DATA QUALITY CAMPAIGN
Using Data To Improve Student Achievement

Data-Driven Districts: Building the Culture and Capacity To Improve Student Achievement

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Districts nationwide are inundated with data: state and district test results, attendance data, disciplinary data, and demographic data, to name just a few types of information. The No Child Left Behind Act has only increased the demand for data collection and reporting. Although collecting and reporting data is essential, knowing how to analyze and apply this information is just as important for meeting the goal of improving student achievement. To realize the potential of data-driven decisionmaking, attention also must be paid to how data are accessed, shared and used at the district level.

Recently the Data Quality Campaign (DQC) collaborated with APQC, a nonprofit, member-based organization working to help educators improve district processes, to conduct a benchmarking study, ***Best Practices in Data-Driven Decisionmaking.*** The 69 participating districts, including eight best-practice districts from across the nation, collaborated for six months to identify and understand what distinguishes characteristics of districts that are excelling at using data for making key operational and instructional decisions. This brief is an overview of the key findings from the study.

Highlights

In this brief, find out more about:

- The *Best Practices in Data-Driven Decisionmaking* study;
- Key findings from the study;
- Best-practice districts, including:
  - Western Heights Public Schools,
  - Clark County School District,
  - Gwinnett County Public Schools; and
- Additional reports and resources on data-driven decisionmaking.

Project Overview

Since its inception in 2005, the DQC has focused on improving state longitudinal data systems. However, the DQC partners recognize that districts are responsible for delivering educational services and that many already have student-level data systems — in some cases more advanced than the emerging state longitudinal data systems. Therefore, the DQC partnered with APQC in 2008 to conduct a benchmarking study of district best practices and investigate how states can support districts and data-driven decisionmaking at all levels.

Based on input from special advisers, subject matter experts, study participants and secondary research, APQC chose to focus on four key district-level areas affecting data-driven decisionmaking. These four areas framed the research effort by shaping the focus of site visits and data collection instruments. They included:

1. **Data Collection.** This area focuses on how districts collect and aggregate data from often disparate data sources.
   - How are districts ensuring the reliability and validity of the data beyond the actual collection?
   - How are innovative districts simplifying the process of sharing data between district and state data systems?

2. **Data Management and Analysis.** This area focuses on how districts maintain and analyze their existing data.
   - What are the policies and practices concerning data management and analysis?
   - How much money and time are spent on data management?
   - What human and technological resources does it require?
3. **Culture.** This area focuses on cultural aspects that promote data use and affect how data shape conversations, meetings and strategic plans within a district.
   - What organizational structures, practices and policies encourage staff to incorporate data use into their daily activities?
   - How much time do employees have to examine data?
4. **Implementation.** This final area focuses on how data-driven decisionmaking is actually being implemented.
   - How are districts working to increase the actual use of data?
   - Does professional development increase data use? If so, how much professional development are districts devoting to data use?
   - What is the focus of this professional development?
   - What kinds of decisions are made based on the data — from instructional decisions at the classroom level to curriculum changes at the district level?

One of the main objectives of the benchmarking project was to provide comparable data around data-driven decisionmaking so that districts can begin to identify key areas on which to focus additional time and resources to improve overall performance. Of the 69 participating districts, 57 completed a 52-question survey aligned with the four focus areas, including the eight best-practice districts: Aldine Independent School District, Clark County School District, Fulton County Schools, Gwinnett County Public Schools, Iredell-Statesville Schools, Montgomery County Public Schools, Palatine Community Consolidated School District #15 and Western Heights Public Schools. (See table on next page for a complete list of best-practice and participant districts.)

Key Findings

Based on the survey results, several key distinctions emerged between best-practice districts and other participant districts. Districts that have successfully integrated data into their instructional and management processes consistently:

- Use standards-based measures to inform instructional decisions;
- Offer professional development opportunities to support a culture of data use;
- Establish and leverage leadership support for a data-driven culture;
- Adopt a continuous improvement model that tracks key indicators; and
- Design and implement a data governance strategy to ensure data quality.

Use Standards-Based Measures To Inform Instructional Decisions

Best-practice and participant districts report state and district exams as the two most important data elements for shaping curriculum and instructional decisions. However, best-practice districts and participant districts place different emphasis on the importance of classroom grades for measuring student achievement.

Districts that Participated in the *Best Practices in Data-Driven Decisionmaking* Benchmarking Study

