Practices That Support Data Use in Urban High Schools

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This article presents initial findings of a case study focusing on data use in five low-performing urban high schools undergoing comprehensive schoolwide reform. The case study investigates: (a) the ways in which disaggregated data can be used to examine progress and guide improvement in the process of restructuring urban, low-performing high schools; (b) factors and conditions that either promote or act as barriers to data use; and (c) the policy and practice implications of achieving effective data use in a high school reform process. Study findings point to several key factors that have an impact on data use in the study sites: the quality and accuracy of available data, staff access to timely data, the capacity for data disaggregation, the collaborative use of data organized around a clear set of questions, and leadership structures that support schoolwide use of data. The findings build on current literature and also contribute new knowledge of the key roles played by a data team and a data coach in fostering effective data use in high school reform.

The high school reform movement is drawing increasing attention to the need for more systematic uses of data to inform the policy, management, and instructional changes that result in higher student achievement. As today’s educators grapple with the challenge of changing current high school structures into more effective learning environments, data can be a powerful ally in stimulating positive change and improvement. In low-performing urban high schools, increasing demands for accountability are paralleled by equity concerns arising from the enormous diversity of the student population—in culture, language, prior educational experiences, home situations, learning styles, attitudes toward learning, and future aspirations.

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The twin mandates of equity and accountability have made it imperative that educators base decisions on accurate and meaningful data about student learning and achievement (Johnson, 2002; Lachat, 2002). To create high schools that are responsive to diversity, connected to the realities of today’s world, and driven by a focus on success for all students, more systemic reform strategies are needed, and new capacities must be developed. One of these capacities is the strategic use of data to support student success and school improvement (Bernhardt, 2000a; Codding & Rothman, 1999).

The Northeast and Islands Regional Educational Laboratory (LAB) at Brown University is conducting a case study that investigates the process and effects of high school restructuring in five low-performing urban high schools that are implementing three central elements of systemic reform: (a) establishing smaller and more personalized learning environments, (b) shifting to standards-based curriculum and instruction, and (c) using data to support continuous improvement. The case study component focusing on data use in the high school reform process is being conducted by the Center for Resource Management, Inc. (CRM), a partner organization of the LAB. This article summarizes some initial findings of this study component. The purpose of the article is to present illustrative case study evidence that contributes to deeper understandings of conditions and practices that either promote or act as barriers to the use of data as a central element of school reform in urban, low-performing high schools.

**DATA-DRIVEN SCHOOL REFORM**

Our examination of data use in five low-performing high schools builds on an emerging body of research and school reform literature that cites the importance of data-driven decision making in creating more effective schools (Armstrong & Anthes, 2001; Bernhardt, 1998, 2000a; Killion & Bellamy, 2000; Schwartz, 2002). Effective use of data by district and school personnel is increasingly identified as a central tenet in school improvement processes (Chrispeels, 1992; Earl & Katz, 2002; Protheroe, 2001; Wayman & Stringfield, 2003), not only to raise test scores (Kennedy, 2003), but also to change school cultures and teacher attitudes (Feldman & Tung, 2001), especially toward low-performing, at-risk students (Armstrong & Anthes, 2001). Johnson (1996, 2002) examined many uses of data as a major force in building school and district capacity to educate students equitably and reduce achievement gaps. The research and practice literature has shown, however, that several key factors influence data use: the types of data available to school staff; technology and data-system capacity; and school conditions and practices that either promote or act as barriers to staff use of data.
Data available to schools. Schools and districts generally collect a wide array of data in three primary categories related to student demographics, school and educational program data, and performance data. Although the range of data available to schools is extensive, it is rarely used effectively (Wayman & Stringfield, 2003). Schools that want to use data to drive their decisions often don’t know where to begin or what type of data to use (American Association of School Administrators [AASA], 2002). There is often too much data, but not the right type or not in a format that facilitates use (Schmoker, 2003). Data often aren’t available to school staff when they need it, and the often complex and confusing formats of data reports make it more difficult for them to sort through what is most useful for them (Lachat, 2002; National Education Association Foundation for the Improvement of Education [NFIE], 2003). In attempting to use data, schools often employ the wrong type of data, using indirect measures of learning for which they have no explanatory model to interpret the data (Marzano, 2003). Teachers often use data meant for compliance when what they need is timely, diagnostic data on the students they teach (Olson, 2002; Rudner & Boston, 2003).

