers had much more to say about data, both positively and negatively. In accord with their various administrators, a number of teachers were positive about the utility of data and its potential to shape practice. Comments from these teachers indicated that they enjoyed getting increased information on their students. Despite frequent difficulties in using data, teachers indicated its value to their craft by expressing a need for easier ways to get and use data.

More frequently, however, teachers described their practical challenges and concerns in using data. For instance, many described how data use was adding work to their day, as well as how it could be overwhelming or not worth their time. Often, a teacher would begin talking positively about data, but quickly move toward the difficulties that a particular use of data had created. Because of these practical challenges, our data demonstrated considerable ambivalence toward data and data use.

Some teachers expressed their hesitance about analyzing data. A few believed they already knew what the data would tell them about their students. We also heard an occasional comment expressing concern or distrust regarding how data were being used in their school or NISD. Many teachers felt like data use was something that had been imposed upon them.

Most of the hesitance we heard, however, pointed to separations between data use and teacher judgment. In terms of conflicts, some teachers expressed frustration that data conflicted with their judgment – and that their judgment was backgrounded as a consequence. To illustrate, one teacher provided an example of knowing the right course of action for supporting a student, but not having the appropriate data to support it. Others complained that they believed their students were learning differently than the data suggested or cautioned against thinking of students as only numbers. Still others were negative toward the role of CBAs in planning and assessment. These teachers did not feel it appropriate to test students on learning objectives that had not yet been taught, or believed teachers were not sufficiently involved in writing CBAs. In all these cases, there was an underlying theme that teacher judgment was secondary to “the data.”

Resultant from these positive and negative attitudes, teachers underlined the importance of support in using data. Such support included proper leadership and direction from their building administration, appropriate training, and instructional support staff that helped them organize and understand their data. Instructional support staff were more positive than teachers about the service of data, but also expressed many of the same concerns. Like administrators, complaints from the instructional support role revolved more around practical barriers to using data rather than the utility of the data themselves. But like teachers, instructional support staff were articulate and specific about where these barriers were and how these barriers affected their jobs.

Computer Systems for Using Data

Throughout NISD, a variety of computer systems are used to sort, store, aggregate, and analyze data. Many of these systems serve specialized functions, such as disaggregating student achievement data or storing and organizing student demographic data. Our data revealed that a majority of NISD educators are using these systems in various ways, but the lack of integration of these systems severely hampers efficient – or even appropriate – use of data. In this section, we describe the systems used by NISD educators, system integration, and how NISD educators use their systems.

Computer Systems Used by NISD Educators

Through interviews, focus groups, and the online survey, NISD educators reported using 58 separate systems. Table 7 offers a comprehensive list of all data systems that were mentioned either in the online survey or in participant interviews as being used for data purposes. The length of this list evidences the diversity of systems in NISD.

The online survey contained questions that asked participants how frequently they used specific data systems: (a) DW for collecting, reporting, and analyzing state and district-level assessment data (e.g., TAKS and district benchmarks); (b) SIS for handling various types of day-to-day student information, such as scheduling, grades, and demographic information; and (c) ASSM for administering and managing formative reading and math assessments.

Table 8 shows the percent of users who reported that they frequently used a system (by noting “weekly” or “more than weekly” use). System use differed by role. Campus administrators most frequently used SIS (74%), followed by DW (48%) and ASSM (16%). For teachers, SIS was again the most frequently used, with frequent use reported by 43% of teachers. Teachers reported considerably less use of DW and ASSM, with only 12% and 14% of teachers reporting frequent use, respectively. Central office personnel used DW and SIS less than teachers or administrators (32% and 38%, respectively), and rarely used ASSM on a frequent basis (12%). Instructional support personnel reported use frequencies similar to central office respondents for DW and SIS (37% and 33%, respectively), with more frequent use of ASSM (21%).

The survey provided individuals an opportunity to note systems used other than the ones explicitly asked. Table 8 shows that in every role, more than 15% of participants reported frequent use of other systems. Notably, over half (53%) of campus administrators and almost half (41%) of central office participants noted that they use other data systems at least weekly.

Similar to the survey data, interviewees most frequently mentioned using SIS and DW, in addition to CatchAll (mentioned mostly by central office personnel and campus administrators). As with the survey data, administrators were more likely to use data systems that accessed formal data such as TAKS. It should be noted that the frequency of comments about some programs was increased because participants complained about problems in using them; this was most noticeable regarding SIS and DW.

Finally, we offer a short but important point: educators were more interested in the information produced by the system than the system itself. Interviewees often referred to the information they were able to get out of “the system” and noted the system only upon further probing.

System Integration

We heard frequent articulation that a lack of integration and data sharing among all of these systems dramatically hindered the effective access to and analysis of data, and substantially contributed to frustration with using data. In this section, we will describe the problems caused by disparate systems and a potential data warehousing solution.

Disparate systems. Data in NISD are stored in a variety of different formats and systems, few of which are integrated or connected. One educator summarized the problem simply: “We have data in a lot of places.” Lack of integration also seemed to affect the way educators conducted their work. This is highlighted by one campus administrator who noted, “I find for myself, with data, if the program isn’t easily accessible, I tend to do my work in clumps. I’ll save data and then do several hours worth—several tasks at once—because it’s hard to access that data and get to it and find my way through all the menus and things like that.” This respondent elaborated that he believes he might miss some trends or information because this method of working takes him away from looking at data more frequently.

As shown in the *Attitudes Toward Data* section above, disparate systems are contributing to frustration with using data, simply because it is such a burden. In fact, of the 48 comments we received about computer systems on the survey, most were complaints about non-integrated systems. Educators are increasingly frustrated that they cannot access data with a minimal number of clicks. Educators noted that they would like to have “quick and easy access to things, without having to involve too many people” and to be able to query reports without clicking in and out of multiple screens.

Besides lack of integrated access, disparate systems were causing inefficiencies that cost educators many hours per year. For instance, teachers expressed frustration with the speed of getting data into current systems for students new to the district – one teacher noted, “Sometimes it’s faster to tell the kids, ‘if you have a copy [of the TAKS results from the previous district], bring it in,” rather than wait for that data to be delivered. Several administrators expressed frustration at not being able to see longitudinal information on students and with the lack of information that transitions with a student (electronically) between campuses (e.g., between 8th and 9th grade, or between like grades at different campuses for mobile students).

Interview data revealed that some available data are missing entirely from current electronic systems. For example, participants indicated that some data for LPAC proceedings for ELL students are maintained solely in a physical folder and are not accessible via any electronic data system. Likewise, some special education data that could prove helpful to classroom teachers (e.g., ARD and IEP data) are located in Special Education Manager, but are not typically accessible to teachers through this system. Last, teachers often reported digging through hard copy cumulative files for information and using collected data to complete paper-and-pencil student profiles to help them plan, particularly at the beginning of the year. They noted this could be a frustrating process because different schools and districts have different ways of putting those files together, so the information is not always in uniform places within the files.

In response to the inability of systems to show data side-by-side, NISD developed analysis forms to guide teachers through examining data. In some instances, these forms became data systems unto themselves, as they were the only places where multiple data points were easily accessible on a single page. Campus-level educators appreciated the organization of data that these forms and processes provided, but also expressed dissatisfaction that current systems were unable to provide reports that contained all data perceived by that campus as needed in the formats desired.

A potential solution: The data warehouse. In response to the problem of data system integration, NISD is in the process of obtaining and implementing a Cognos data warehouse to link disparate systems and support interoperability. Data warehouses serve as a common store of data, so educators have one-stop access to all the data available to them.

Interviewees expressed hope that the new system will bring all data under one roof, as did commentary on the open-ended portion of the survey. Comments from the survey such as, “A more effective system for single source data access is a must,” and “I would like to go to one place to find all the data to make it easier and faster” illustrate the urgency and desire for a single-access system.

Implementation of a data warehouse would solve the problems caused by disparate data and systems. In describing problems with the current system, one central office staff member noted, “One of the weaknesses we have with our existing system is the reporting mechanism. We have compliance reports. We typically don’t have these kinds of operational reports. The data is there; we just can’t get it as quickly and as effortlessly as people would like it.” Another central office member expressed the hope that the data warehouse would “empower people at all levels to access appropriate data to do a better job at whatever their function is.” At the building level, educators hoped the system would deal with their specific needs. A good example was given by high school administrators who hoped that the new system would have the capacity to access student information by academy, not solely by campus or grade level.

How Computer Systems Are Used by NISD Educators

We also examined how data systems were used by NISD educators. Some educators reported accessing systems directly, while others reported having printouts provided by support staff or an administrator. In addition to these uses, three themes emerged that were important to understanding system use: (1) Use of data systems in the service of changing practice, (2) The creation of standalone personal systems to integrate data from disparate district systems, and (3) Attitudes toward data systems.

Using data systems to help change practice. We heard infrequent articulation of efficiently using data systems to help change teacher practice. Qualitative data suggest that one barrier to the use of systems for improving practice is the turnaround time of data so that teachers might have timely feedback to incorporate into their lessons and practice.

