

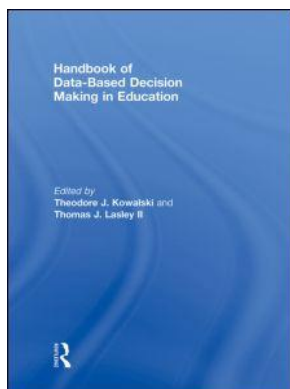
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Handbook of Data-Based Decision Making in Education

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Building Data-Driven District Systems

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Handbook of Data-Based Decision Making in Education

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Building Data-Driven District Systems

Examples from Three Award-Winning Urban Systems

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When the No Child Left Behind Act (NCLB) of 2001 required increasing achievement for all student groups, districts and schools suddenly needed to learn how to assess student performance to identify specific areas for intervention and acceleration. Slow incremental improvement was no longer acceptable under the potential sanctions of NCLB; districts had to efficiently and effectively raise improvement for all schools, student groups, and grade levels. To address that need and take it to the necessary scale, a district would have to create a well-aligned system in which teachers, principals, and central office administrators comfortably use data on a daily basis to inform decisions on all aspects of learning. The few districts that are on the right path to creating those systems have done three things:

1. created easily accessible systems and tools that include multiple measures that address numerous aspects of the educational process;
2. used those systems and tools to create and constantly monitor system alignment and progress; and
3. instituted data-use within all levels of their system.

Building such systems requires a careful and strategic process to overcome numerous barriers characteristic of data transparency, including mistrust and fear of data; failure of system actors to react to data constructively; lack of data interpretation skills; lack of user-friendly accessible data systems; and failure to clearly identify and discuss desired goals and outcomes at the teacher, classroom, school, and district levels.

This chapter presents the concept of systemic data-use through case studies describing three award-winning urban districts that built a culture of data-use throughout every level of their system to improve student achievement. The first section provides an overview of research on data-use in districts and schools, the second section describes the methodology behind this study and presents three separate district case studies, and the final section discusses the overlapping case study themes and suggests important elements to consider for building systemic data-use in districts.

Data-Use in Districts and Schools

Practitioners and researchers agree that the data requirements within NCLB have prompted a beneficial demand for school systems to have not only more data, but data disaggregated by student groups. The requirements also sparked more public interest and attention to district/school performance data, creating a greater interest in data systems and data-use in districts and schools. Research on data-use in education systems increased greatly between 2003 and 2007, illustrating movement from isolated practices in isolated schools to growing examples of entire districts that are well-aligned performance-driven systems.

Many case studies focused on the beginnings of systemic data-use in individual schools. In their comparison of data-use in two similar schools, Heritage and Chen (2005) illustrate the effective practices of a school that engaged numerous stakeholders in an ongoing process of setting goals, collecting and analyzing data, setting priorities, and developing strategies. In contrast, the comparison school was less effective with its cursory annual year-end data review. Agreeing that effective data-use requires a well-aligned process that also includes numerous supports, Lachat and Smith (2004) conclude that school-wide data-driven decision making requires three elements: access to high-quality data; leadership structures that support data-use; and processes that support collaborative inquiry. Obstacles to effective data-use found in their five study schools included limited technical knowledge for data collection, lack of data storage capacity, and lack of structured time for collaborative data analysis.

Earlier case studies also addressed systemic data-use at the district level, mainly as a means to provide the necessary data systems, tools, and support for widespread use in schools. Ramnarine (2004) describes how the Saint Paul Public School District worked with a vendor to develop a customized, easily accessible data management system that was also compatible with its student information system. After a year's implementation, teachers went from having little or no student achievement data to having real-time student achievement data tied to demographic data on their current students. Renzuli (2005) describes a similar data system development process in the School District of Philadelphia, resulting in the capability to produce timely accessible data to teachers and administrators along with information on curriculum, learning resources, and some analytical tools. Agreeing that powerful information systems provide important real-time data and promote data transparency, Golden (2005) describes how the Pennsylvania Department of Education took the concept to scale through its statewide information system devised to help districts track student progress over time and across districts.

The presence of an accessible information system does not of itself create data-based decision making. Such a system requires a strategic approach at all levels that utilizes and aligns the appropriate tools, leadership, and communication structures. Rudy and Conrad (2004) discuss the importance of supporting and sustaining data-use at the district level through ongoing professional development for leaders and teachers and by securing buy-in from central office and school leaders. Regarding the issue of system alignment, Supovitz and Klein (2003) discuss the importance of using multiple assessments but caution that assessments should be aligned to each other on the district, school, and classroom levels to better connect planning and instruction.

Agreeing that data-use should occur within all district levels, Kerr, Marsh, Ikemoto, Darilek, and Barney (2006) discuss barriers that districts must address to successfully connect the system levels, including distrust of data validity, lack of district-wide flexibility to respond to data, and lack of staff capacity to use data.