Descriptive cases of how schools use data for school improvement (Mason, 2002) have noted that the types of data collected determine the types of decisions that are made. In Mason’s (2002) study of the use of data for school improvement, six schools instituted data-driven strategies to improve students’ state assessment scores. The data that were most useful to these schools were a combination of assessment, demographic, perception, and education program data. Pardini (2000) noted that teachers are better able to modify their instructional strategies when they have current information about the skill levels and proficiencies of their students. Researchers also suggest the importance of teacher use of varied types of data, including video analysis, classroom observations, and student work samples (NFIE, 2003; North Central Regional Educational Laboratory [NCREL], 2003). Prior studies also have suggested that multiple methods of data collection should be used (Brimijoin, Marquissee, & Tomlinson, 2003).

Technology and data system capacity. Researchers and leaders of school reform efforts have cited the capacity for data disaggregation as being essential to effective data use (Bernhardt, 2000b; Holcomb, 1999; Johnson, 2002; Love, 2000). High-level data disaggregation requires the capability to integrate or link multiple types of student performance data, demographic data, and data on students’ educational experiences. However, even in districts where extensive data are maintained, the technology to integrate and manipulate different types of data is lacking (Wayman, Stringfield, & Yakimowski, 2004). Visher and Hudis (1999) reported that very few high schools participating in the New American High Schools initiative had the information system capacity to link student results to specific programs, classroom practices, and learning environments.
Data generally exist in multiple electronic files that include the district data system as well as data files from state assessments and other testing programs. This means that teachers and administrators may not have easy access to the data they need to examine how students enrolled in particular programs are performing on various measures, nor are they able to determine the effects of programs and practices on student performance over time (Lachat & Williams, 2003).

In their analysis of currently available technology, Wayman et al. (2004) noted that recent technological advances in data-warehousing applications have produced software tools that integrate multiple student data files. They recommended that schools move toward data-warehousing capability to support the analysis and use of data. Other researchers have also cited the increasing importance of more advanced data-system technology, as well as the need to present data in formats that are meaningful to school leaders and teachers (Rudner & Boston, 2003; Schwartz, 2002; Streifer, 2002; Thorn, 2001). Although technology may be available, however, school districts often lack the funds or do not allocate the resources necessary to establish coherent and high-level data-system capability (Olson, 2002). Mason (2002) also emphasized that technology capacity alone is not the answer; such capacity needs to be coupled with teacher willingness and capacity to use data. Teachers need to learn how to obtain and manage data, ask good questions, accurately analyze data, and apply data results appropriately and ethically.

Supporting data use. A study by Armstrong and Anthes (2001) highlighted several elements associated with effective data use: strong leadership, a districtwide culture that supports the use of data for continuous improvement, a structure for supporting and training teachers to use data, a close accounting of every student’s performance on academic standards, and a well-defined, data-driven school improvement process. A process that involves teachers in data analysis is essential, and Wade (2001) emphasized that as many teachers as possible are needed to support effective data use in schools. Data use is most effective when teacher decisions about instructional effectiveness are based on assessments of students’ actual proficiencies in various skill areas (Pardini, 2000). A data-driven inquiry process can act as a tool for change in schools often considered furthest from current standards of excellence (Holcomb, 1999, 2001).

Data-use strategies that involve school staff in collaborative problem solving can foster the open dialogue needed for equity issues to be addressed (Love, 2000). Inquiry-based schools promote a culture of high standards and the use of appropriate assessments for improving student learning (Rallis & MacMullen, 2000). Some researchers have highlighted the use of questions to structure teacher analysis of data as a key element to effective data use (NCREL, 2003; Protheroe, 2001). Ideally, teachers should be provided with opportunities to work collaboratively in building their capacity to use data (NFIE, 2003). A study of 18 Annenberg Challenge Schools in six states noted successes in the use of data-driven strategies
where teachers worked collaboratively in framing questions to monitor school progress in implementing new practices (Keeney, 1998). Another study highlighted the need to provide time for teachers to meet and review assessment data in making instructional decisions (Cromey, 2000).

**Barriers to data use.** Many reasons for the lack of data use in schools center on the lack of training, cultural resistance, and fear of reprisal. Few administrators and teachers have had formal training or experience in analyzing and interpreting data or using assessment results for program and instructional improvement (Bernhardt, 2000b; Cizek, 2000). There is minimal preservice emphasis on the use of data in school reform (Cromey, 2000), and most schools do not provide teachers with the ongoing, sustained training they need to ask the right questions in analyzing and interpreting data (Protheroe, 2001).

In her extensive examination of data use in schools, Love (2000) showed that schools are ill-equipped to use data to address problems, target improvements, or monitor progress. They lack the staff skills, time, and organizational structures to use data effectively. Bernhardt (2000b) noted that most schools conduct their education programs with little analysis of how well programs work for students, and rely instead on “gut feelings” about what is and isn’t working. Cultural resistance is a significant barrier to data use in high schools. High school cultures simply do not focus on data analysis, and the use of data for ongoing decision making and program improvement represents a major cultural shift (Lachat, 2002; Visher & Hudis, 1999).