District administrators were attempting to affect practice through classroom walkthrough data, designed to assess whether the curriculum was being delivered in a manner appropriate to district goals. The use of systems in this regard was cumbersome, however. Administrators collected walkthrough data in two main ways: (1) a pencil-and-paper form, which was then entered into CatchAll and/or a spreadsheet, or (2) using their own handheld device (e.g., iPhone) to complete a form in CatchAll that automatically aggregated the walkthrough data to the district system. Both methods came with hindrances. Administrators reported that the forms available in CatchAll were mostly dichotomous “yes/no” checklists that precluded inclusion of complex information or feedback that might be more helpful to teachers. Also, without being able to access the curriculum bundles (i.e., specified material to be taught) at the moment of the walkthrough, administrators reported that they compensated by taking notes and returning to their offices to match up what was observed with the appropriate curriculum bundle.

Creation of personal data systems. As a consequence of non-integrated systems, users in all roles at all levels of the district reported creating databases to organize data from several systems into a single representation of a student or group of students. We saw numerous

examples of this, primarily in the form of Excel spreadsheets, but also including pencil-and-paper charts or organizers.

To illustrate, we heard multiple administrators describe the time-consuming task of taking data from disparate district systems to populate a spreadsheet that is then built upon throughout the year. This was particularly common in primary grades, where TPRI and DRA data are managed through standalone databases or shared spreadsheet formats because those data were not included in DW. Also, some elementary-level administrators noted that they maintained separate databases in Excel to track disciplinary information that was not housed in RAMP (e.g., minor infractions and student conversations). Data such as these were valued for more detailed analysis of student discipline trends at both the individual and group levels than RAMP currently accommodates.

Attitudes Toward NISD Data Systems. Attitudes toward NISD systems also affected the way these systems were used. Quantitative data revealed that the perceived utility of current district data varies by role. For all but teachers, the *Computer Data Systems* scale was ranked the second-lowest, only behind *Time* (see Table 2). Teachers and those in instructional support roles generally were more positive regarding the appropriateness and efficiency of district data systems ($M=3.07$ and $M=3.12$) than were either building administrators ($M=2.83$) or central office staff ($M=2.57$). Interview data produced mixed results. Various persons in all roles expressed a desire to access data and described methods (both efficient and inefficient) of currently accessing and organizing the data they perceive to be relevant. However, persons in all roles also expressed levels of frustration that current systems do not provide easy access to integrated data in formats that are easily manipulated so that data are meaningful and organized in a useful way. Nearly unanimously, NISD educators believed their systems were cumbersome to work with, primarily because disparate programs did not “talk” or share data.

Several participants expressed frustration at what they perceived as redundancies in current data systems. This was most apparent with various referral and tracking forms that must be completed for students in ELL programs, for Special Education referrals, and for Student Success Team collaborative sessions. Specifically, several forms require the same information and ask similar questions, thus administrators (or teachers) must return to various systems to pull up the same data, rather than having the forms housed in the system and automatically populating with any available data.

Comments from one administrator were typical not only of mounting frustration, but of optimism at what could be accomplished with more effective data systems:

We have forms to send a student to alternative placement...if we are doing RTI on a student, and a teacher wants to refer a student to our student support team, we have all these forms, and on all of these forms, we are required to load the data. And it's like you're having to pull the data up, retype it into this form. There's many more, but those two we dealt with this week. We have a student who needs to be referred to PSST, and there's these forms that need to be filled out and part of that form is data. If that could just be pre-loaded and you pull up the form and type in the kid's name, and all of the information on that student gets dumped into that form—so now teachers are concentrating on what interventions have we tried? What do we think we could try? What are other ideas? We get to the meat of what we want to do with that child. And then the same thing with the OC forms. There's three separate forms, all of them ask for the same information. It all comes from a system that any school should be able to pull information from.

Similarly, another administrator commented on summer school registration: “We had parents who wanted to register their student for the summer. We had a blank form that said where do you live, what’s your name, what grade is your child in? As a point of customer service, we already have this information. Why are we asking for it again and again and again?”

Educator attitudes were often negative about the interfaces they dealt with, particularly in SIS and DW. Interviewees generally reported that they found SIS non-intuitive, and expressed frustration that certain data are archived each year, making longitudinal queries difficult and time-consuming. Users exhibited more variation about the user-friendly qualities of DW. Some teachers reported that DW was “easy” to use and indicated that they accessed the system frequently for information on students. Other respondents—including some central office and campus administration respondents—noted that the filters and query process could be cumbersome or laborious. Regarding both systems, users complained that some reports required lead time because the persons putting those reports together must access information from multiple systems, and sometimes, multiple departments.

District Supports for Using Data

As noted in the introduction, we view data use in NISD through the lens of the Data-Informed District. Consequently, there are a number of ways in which the district can provide and direct support for effective data use. Regarding these supports, our data uncovered five themes that will be discussed in this section: (1) District vision, (2) Professional learning, (3) Time, (4) Collaboration, and (5) Principal leadership.

District Vision

Since the effective use of data stems from a clear district vision for teaching, learning, and the conduct of education, we asked educators for their understandings of their district’s vision. Survey respondents strongly agreed that the district had set forth a vision for education. In fact, the *District Vision* scale ranked highest of all the scales ($M=3.49$; see Table 2). All roles scored highly on this scale. In contrast, our interview data revealed widely varying definitions and articulations of what this vision is. Thus, while NISD educators generally agreed that there is a district vision for education, there is substantial disagreement on what it is.

Several characterizations of district vision emerged in interviews. For instance, some defined district vision in terms of the district’s guidance for implementing curriculum and instruction.

Some educators mentioned mottos or slogans. Few participants, however, produced the motto verbatim. Many started with the first few words and then described what that meant to them on their own terms. Teachers were sometimes negative when they used this motto to describe vision. Central office members and campus administrators were more uniformly supportive of this motto. In addition, a few central office members also suggested that the district’s vision was a prior motto. No teachers or campus administrators produced this motto.

Data use was occasionally mentioned as being part of the district’s vision, but it varied by role. This was especially prevalent among central office members, whose positive attitudes especially pertained to data’s capacity to support individualized attention and fidelity to curriculum. Teachers and administrators were also positive about data and the district vision, but a few teachers also had mixed feelings in this regard. Teachers in particular described how it was hard to put the students first when the focus seemed to be on TAKS or other data.

Two other role differences are noteworthy. First, school administrators most frequently described the district vision as relating to personalized attention to students. This included talk about creating caring school communities, celebrating children, or helping individual students beat the odds. In describing vision in this way, several administrators also mentioned the role that data can play in focusing on individual students' needs.

Second, we found teacher responses about district vision to be much different than other roles. Some teachers seemed clear about vision, but more seemed unaware – the most frequent response to our vision question was some version of “I don't know” or “it's not clear around here.” During our interviews, teachers seemed to be discussing vision for the first time, attempting to develop consensus as they went along. Teachers were often negative about vision in terms of mottos and slogans.

Not all teachers were negative and unaware regarding district vision, but the difference with other roles was striking. One teacher's comment was telling: “a lot of us are more concerned with the kids than knowing the mission statement that someone else [created] without our input.” We heard this sentiment from many teachers, suggesting that teachers may feel left out or marginalized by the visioning process.

To this end, respondents also demonstrated a lack of consensus about what mechanisms best transmitted the district vision. Many perceived transmission to be “pushed out” from the central office, such as via guidance for curriculum or other formal policies, structures, or newsletters. Less frequently mentioned, but also considered meaningful, were collective events, such as convocation, professional development, and induction.

Professional Learning

We questioned participants specifically about how they were supported in using data. Much of the *Support for Data Use* scale is comprised of questions about training and we asked interviewees specifically how they were supported in learning data techniques. All roles averaged near 3.00 on the *Support* scale (see Table 2), indicating they feel supported, but that there is room for improvement. The interviews turned up similar results, highlighting specific examples of professional learning for data use and common complaints about insufficient training. Further, we received 40 comments from the open-ended portion of the survey that dealt with professional learning; most were asking for more training on data use, and many stated explicitly that they would like more training on how to use data.

Central office administrators described professional learning opportunities they provided, most frequently citing summer professional development on data systems and collaboration with principals. One common model for working with principals involved providing training sessions, from which the principals then were expected to train their faculty.

Campus administrators also cited participating in this training (most frequently on how to analyze TAKS and the CBAs). However, their comments indicated that this structure of training may not be sufficient to meet teachers' data use needs. Several campus administrators noted that while they received training from central office, their teachers did not have the same opportunities to learn about using data. Lack of time to provide this “turn-around” training for their teachers was cited as a barrier. For example, one campus administrator said, “I would say that we are given more of an opportunity to study the data, we go to trainings quite frequently to study the data. I don't think the teachers have the opportunities as much as we do. And I think we are really the ones who have to provide that training back to them. But again, when do you do it?”

Many teachers who were interviewed expressed frustration with what they perceived as a lack of learning support around data. This frustration appeared to be compounded by district and campus expectations that teachers use data regularly. A dialogue from one pair of teachers illustrates this:

Teacher 1: Last year they gave us days to do the data, but they never gave us direction.

Teacher 2: That was within our staff development, but again it was too much and it wasn't anything specific.

Teacher 1: All it was, was 'Here's where your kids are failing.'

Teacher 2: It was too broad.

Similarly, a secondary teacher lamented, "[In the] last staff development, they gave us the item analysis from the last TAKS test, but we didn't have enough time to really get into it and analyze my own teaching."