Two recent case studies address all the above-mentioned aspects of data-use: district and school culture, types of data used, data management systems, data-use practices, structures and supports, and creating system alignment. Using their own framework, Wayman, Cho, and Johnston (2007) analyzed the extent to which a particular district was “data-informed,” describing successful data-use practices and suggesting areas for improvement. Addressing similar elements of data-use, Datnow, Park, and Wohlstetter (2007) describe how four high-performing districts and charter systems carefully and strategically developed the right culture, system, tools, and practices for comfortable data-use at all system levels. Two of their selected districts, Garden Grove and Aldine, were Broad Prize finalists, and one is discussed in this paper.

While these studies have moved the notion of data-use from a singular focus on data systems and practices to the concept of well-aligned performance-based systems, there is a need for more concrete examples of how successful data-driven systems are created, evolve, and are sustained over time. This study provides three such concrete examples.

Case Studies of Three School Districts

This study analyzes the evolution of systemic data-use in districts that have successfully increased student achievement. The researcher served as the project manager for the Broad Prize for Urban Education between 2003 and 2006 for the National Center for Educational Accountability (NCEA), who managed the Prize from 2002 to 2006. The Broad Prize for Urban Education, funded by Eli and Edythe Broad of The Broad Foundation, is an annual award honoring urban school districts that demonstrate the greatest overall performance and improvement in student achievement while reducing achievement gaps among poor and minority students. Using data collected through the Broad Prize process, this study focused on Broad Prize finalists that had particularly strong, well-aligned data and accountability systems. The study is primarily qualitative and utilizes a case study format.

The three selected sites, Aldine Independent School District (Texas), Boston Public Schools (Boston), and Norfolk Public Schools (Virginia), were repeat Broad Prize finalists prior to 2006, and had at least two separate site visits covering a two-year time-span. Two of the districts, Norfolk and Boston, were Broad Prize winners in 2005 and 2006 respectively. Broad finalists are selected using statistical measures for modeling performance and improvement over a four-year period to eliminate making a finalist selection based on one-time performance increases. The actual process for selecting a finalist involves a multi-dimensional year-long process that includes: data collection on all eligible urban districts in the U.S.; finalist selection by a review board comprised of educational researchers and experts; site visits to each of the five finalists; and selection of the winner by a prestigious jury comprised of civic leaders (see <http://www.broadprize.org/> for further details).

Data for this study came from the interviews and the documents collected on Broad Prize finalist site visits. For the site visits, teams of five members consisting of superintendents, principals, professors, the NCEA Broad project manager, and an additional NCEA researcher were trained to conduct a uniform site visit process across the finalist districts. During each visit, the team spent one day interviewing central office leaders; one day interviewing administrators and teachers at one district-selected elementary, middle, and high school; and one day conducting four separate focus groups of randomly selected new and experienced principals and teachers. In addition to interviews, the research team gathered district and school documents to further describe and support the practices being studied. Finally, one teacher team meeting was convened at each selected school to observe the structure and content of collaborative meetings.

The case studies focus on each district's data collection and data systems as well as their data-use and how they implemented their systems throughout their different organizational levels. Case study details vary depending on the number of site visits and quality of interviews attached to each district. Each case study is discussed separately.

Aldine Independent School District

Located in Texas just north of Houston, Aldine Independent School District is the 73rd largest school district in the nation. The district has 66 schools, 3,616 teachers, and 56,292 students. Seen as a minority district, Aldine ISD has 33% African American students, 58% Hispanic students, and 7% White students, with 76% of its students eligible for Free and Reduced Price School Lunch and 25% designated as English Language Learners (NCES, Common Core of Data, 2004).

Aldine gained attention in Texas over the past five to seven years as a district that embraced the accountability movement early and showed success with a challenging population before the implementation of the No Child Left Behind Act. Highlights contributing to their two-time nomination as a Broad Prize finalist show that Aldine has:

- Met their Adequate Yearly Progress (AYP) targets in 2004 for 100% of all schools.
- Consistently performed higher among demographically similar districts between 2001 and 2004.
- Narrowed the external gap (the gap between the district's disadvantaged group and the state's advantaged group) for all groups in reading and for low-income and Hispanic students in math.

District personnel attribute many of their successes to early efforts to clearly define what all students must know and be able to do at all grade levels, and to a consistent focus on the same goals and priorities over time, making changes only as a result of further refinement. Once teaching and learning was defined, the district worked to fully align all of their practices by providing tools to all system levels to monitor

progress towards desired outcomes; and by providing effective interventions at the first sign of trouble. For Aldine, data are at the heart of all of these practices.