Changing a school’s culture and building teacher capacity to use data often require a change in staff attitudes toward the diverse student populations in a school, as well as the skills to apply appropriate interventions for students based on data. In a study examining teacher attitudes toward the potential success of previously low-performing students, Armstrong and Anthes (2001) noted that teachers find it difficult to link data to an appropriate intervention. In their study, the researchers determined that teacher use of data helped clear up false assumptions. However, even when teachers are given training and time to think about using data to inform their practices, they may be reluctant to do so in a culture where they feel threatened or fear they will be attacked for something they are doing or not doing in the classroom (Bernhardt, 2000b). Effective data use requires a culture that is driven by inquiry, not fear.

**METHODOLOGY FOR THE STUDY**

This case study of data use in high school reform reflects the growing emphasis on the use of disaggregated data to monitor school progress in raising student achievement. This emphasis has been driven by both federal and state accountability man-
The purpose of the case study is to investigate: (a) the ways in which disaggregated data can be used to examine progress and guide improvement in the process of restructuring urban, low-performing high schools; (b) factors and conditions that either promote or act as barriers to data use; and (c) the policy and practice implications of achieving effective data use in a high school reform process. Research in this area is limited, and few studies have produced case study evidence of the multiple factors associated with the use of disaggregated data to improve student learning and achievement in urban, low-performing high schools. The study is thus intended to build on the current literature and to provide evidence of data use in high school reform that can serve as a foundation for future research.

Study Sites

The case study is being conducted in five low-performing high schools located in three high-poverty urban districts. The size of the student population across the five schools ranged from approximately 1,400 students to 1,800 students. In four of the high schools, Hispanic students represented slightly more than half of the student population. Three of the high schools were part of a district-driven high school reform process. However, although located in the same district, the schools exhibited very different cultures, and they varied considerably in their leadership structures. These schools offered the opportunity to examine variations in data use in high schools operating under the same strong district mandates for high school reform. A fourth high school site was one of five high schools in a district where there was an overall district plan for reform, but reform decisions were largely site-based. The fifth high school site was the only public high school in its district.

Site selection criteria were aligned with the LAB’s mission of advancing research knowledge of effective reform strategies in high-poverty, low-performing high schools and conducting research in school settings where reform plans reflect a clear commitment to the concurrent implementation of three core reform components. These components are establishing smaller learning communities (SLCs); implementing standards-based curriculum and instruction; and using data to support continuous improvement. The schools chosen for the case study met these criteria. As such, they were not randomly selected.

Although this is a limitation of the study, all of the schools share the trait of being large, comprehensive high schools in urban, high-poverty areas. Each contains a diverse student population with many students not performing at grade level on state-mandated assessments. Although the schools are not a statistically representative sample, they can be considered typical of many low-performing medium to large urban high schools. The limited sample of only five high schools in the Northeast makes generalizability to other high schools more difficult, but certainly not invalid, as the literature suggests that many high schools across the nation struggle with the same issues as these five schools.
Study Procedures

Over a 4-year period, an extensive array of qualitative data was collected to examine the process of data use in the five study sites and to provide contextual evidence of factors that either supported or inhibited the use of data. Qualitative data sources include: (a) school reform documents, such as Education Improvement Plans, showing uses of data for planning and improvement; (b) field note documentation of the numerous data analysis meetings that occurred in the schools, including a running record of decisions and actions that resulted from data use; (c) an archival catalogue of data used by the schools; and (d) interviews with principals and other school administrators, teachers, and school design teams and data teams.

Qualitative data were entered into NVivo, a qualitative data-management program selected because of its flexibility and power to support the coding and manipulation of the qualitative data. The findings reported in this article are based on initial analyses of the extensive field note data collected over the 4 years of the study, the archival catalogue of data used by school staff, and group interviews with school design teams and data teams. The full report summarizing all of the case study evidence will be completed by the fall of 2005.

Qualitative procedures included the use of a data coach as an external facilitator across the study sites who also functioned as a participant observer member of the research team. In addition to providing technical assistance, the data coach was able to maintain an ongoing presence in the schools over the 4-year period and collected detailed field note documentation of data use in the schools. The rationale for the use of a data coach as part of the study design was based on emerging research showing the importance of external facilitators or coaches in school change processes (Center for Collaborative Education, 2002, 2003; RAND Corporation, 2002). There is growing support for the role of coaches in multiple aspects of school reform (Greene, 2004). However, although the literature cites the use of coaches to support schoolwide change, instructional improvement, and literacy, there is limited case evidence of the role of a coach in supporting data use. Our case study thus contributes to this new area of knowledge. It is also important to note that because of each high school’s emphasis on data use as an integral aspect of their reform process, all of them had established a school team with assigned responsibility for data analysis and data dissemination. They tended to be called data teams, which is also the term used to describe them in this article.