District	Completed Survey
Best-Practice Districts	
Aldine Independent School District, TX	✓
Clark County School District, NV	✓
Fulton County Schools, GA	✓
Gwinnett County Public Schools, GA	✓
Iredell-Statesville Schools, NC	✓
Montgomery County Public Schools, MD	✓
Palatine Community Consolidated School District #15, IL	✓
Western Heights Public Schools, OK	✓
Participant Districts	
Anoka-Hennepin School District, MN	✓
Baltimore County Public Schools, MD	
Bedford County Department of Education, TN	✓
Bellevue School District 405, WA	
Blue Valley School District, KS	✓
Carrollton-Farmers Branch Independent School District, TX	
Charles County Public Schools, MD	
Chicago Public Schools, IL	✓
Community Consolidated School District 93, IL	✓
Community Unit School District #300, IL	✓
Corpus Christi Independent School District, TX	✓
Coventry Public Schools, RI	✓
Cypress Fairbanks Independent School District, TX	✓
Dallas Independent School District, TX	✓
Dysart Unified District, AZ	✓
East Baton Rouge Parish School Board, LA	✓
Elk Grove Unified School District, CA	✓
Enlarged City School District of Middletown, NY	✓
Fairfax County Public Schools, VA	✓
Fort Wayne Community Schools, IN	✓
Fort Worth Independent School District, TX	✓
Fresno Unified School District, CA	
Gaston County Schools, NC	✓
Guilford County Schools, NC	✓
Hampton City Public Schools, VA	✓

District	Completed Survey
Participant Districts *(continued)*	
Harford County Public Schools, MD	✓
Houston Independent School District, TX	✓
Humble Independent School District, TX	
Jenks Public Schools, OK	✓
Kipp: Houston, TX	
Klein Independent School District, TX	✓
Lake Washington School District No. 414, WA	
Los Angeles Unified School District, CA	✓
Loudoun County Public Schools, VA	✓
Mesa Unified School District, AZ	✓
Metropolitan Nashville Public Schools, TN	✓
Miami-Dade County Public Schools, FL	✓
New York City Public Schools, NY	✓
North Penn School District, PA	✓
Oakland Unified School District, CA	✓
Omaha Public Schools, NE	✓
Palo Alto Unified School District, CA	✓
Paradise Valley Unified District, AZ	✓
Pasco County School District, FL	✓
Pawtucket School Department, RI	
Pinellas County Public Schools, FL	✓
Poudre School District, CO	✓
Prince William County Public Schools, VA	✓
Richland County School District 2, SC	
Rockwood School District, MO	✓
Sacramento City Unified School District, CA	✓
San Diego Unified School District, CA	
San Francisco Unified School District, CA	
St. Charles Community Unit School District 303, IL	✓
St. Charles Parish Public Schools, LA	✓
Tulsa Public Schools, OK	✓
Virginia Beach City Public Schools, VA	✓
Wake County Public School System, NC	✓
Washoe County School District, NV	✓
Waukesha School District, WI	✓
Westfield Washington Schools, IN	✓

> "I don't anticipate getting any better results even if we give the [standardized] test for 20 years. I'll anticipate getting better results when we start using the data from the . . . test."
>
> ***— Mary K. Zarr***
>
> *Assistant Superintendent for Curriculum, Special Services and School Improvement, Community Consolidated School District #15*

While participant districts use state exams, district exams and classroom grades as the most important measures of student progress, best-practice districts use a combination of methods including district exams, state exams, norm-referenced exams, interventions, SAT/ACT and Advanced Placement tests, and English language learner (ELL) classification to measure student achievement.

At the heart of this discrepancy is the subjectivity inherent in a solely teacher-assigned student grading system versus a standards-based grading system.

In the benchmarking study, 75 percent of best-practice districts had implemented some form of standards-based grading. As was explained by Dr. Lisa McLaughlin, assistant superintendent of Western Heights Public Schools,

> … The parents expect grades. That's what they expect out of you. But we are trying to move towards standards-based reports to our parents. … Yes it's accountability-driven, but I think it's gotten us to another level because it's brought the teachers around to realizing how subjective that their grades are. … So where have we started? We tell them that 40% of the grade is going to be based on formative assessments of the standards and expectations in terms of standardized testing, in terms of what the standards [are]. What do you expect to learn here, and have you learned it? We certainly want to honor the teacher, so there's 30% on classroom work, and 30% on other types of assessment.

Standards-based grading systems reduce the subjectivity of classroom grades. Once this has been accomplished, the classroom grade can become a powerful indicator and predictor of growth and achievement.

Offer Professional Development Opportunities To Support a Culture of Data Use

Best-practice districts use professional development as an opportunity to establish and promote a culture in which data are used to inform instruction and guide collaboration versus a culture in which data are used to evaluate performance. To this end, all best-practice districts report that their training and mentoring programs formally emphasize the importance of data analysis for improvement and not solely for evaluation.

At Western Heights Public Schools, the director of research and school improvement and the director of student assessment hold regular meetings with site-level professional learning communities and other faculty members to demonstrate and reiterate the importance of data analysis for improvement.

Other characteristics of professional development in best-practice districts include:

- Best-practice districts offer approximately two times more data-related professional development for new teachers and approximately 50 percent more for returning teachers than participant districts.
- More of that data-related professional development time is spent on data analysis than on technology. This training resulted in tangible differences, such as the use of advanced data analysis techniques including correlations, regression, analysis of variance and multivariate analysis. In best-practice districts, the number of teachers and principals employing these advanced analytical tools markedly increased: 63 percent of best-practice districts' teachers and

principals used such tools, while only 6 percent of teachers and 14 percent of principals in participant districts employed such methods.

- Best-practice districts team central office staff and campus staff to train data-entry clerks. While 57 percent of participating districts rely on central office staff to conduct campus data-entry training, none of the best-practice partners relies solely on central office staff.