Of the five finalists in 2005, Aldine displayed the tightest coordination among the district, school, and classroom levels through its benchmark and common assessments, student performance management system, Balanced Scorecard, and constant monitoring practices. Central office administrators asserted that data “provides the road map” to (1) identify strengths and weaknesses of curriculum and instruction; (2) monitor alignment of written curriculum, classroom instruction, and student assessment; and (3) monitor progress from the district, campus, teacher, and student levels. Led by the philosophy that they should leave nothing to chance, Aldine has a rich data collection and monitoring system that includes formative and summative assessments, a multi-level scorecard, a structured walk-through process, and a powerful data management system that ties all the pieces together.

Data Collection and Data Use

Assessments

One of Aldine’s most impressive features is the frequency with which the district monitors student progress on an ongoing basis. District-mandated and district-developed benchmark assessments are given every nine weeks in all core areas. In addition to district-level assessments, schools have developed Common Assessments that are given as frequently as every two to three weeks in all grades and core subjects. Frequent feedback from these assessments helps teachers and principals identify weak instructional objectives early, regroup students for short-term intensive interventions, and provide disaggregated assessment information to teachers to plan future instruction both across same grades and vertically from lower to higher grades. When describing how benchmark results are used, one district leader commented, “We work with teachers and principals not from the standpoint of what are you doing, but what you think your data says and why do you think it is happening?”

As one might imagine, teachers did not instantly embrace benchmarks when they were first introduced. A district leader described the first implementation of the benchmarks as “interesting,” because the teachers who did not follow the curriculum had terrible results. For example, in biology, teachers who loved genetics did not teach the full curriculum and their kids missed most of the other items. He described the process as “a real wake-up call to the teachers.”

When the site visit team visited the district in 2005, the benchmarks had been in place for approximately three years. Surprisingly, both district leaders and teachers reported that their successful increases in student achievement yielded increased buy-in for the quarterly and common assessments and the curriculum pacing guides. Highlighting the importance of their constant feedback system, one principal commented, “It’s the frequency of monitoring that prevents the gaps from getting so wide that you cannot deal with them. We keep the data real-time and we use it for immediate interventions.”

In addition to principals, teacher interviews yielded numerous favorable comments about the benchmarks as being an instructional tool rather than a “gotcha.” Several described using benchmark assessment results to reflect individually or within teacher teams on how instruction could be improved. One group of teachers explained:

Our data drives our instruction and helps us revisit and revise our curriculum. If we see there is an area where our first-graders are not achieving, we rethink it—Is it taught too early? Is it taught too late? How do we adjust our curriculum and/or instruction to make up for that?

Data System

The common and benchmark assessments are used in Aldine’s custom-designed data management system called TRIAND. Serving as a “one-stop data shop,” TRIAND allows teachers to access student scores on summative and formative assessments, student profiles, records, and transcripts. Additionally, TRIAND provides the curriculum scope and sequence, lesson plans, and resource materials for teachers. TRIAND also allows users to query state and local assessments immediately with a powerful disaggregation and item analysis tool. To maximize effectiveness, Aldine mandates that every teacher upload their classroom data into this system with the help of Scantron machines that eliminate the need to enter data by hand.

Monitoring

In addition to analyzing performance data, Aldine frequently monitors classroom activities through observations and walk-throughs. Teachers are routinely observed by principals, department chairs, and their peers who have been trained to use a structured rubric to record walk-through observations and conduct follow-up conferences. Area superintendents and program chairs also spend time in schools and classrooms monitoring instruction. The classroom observation sheet collects focuses on four domains: (1) student participation in learning; (2) learner-centered instruction; (3) evaluation and feedback on students’ progress; and (4) management of student discipline, instructional strategies, time, and materials. The sheet also includes a chart for rating effective teaching strategies according to Bloom’s Taxonomy.¹ One secondary principal interviewed said each of her teachers received walk-throughs and feedback at least four times a year.

While a few teachers mentioned feeling nervous at times when being observed, most of them characterized the process as providing instructional support. One teacher stated that her principal often gave her good ideas after walk-throughs, and she, in turn, shared those ideas with her peers. A new teacher stated that she was “being evaluated by everyone” from her alternative certification supervisor to team leaders and assistant principals. She commented that she liked “the constant monitoring because it helps me correct any mistakes, helping me not to repeat them all year long.”

Accountability System

Aldine's data collection and analysis tools are folded into an overall monitoring process that functions like a feedback loop. The formative and summative assessments and walk-throughs are all used to develop district, department, campus, and subject- or grade-level Action Plans. Each Action Plan delineates goals, objectives, specific tasks, measures of success, monetary resources, and timelines. The Action Plans are monitored by Scorecards (discussed below) that are tied to each level of an Action Plan.