Although primary and secondary teachers agreed generally that training was insufficient, secondary teachers were markedly more vocal. Several secondary teachers felt that the training that the district and campuses provided was not relevant to their needs, and they argued that training in data use should be differentiated for teachers. For instance, one secondary teacher said, "I think there are leaders on the campus, not administrators, who lead these PD days who don't understand the relevance of looking at this data and applying it to what we're doing to be able to relay that information to the teachers, so that we understand the relevance." Another secondary teacher was similarly critical of a district training on data use, noting:

The big push right now is to make sure that what we're teaching our kids is relevant, so why do I need to learn these things? If you make me sit at a meeting, and they go through a PowerPoint, and blah blah blah – I'm not going to pay attention. But if you give me someone who can come and show me how to use it and how it fits in with my instruction, and it's hands-on, I'm going to remember it. I think so much of our training has been, here is a power point, your students did well here, they did not do well here. That's what a lot of the conversations have been.

Instructional support personnel play an instrumental role in helping teachers work with data. A few instructional support people said that they worked with teachers to reflect on practice using student data, something they said the district should support more. Unfortunately, much of the work that instructional support personnel do appears to occur in an ad hoc fashion and may even serve as a bottleneck. For instance, some of the instructional support professionals reported a common task was to provide data to teachers. One instructional coach illustrated the dual roles of being a data provider and a pedagogical support: "We collect data by grade level, and then as a coach, I look at trends and then for a certain grade level meeting might say what I saw in the DIBELS. I then might give activities that might help them in that in small groups. [...] They don't pull up the data. In my experience, if we give them the data, they're thankful and say, 'what do I do with it?'"

Time

In NISD, there is a stark absence of an important resource in using data: the time to do it. All of the data are clear on this point. However, an associated positive finding was the educators throughout the district *want* to use data, even if they do not have the time.

Table 2 shows that the *Time to Use Data* scale averages lowest; for all roles, educators display considerable disagreement that they are given sufficient time to use data. Interview data

suggest that educators believed they were spending too much time operating data systems, did not have sufficient time for analyzing data, and were not given sufficient time to plan using data. Further, we received 58 comments about time from the open-ended area of the survey, all of which dealt with the need for more time. Some comments were general (and sometimes vehement), such as, “We need TIME, TIME, TIME!” Many others were related specifically to data use, such as, “The amount of data available is overwhelming when we are not provided enough time evaluate it.”

From top to bottom, educators in NISD reported spending too much time accessing and pulling together data from disparate data systems. As is noted in the *Computer Systems for Using Data* section above, NISD has at least 58 data systems, many of which are not interoperable. For example, one central office administrator noted that, “there are times when we have systems that don’t talk with each other, so some things you have to hand crunch. So, it would be nice if our systems talked to each other. We can get the information, it’s just the time spent to do it.” Several instructional coaches described how they spent a substantial amount of time accessing data for the teachers so they did not have to take more time away from instruction or planning. An elementary school teacher shared that, “[...] that’s the biggest problem, that we’re having to go to so many sources to get what we need.”

Educators, particularly teachers, do not feel that they have sufficient time to analyze the data that they either are given or access themselves. For this reason, many teachers reported feeling inundated with data. For instance, one secondary teacher said, “There’s no time to really look at data. We had one professional development day where the word data was thrown out. We reviewed Kilgo, but I haven’t picked it up since. We have to keep moving forward, even though I think the data is important. We need time to really make good use of data.” This last point is particularly important because it highlights something else we heard: while time is a problem, educators *want* to use data. Teachers want data so they can plan lessons and learn more about their students. Administrators want data so they can connect disparate pieces of information and run analyses, whether at the district or campus level.

Besides time to analyze, educators complained that they also did not have sufficient time to plan future directions using data. This fact was particularly frustrating for teachers, who knew they were expected to use data to plan their lessons, but also felt that they did not have the time to do so. Campus administrators and instructional support also recognized this problem. One campus administrator said, “Obviously, [conference periods are] not enough time for [teachers] to do what they need to do, so they usually set aside another day during team meeting time or after school where they are planning in small groups or the whole team.” Similarly, a secondary teacher lamented not having sufficient time to plan collaboratively around student data, noting that, “The freshmen [teachers] have common planning periods, but nobody else on campus does. So, we end up having to meet before and after school, at lunch, because we don’t have a common period to sit down together.”

Finally, we note this important finding: our data revealed few instances of structured, systemic time to use data. Educators throughout the district are expected to use data, but are also expected to carve out the time to do it. Structured time is not without precedent in NISD – we uncovered a few examples. To illustrate, even the secondary teacher in the paragraph above has seen what it can be, finishing the above comment with, “[...] Last year we had great teams-vertical and horizontal teams-and we created interdisciplinary units for our kids, and we could support each other.” Unfortunately, instances such as this were few and far between.

Collaboration

In assessing for supports for data use, we also examined patterns and levels of collaboration in the district. To this end, we learned about a number of promising practices, as well as a few barriers to improving data use.

NISD educators tended to describe opportunities for sharing knowledge and collaborating around data generically. This included informal meetings with other teachers, coaches, or educators, as well as formal planning times. Examples of regular team meetings included those for grade levels, vertical teams, or committees. At the high school level in particular, professional development days seemed especially beneficial.

While these forms of collaboration were beneficial, barriers were also reported. Repeatedly, school staff mentioned how the lack of time and scheduling constraints, as well as unpredictable demands on time, could be a barrier to collaboration. Central office members were especially likely to describe challenges to sharing and distributing information, because spanning departmental boundaries could be challenging. Some ascribed this to incompatible data systems, while others described issues with department jurisdictions or lack of familiarity with other departments and their data.

Teachers were the group who mentioned collaboration the most, and frequently spoke of collaborating with other colleagues. Many examples related to routine lesson planning, as well as planning in accord with the bundles or common assessments. Less frequently, teachers also mentioned more intensive forms of collaboration, such as writing common assessments, troubleshooting instruction, or in-depth analysis of benchmark data.

Administrators were positive about supporting collaboration among teachers. One administrator described how providing teachers collaborative time allowed them to share “jewels of knowledge” and best practices. In addition, administrators also reported collaborating directly with teachers. Most frequently mentioned were collaboration relating to RTI, analyzing TAKS and CBA results, and general monitoring of student progress, retention rates, or grades. Administrators also mentioned (though infrequently) sharing discipline data or other data from administrative meetings with teachers, working with teachers to plan professional development days, or helping teachers with curriculum or instruction.

Perhaps depending on their relationships with their school administrators, teachers had mixed feelings about collaborative activities set up by their administrators. Some were positive, while others reported wishing that their time was better honored and respected. For instance, one teacher group described how their principal regularly mandated that each teacher hand copy scores from DW in order to then meet with her individually to “explain” their test scores. The principal, on the other hand, saw this as a positive practice and intended to extend these data and accountability exercises to large group events.

Principal Leadership

Principals are a key to effective data use. They use data themselves, lead faculties in using data, help others use data, and serve as an integrator between central office and campus educators. Our findings indicate that while NISD administrators themselves report frequent and extensive data use in their roles, there is much variation across NISD campuses in the capacity for data use. Much of this can be attributed to leadership actions.

Campus administrators who responded to the survey were very positive about their data use. Table 4 shows that campus administrators had the highest reported frequency of use of TAKS data ($M=2.87$), other formal assessments ($M=2.45$) and other student data (such as

disciplinary info; $M=3.37$). Table 2 shows they also had the highest confidence ($M=3.92$) in the effectiveness of data use for pedagogical improvement and were the most positive in their attitudes toward data ($M=3.71$).

In visiting schools, we found consistently similar attitudes and cited uses of data. However, we observed that the differences in data use capacity across campuses were largely attributable to the degree of connection between the principal and her or his faculty. In some schools, the administrative and teacher focus groups were similar in how they described data use. In some other schools, the two groups were very dissimilar, to the extent that some seemed as if they were in different schools. Data from the survey suggest that an administration/teacher disconnect may be somewhat widespread in NISD. Table 2 shows that teachers averaged lower in their attitudes towards data, averaging .50 points lower on the *Data's Effectiveness for Pedagogy* scale and .57 points lower on the *Attitudes Toward Data* scale. This theme runs throughout the following descriptions.

Campus administrators frequently mentioned their own use of data as a form of modeling data use for their staff. In schools that seemed aligned between teachers and principal, teachers were able to describe their principal's expectation for data use. Examples of specific expectations included: (1) grouping and regrouping students for instruction; (2) monitoring student progress for students in special programs (e.g., ELL, Special Education); (3) identifying students with needs and guiding practice, and (4) using data in planning common assessments.

In schools that seemed misaligned, our data pointed to a lack of clear expectations. In some cases, the principal was unable to clearly tell us about expectations for data use. In all cases of misaligned schools, teachers were unable to describe these expectations. As one teacher put it, "I don't know what the administrators expect. If I need anything, I get it from my department chair or instructional coach. I'm not that familiar with what the administrators expect. I know what my department expects." Other interview data demonstrated frustration with administrators who teachers perceived as establishing clear expectations, but then not providing the campus supports or time to successfully meet those expectations. One teacher asserted, "[Our principal] says we need to do it [use data], and then that's it. There's no allocation of time. There's no follow through or follow up. No accountability."

On some campuses, teachers reported planning with their administrators – particularly at staff development days and when the administrators prioritized attending team meetings to dialogue about student data with teachers. Others noted that their administrators frequently brought data printouts or reports to them (individually and as a group) to use as the basis for discussions. Still others noted that their principals frequently referred to data use in verbal and written communication with them.