Establish and Leverage Leadership Support for a Data-Driven Culture

A common characteristic of all best-practice districts is leadership that sets the tone for and demands that all interactions and decisions be based on data. Brenda Clark, associate superintendent of learning at Iredell-Statesville Schools, says, "I will not talk to [teachers] when they come to my office with issues unless they have data or are planning on collecting data."

One of the best-practice districts, Gwinnett County Public Schools, recognizes the need for strong leadership to implement data-driven decisionmaking. As Gwinnett County Public Schools explains, "the vision and commitment of the CEO/Superintendent and Board of Education align human and financial resources to provide the tools, staff development and cross divisional support for timely and accurate data to improve instruction." This alignment should not simply be a top-down effort but needs to be modeled at all levels.

Fulton County Schools has incorporated data-driven decisionmaking into its balanced scorecard performance management tool and strategic planning process for schools and central office departments. Ensuring the effective use of data to inform student instruction requires a strong champion, but that individual does not necessarily have to be the superintendent.

Throughout the study, districts consistently remarked that time was a key factor in the cultural acceptance of data use. Teachers and central office staff must have time to review and analyze data if they are to accept and appreciate its importance, which requires leadership support. Best-practice districts consistently devote much more time to data analysis than other districts. Teachers in best-practice districts spend on average almost two hours per week and central office staff almost 4.5 hours per week on data analysis. For teachers, this time is often provided through professional learning communities or other group activities. To promote a culture that values data, leaders in best-practice districts also use Web sites and newsletters with processes in place that ensure frequent updates.

> "You have to bring [the school board] along and share your vision of where you want [the district] to go and what it'll do for teachers and kids."
>
> ***— Dr. Lisa McLaughlin***
> *Assistant Superintendent, Western Heights Public Schools*

Adopt a Continuous Improvement Model that Tracks Key Indicators

As best-practice districts demonstrate, continuous improvement initiatives are not possible without having rigorous data available. A common characteristic across all best-practice districts was strict adherence to a continuous improvement model to manage and improve all instructional and operational aspects of the district. The use of continuous improvement tools, such as balanced scorecards and the Plan Do Study Act (PDSA) cycle, requires districts to have systems in place to track and report numerous performance metrics. Therefore, the best-practice districts were much more likely to have easy access to the types of data that were asked for in the benchmarking study.

Almost two-thirds of best-practice districts (compared to only 30 percent of participant districts) track the number of data-entry errors over time. Six of eight best-practice districts are able to provide information regarding the overall number of hours devoted to professional development related to data use. Best-practice districts also are more likely to know how much data-related professional development focuses on data use and analysis as opposed to data-related technology training. Fewer than 50 percent of the participant districts are able to report these data because they say the data are not available, too difficult to get or simply not tracked.

Both best-practice and participant districts find reporting expenditures for their data-related investments difficult. Among districts that do have access to data-specific financial information, very few are able to provide exact figures. If district financial systems do not allow ready access to data-related costs, a return on investment analysis is not possible.

Design and Implement a Data Governance Strategy To Ensure Data Quality

Best-practice districts have well-established, documented and consistent procedures and business rules for data validation. These districts develop and monitor key processes across divisions to ensure that reports include the precise data needed to answer process questions. Formal data checks apply logic to ensure that the data reported make sense within parameters. Montgomery County Public Schools, a best-practice district, enforces validation procedures, which are documented at the district level using data integrity verification reports. The district has integrity constraints programmed into the data systems.

Best-practice districts hold employees accountable for data integrity throughout the entire collection, maintenance and reporting phases. For example, Clark County School District checks for errors daily and has designated an assessment and accountability organization as a data clearinghouse for district and school data. Gwinnett County Public Schools ties accuracy to performance evaluations. The integrity of the data elements is monitored by a data advisory committee and an executive data steering committee.

Data validity also suffers when school personnel have too many other responsibilities and the system has too many points of entry. Lacking clearly defined business rules for data entry can lead to duplication of information in data systems or sometimes omission of data. As mentioned previously, having longitudinal error tracking is a significant difference between best-practice and participant districts. This tracking is an important part of ensuring that data are reliable and valid.

Participant districts frequently cited a lack of expertise by personnel as a source for their district's lack of data integrity. This, coupled with high turnover, further increases the opportunity for data errors.

Challenges of District/State Data Connection

The DQC has primarily focused on building and using longitudinal data systems at the state level; to reach the goal of using data to improve student achievement, states must partner with and support districts' critical role. As illustrated by this study, districts have vastly different levels of sophistication for building and using data systems to inform decisions; therefore, the state has the opportunity to provide economies of scale and help all districts use data to inform decisions. Before realizing the potential of these state investments, the cultural and technical differences that exist between state and district data systems must be addressed.

Cultural: Misalignment between data requested by the state and data used by the district to improve student achievement

Best-practice districts see the primary purpose of collecting and analyzing data as increasing student learning. Study participants overwhelmingly agreed that there seems to be

a fundamental misalignment between the types of data that districts deem to be imperative for student achievement and the types of data that are being requested by the state for federal accountability purposes.