Based on the Baldrige Model for Performance Excellence,² the Scorecards measure the success levels within the Action Plans. The Scorecards, distributed quarterly, are standard from campus to campus with the exception of elementary schools, which follow a six-week schedule versus the nine-week schedule in secondary schools. Area superintendents work with schools on a quarterly basis to collect data for their Scorecards. These data include student assessments, staff development feedback, attendance, and other information. The central office leaders compile the various school Scorecards on a given level to produce a vertical Scorecard.

Central office leaders explained the Scorecard process as “coming right back to objectives, action plans, and the goals we have set.” The goals relate back to the district improvement plan to evaluate overall district performance. Once compiled, the vertical Scorecard goes to the district. Campuses compare their results with other campuses and review the goals and compare their data. Core subject department chairs share Scorecard results with teachers, who meet in groups to monitor the different objectives within the Scorecards.

One district leader characterized the process as, “monitoring as you go, and at the lowest level, doing more frequent monitoring.” This process has helped various district stakeholders “keep up with what’s happening” and address concerns early. When asked what district practice most greatly affected her school’s performance, this leader pointed to the Scorecards and action planning process. She said,

Originally, we worked very much on the math, reading, and composition and didn't focus enough on science and social studies. We realized through analyzing the data we needed to work on this. What also helped was having the benchmarks broken down into weekly increments, which helped pace the teachers and track what they should cover each day. That has been a significant improvement.

Systemic Implementation

Teachers and administrators alike highlighted the importance of having information early to focus on prevention rather than intervention. Illustrating this theory of action, one principal stated, “We’re a very focused and proactive district. We are looking ahead and are not reactionary. We anticipate trends and make adjustments as needed.” Another principal described the process of building a culture of regular data-use as starting from the top, engaging in staff development, and moving the process down to schools through the vertical feeder pattern teams. To gain system-wide trust, she stated,

You need to have the buy in from the people you are working with. You need to convince them that there needs to be change . . . we worked very hard on getting our students to perform as well as the children from middle-class school systems. That was a big change.

Agreeing with her, another principal asserted that principals support each other through the process, which is made possible by the district's approach to data and accountability as "very non-threatening, very open, and very willing to share from within." An appreciation for information was very prevalent at all levels of the district and was a prominent topic throughout the site visit.

Boston Public Schools

Boston Public Schools, one of the few high-poverty, high-minority districts in Massachusetts, is the 67th largest school district in the nation. The district has 144 schools, 3,926 teachers, and 60,150 students. A very diverse district, Boston has 46% African American students, 30% Hispanic students, and 14% White students, with 73% of its students eligible for Free and Reduced Price School Lunch and 19% designated as English language learners (NCES, Common Core of Data, 2004).

With its size, history of racial tension, and political difficulties both within the culture of the city and with the teachers' union, Boston has many challenges. Despite these challenges, Boston has maintained relatively high levels of student achievement, which is why they have been a finalist every year since the inception of the Broad Prize in 2002 and why they won in 2006. Highlights of its performance contributing to their recent win show that Boston has:

- Consistently outperformed other Massachusetts districts with similar low-income populations in six out of six areas (reading and math at the elementary, middle, and high school levels) in the Broad Prize methodology from 2002 to 2005.
- Demonstrated greater improvement by African American students than similar districts in the state in five out of six areas (math at the elementary, middle, and high school levels, and reading at the middle and high school levels).
- Improved fourth- and eighth-grade reading and math scores at a faster rate than other large American cities on average on the 2005 National Assessment of Educational Progress (NAEP) Trial Urban District Assessment (TUDA).

Boston attributes its successes to a long, steady process of pulling its diverse system into one stable, aligned system. Tom Payzant, Boston's recently retired superintendent who served the district for 11 years, discusses his long-term priority for Boston as improving a "system of schools beyond more than just a few good ones." He characterizes that process as a "K-12" issue involving a whole-school improvement process—where "the whole is greater than the sum of its parts." Dr. Payzant's key focuses for the district have been standards-based leadership and instruction; the provision of clear expectations and curriculum; support systems for teachers connected to learning standards; and strong accountability measures.

The Broad site visits to Boston, spanning five years, have yielded a gradual increase in systemic data-use in the district and schools. Boston's powerful data management system and numerous structured monitoring procedures help keep the system well apprised of its strengths and weaknesses. Interviews during the recent 2006 visit contained more references to data, with principals asserting that teachers were moving beyond superficial use of data to really "digging into the data" to understand student performance. One comment repeated several times by different district leaders and teachers was "the data show everything. You can no longer hide."

Data Collection and Data-Use

Assessments

The district requires quarterly assessments in all subjects and grade levels and provides mid- and end-of-year open response assessments. At grades 3, 6, and 9, students are retained unless they have mastered the standards assessed in the district reading and mathematics benchmarks by the end of summer school. Benchmarks are reviewed every four to eight weeks.