On other campuses, teachers expressed frustrations with their administrators' attempts to lead for data use. Some reported an overabundance – and even misuse – of reporting. For example, one noted, "They listed the teachers who had 10% or higher failure rate. So what, now there's a pressure for teachers to pass all of these kids? Look, if I'm doing every possible intervention I can, and the kid is still failing the class, I'm sorry. I don't know what else to do." Another reported that the meaning was lost in the abundance of reporting in a campus newsletter: "...it has the number of referrals broken down by ethnicity, the types and number of each type of referral, at least 15 different categories and ways to break things down. Just crazy." In these instances, the intended meaning behind the reporting appears to have been lost.

The wide range of data skills among educators—including campus administration—was a frequent theme. Some teachers indicated their principals were able to help them learn to use data

systems and led dialogues to analyze results. Others were more critical of perceived inconsistencies in the abilities of campus administrators: “They expect that we use the DW system, and that in our meetings we’re analyzing the data together. But to be honest, there are leaders on this campus who don’t know how to analyze the data. And so you have pockets of teachers who are really good at using and analyzing data, and then you have pockets of teachers who just follow along with what those folks are doing, but they have no idea how to access any of their data.”

Some teachers even reported that while their administrators verbalized a message regarding the necessity to use data, they did not believe that the administrator really bought into the efficacy of data use:

Teacher 1: Well, we know it’s coming from the district, but we hear it from our principal. And we get that monthly email from the superintendent and it’s a bunch of numbers about things that have to be done.

Teacher 2: We know when our administration is discussing it [data] with us, we know where it’s coming from.

Teacher 3: No one thinks that it’s [the principal] who’s pushing this data stuff, we understand that it’s the district and then the state. We understand.

Finally, we note that some in the district offices were aware of the key role played by the principal – and of the inconsistencies we have described here. One central office administrator whose role afforded him/her the opportunity to see data use at several campuses said:

The principals are really key for the buy-in. We have had lots of discussions about what we want classroom instruction to look like, and you can see variation from campus to campus as far as the buy-in. I would say that administrators often have their own idea of how things should look and their campuses reflect that. But we don’t have good data on that. The data do show that when a campus is implementing the instructional strategy eagerly, [the data are good]. And on a campus where they’re not as passionate about the implementation, data don’t look as good. Yes, maybe everyone is passing TAKS, but we want a lot more than that. [...] As a district, the expectation is that data are used to make decisions. The campuses, for the most part, share that culture, in some cases not so much. If there’s not the expectation from the principal – they have so much power on their campuses. That is their campus.

RECOMMENDATIONS

Introduction

In this section, we offer our recommendations for how NISD may become a Data-Informed District. These recommendations were developed by viewing the findings of our study in light of our professional expertise and prior research on education, data use, and systemic improvement.

NISD is well-positioned to use data effectively. Educators throughout the district are already using a variety of data in several forms, many structures are already in place to facilitate data use, and attitudes toward data use are positive throughout the district. Unfortunately, we observed that the effective use of data was a difficult endeavor in NISD and is not likely to get easier without some changes.

Traditionally, educators have collected a plethora of informal observations and synthesized this information to improve their craft. Our recommendations offer ways to add formal observations (data) to this information and to make it easy for educators to use data. We submit that *professional judgment* is the glue that holds this information together and, ultimately, is what makes the information useful for educational improvement. But professional judgment cannot be bolstered and improved by data unless the use of data is woven into the *everyday work* of NISD educators. Doing so strikes at the heart of why educators chose this path: to educate students.

Integrating data with professional judgment – and aligning these throughout the district – can transform your school district into a learning organization where knowledge, ideas, and capacity-building are the norm rather than the exception. Such districts are exciting places to work and even more exciting places to learn.

Accordingly, we have built our recommendations on the themes of information, professional judgment, everyday work, and support structures. In presenting our recommendations, we first offer a brief summary of findings, followed by a set of tenets that we believe should be the cornerstone of the NISD data initiative. Next, we present recommendations in six areas: (1) Common understandings, (2) Computer systems, (3) The principalship, (3) Time and collaboration, (6) Professional learning, and (6) Other important issues.

We believe the recommendations offered in this report can help NISD create a data initiative that aids educator work and improves student achievement. Many of these recommendations will require hard work, careful thought, and tough decisions. We will work alongside you, offering our expertise while also learning from yours. In the end, we believe the educators and students in NISD will be better for this partnership.

The time is right for this work – your district is ready and your educators are ready. We are looking forward to helping your district in this endeavor.

Summary of Findings

The findings presented in this report paint a comprehensive picture of data use in NISD. In collecting and analyzing these data, we uncovered many positives. For instance, attitudes toward data and its use for educational improvement were mostly positive. NISD educators generally saw data as useful to their craft and often wanted to use data more. We saw no evidence of differences by experience in educators' data use or attitudes towards data. We observed many strong leadership practices at the building level and noted a commitment to the

effective use of data by district central office staff. Finally, we observed some structures in place that will effectively support data use, such as the district-wide articulation of curriculum and its connection to data.

We also learned about many barriers to the effective use of data for educational improvement. For a number of reasons, using data in everyday work is too hard. First, we found a lack of unity on critical definitional components, such as district vision, definition of learning, and how data are to be used. Our findings also show that computer systems are an important barrier to effective data use – current systems are neither integrated, nor easy to use. As a result, educators often cobbled together their own systems in an effort to use data better. Also, although NISD educators were expected to use data regularly, they were vocal and consistent in describing the lack of time they were offered to use data. Similarly, we identified a lack of training and learning opportunities. Finally, we identified issues related to the principalship as barriers to data use. Principals sometimes were unaware how to lead faculty for using data and messages about data use often differed between administration to faculty in the same school.

The Tenets of Your Data-Informed District

In establishing NISD as a Data-Informed District, NISD educators should look to create an environment where the conduct of education is aligned and understood throughout NISD, appropriate data are used to inform each decision, and where *professional judgment* brings these all together. Data do not “drive” anything: data are tools used by educators to constantly improve practice and the student experience. As a district, NISD should endeavor to use data in a manner that is efficient, effective, and professionally rewarding.

To this end, it is important to articulate a core set of beliefs, or *tenets*, to be followed as the cornerstones on which the NISD initiative will be built. These tenets should be publicized and should guide all decisions.

In the Nameless Independent School District...

- **Data are used for educational improvement, not just accountability.**
Data use should be built on a foundation of improving teaching and learning. Reporting results and achieving desired ratings is important, but is only one component of this larger charge.
- **Data inform professional judgment.**
It is professional judgment that makes data useful. By themselves, data are merely numbers, words, or observations, but when viewed through professional judgment, data are powerful tools that can inform and improve practice.
- **Teachers are supported as important users of data.**
Teachers should be the most avid consumers of student data and supports should be provided to consistently increase teacher capacity to use data.
- **Effective structures support data use at every level.**
Data use is effective when supported by structures, routines, and processes. Examples of structures are dedicated time, effective computer systems, and relevant training.
- **The vision for education is aligned and defined.**
Definitions and vision of student learning and the conduct of education must be agreed upon first, then the use of data must be tied to these.
- **We build it together.**

Policies, structures, and definitions for how data are to be used must be built jointly, with every voice heard.

- **Collaboration is key.**
Collaboration should be highlighted and valued as a critical mechanism for using data to change practice and effect professional learning.
- **Data are used in the course of everyday work.**
The use of data should be conducted within the normal tasks performed by the educator, particularly teachers. Support should be provided to ensure this happens in a professionally supportive, not burdensome, way.
- **Data use is supported with the best technology.**
Cutting-edge data systems should be provided that make access to educational data easy, efficient, and user-friendly.
- **Professional development is frequent, differentiated, and immediately useful.**
Educators should be provided frequent, ongoing opportunities to increase their knowledge of how to use data and improve practice. These opportunities should be short in length and directly relevant to the work of the educator.
- **Professional learning is embedded in every endeavor.**
The learning that educational professionals gain from data comes in a variety of ways. Consequently, all data activities should be constructed with professional learning in mind.

The following sections provide detail of what NISD should address in establishing a Data-Informed District. The above tenets guide our description of these details and their subsequent implementation.

Common Understandings: The Calibration Process

Research on educational data use (and more generally, organizations) shows that the use of data is more effective when there exist common understandings of the goals and aims of education, and when the use of data is tied to these (Ingram, Louis, & Schroeder, 2004; Senge, 2006; Wayman, Midgley, & Stringfield, 2006). We want to see NISD establish these understandings so data use is more closely aligned throughout the district – not in a prescriptive way, but in a way that allows educators to more easily share practice and build capacity. We hypothesize that educators or groups that speak the same “data” language can more easily build relationships and learn from each other.

When we speak of “common understandings,” we do not imagine finely-detailed definitions to which everyone must adhere in lockstep fashion. Instead, we imagine understandings that are common at some level, but allow for variation in how professional practice is applied throughout the district. And we believe everyone in the district should have a voice in how these definitions are built.

Our findings indicate that understandings of educational vision vary widely in NISD, and consequently, NISD lacks alignment and synergy in using data. We believe this is hindering effective data use in NISD, so the development of clear and agreed-upon beliefs about education is a critical structure that NISD must establish.