As Dr. Katherine Conoly explained, "Yes, we as states or as school districts … want accountability data for purposes outside of … classroom teaching and learning. And so the data that gives purpose and meaning to the classroom teacher looks completely different from that. And [states are] not collecting that data."

When collecting and reporting data, districts, state education agencies and the U.S. Department of Education are acting on their perception of who their primary stakeholder group/customer is. Best-practice districts most frequently identify students and their families as customers, whereas state education agencies are accountable to the federal government. The data elements that are needed to satisfy each customer are fundamentally different.

For state and federal accountability systems, districts provide student counts, attendance and aggregate student achievement data. Districts themselves need student-level information to inform instruction. This dual demand requires districts to spend valuable time collecting data that most likely will never be used to inform decisions at the classroom level.

Technical: State-to-district data transfer barriers

This study uncovered several barriers to a successful relationship between the states and districts, including:

- **Lack of communication and collaboration** — approximately half of all districts report having minimal to no communication or collaboration with their state education agencies on state technology planning, district technology planning or data training opportunities.
- **Frequently changing requirements** — best-practice districts report that their state education agencies change requirements for accountability reporting frequently and with no warning, causing them to spend unnecessary time and resources ramping up to meet the new requirements. The states also are not allowing enough time for districts to comply.
- **Speed of data delivery** — all districts express a concern about the speed at which achievement results are returned from the state to the districts. Districts report that receiving data on test results from the state takes approximately two months. Once the state distributes the data, districts need approximately two weeks to completely disseminate the information, representing a total lag of approximately two and a half months before the data are available to teachers. The lag time means that teachers are not able to use this information to inform instruction.

Districts also face a unique challenge when purchasing systems from commercial vendors. The idiosyncratic nature of the data elements being demanded for accountability purposes means that districts often need a software package that works for them but cannot fulfill the requirements of every other district. This results in a district's purchasing a product from a vendor and either negotiating a level of cooperation and customization that may not be in the best interest of a vendor that wants to provide its products in different states or expending district programmer time to customize the product.

When the states do provide training, workshops, annual conferences and technical assistance papers, the districts cite this type of collaboration as valuable. Gwinnett County Public Schools says that the collaborative working relationship between the district and state fosters an iterative discussion of data collection and reporting that includes defining data requirements early in the process.

District Guidelines for the Effective Use of Data

Build a Culture of Data-Driven Decisionmaking

- Ensure the collection of multiple types of student-level data, including longitudinal state, formative and summative assessment; attendance; and demographic data.
- Allocate time in department meetings and professional learning communities, and provide other vehicles for teachers and principals to view, discuss and collaborate using data.
- Encourage leadership at all levels to require the use of data for all meetings and individual interactions.
- Create and allocate resources for a continuous improvement system (such as the Baldrige National Quality Program or the PDSA model) that requires the use of student-level data for key performance indicators.
- Build a collaborative relationship with the state education agency to ensure that state-level collection, reporting and analysis support district data use by delivering timely data in user-friendly formats.
- ***Don't assume that you can change the culture without changing structures and policies in the district.***

Ensure Data Quality

- Collaborate with the state education agency to create a standardized data transfer process with clear data requirements and processes for notification of changes to collection requirements.
- Establish and clearly communicate a data governance policy that articulates roles and responsibilities; facilitates cross-functional access; increases data security; and improves the accuracy, reliability and validity of data.
- Train and hold employees accountable for data integrity and validity.
- Develop interoperable standards and data management systems that facilitate cross-functional access.
- Develop well-defined data audit processes that identify data that are likely to be in error, spot-check other information randomly and conduct site visits when necessary to audit the validity of data.
- ***Don't have multiple resources or departments entering the same categories of data.***

Use Data To Inform Decisions at All Levels

- Develop data management systems that facilitate real-time access to longitudinal student-level data and generate standard reports as well as allow customizable queries.
- Use data at all levels to make decisions about issues including curriculum, school improvement planning, resource allocation and classroom instruction.
- Include student-level statistics in multiple channels of communication that target diverse audiences and stakeholders.
- Provide education stakeholders professional development on not just data entry but also data use and analysis.
- Align curriculum, assessments and grading systems to local and state content standards to encourage systemic data use within and across classrooms and schools.
- Educate all stakeholder groups, including the board of education, on the importance of collecting and using robust high-quality data.
- ***Don't use data to place blame on people or situations.***

Best-Practice District Case Studies

Western Heights Public Schools

Investing in Technology and Capacity To Use Data for Continuous Improvement

Western Heights Public Schools in Oklahoma City, OK, is a small, independent district composed of six schools and approximately 3,300 students. Almost 80 percent of its students qualify for the free or reduced-price lunch programs, and 13 percent are ELLs. To accomplish its mission of educating every student for success, Western Heights adopted and employed continual, rigorous efforts for improvement and provided real-time, accurate data to all its stakeholders. By investing in both the technology and capacity to support data-driven decisionmaking, the district has improved data quality, reduced reporting burdens, and increased data access and use, all of which culminate in the most important benefit — increased student achievement.