Teachers review results from both formative and summative assessments in grade-level meetings. Instructional coaches from the district also attend teacher meetings to help develop additional instructional interventions based on the data. Individual teachers report using data to assess whether students are mastering the skills being taught. One teacher described how teachers use data in her school:

Our school is really heavy on looking at data. We looked at the MCAS results and noticed the questions the kids bombed on. We developed a curriculum map so we could ramp up our kids so that none of them would be retained. We figured this out through our teacher team meetings and that has been very powerful. Anyone can look at our curriculum map and figure out where we are going.

Data System

Boston Public Schools developed MyBPS in 2003 as a means to communicate information and make data useful to administrators and teachers. The secure web-based system contains student performance information on formative and summative assessments, as well as report cards, tips on how to use and interpret the data, links to state standards and learning objectives tied to assessment questions, and copies of students' writing compositions and scores. Interactive graphs displaying student performance data linked to specific questions on the state assessment are also available.

Through MyBPS, users can query the data to answer questions such as "How did my students perform on the English Language Arts multiple choice questions?" or "What was the distribution of student responses on a specific test item?" One administrator commented,

It's remarkable! You can sort your own class by different subgroups and people who work across the school can look at it. We can see how the district data brings us all back to the school plan. Instead of requiring every teacher to be a data analyst, the tool does it, allowing teachers to focus on learning objectives.

Teachers in the district also spoke favorably of the usefulness of the system. One teacher offered the following example of how data are used in her school:

We look at a lot of the formative assessments and we are able to see the weak areas. For example, we know that the students did not do well on nonfiction pieces, so that's one of our focuses. We also wanted to make sure that the students could become independent learners and thinkers. Now we are trying to use assessments in our classrooms with the students to show them, "This is where you are," and question them about why they chose certain responses on particular tests.

Similar examples of teachers using data to drive instruction were abundant throughout the district.

Boston is continually working to improve the usefulness of MyBPS by connecting data from other sources to data currently available on the system. District leaders mentioned future plans to make it possible to query the formative assessments and to add student indicators to more closely track secondary school students. The additional student data will be called "MyBPS Indicators." MyBPS Indicators will include non-academic data such as student absences, suspensions, and dropouts. Their purpose will be to help high schools use real-time data to identify and track students at risk of dropping out. Central officer leaders feel that information is necessary, as they believe schools are often surprised at the end of the year to find out which students had dropped out or displayed poor attendance. With the new system, a high school principal will be able to click on the particular indicators to review academic and non-academic data simultaneously to identify potential problems early.

Monitoring

The district conducts curriculum implementation reviews of the middle and high schools that are similar to "mini accreditation visits." Deputy superintendents observe one department at a time to give feedback to every teacher on their classroom instruction. These visits also review how well campus administrators support and monitor instruction. Additionally, school instruction and performance are monitored through "cluster walk-throughs," with a cluster being defined as a feeder pattern. Principals in each cluster decide at the beginning of the year which schools to target for walk-throughs. These walk-throughs are also used as a means to share best practice instructional strategies across schools and to view model programs. District leaders feel the walk-through process has been valuable to them because they are "uncovering concerns much earlier than before, and in much greater quantity."

Accountability System

All district activities center on the unifying goal of Focus on Children II, a five-year plan “to accelerate the continuous improvement of teaching and learning to enable all students to meet high standards.” The two main goals are to move students beyond the minimal to the proficient level and to close achievement gaps between different ethnic and income student groups. To monitor school progress towards the goals in Focus for Children II, school performance is monitored several times a year through the Whole School Improvement Plan (WSIP). The WSIP is a document created by each school which identifies several goals each year that are tied to the district’s overall goals. The plans are monitored by assistant and deputy superintendents who spend the majority of their time working directly with schools. The plans are displayed in MyBPS to connect schools and district leaders to each other and add transparency to school performance. In 2006, the WSIPs were updated to include implementation benchmarks for the curriculum and outcome benchmarks tied to academic goals.

Systemic Implementation

Responses from the focus groups with principals and teachers confirmed that most school personnel are comfortable with Boston’s data and monitoring systems. Almost every principal and teacher interviewed seemed enthusiastic and comfortable with using data to guide daily decisions. Nicely illustrating the spirit in which data are used and their growing prevalence, one principal commented,

We monitor performance in many different and exciting ways with whatever data are available. The conversation trickles on down to the deputies who are in the buildings more frequently, and they have conversations with the principals about the data. The conversations are very specific and focus on ownership rather than blame. “What haven’t I done as a teacher? Where am I missing? As a teacher, I have a gap.” It’s not “Children have the gap,” but “I have a gap.”

Clearly Boston is using data to encourage accountability for the adults in the system rather than viewing all problems as student-driven.