Our findings highlighted many contrasts. The survey data showed strong agreement that there was a vision for education in NISD, but interviews showed little agreement about what this vision was. High-level district administrators knew how they wanted to focus education in NISD,

but this focus was getting out to NISD educators in many forms. And contrary to the intent of district administrators, who were dedicated in their intent to create an inclusive culture, the mechanism for delivering this focus resulted in a perception that district vision more centrally-pushed than commonly-held. Given these contrasts, it was nearly impossible to create a consistent, efficient process of data use.

We believe these contrasts are largely due to a lack of articulation, definition, and inclusion regarding district directions for education. A process called *calibration* offers a good solution that can build upon the strong culture of education in NISD. NISD educators can build their data initiative directly on this work.

Calibration

The process of *calibration* (Wayman et al., 2006; Wayman, Cho, & Johnston, 2007) is important to establishing a Data-Informed District. Similar to how a mechanic might calibrate the numerous working parts of an engine to create synchronous efficiency, so must NISD educators commit to a calibration process to reach some common definition of education and how data support education. This process can help establish a commonly-held, clearly-articulated direction of how education is to be conducted in NISD, and link their uses of data to this direction. This process must be inclusive at every level of the district. Finally, this process must also accommodate the diversity of creativity present throughout the district.

A district may engage in calibration in many ways. Similar to the work of DuFour, Reeves, and others, we suggest starting with a tight focus on teaching and learning, driven by the following four questions:

1. What do we mean by learning and achievement?
2. How will we conduct and support teaching and learning?
3. How will we know teaching and learning when we see it?
4. What action will we take based on our results?

Question 1 deals with a variety of goals and definitions surrounding student learning. Research has shown a wide variety of opinions is held by educators about what learning is and how data may support this (Ingram et al., 2004, Wayman, Cho, & Johnston, 2007). Without these definitions, it is impractical to imagine data being used effectively (i.e., if we do not know what learning is, how can we measure it?).

Question 2 deals with how education is conducted in NISD and how various entities affect this educational process. The most obvious ways of conducting education are seen in classrooms, school buildings, and district policies. Data can play a key role in how education is conducted for every level and group.

Question 3 deals with the assessment of learning. Our findings indicated that many types of formal and informal assessments (e.g., TAKS, curriculum-based assessments, quizzes, grades) are already entrenched in NISD. Through the calibration process, educators at every level will judge the suitability of these measures and jointly explore appropriate changes.

Question 4 deals with varied aspects of the feedback cycle. Such aspects include how data should be interpreted (also undertaken in Question 3), what actions are appropriate based on data interpretations, and what resources can be drawn upon (e.g., content resources, district programs, or even systemic change processes), to name a few. It is in exploring this question that NISD will describe and create effective ways to change practice based on data.

Once visions and definitions are established through exploring these questions, all uses of data must be connected to them at every opportunity. Everything comes back to these definitions.

Conducting the Calibration Process

It is important to note that the calibration process must be undertaken by the district as a whole as well as separately at each level. It is true that the district must articulate definitions regarding the conduct of education. But it is also true that other levels (e.g., classroom, subject, or even various central office departments) must articulate their own understanding of education, and that this must align with the district articulation. Further, given that school districts are ever-changing organizations, this process should be undertaken yearly.

By now, it should be clear that the calibration process is an organic one that does not lend itself well to a set of prescriptive steps. Much of the process will be determined by your understandings of how NISD educators best work and communicate. Beyond the structure given by the questions above, we offer some suggestions to consider.

It is important to include every district role in this process and somehow allow every individual educator to have a voice. To do this, we suggest forming numerous groups at various levels of the district and creating a process to combine the results of these various discussions. Further, we suggest that the discussions within these groups be guided by a protocol and process.

District-wide agreement on the articulations produced by calibration is paramount. Consequently, the aim of this process should be to establish agreement, regardless of the degree of granularity. Especially at first, agreement about the fine-grained details of important concepts such as teaching and learning may be unattainable – research has demonstrated the wide range of definitions that educators have about what “learning” is (Ingram et al., 2004). But it will be possible – and necessary – to establish agreement at *some* level of detail, even if this detail seems large at first.

It is also important that the process and outcomes are aimed at helping individuals understand how their roles – their work – fits into the district, building, and other visions. Individuals each should understand and be able to articulate visions that affect their roles. They must also understand the place of their roles in these visions – how their roles contribute to these visions, how their roles affect other roles, and vice-versa. We believe these understandings of role will help the individual better situate how their personal skills and talents can improve education.

Throughout this process, NISD must produce written documents that clearly state district, building, and other entity positions on each aspect deemed important by district educators. Creating such documents provides clarity and transparency, helps to establish a formal structure for learning and data use, and creates historical artifacts that can ease transition for district newcomers. We believe calibration is most effective when these documents are made public.

NISD may wish to establish a steering committee that will assume responsibility for the calibration process (and perhaps the success of the data initiative as a whole). This committee would be charged with aspects such as organization of meetings, compilation of documents, and follow-through on important tasks. It is important to be clear that this committee guides the process – but does not define the outcome.

Regardless of how the process is designed, we recommend that it begin with a pilot process that involves a small number of educators district-wide. Once this process is complete, adjustments can be made so the full process may be planned and executed. Time is of the essence because your data initiative can proceed effectively only after establishing these definitions.

Finally, we note that NISD is well-positioned to undertake this process. Many structures are already in place that can be built upon, such as the articulation of curriculum bundles. In

addition, attitudes are positive toward the use of data, so we believe NISD educators will welcome this process.

Computer Systems

An assertion by Wayman, Stringfield, and Yakimowski (2004) is even more true today: effective data use is untenable without proper technology. This was evidenced in the data we collected, which were clear that computer systems for managing and examining student data in NISD were a major hindrance. Computer systems in NISD did not link or share data, and educators reported that many systems were hard to use. Teachers were particularly burdened. Fortunately, help is on the way – NISD has purchased a data warehouse that will integrate data to provide educators a single entry point to student data.

Data warehouses have been shown to be a critical support in effective data use (Lachat & Smith, 2005; Mieles & Foley, 2005; Wayman et al., 2004). Data warehouses organize data from disparate systems and make them available for use such that the data appear to be linked in one database. In doing so, these systems address problems of redundancy and inaccuracy because elements common to many systems (e.g., gender, ethnicity) now are drawn from only one place, rather than multiple disparate systems.

As a result, NISD will realize exponential gains in the efficiency and effectiveness in data use district-wide. Cast in terms of dollars, an efficient data system will reduce indiscriminate purchases of stand-alone data software and eliminate the need for some systems. Cast in terms of time, efficient data systems can save already overburdened educators and support staff countless hours spent examining data to improve practice or to respond to reporting mandates. Most importantly, efficient data systems represent rapid and thorough ways to diagnose the learning needs of children.

All of this is true only if the aims of use for the data warehouse are appropriately conceived, a user-friendly interface is provided, and the warehouse is properly installed and rolled out to users. In the following sections, we discuss these issues, finishing with a look to the future of NISD data systems.

Aims of System Use

Effective computer systems can drastically change the landscape of data use in NISD. If properly conceived, they will provide an important structural support to an educator's work day that delivers *more information* to educators in *less time* and in far *easier fashion* than current systems do. We like to think of it as "shortening a teacher's day." As much as anything, it is computer systems that make possible the uses of data foreseen in this report.

Accordingly, one aim of system use should be the expectation that everyone who can benefit from student data is a user – an independent user who is not dependent on others for accessing and printing data². To make this happen, the system must be designed so that users can quickly and easily get the data they want out of the system. Data use with this sort of system should be efficient and enjoyable, such that it facilitates the everyday work of educators. It should also be comprehensive to the point that NISD educators do not need the individual data systems they currently have cobbled together.

² While we advocate independent use, we also recognize that one of the great benefits of an effective system is the collaboration it fosters (Lachat & Smith, 2005; Wayman & Cho, 2008; Wayman & Stringfield, 2006)

NISD should consider teachers to be their most important users and should expect that every teacher uses the system daily, in the normal course of their work. Certainly, users in other roles are very important and the system should support them also. But research suggests that teachers are often ignored in conceiving of a data system (Wayman & Cho, 2008), even though they can greatly benefit from the services a system provides (Lachat & Smith, 2005; Wayman & Stringfield, 2006).

These aims will require proper support and planning, such as a user-friendly interface, proper training, and structural supports (e.g., time to use the system, opportunities for collaboration in using the system). These issues also speak to the larger district initiative and are discussed in more detail elsewhere in this chapter.

Finally, we note that system planners should be aware of the sometimes surprising speed at which their users can build capacity. In exemplary implementations of data systems, we have seen educators – particularly teachers – quickly take the lead in using data (Wayman & Stringfield, 2006) and are often out in front of planners. Leaders in the Wayman & Stringfield study (2006) reported this to be an exciting, positive experience.

System Interface

Critical to the above aims of system use is an intuitive, user-friendly interface. Wayman et al. (2004) suggested that anyone who can check the weather on the Internet should be able to easily navigate the interface of a student data system. It is unlikely that the Cognos data warehouse purchased by NISD will provide a system with this type of interface. While Cognos should do an excellent job in warehousing, integrating, and storing the data, no system or company provides everything needed for effective data use (Wayman & Cho, 2008; Wayman et al., 2004). Consequently, NISD should look to partner with another company in providing an appropriate interface.

It is possible that NISD may be able to build a good interface internally. We caution against this, however, because of the experience commercial vendors bring to the problem. If the expertise exists in NISD to build such an interface, we suggest instead that this expertise be directed toward working with the vendor to identify or perfect the interface that best fits district needs.