The full study also will report on changes that occurred on multiple indicators of student performance in the study sites. A longitudinal (4-year) research database has been created to support this analysis. The application used to create the longitudinal student database was CRM’s Socrates Data System, a data-warehousing application that integrates data from school administrative systems, state assessment data files, standardized test files, and other data sources. The system creates a fully integrated database that links all relevant information about the student
and allows extensive data disaggregation. It was specifically designed to support data integration, data management, and research/program evaluation functions. Socrates was used in the study because it not only supported research functions, but also provided a technology tool for establishing data-system capacity at each site that was essential to a study of data use by school personnel.

As noted in the research findings described earlier in this article, in spite of federal mandates that call for fuller use of disaggregated data, many districts and schools lack the technology to disaggregate student performance data (Lachat & Williams, 2003; Rudner & Boston, 2003; Schwartz, 2002; Streifer, 2002; Thorn, 2001; Wayman et al., 2004). This was true for the study sites as well. Therefore, the rationale for providing data-system technical assistance was to create equal capacity across the five high school sites in establishing school access to disaggregated data that was essential to the focus of this study. The case study could then focus on how each of the schools actually used data for decision making, as well as the factors that affected data use. Socrates was used to create a fully integrated relational database for each of the study sites that brought together data from the district information system and data from state assessments and other testing programs. The database linked multiple types of student performance data to demographic data, student program data, and membership in an SLC. This allowed data to be disaggregated by these variables.

STUDY FINDINGS

The case study findings presented in this article are drawn from initial analyses conducted to examine the factors and conditions that either supported or acted as barriers to data use in the high school sites. The evidence discussed relates to four key factors that had an impact on data use: (a) data quality and data access, (b) capacity for data disaggregation, (c) collaborative use of data organized around a clear set of questions, and (d) leadership structures that enhanced data use.

Data Quality and Data Access

Integrating data use into the high school reform process meant that school teams needed timely access to accurate data from district information systems that were maintained centrally, with data entered at the school level. This was a challenge for all of the study sites. The districts and schools didn’t recognize the extent to which data in their student information systems were not complete and/or accurate until they had to use data more rigorously. The most common data quality issues uncovered by more frequent use of the data files were tied to the high level of student mobility and high dropout rates between the 9th and 10th grades in these urban districts. In many cases, procedures at the school and district levels for updating data
systems, accurately coding students who had left the system, and removing them from the “currently enrolled” student population files were not in place or not followed consistently by personnel. In all of the sites, it took the combined efforts of both district and school personnel to resolve these issues, which in turn had the effect of improving teacher and administrator perceptions of the accuracy and relevance of data provided to them.

The case study also revealed the combination of factors that need to be addressed to resolve the issue of schools having timely access to pertinent data in urban settings. This issue reflects previous literature that cites the lack of information at the right time and in the right formats as a major barrier to data use in schools (NFIE, 2003; Schmoker, 2003). In all of the study sites, district data-system personnel were burdened with data requests from multiple projects, often without being informed of how the data would be used. Developing better understandings with them about the data the schools needed and when the data were needed became an important strategy for improving school access to data. The issue was most effectively resolved for the three high schools located in the same district, where a formal Data Access Plan was developed in collaboration with district data-system personnel. By the 3rd year of the study, these schools were getting a much faster turn-around on quarterly attendance and course grade data disaggregated down to the level of the SLC and 9th-grade team structures that had been created in the schools. School teams also were receiving disaggregated state assessment and other standardized test data as early as possible. This allowed them to use the data more effectively to determine the school’s progress in improving literacy skills and to target instruction more effectively for the students assigned to a particular learning community.

The establishment of a 9th-grade interdisciplinary team structure was a major strategy used by all of the high schools to create smaller and more personalized learning environments for students. Because of the pressure on these teams to demonstrate positive results for students, the teachers wanted information on the characteristics and past performance of the incoming 9th-grade students assigned to their learning community as close to the opening of school as possible. The process of creating timely access to these data illustrates the fundamental connection between data-system capacity and data use. In all but one of the high schools, the 9th-grade population came from several district middle schools, and data were not readily available at the opening of school on the characteristics of the students, absence levels for the previous year, previous test performance in reading and mathematics, and 8th-grade state assessment results.