Technological solution to improve data quality, reduce reporting burdens and eliminate data silos

In 2002, Western Heights inaccurately reported high school graduation rates at 96 percent. Western Heights also was experiencing difficulty in submitting the proper student enrollment data to the state in the necessary format and timeframe. At the time, the district had 11 different software platforms. It needed to find a technological solution that would allow all systems to share data effortlessly and accurately. District administrators also wanted a way to collect and disseminate all student data to relevant stakeholders — principals, teachers and parents — safely and securely. Furthermore, the administrators were seeking a technology business solution that not only held extensive reporting capabilities but also could accommodate the continual changes from state and government levels on classroom testing and reporting standards.

Five years ago, Western Heights selected and implemented the Zone Integration Server (ZIS), a technology solution based on the Schools Interoperability Framework (SIF)[1] standards that allows all disparate software systems to exchange data. As a result of this ZIS/SIF-based solution, the district can now distribute student data in nearly real time. The system manages access for all stakeholders, ensuring that the proper data are received by the appropriate users while protecting student and teacher privacy. This solution also has allowed Western Heights to have more detailed and accurate student data than state-level reports typically require. For example, state-level reports use the same code for any break in enrollment, but Western Heights added exit codes to identify whether the break was due to suspension, illness or work. Also, Western Heights can identify whether a student left the district due to a move to a different school district, a move to a private school or even death. Current state-level reporting does not differentiate a deceased student from one who has dropped out of school.

Investing in professional development and reporting and analysis tools to support data use by all stakeholders

Investing in new technology was critical, but perhaps the largest factor contributing to Western Heights' successful use of data-driven decisionmaking was the substantial investment the district made in professional development. A primary goal was to allow teachers to focus on the instructional needs of their students, while administrators would attend to their own reporting needs. Therefore, the district has a department devoted to technological support, while each school location has site facilitators who are given extra

[1] For more information, please see www.sifinfo.org; Data Quality Campaign, *The Right Data to the Right People at the Right Time: How Interoperability Helps America's Students Succeed*, June 2007, www.DataQualityCampaign.org/files/Meetings-DQC_Quarterly_Issue_Brief_061307.pdf.

Tools To Support Data-Driven Decisionmaking

In committing district resources to both technology and capacity building, Western Heights has created and deployed the following tools, which further institutionalize data-driven decisionmaking among all education stakeholders:

EZ Planner Provides Teachers with Data Access and Curriculum Resources

With the EZ Planner software, teachers at Western Heights have access to a curriculum resource library — a comprehensive collection of data that allows teachers to create, share and explore lesson plans and view state standards. The lesson plans, as well as weekly assignments and specific classroom details, are then made available through a portal for parents and students to access and use.

Professional Learning Communities Support Teacher Collaboration and Data Use

Western Heights established a professional learning community for each of its schools. The professional learning community provides opportunity for educators to collaborate and communicate as well as instructional support tools and templates that teams can use to facilitate data discussions. It also is a support tool for new teachers.

Parent Portal Supports Family and Student Involvement

Western Heights' ZIS/SIF-based solution includes a successful parent portal that provides comprehensive online resources to students and their families while protecting the integrity of the data and the security of private information. The district developed an entire business process around the issue of data integrity and privacy, and as a result, any change in family data requires reverification of the entire family economic unit.

training to assist teachers. Together, the district and site facilitators work with teachers on the value of the data and how to use them to prepare lesson plans that meet or exceed state standards. The district ensures teachers receive enough training to apply data software to classroom needs — returning teachers receive about 10 hours of data training, while new teachers receive about 20 hours.

Successes, challenges and future goals

Western Heights has enjoyed steady improvement in student performance since the implementation of the ZIS/SIF-based solution. During 2004–08, high school graduation rates improved (as well as the accuracy of this rate), and math and reading scores at the middle school level improved. Western Heights also has enjoyed an increase in district general funds of $2.1 million over a 36-month period because of savings that resulted from having better data and accounting systems.

Western Heights will continue to focus on barriers that disrupt and slow the state-to-district and vendor-to-district data transfer processes. Such barriers include a distinct need for uniform scheduling, course identifiers and student identification numbers. Frequent changes to data collection and reporting requirements, excessive "wait time" on data provided by state agencies and/or vendors, and incompatible software systems are all additional barriers. In fact, the district now insists that all technology be SIF compatible and expects vendors to respond and adapt to this need. Future goals are to continue to use data to improve each student's education and continue to customize reports that provide maximum value to all stakeholders.

Clark County School District

Using Data as a Tool for Management and Instruction

Las Vegas' Clark County School District (CCSD) is the fifth-largest district in the United States and serves 308,783 students, of which 55 to 60 percent qualify for free or reduced-price lunch. Since the mid-1990s, CCSD has seen a 7 to 10 percent annual growth rate, and it has added an average of 12 new schools and about 1,700 teachers per year for the past 10 to 12 years. Despite this continuous growth, CCSD has been able to ensure a high-quality education for its students by implementing numerous management and instructional tools and processes that are all driven by quality and timely data.