NISD should establish a committee (that includes educators of all roles – particularly teachers) to identify exactly what this interface should provide. The committee should begin with a few ideas of what they would like in an interface, then invite vendors to do demonstrations through a Request for Information (RFI) process. The RFI process will help the committee learn available features and gain new ideas. After the RFI, the committee should produce a clearly-written Request for Proposals (RFP). Among the features that should be pursued include a simple ad-hoc query tool; pre-formatted reports; familiar web elements such as drop-down menus; clear and comprehensive student history reports; “drill-down” features that enable users to explore data; flexible and easy-to-understand graphical representation; and online access that allows educators to work from home (Chen, Heritage, & Lee., 2005; Wayman & Stringfield, 2006; Wayman et al., 2004).

System Rollout

In implementing its new data system, NISD should take care that the “rollout” (i.e., the release of data system functions to users) goes slowly and carefully. The data warehouse will contain a wide variety of functions that cannot be used all at once, so users will be overwhelmed

by the amount of data available if the entire system is rolled out at once. Also, rolling out in pieces allows the district to apply fixes more effectively.

To engage users and build support, district personnel should begin with the portions of data and system functions that will provide the most value and immediate impact. In particular, educators were most vocal in asking for integration of disparate forms of data and longitudinal access. Since CBAs and TAKS were the most commonly-cited data used at every level except primary levels, we suggest that the first rollout of the data warehouse focus on making those data available, longitudinally, along with relevant demographic characteristics (e.g., gender, ethnicity, attendance). After users are familiar with and using the system to access these data, a second rollout phase can contain functions targeted at specific levels. For instance, elementary teachers could get access to reading inventories such as TPRI, DRA, or DIBELS, and secondary teachers could get more detail on the CBAs or SAT results as they relate to standards.

First impressions are important to district-wide support of the system, especially in light of the low level of patience some educators showed with their technology. Therefore, the initial rollout must go flawlessly. A few examples of issues to address include the following: District officials must make sure the initial rollout contains no errors in the data. Adequate response time will be important to build educator confidence, so checks must be made regarding the capacity of building infrastructure to respond to system queries. (In fact, the district may want to consider a pilot rollout initially.) Finally, we recommend the system not be rolled out until the interface is fully in place and functional.

Having observed instances where confidence in a system was low because training was too distanced from system rollout or system functions (Wayman, Cho, & Shaw, 2009), we believe it is critical to systematically provide training during rollout. We recommend that NISD tie rollout of any system function to training on the data themselves and the functions that access them. Further, we recommend that each rollout be tied to a short-term activity that each building is required to do. To illustrate, we forward an example, using the TAKS and CBA data:

On Monday, there is a day-long, district-wide staff development day that focuses on important details about the use of TAKS and CBAs³. These details include information about the data themselves and information about how to use these data to adjust practice. In addition, a portion of the day is spent rolling out isolated features of the new system, showing educators how to access these data in a variety of ways that support other learning from this day. At the end of the day, each building, office, or team defines a short project in which they will engage, using their new skills (e.g., lesson plan together around a new curriculum bundle, or create common assessments). On Tuesday, there is dedicated time set aside during the school day for teams to meet and plan how they will complete the project. On Wednesday, Thursday, and Friday, there is dedicated time set aside for teams to work on and complete the project. There could even be a component where results are shared within buildings or district-wide.

In this example, rollout happens along with training on *uses of data*, not just system use. And it is connected directly to an educational improvement exercise that uses these newly-trained skills.

Future technology needs

Implementation and use of the data warehouse is only the first step toward technology acquisition that can help change the way education is done in NISD. Consequently, district

³ We understand that training has been conducted on these data. Our data also show the delivery of this training this training has been uneven, so we recommend you start again from scratch.

leaders should have an eye to the future as this data initiative is built. Getting good at using data will highlight other needs that technology can support, both now and as capacity is built. Assessment of these needs will continue throughout the course of our project. For now, we will offer some suggestions of areas to watch.

Once the data warehouse is implemented and used, other systems will need assessing. For instance, is the current student information system (SIS) meeting the needs of your Data-Informed District? Is there a need for an interim assessment system that can deliver CBAs or CBA-like assessments more efficiently? Which systems are now redundant or obsolete because of the new data use structures?

We believe handheld devices should probably play a major role in future NISD data use. Although not yet ubiquitous in schools, we have hypothesized that handheld devices may be a key to truly incorporating data use into the fabric of everyday educational life (Wayman, Cho, & Richards, in press). Specific to the data we collected, we can imagine how much more efficient and useful the walkthrough process would be made by utilizing effective handheld technology.

Finally, we believe NISD should look for effective ways to structure technology in order to connect teacher and student data. As we discuss in another section (see *Other Important Issues*), we believe policies requiring these linkages are inevitable and NISD should be in a position to respond positively – not just in terms of technology, but in a way that is fair to their educators.

The Principalship

The literature on educational data use has been very clear about the important role principals play in the success of data use (Copland, 2003; Datnow et al., 2007; Lachat & Smith, 2005, Wayman, Brewer, & Stringfield, 2009; Wayman & Stringfield, 2006). In short, data use lives and dies in the principal's office. Although our survey data indicated that NISD teachers do not feel entirely unsupported by their administrative teams in using data, we observed ample room for improvement. We believe that the district must immediately provide better support and training for principals to lead their faculties in using data, and if left unattended, these problems will likely render other improvements useless.

We find little fault with principals in this regard. Research notes that most principals lack the training that would enable them to lead faculties in this way (Copland, 2003; Deike, 2009; Hamilton et al., 2009) and data use is new to many. When these issues are coupled with time burdens, it would be unfair to expect principals to discover effective techniques on their own. Even so, we saw some good practices being implemented by campus administrators and an understanding at the district level of the difficult task at hand. We are optimistic that our proposed changes can help the principalship in NISD immediately.

We recommend two primary, immediate focuses for supporting the principalship: (1) provide training in aspects of leading faculty in using data, and (2) establish better principal-faculty connections. In the following sections, we discuss these issues and then describe future issues to consider.

Training in Techniques for Leading Faculty in Using Data

Leading faculties for using data is a difficult task. Research suggests that effective techniques are needed in areas such as collaboration, dialogue, and actual data skills, along with training and strategies for structuring these into the school day (Copland, 2003; Datnow et al.,

2007; Lachat & Smith, 2005, Wayman et al., 2009; Wayman & Stringfield, 2006). As Wayman, Brewer, & Stringfield (2009) point out, the sum of these collective techniques means that principals are responsible for weaving data use into the everyday work fabric of their building.

The district must take the lead on providing these supports and training to principals. This in and of itself may be paradoxical, because district leadership may also lack these skills. Still, we were impressed with the data skills, attitude, and knowledge displayed by central office personnel and we are confident that they are up to the task. Further, it is likely that this training must be mandated for principals, although differentiated.

The immediate set of skills to be addressed includes strategies for setting short-term goals, dialogue around data, effective collaboration with teachers, strategies for collaborative structures (e.g., grade-level teaming or subject-level teaming), strategies for effectively using the data system, and data skills (i.e., what to do with the data).

Besides receiving these skills, principals will also need to learn about ways to properly establish structures to make sure these happen. For instance, none of the above can happen without allocating dedicated, structured time (see *Time and Collaboration below*). Also, within collaborative meetings, it will be very important to structure the tasks within the meetings. Or, it may be that dialoguing around data requires specific structures or protocols (e.g., Boudett, City, & Murnane, 2005; Wellman & Lipton, 2004).

Finally, we note that any implementation of newfound skills and structures must be done in a respectful and collaborative way. We observed principals who were very directive and top-down in their leadership for data use; in these schools, we also observed mistrust and suspicion among the faculty regarding data and the intent of data use.

Establish Better Connections Between Principals and Faculty

In schools where data use was seemingly less effective, we observed a marked disconnect between the faculty and their administration in how they viewed their data use. Sometimes, when we moved from our administrator to teacher focus groups within a school, it felt like we had actually changed schools. These connections seemed stronger in schools that were seemingly better at using data. Still, we believe all NISD schools can probably improve in this regard.

We imagine a school environment where teachers and principals regularly interact in ways that develop shared meaning from data. However, the theme that ran through every mismatch we observed was poor communication. Accordingly, we believe that NISD principals can benefit from training about effective articulation of – and collaborative building of – expectations around data use.

Certainly, the training outlined in the previous section will help forge lines of communication. However, the calibration process will also facilitate this. The exchange of ideas about how teaching and learning will operate in a certain building context should provide core understandings from which these connections may be built. Also, conversations about teaching and learning should help keep conversations about data non-threatening, which has been shown to be important (Ingram et al., 2004; Wayman & Stringfield, 2006).

A (Not Very) Long-Term View: Reconstructing the Principalship

Research on the principal's role in data use is clear that the principal cannot do it alone. Effective models of campus-level leadership all suggest the principal is the key component, but also best when surrounded by competent staff that act as a team (Copland, 2003; Deike, 2009; Datnow et al., 2007; Wayman, Brewer, & Stringfield, 2009). In fact, research has demonstrated

that focusing a data initiative on the leadership abilities of one person is unsustainable (Stringfield, Reynolds, & Schaffer, 2001).