Norfolk Public Schools

Norfolk Public Schools, a three-time Broad Prize finalist and the 2005 winner, is a moderate-sized district with 36,724 students, 58 schools, and 3,363 teachers. The diverse student body consists of 68% African American students, 3% Hispanic students, 27% White students, and 2% Asian American students, with 60% of students eligible for Free or Reduced Price School Lunch (NCES, Common Core of Data, 2004). Norfolk’s results demonstrate higher levels of achievement than demographically similar districts in Virginia. Highlights contributing to the district’s nominations for and becoming winner of the Broad Prize include:

- Met its adequate yearly progress (AYP) targets in 2004 for 76% of schools.
- Increased the number of elementary students who reached proficiency in reading by 14% in the past four years, and increased the number of middle school students who reached reading proficiency by 12%.
- Increased the number of elementary students who reached proficiency in math by 14% in the past four years, and increased the number of middle school students who reached proficiency in math by 23%.
- Reduced achievement gaps in elementary reading for Hispanic students (by 11%) and middle school math for African American students (by 10%).

The accomplishments of this diverse district with highly mobile Navy families are impressive. When now-retired superintendent John Simpson came to Norfolk in 1998, he thought the district's student performance was "abysmal." Believing that the few pockets of successful schools could be replicated, he strove to duplicate their successes by working with his team to reproduce their practices. This process entailed re-centralizing instructional programs and practices (reducing 54 reading programs to one, for example) and building a cohesive culture through consistent messaging, clear communication to all system levels, and by using a "laser-like focus" on student achievement. Although the district focused somewhat on data before Dr. Simpson's arrival, they strengthened its academic focus and accountability practices with the help of Doug Reeves and his Center for Performance Assessment.

Data Systems and Data-Use

Assessments

The district requires quarterly benchmark assessments at all levels. In 2005, 90% of NPS schools had developed common assessments given at least every month. To help with data collection, many schools have the capability to electronically score their test sheets on site to receive immediate feedback on student achievement. Additionally, the district provides schools with a detailed item analysis per classroom.

District leaders feel the quarterly assessments have been crucial for improving instruction in the district. As one administrator described it,

There's immediate feedback for the teachers and for the students. The item analysis reports in particular have been very powerful because the teachers use them with their students to discuss the thinking behind student responses. Students can reason through the answers they choose, whether or not they were correct or incorrect answers. This is a huge change.

The benchmark assessments were frequently referenced in school interviews. One department chairman explained that in his school, they review the results to analyze whether missed questions are likely attributed to instruction or to the test itself. He found the process helpful for adjusting instruction and creating alignment within grade levels and subjects. Teachers also voiced appreciation for the

cross-school alignment created by the curriculum pacing guides, benchmarks, and common assessments. Explaining the importance of having “everyone teaching the same thing,” one teacher said, “It is really neat, because when a student transfers in mid-year, we are working in the same book that was being used at another school.”

Instructional alignment across classrooms occurs frequently as teachers meet in “data teams” on a regular basis to review data, make common plans, and adjust instruction. An observation of a high school data team meeting during the 2005 site visit found teachers in a grade-level team meeting reviewing benchmark item analysis results to determine mastery of specific learning objectives. Unhappy with the results, the team decided to review their lesson plans on the weak objectives to understand why students had not learned what the teachers had taught. The teachers also decided to review the lesson plans of teachers who scored higher on those objectives to see if they could glean successful techniques for their own lessons. During the entire meeting the teachers appeared quite comfortable with and accustomed to reviewing data together to boost their instructional practices, with the common and singular goal of improving student achievement.

Data Systems

The district manages its data through two Web-based data systems; one is a data warehouse that allows queries to be run on longitudinal data, and the other is called Assessor, which houses the district’s quarterly benchmark assessments. Giving teachers almost immediate results, the quarterly assessments are in the same format as the state assessments, and are scanned into Assessor immediately.

Both data systems give district leaders, principals, and teachers immediate reports displayed graphically. The systems’ goal is to provide “24/7” data access to teachers, with results available within one to three days of testing. One interesting comment made by a central office leader was the importance of a subtle detail like adding different colors to the data charts to improve data interpretation for teachers and principals.

Monitoring

Similar to Aldine, Norfolk developed a structured walk-through process to monitor school activities, share ideas, and provide feedback on program implementation and performance. To build a more trusting environment, then-superintendent Dr. Simpson promised the schools that walk-through results would not be tied to teacher evaluations and would not be shared beyond the principals’ immediate supervisors. Once comfortable with the process after the first year, teachers and principals were anxious to share walk-through results with central office leaders. Capitalizing on the trust built through the walk-through process, the practice has expanded vertically to include elementary teams visiting high schools and vice versa, with best practice documents being created as an end-product.