Board governance policy empowers district and school leaders to use data

In 2000, CCSD's board of trustees changed its governance policy to create clear goals with tangible indicators and provide CCSD staff with the autonomy to meet them. Rather than prescribing decisions, programs and specific strategies, the board sets large policies with end and means statements for the superintendent that outline both goals and broad strategies for accomplishing them. The district staff is afforded more freedom in exchange for tracking indicators and being held accountable for progress toward meeting the board's goals. The district staff is responsible for demonstrating to the board that the mission, vision and values are achieved. CCSD uses the Quality Assurance Framework to show growth in various areas. The administration sets target data points for the indicators by examining past data and identifying what numbers would indicate limited, adequate and superior growth. It then assigns a green arrow if the target was met and a red arrow if it wasn't.

The superintendent, regions superintendents and school principals also include specific indicators that showed no progress or regression in their school improvement plans and delineate action steps to address those issues. The superintendent reports the programs, action steps and activities that are in place to address areas of deficiencies to the board.

Culture change to standards-based learning gives teachers the data needed to inform instruction

In addition to simply reporting on student success, CCSD recognized the power of data as a tool to actually improve student achievement. Prior to adopting interim assessments, CCSD relied on data collected from three points in time — the beginning, middle and end of the year — only to get the results three months later. With the passage of the No Child Left Behind Act and its increased accountability measures, CCSD wanted timely information on whether its instruction was effective, so the administration created a pilot of formative assessments. During the design and deployment of these assessments, CCSD involved teachers and curriculum specialists to ensure relevance and reinforce the importance of the learning standards.

The district provided teachers with not only an item bank but also "testlets," which are single-page, four- or five-item mini-tests that teachers can use as interventions with students who didn't perform well on the initial assessment. With the interim assessment program in place, CCSD needed a way to gather and manage the data so they could be used effectively, so it chose an instructional data management system that houses all data from both the interim and state assessments and data from the district's student information system. As a result of these systems and tools, teachers collaborated and talked about which student(s) understood a skill, concept or standard. Based on these data-driven conversations, students were regrouped and retaught to individualize instruction and improve student achievement.

Successes, challenges and future plans

CCSD is the only one of the nation's 10 most populous districts that met all federal benchmarks for the No Child Left Behind Act in the 2006–07 school year. At first, the schools resisted aligning instruction with the state standards and benchmarks. However, after teachers and principals saw marked growth in many of the elementary schools that used the formative assessments, they understood the value of frequent assessments of student learning. Middle schools now also are using the formative assessment items and are asking for more. At the high school level, resistance remains — many high school teachers and principals give the assessments but do not use them. To address this, some elementary and middle school principals are talking to the high school principals about the value of the assessments. In addition, some middle school principals have naturally migrated to the high schools. Moving forward, CCSD will continue to focus on not only administering the assessments but also using the results as tools for improvement at all levels of schooling.

Gwinnett County Public Schools

Defining Roles and Responsibilities To Increase Data Quality and Use

Gwinnett County Public Schools (GCPS) is located in the metro Atlanta area. It is the 14th-largest school district in the nation and serves approximately 156,000 students, 41 percent of whom qualify for free or reduced-price lunch programs and approximately 15 percent of whom are ELLs. The district has an average mobility rate of 23.16 entries and withdrawals per 100 students. Because it is Georgia's largest school district, data issues within GCPS are magnified, and a public embarrassment over the accuracy of data reported to the state served as the catalyst to create a districtwide data quality initiative that addressed both the technical and cultural factors needed to systemically improve data use.

Poor data quality leads to public accountability

GCPS, and indeed the state of Georgia, was given a wake-up call when the district was named in a front-page article in the *Atlanta Journal-Constitution* describing discrepancies in discipline data reported on the Georgia Department of Education Web site. The newspaper stated that the district had reported data inaccurately. One of the causes of this problem was that districts were interpreting rules differently and, as such, reporting different data to the state education agency. In addition, the district had made an application change that had not been documented. With no way to track ownership of the data being reported, the district developed a data quality initiative. This process benefited from strong support from the superintendent and resulted in strong punitive consequences should reporting errors ever occur again.

Clarifying data governance critical to improving data quality

To ensure that the reporting errors would never be repeated, the district placed a new emphasis on data ownership and the responsibility of the data owners to provide quality data. Analyses showed that the data being provided were not as clean as they needed to be. A cross-functional action team composed of central office and local school personnel, including principals and clerks, met for 90 days to identify problems and make recommendations. As a result, two standing committees were created to oversee data issues. A data advisory team that consists of data managers with operational responsibilities meets monthly and makes suggestions to the executive data steering committee. Based on these recommendations, the executive data steering committee, composed of the chief executive officer and the superintendent's executive cabinet, reviews and signs off on data before they are presented to the superintendent. This process forces ownership at all levels, from school data clerks, teachers and program contacts to school administrators and district program leaders and finally to district leadership.