The changes we have recommended will immediately create more work for principals. Given that they have no extra time, just asking them to do more is not an option. We imagine these principals will look to the staff surrounding them for help. As things stand now, we also imagine this solution will be successful in some contexts and unsuccessful in others – our data demonstrated that some staff are prepared for this work and others are not.

Beyond these immediate steps, we believe NISD would be well-served to reconsider how the principalship is currently structured. This could involve moving from a principal-centric model to a model of an instructional team that is headed by the principal. In such a team, leadership, management, and data-related tasks (such as those described above) would be distributed throughout the team while maintaining the connection between principal and faculty. At the least, district administration should be vigilant and proactive to make these changes positive and involve principals and their service organizations in this process.

Time and Collaboration

Our findings indicate that NISD educators are positive toward using data, but the lack of time to do so has made using data a source of dissatisfaction. Educators are not consistently offered dedicated time for using data – and what time they are offered (e.g., planning time for teachers) often amounts to borrowing time from another area. As a consequence, building-level educators expressed dual pressure: (1) they were expected to use data, and (2) to use data, they had to carve out time on their own. We believe these pressures, coupled with inefficient computer systems, have contributed to an overall feeling that educators are overwhelmed by their data tasks.

These results are not surprising, because time is a common theme throughout the research (Datnow et al., 2007; Wayman et al., 2007; Wayman, Cho, & Shaw, 2009a; Young, 2006). That these problems continue to persist in the research base is evidence of the challenges NISD faces in structuring time into an already-full work day.

Certainly, NISD should consider solutions such as reworking planning periods, shifting support positions, or creating new blocks of time. In addition, we maintain that NISD should also consider time as a workday issue – in other words, NISD should look to create time by implementing strategies that embed data use into the everyday flow of educator work.

One example is through more effective collaboration around data use. Our data showed that collaboration is viewed positively throughout NISD. At the school level, we uncovered many quality examples of collaborating about data and we heard examples of principals creating opportunities for collaboration. Unfortunately, we also heard descriptions of barriers to collaboration, such as a lack of time and scheduling constraints. Further, collaboration around data happens too infrequently.

Consequently, there are opportunities to solve collaboration and time problems simultaneously. For instance, in looking to provide more time, district and building leadership should look for opportunities to create consistent time for collaboration around data – collaboration that is intended to promote conversations about student achievement and improving practice. This action would promote many positives at once. By mixing these tasks, it solves scheduling problems that arise when tasks are separated. By collaborating, educators spend their time sharing expertise and helping each other with data use tasks. And by having

these conversations, educators are collaboratively engaging in much-needed reflection about using data in the service of improving practice and student achievement (see *Professional Learning* below). These items are positive because they are necessary components of an effective educator's regular workday.

In considering how to provide consistent time for collaboration around data, it is imperative that both district and building leadership understand the degree to which this time must be *structured*. In prior work (Wayman, Brewer, & Stringfield, 2009), we have observed that, without intentional structures, informal structures inevitably arise. While a certain amount of informal structures are good for the life of the organization, we found that many of these informal structures were unsustainable in the long term. Time and collaboration are among the most tenuous when based on informal structures.

Accordingly, it will be necessary for the district to create policies that structure this collaborative time into the school day. And, besides district policies, it will be necessary to tap into expertise at the building level, so the district must give building leaders the latitude and the training to effectively implement further time and collaboration structures into their unique contexts. Finally, we note that structured collaboration has been identified as a way to keep data use non-threatening because structured collaboration keeps the focus on student learning (Wayman et al., 2006).

In closing this section, we note the negative effect that computer systems have had on both time and collaboration. If implemented properly, the new data system should provide a great time savings as educators access data. Also, the new system will make collaboration easier, as educators are able to quickly answer questions that arise during their conversations. Other collaborative efforts will be made easier with a better data system – for instance, we found that data sharing was a barrier to inter-departmental collaboration in central office. We believe that more transparent, effective systems should improve existing issues with department jurisdictions or unfamiliarity with other departments and their data.

Professional Learning

It was clear in our data that NISD educators at all levels want more training on how to use data – and they want *better* training. While their comments and survey responses focused on training and support, we will broaden our recommendations to encompass professional learning. Professional learning goes beyond mere training; it is the process of gaining knowledge that improves one's abilities as an education professional. Educators gain professional learning in many ways, including professional development (PD), informal training, experience, conversation, and reflection.

It is necessary that NISD structure a certain amount of PD that should focus on helping teachers access and use a variety data in their daily routines. This PD should be viewed as small and multifaceted, and as in the example of data system rollout (see *Computer Systems* above), it should be tightly targeted and immediately useful, meeting teachers where they are as learners (Wayman et al., 2007). As a consequence of these recommendations and the lack of training opportunities reported by NISD educators, it is probably necessary that the number of PD opportunities be increased dramatically. Further, although we describe these as “opportunities,” we believe NISD should mandate frequent training for all educators who use data.

This recommendation places a large demand on central office employees, campus administrators, and staff who currently provide training. Recognizing this, it is important to keep

in mind that we are not recommending the traditional “sit and get” offerings. Rather, we suggest NISD look to provide training in a number of contexts and settings, remembering that professional learning can be supported by individuals serving a number of roles and frequently is informal in nature (Gallucci, 2008; Supovitz & Klein, 2003; Wayman & Stringfield, 2006).

To this end, it will be important to implement innovative structures to ensure the quality of PD and ensure that professional learning is sustainable. For instance, the aforementioned collaborative structures (see *Time and Collaboration* above) could be used to take advantage of staff expertise, strategically including respected teachers and strong data users. Informal structures may also be effective. For instance, support staff may be able to quickly learn specific strategies and bring them to team meetings, or central office staff may uncover trends in data that are then delivered to specific schools. Lastly, the most important structure in advancing professional learning is time – time for learning must be structured and dedicated.

Finally, we wish to emphasize the value of reflection in professional learning. It is through reflection that educators sort and synthesize the information they are presented and use prior experience and professional judgment to apply this information to their practice. In contrast, no NISD educator reported having enough time for reflection on data and their practice. Reflection is often seen as personal time, but we submit that reflection should also be considered as collaborative time: the process of sorting and synthesizing data has been shown to be most effective when done in collaboration (Coburn, 2001; Lachat & Smith, 2005; Wayman & Stringfield, 2006; Young, 2006), and the conversations that educators have around data have been posited to be particularly important to their practice (Wayman et al., 2004). As a result, we believe it is very important for NISD to promote reflection as a prominent component of professional learning, and to promote it as a collaborative experience where knowledge is shared.

Other Important Issues

Besides the above components of the Data-Informed District, there are other issues on which we have less commentary, but are still important to discuss. In this section, we address the following issues: (1) Linking teacher data to student data; (2) Instructional coaches; (3) Engaging parents; and (4) The role of the central office.

Linking Teacher Data to Student Data

We believe NISD should look for effective ways to connect teacher data and student data. Linking students and teachers over time can provide great assistance in deeper, more informative teacher evaluation that helps teachers and students alike by targeting professional development, identifying areas of strength and weakness, and improving pedagogy. On the surface, this represents effective education, but data have not commonly been used for this purpose in a non-threatening fashion (Ingram et al., 2004; Wayman & Stringfield, 2006).

It is clear that policy is shifting toward connecting student data to teachers. Given improvements in technology that may soon make these connections simple to perform, we anticipate that even though NISD operates in a state policy environment resistant to these linkages, these policies are inevitable. Consequently, we believe that NISD should start now to establish these connections and work with teachers in a way that is fair, non-threatening, and that results in an honest, non-punitive dialogue about school improvement. If these movements indeed become policy, schools and districts that are prepared in terms of data structure and data use culture will have the capacity to react positively to these mandates.

Instructional Coaches

We observed the role of instructional coaches in elementary schools as highly variable. In many schools, they bore much of the data burden, performing tasks such as printing data for staff, collecting data, and sometimes discussing data with educators. Their tasks are largely defined by the building principals.

The instructional coaches we interviewed seemed to be top-flight educators. Unfortunately, we believe the variability in how instructional coaches are used makes it hard to take full advantage of their expertise. Given this, we recommend that NISD leadership should define this role more clearly, but neither we nor the district has enough information to make specific recommendations. Instead, we believe the calibration process will provide the knowledge needed to define these roles⁴.

As district leaders consider the role of instructional coach, they should endeavor to gain input that answers the following questions, in terms of data use:

- Should the instructional coach be defined solely in terms of data use?
- Should there be an instructional coach in each school, at each level?
- How does the definition of this role fit with the definitions set forth in the calibration process?
- How much flexibility should building administration have in the tasks assigned to these educators?
- Can the district amass sufficient expertise to fill each role with a quality professional?
- Can the district provide enough training to keep these roles as viable data supports, especially as teachers gain more capacity and expertise?

Engaging Parents

Accountability laws mandate that educational data is made available to the public. The public is making decisions and reaching conclusions from these data, regardless of their ability to do so effectively. It is therefore necessary that NISD be proactive in how their data are perceived by the public – and in particular, district parents.

It is particularly critical to address public evaluation of schools and teachers. Informal evaluations of which schools or teachers are the “best” have abounded in education for years, yet our data indicate that engaging parents in discussions about data is one of the least frequent data activities for NISD educators. In another study (Wayman et al., 2007), we had a parent point out to us that parents are going to talk about teachers and schools at basketball games, meetings, or backyard barbecues anyway, so it is important the district provide honest, grounded information to inform perceptions.