Accountability System

One important tool for capturing and communicating data across the system is the district's three-tiered Comprehensive Accountability System (CAS). The CAS is used to hold all levels of the district accountable, including the district, school feeder pattern, school, and classroom levels. Data are compared longitudinally over five years to monitor improvement. Tier I indicators include state- and district-level data, Tier II focuses on school-level data, and Tier III provides a qualitative narrative that describes the context of each school's accountability results. District leaders view the CAS as an important tool for sharing and improving district practices. In addition to creating alignment between the district and school plans, school leaders also see the CAS as a mechanism for gaining district support. One new principal commented,

The support system is unique and very tight. I was impressed that, once we developed our accountability plans, central office came to us lending support. You don't have to seek it out. If they see something, they give us a call and ask "Is there anything I can do for you?" [The plan] helps us to speak with one voice. It's really critical having the same language.

School performance is also monitored by executive directors and content specialists who review the same campus reports, looking at targets and benchmarks for gap closures. After the review, these administrators meet with principals on a regular basis to look at their data and discuss adjustments. The executive directors also have ongoing discussions about assessment data. As an example, the executive directors make sure that any students with a low third-grade reading score have the appropriate intervention and resources.

Systemic Implementation

Conversations about using data as a positive means to inform instruction and district practices were common throughout the interviews in Norfolk. When asked what practices have had the most impact on improving student performance, the superintendent stated that they used a systemic approach, describing it as "coming at the elephant" from different angles by communicating clear goals and expectations on the classroom, school, feeder pattern, and district levels. Highlighting the importance of measuring the outcomes of those expectations, one principal identified their most important reform as, "Data-driven decision making and accountability. There's no other answer to that. There IS a magic bullet: data-driven decision making."

Other leaders cited Doug Reeves and his Center for Performance Assessment as key to helping the district refine its accountability system through training and tools that enabled staff at all levels to use data as a part of the district's daily culture. Data not only served as a mechanism for driving decisions, but also created common dialogue and set processes for the district, schools, and classrooms. One principal described how Reeves helped him organize his school in vertical data teams. While the public review of data was at first unnerving to his teachers, in the end, he said, they voiced appreciation for the process. "Doug always said the data will provide the

buy-in!” said the principal. Several central office administrators agreed that Reeves was a key element in building their accountability system because he “presents a very logical, easy-to-understand researched-based message.”

Discussion

All past and present Broad Prize finalists use data to drive instruction and other decision-making processes—possibly one reason why they have been successful in raising student achievement and closing gaps.

Aldine Independent School District, Boston Public Schools, and Norfolk Public Schools have been Broad Prize finalists more than once, and have shown marked increase in student achievement over time while reducing ethnic and income achievement gaps. These three districts have thoughtfully built well-connected systems that prompt daily use of data as a transparent practice from the central office to individual classrooms. Each of these districts began its “road to Broad” upon discovery that its student achievement needed to improve drastically to prepare students for college and skilled careers. Understanding that its goals depended on creating much more cohesion between classrooms, schools, feeder patterns, and the district, each of the three districts began systemic alignment by clearly defining what was to be taught and learned in every grade and level. The major tools used to manage and monitor consistent and correct implementation of curriculum and instruction were various forms of data and monitoring systems.

Data as a Diagnostic Tool

These three districts are driven by the philosophy that engaging in early and frequent intervention can promote student success and prevent unchecked development of larger individual or systemic problems. Through the use of real-time data, teachers, principals, and district leaders can target areas of weakness early instead of waiting until the end of the year “to find out students didn’t get it.” Many interviewees pointed to their benchmark, quarterly, and common assessments as a key to their success in raising student achievement. Paired with curriculum pacing guides that clearly articulated what teachers should cover in a prescribed time period (but not in a prescribed manner, one should note), benchmark assessments help teachers understand if students are mastering instructional sequences appropriately to move on to the next level. Although these assessments are often district-developed, they are created with the input of teachers.

Teachers, principals, and district staff members said that frequent real-time data helped them identify areas where individual students or groups of students were struggling. Identifying instructional needs and developing appropriate interventions happens often through groups of teachers getting together in data teams or weekly collaborative meetings to analyze results and plan future instruction. Meeting over data not only helps teachers plan and improve instruction, but also serves as an important vehicle for aligning instruction across both horizontal and vertical grade

levels. Frequent team meetings are made possible through the availability of common planning time for teachers.

Data as a Monitoring Tool

In addition to implementing frequent assessments and data reviews, all three districts also have overarching systemic tools and processes for monitoring school performance and connecting school and district goals. These tools are implemented and reviewed several times a year and include both summative and formative assessment data. Each of the tools has different features and formats to manage goal-planning processes and strategies. Aldine uses a Baldrige-based Scorecard that includes formative, summative, and walk-through results that directly feed into Action Plans. Scorecards have been implemented at the classroom, grade, feeder-pattern, and district levels. Boston's Whole School Improvement Plan includes formative and summative assessment data tied to school goals that feed into the district's goals. Norfolk's Comprehensive Accountability Plan includes three tiers that contain summative and formative performance data as well as a narrative that analyzes the different data points within the schools' context. All of these monitoring systems are public within the district through a local intranet or through a district website to connect different system levels and create an open accountability environment.