An important part of achieving the goal of collecting and reporting high-quality, reliable and valid data is the Application for Data Integrity and Accountability (ADIA). This application uses predefined business rules and validation as a first-level error check. Each night, data from schools are updated, and the application produces an exception report for each school. These errors are then reported for correction, and data are resubmitted. These resubmitted data then undergo the ADIA validation process again. For data clerks, ADIA eliminates redundant error reporting by organizing validation processes and providing a centralized resource for data checks and changes. This allows principals to have a single view of all data issues related to their schools. These school-level validation functions allow streamlined communication between schools and the district. This results in less time being used on data validation for state reporting and documents data exceptions to be reviewed by the Georgia Department of Education. The true power of this effort is the additional time that is created for qualitative review of district data.

Streamlining technology to complement clear lines of ownership

Through this work, GCPS learned several key lessons. One lesson is that data quality is crucial. As part of the reporting process, GCPS collects an estimated 74 million different data elements annually, underscoring the vital need for clean data. Before implementing the districtwide student information system and data warehouse, GCPS discovered that because no central database existed, schools were making data requests and creating their own school databases. In conjunction with IBM, the district developed a system that has standards and data validation checks to help facilitate the consolidation of the millions of data elements that need to be collected. This student information system then feeds into the data warehouse, which provides the data needed by numerous district departments. The data warehouse is only as good as the data stored within it. Developing this system naturally led to another important lesson: Clear lines of data ownership are needed to trace elements in the data warehouse to their owners.

Additional Districts with Exceptional Data Use

For the *Best Practices in Data-Driven Decisionmaking* study, APQC identified eight best-practice districts that have been recognized for unique or innovative practices. In addition to Clark County, Gwinnett County and Western Heights, these districts include:

Aldine Independent School District

Located in Houston, TX, Aldine Independent School District (ISD) begins its annual strategic planning process with an internal and external scan of its data. The cabinet-level administration, or the assistant superintendents, tracks the information back to the district's vision, mission and beliefs to determine if they are being upheld. Aldine ISD measures and reports on its growth using scorecards. Each scorecard contains a goal, how the district measures that goal and what the targets are. All departments complete their own scorecards every three months. Data have been vital in helping Aldine ISD increase success and decrease failure across the district. The data are pushed out to stakeholders and pulled in to the district to help the district recognize trends and take action.

Fulton County Schools

The most populous district in the state of Georgia and located in the center of metro Atlanta, Fulton County uses the student information system (SIS) to capture and manage the flow of data elements such as attendance, discipline, grading, student information, scheduling, enrollment and test history. The SIS application serves as an umbrella over all data entry points, including the Student Achievement Management System (SAMS). SAMS is a user-friendly, read-only application teachers and administrators use to analyze and report on data uploaded nightly from the data warehouse. Fulton County Schools employs an extensive training department designed to maximize data use at the school level by providing thorough training to all teaching personnel. Business processes ensure that training personnel work with every department in the district, including special education, discipline, health and immunization, curriculum, and assessment and evaluation.

Iredell-Statesville Schools

Iredell-Statesville Schools (I-SS), located in Statesville, NC, provides public education for Iredell County, which has a population of 146,384. I-SS was one of three organizations to receive the 2008 Malcolm Baldrige National Quality Award. I-SS collects student data from various sources and compiles them in a data warehouse. From this data warehouse, the district provides access to an online dashboard that allows teachers and central office administrators to select the indicators they want to monitor as well as scorecards that are used in every classroom in the district to demonstrate how well students in the class did on their monthly common and quarterly assessments. To maximize these tools, teachers are trained on how to access and use the data, including creating queries.

Montgomery County Public Schools[2]

Located in the suburbs of Washington, DC, Montgomery County Public Schools has experienced a demographic change, with the central portion of the school system in newly urbanized areas surrounded by a suburban area. To redefine equity, the district designated two distinct zones: the "red zone" (the urban area serving disadvantaged students with comparatively low levels of prior student achievement) and the "green zone" (the suburban area serving students with comparatively high levels of student achievement). Based on these data, the district gave more resources to the low-performing areas in an effort to close the achievement gap. Additionally, the district designed its school improvement process to reflect the components of the Baldrige Education Criteria for Performance Excellence that require identifying resources needed for total system implementation and systematically evaluating the implementation throughout the project.

Palatine Community Consolidated School District #15

Palatine Community Consolidated School District #15 (CCSD15) is located in a suburb northwest of Chicago, IL, and in 2003, it became the third school district in the nation to win the Malcolm Baldrige National Quality Award for performance excellence. Every school within CCSD15 is required to identify a main academic goal and develop a PDSA model to help achieve this goal. The PDSA must be related to a student performance target and will become part of the overall school improvement plan. The successful data-valued culture at CCSD15 is a result of the continuous improvement model, staff knowledge of the Baldrige criteria, and the communication of the district's strategic plans and core beliefs.

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[2] Data Quality Campaign, *Linking Spending and Student Achievement: Managing Inputs, Processes and Outcomes,* May 2008, http://dataqualitycampaign.org/files/meetings-dqc_quarterly_issue_brief-042408.pdf.

Conclusion

The momentum behind building high-quality data systems to harvest better information about student, school and district performance has never been stronger. Valid, transparent and meaningful data are the foundation of any district's ability to target and develop strategies to improve student achievement. A district's capacity to provide the structures and processes for the collection, analysis and use of student data is pivotal to the success of students in the classroom, and understanding how the state can support these efforts will help realize the potential of investments in longitudinal data systems at all levels.