Guided by the adage, “tell your story or someone else will,” we recommend NISD embark upon a public education campaign about data. Many aspects of this program can be accomplished simply. For instance, when test scores are sent home to parents, a clear, basic description of the meaning of these scores can be provided. Online access to data should be accompanied by similar information. Public education programs can be provided in a number of ways: meetings, online, or through the media, to name a few. Finally, teachers and administrators

⁴ We do know that if the role is defined in terms of data use, it should not involve printing data for teachers. We have observed in NISD and other districts that this puts limits on the capacity that teachers themselves may build.

should be able to simply articulate for parents the purpose and meaning of any data-oriented report sent home with a student.

The Role of the Central Office

We finish our recommendations with a few words about the role of the central office in the Data-Informed District. In our data collection, we were impressed with the abilities of central office educators and the commitment of central office staff to using data in an appropriate way to inform education. It is this strong foundation upon which the role of the central office should be built.

We can summarize prior research on data use by saying a central office in the Data-Informed District should be “truly central” (Moll, 2009; Honig & Coburn, 2008; Wayman et al., 2007). By that, we mean that the central office should be both a guide and a support. As an entity in the Data-Informed District, it should serve to set sound policy for data use, while at the same time, helping educators effectively use data. In the Data-Informed District, central office personnel live in both the policy and practitioner worlds.

Accordingly, we view the role of central office staff in NISD’s Data-Informed District more as facilitators of data use than as drivers of data use. As an example, we look to the calibration process. Central office will be charged with articulating and disseminating visions and definitions, but should be equal participants in the process, alongside other district staff.

We close by highlighting the importance of the central office in the Data-Informed District. It is at the central office where the buck ultimately will stop. The actions of central office staff over the coming three years will largely determine whether this initiative is a success or failure.

FIRST STEPS

In implementing these recommendations, we believe there are some important first steps that must be taken during the Spring 2010 semester. Planning should begin immediately in meetings with the research team and district leadership to review and chart the course based on these recommendations. There are three additional steps that must be taken:

First, it will be important to give our research team a forum to present and explain our findings and recommendations. Examples of ways to provide this include one large event, a series of presentations, or even town-hall discussions. At a minimum, this should target NISD teachers, campus administrators, central office staff, and instructional support staff. It is possible a public component may also be beneficial.

It is also important to get the calibration process going as quickly as possible. The timing of this will be determined together in discussions with NISD leadership. At a minimum, NISD must complete a pilot process during Spring 2010.

In addition, work should begin on identifying needs and format of the data warehouse interface. The full timeline will be established together during discussion with NISD leadership. At a minimum, NISD should complete the Request for Information (RFI) process during the Spring 2010 semester.

Over the next two and a half years, your district and our research team have a lot of work in front of us. It is enjoyable work and we are sure it will be fruitful. We hope you are looking forward to it as much as we are.

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TABLES

Table 1
Study Participation, By Role

	Survey Data		Interview Data	
	<i>n</i>	%	<i>n</i>	%
Teachers	1117	(79.5%)	30	(46.2%)
Campus Administrators	62	(4.4%)	18	(27.7%)
Central Office	34	(2.4%)	11	(16.9%)
Instructional Support	82	(5.8%)	6	(9.2%)
Other	111	(7.9%)	0	(0.0%)
Total	1406		65	

Note. Percent of total participants in each role given in parentheses.

Table 2

Means of Survey Scales, Disaggregated by Role

	Attitudes Toward Data	Computer Data Systems	Data's Effectiveness for Pedagogy	District Vision	Principal Leadership	Support for Data Use	Time to Use Data
Teacher	3.13	3.07	3.42	3.47	3.21	2.98	2.30
Campus Administrator	3.71	2.83	3.92	3.73	3.35	3.03	2.50
Central Office	3.71	2.57	3.84	3.69	N/A	3.01	2.31
Instructional Support	3.53	3.12	3.69	3.52	3.42	3.16	2.77
Total	3.19	3.05	3.47	3.49	3.22	2.99	2.34

Note. N/A means “not applicable”.

Note. Teacher: n=1117. Campus administrator: n=62. Central office: n=34. Instructional support: n=82.

Table 3

Mean of Survey Scales, Disaggregated by Experience

	Attitudes Toward Data	Computer Data Systems	Data's Effectiveness for Pedagogy	District Vision	Support for Data Use	Time to Use Data
1-5 Years	3.13	3.05	3.42	3.44	2.95	2.31
6-10 Years	3.18	3.01	3.49	3.45	3.00	2.43
11-20 Years	3.25	3.06	3.49	3.50	2.99	2.35
20+ Years	3.18	3.01	3.49	3.55	3.04	2.37
Total	3.13	3.07	3.42	3.47	2.98	2.30

Note: Scales included are scales that apply to all roles.

Note. 1-5 years of experience: n=371. 6-10 years: n=337. 11-20 years: n=376. 20+ years: n=322.

Table 4

Means of Survey Variables Describing Various Data Forms, Disaggregated by Role

	State Achievement Test Data (TAKS)	Formal Assessments (DRA, TPRI)	Other Student Data (attendance, demographics)	Personal Assessments (tests, quizzes)
Teacher	1.79	1.97	2.41	3.38
Campus Administrator	2.87	2.45	3.37	1.95
Central Office	2.12	2.18	2.59	1.68
Instructional Support	2.27	2.17	2.37	2.22
Total	1.88	2.01	2.45	3.19

Note. Teacher: n=1117. Campus administrator: n=62. Central office: n=34. Instructional support: n=82.

Table 5

Means of Survey Variables Describing Various Data Forms, Disaggregated by Experience

	State Achievement Test Data (TAKS)	Formal Assessments (DRA, TPRI)	Other Student Data (attendance, demographics)	Personal Assessments (tests, quizzes)
1-5 Years	1.78	1.95	2.52	3.50
6-10 Years	1.78	1.91	2.41	3.45
11-20 Years	1.82	1.96	2.34	3.32
20+ Years	1.80	2.01	2.34	3.21
Total	1.79	1.97	2.41	3.38

Note. 1-5 years of experience: n=371. 6-10 years: n=337. 11-20 years: n=376. 20+ years: n=322.

Table 6
Respondent Rankings of Data Uses, By Role

Teachers	Campus Administrators	Instructional Support
1. Identify learning needs of students who are struggling (2.72)	1. Identify learning needs of students who are struggling (3.16)	1. Discuss student progress or instructional strategies with other educators (2.74)
2. Tailor instruction to individual student needs (2.68)	2. Discuss student progress or instructional strategies with other educators (3.13)	2. Identify learning needs of students who are struggling (2.70)
3. Identify instructional content to use in class (2.60)	3. Develop recommendations for tutoring or other educational services for students (3.03)	3. Tailor instruction to individual student needs (2.65)
4. Form small groups of students for targeted instruction (2.51)	4. Tailor instruction to individual student needs (2.90)	4. Set learning goals for individual students (2.55)
5. Set learning goals for individual students (2.50)	5. Meet with a specialist about data - e.g., instructional coach (2.84)	5. Develop recommendations for tutoring or other educational services for students (2.55)
6. Develop recommendations for tutoring or other educational services for students (2.47)	6. Set learning goals for individual students (2.73)	6. Identify instructional content to use in class (2.50)
7. Discuss student progress or instructional strategies with other educators (2.45)	7. Form small groups of students for targeted instruction (2.69)	7. Assign or reassign students to classes or groups (2.39)
8. Assign or reassign students to classes or groups (2.35)	8. Discuss data with a parent (2.65)	8. Interact with your principal about data use (2.34)
9. Identify learning needs of students who are not struggling (2.28)	9. Assign or reassign students to classes or groups (2.61)	9. Form small groups of students for targeted instruction (2.34)
10. Discuss data with a student (2.12)	10. Discuss data with a student (2.58)	10. Meet with a specialist about data - e.g., instructional coach (2.22)
11. Choose which parents to contact (1.91)	11. Choose which parents to contact (2.50)	11. Identify learning needs of students who are not struggling (2.12)
12. Meet with a specialist about data - e.g., instructional coach (1.83)	12. Identify learning needs of students who are not struggling (2.29)	12. Discuss data with a student (2.12)
13. Discuss data with a parent (1.83)		13. Discuss data with a parent (2.04)
14. Interact with your principal about data use (1.66)		14. Choose which parents to contact (1.94)

Note. Mean response is shown in parentheses and only uses specific to the role are included.

Note. Central office is not included because few uses applied to that specific role.

Note. Teacher: n=1117. Campus administrator: n=62. Instructional support: n=82.

Table 7

Comprehensive List of Data systems Mentioned By Participants

List not provided to protect district
anonymity.

Table 8

Count and Percent of Participants Reporting Frequent Use of Specific Systems, By Role

	DW	ITCCS	AIMSWeb	Other
Teacher	138 (12%)	479 (43%)	161 (14%)	177 (16%)
Campus Administrator	30 (48%)	46 (74%)	10 (16%)	33 (53%)
Central Office	11 (32%)	13 (38%)	4 (12%)	14 (41%)
Instructional Support	30 (37%)	27 (33%)	17 (21%)	18 (22%)
Total	209 (16%)	565 (44%)	192 (15%)	242 (18%)

Note: Percent of participants reporting weekly or more use given in parentheses.

Note. Teacher: n=1117. Campus administrator: n=62. Central office: n=34. Instructional support: n=82.