Data are also gathered on overall school and classroom performance through structured walk-through processes. All three districts implement a walk-through process that includes training the walk-through teams and using a rubric to document activities and evaluate targets, which in most cases is classroom instruction. In Norfolk and Aldine, the district leaders took particular care in building a trusting environment prior to implementing the walk-through process. They assured schools and teachers that walk-through data would not be used for formal evaluations and would not go directly to central office, and that the walk-throughs would always be treated as opportunities to offer support, share practices, and align activities across the K-12 system. Once teachers and principals found that the process was used solely to improve instruction, they felt comfortable and open about having outsiders visit their classrooms.

Data Management Systems

Aldine, Boston, and Norfolk developed powerful data management systems to collect and analyze data. The most important feature of these systems is the ability for district leaders, principals, and teachers to access and query data easily and on an ongoing basis. The data management systems in all three districts provide summative state assessment results and formative benchmark, quarterly and common assessments results. The differences in the data management systems vary only slightly, with Boston having the most interactive and inclusive tools, including data training modules, links to lesson plans, and interactive graphs connecting performance results to specific questions.

Additionally, all three districts provide or plan to provide student demographic data within the same data management system so that student progress and course placement can be easily monitored. Norfolk houses its summative and formative assessment data within two different data tools, and this is one of the most obvious differences among these districts' systems. Impressively, all three districts have invested the time necessary for creating and updating their systems to ensure they are easily accessible and user-friendly. Each district gradually introduced the data management systems to the users, providing training to central office leaders, principals, and teachers, resulting in successful high-volume use.

Systemic Implementation and Culture Building

Creating an atmosphere that is comfortable with frequent, if not daily, scrutiny of student, teacher, and administrator performance requires care and consideration. Multiple interviews conducted in Aldine, Boston, and Norfolk supported the belief that data were truly used as “a flashlight rather than a hammer” for improving student achievement. Statements like “We looked at the data and just didn't get it right, so we worked together to find a better way” were frequent, and we heard those statements at all levels of these three districts.

Accustomed to witnessing the pressure of data management systems trickle down from the superintendent to teachers, we were surprised at how comfortable and excited teachers and principals were in analyzing and discussing data results openly and honestly. Several leaders in Norfolk and Boston referred to the process as acknowledging and addressing “the brutal facts” that are revealed through the use of tools to disaggregate data by various programs and student groups. In addition to practices around data, it seemed that all the practices within these districts, including goal setting, curriculum development, and professional development selection involved multiple stakeholders functioning within a “customer-service” framework.

Conclusion

The data-use commonalities among these three districts include frequent student performance data collection through various types of formative and summative assessments; diagnostic and monitoring tools that provide ongoing feedback on performance at all system levels; a comprehensive data management system that is easy to access and use; and development of a culture that uses data to guide instructional decisions rather than for punishment. Other practices supporting data-use included training and supports for principals and teachers to use data, and opportunities for leaders, principals, and teachers to meet for the purpose of analyzing and discussing data results. The end result is that teachers meet frequently—often daily—in all three districts to analyze data, plan instruction, and share best practices. The ensuing dialogue around data has proven to be important, as it has led to problem-solving and finding ways to improve and align instruction and instructional supports.

The “best practice” uses of data as illustrated by the three featured Broad Prize

finalists are valuable for two reasons. First, they demonstrate how higher performing school systems have focused on the most strategic and effective ways for improving student learning by using data as a guide. All three districts assert that data have been an important catalyst for increasing student achievement and narrowing achievement gaps. Second, they demonstrate that a culture of trust can coexist with the frequent use of data, given the right supports and structures. When district leaders, school administrators, teachers, and even students open a dialogue about data, these systems begin to inspire personal and collective accountability to the same goal: student success.

Notes

1. Bloom's Taxonomy identifies six types of knowledge: knowledge, comprehension, application, analysis, synthesis, and evaluation. Bloom was an educational expert who believed that learning involves, or should involve, moving from simple to more complex kinds of thinking.
2. The Baldrige Model for Performance Excellence is a process of continuous improvement that has been used in business. Named after former Secretary of Commerce Malcolm Baldrige, the Baldrige criteria are a blueprint for developing quality business practices. In 1998, the Malcolm Baldrige National Quality Award was expanded into healthcare and education and an education application of Baldrige was developed called BiE (Baldrige in Education). The criteria are built upon a set of core values and concepts that include visionary leadership, customer-driven excellence, valuing employees and partners, management by fact, and a focus on results and creating value.

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