Selected Resources

APQC, *Best Practices in Data-Driven Decision Making: D3M Study,* 2008. www.apqceducation.org/d3mstudy

APQC, *Best Practices in Data-Driven Decision Making: 2008 Generic Benchmarking Report,* 2008. www.apqceducation.org/d3m/Generic_D3M_Report.pdf

For more resources by APQC Education on benchmarking projects, please visit www.apqceducation.org/projects.

V. L. Bernhardt, *Data Analysis for Continuous School Improvement,* Second Edition, Larchmont, NY: Eye on Education, Inc., 2004.

V. L. Bernhardt, *Data, Data Everywhere: Bringing the Data All Together for Continuous School Improvement,* Larchmont, NY: Eye on Education, Inc., 2009.

V. L. Bernhardt, *Translating Data into Information to Improve Teaching and Learning,* Larchmont, NY: Eye on Education, Inc., 2007.

V. L. Bernhardt, *Using Data to Improve Student Learning in Elementary Schools,* Larchmont, NY: Eye on Education, Inc., 2003.

V. L. Bernhardt, *Using Data to Improve Student Learning in High Schools,* Larchmont, NY: Eye on Education, Inc., 2004.

V. L. Bernhardt, *Using Data to Improve Student Learning in Middle Schools,* Larchmont, NY: Eye on Education, Inc., 2004.

V. L. Bernhardt, *Using Data to Improve Student Learning in School Districts,* Larchmont, NY: Eye on Education, Inc., 2005.

V. L. Bernhardt and B. J. Geise, *Questionnaires Demystified: Using Perceptions Data for Continuous Improvement,* Larchmont, NY: Eye on Education, Inc., 2009.

For more resources by Victoria L. Bernhardt, Ph.D., on the research behind her work, please visit http://eff.csuchico.edu/home.

J. C. Wayman, V. Cho and M. T. Johnston, *The Data-Informed District: A District-Wide Evaluation of Data Use in the Natrona County School District,* Austin: The University of Texas, 2007. http://edadmin.edb.utexas.edu/datause/Wayman_data_use_evaluation.pdf

J. C. Wayman, "Student Data Systems for School Improvement: The State of the Field." In *TCEA Educational Technology Research Symposium: Vol. 1* (pp. 156–162), Lancaster, PA: ProActive Publications, 2007. http://edadmin.edb.utexas.edu/datause/papers/Wayman%20state%20of%20data%20systems%20field.pdf

For more resources by Jeffrey C. Wayman, Ph.D., on data use for educational improvement, please visit http://edadmin.edb.utexas.edu/datause/.

DATA QUALITY CAMPAIGN

Using Data To Improve Student Achievement

www.DataQualityCampaign.org

The Data Quality Campaign is a national, collaborative effort to encourage and support state policymakers to improve the availability and use of high-quality education data to improve student achievement. The campaign will provide tools and resources that will help states implement and use longitudinal data systems, while providing a national forum for reducing duplication of effort and promoting greater coordination and consensus among the organizations focused on improving data quality, access and use.

Managing partners of the Data Quality Campaign include:

- Achieve, Inc.
- Alliance for Excellent Education
- Council of Chief State School Officers
- Education Commission of the States
- The Education Trust
- National Association of State Boards of Education
- National Association of System Heads
- National Center for Educational Achievement
- National Center for Higher Education Management Systems
- National Governors Association Center for Best Practices
- Schools Interoperability Framework Association
- Standard & Poor's School Evaluation Services
- State Educational Technology Directors Association
- State Higher Education Executive Officers

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For more information about the Data Quality Campaign, please visit www.DataQualityCampaign.org.

Endorsing partners of the Data Quality Campaign include:

- ACT
- Alliance for Quality Teaching
- American Association of Colleges for Teacher Education
- American Association of State Colleges and Universities
- American Board for Certification of Teacher Excellence
- American Youth Policy Forum
- APQC
- Business-Higher Education Forum
- Center for Teaching Quality
- College Summit
- Consortium for School Networking
- Educational Policy Institute
- ETS
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- Institute for a Competitive Workforce
- Institute for Educational Leadership
- James B. Hunt, Jr. Institute for Educational Leadership and Policy
- Jobs for the Future
- Knowledge Alliance
- League of Education Voters Foundation
- Learning Point Associates
- Midwestern Higher Education Compact
- National Alliance for Public Charter Schools
- National Association of Secondary School Principals
- National Association of State Directors of Teacher Education and Certification
- The National Center for Public Policy and Higher Education
- National Council for Accreditation of Teacher Education
- National School Boards Association
- National Staff Development Council
- National Student Clearinghouse
- New England Board of Higher Education
- Pathways to College Network
- Postsecondary Electronic Standards Council
- Pre–K Now
- Roads to Success
- Southern Regional Education Board
- Thomas B. Fordham Institute
- Western Interstate Commission for Higher Education

To join the DQC as an endorsing partner, visit www.DataQualityCampaign.org.