Significant changes had to be made in each school district’s schedule for assigning students to SLCs, processing pertinent Grade 8 data, and making data on the incoming freshmen available to high schools. The lack of sufficient district data personnel slowed the process down for two of the high schools. Still, by the 4th year of the study, all of the high school 9th-grade teams were getting data on a far more
timely basis than in the past. Data were used to address equity in SLC membership, student attendance issues, and literacy. Administrators were able to determine whether SLCs within a school were similar to each other in the demographic characteristics of their students, an important equity goal. Teacher teams reviewed absence data on the incoming freshmen to determine whether school attendance was an immediate issue they would have to address for their students. In two of the high schools, the 9th-grade teacher teams used disaggregated state assessment results to specifically identify students who had achieved or were close to achieving standards in reading skills, as well as those students who clearly needed intensive interventions.

Data Disaggregation

The study findings affirm current research that cites the capacity for data disaggregation as being essential to effective data use (Bernhardt, 2000a; Holcomb, 1999; Johnson, 2002; Love, 2000). All of the high schools had previously received student-performance data with minimal or no disaggregation. The fully integrated database that was created for each site provided the capacity to disaggregate data by combinations of demographic characteristics, SLC assignment, participation in specific programs, and exposure to specific literacy or other instructional interventions. This allowed more targeted uses of data to address student performance issues in these low-performing high schools.

SLC staff received quarterly data showing the extent to which they were having an impact on reducing poor attendance and course failure rates. The use of disaggregated data also helped overcome a narrow over-reliance on aggregated state assessment and standardized test results. When the results of these measures were disaggregated in different ways, they became more meaningful to school staff and were used more meaningfully in making instructional decisions.

School teams also came to realize that disaggregated data were “their” data; this data could be used to answer their questions. In one high school, student performance on state assessments and other standardized measures were disaggregated by frequency of student absence to allow school staff to examine their assumption that low achievement on these measures resulted from high student absence rates. The data showed not only that the students with low attendance rates were performing at failing levels, but also that the same was true for the majority of students with high attendance. The data thus confirmed that the school had two problems—student attendance and quality of instruction. Reviewing the data and eliminating teacher assumptions that the problem was only an attendance issue allowed for more productive discussions about the content and quality of instruction provided to students, teacher expectations, and the ways in which the SLCs might engage students more effectively in instruction as well as school attendance.
Consistency in grading across subject areas within SLC teams and within subject areas across SLC teams was another issue that was examined through the use of disaggregated data. Conversations among school teams and subject-area departments about grading criteria led to the question of how students’ course grades related to their performance on state assessments and standardized tests. Data were disaggregated to show these relationships for the content areas of English/language arts and mathematics. What school staff discovered was that many students who had been given high grades were performing at the lower levels of the state assessments and other standardized tests. School teams started to recognize that these questions were connected to the more complex issues they faced in their school reform efforts—whether course offerings and grading criteria were aligned with standards, and whether instruction was sufficiently focused on the higher level proficiencies that were being measured in the state assessments. In three of the high schools, this led to school staff identifying the need for professional development related to such areas as rubric-based grading criteria and high-quality student work products. In another high school, a decision was made to start the development of common examinations across subject area course sections to ensure more consistency in teacher expectations for student performance.

Collaborative Inquiry

The case study confirmed that the practice of collaborative data use organized around a clear set of questions is a potent strategy for building staff skills and keeping the focus on student learning and achievement. This approach is supported in the literature (Holcomb, 1999, 2001; Love, 2000; NCREL, 2003; Protheroe, 2001; Rallis & MacMullen, 2000). However, evidence from three of the high schools also suggests that the process of organizing data use around clearly focused questions is far more powerful if it is established and championed as a schoolwide practice by school leaders—the principal and other administrators, teacher leaders, department chairs, and school coaches. Their modeling of the use of questions to focus the collaborative examination of data is a key factor in reinforcing this approach to schoolwide data use. Focusing on a set of key student performance questions not only builds staff skills to analyze data, but also increases their motivation to use the data.

When the high school teams collaboratively developed clearly focused questions, it helped them look beyond the data to examine other pertinent information, and they were far more likely to understand what the data meant for school improvement. The questioning process allowed staff who represented different perspectives in a school—administrator, teacher, guidance counselor, coach—to step back and consider more objectively how school policies, teacher beliefs, conditions for learning, or teaching practices might be affecting students’ learning and achievement. When the data revealed false assumptions or hunches about specific
groups of students, it became easier to get school staff to recognize the importance of basing decisions on objective data. The use of questions helped school teams maintain a focus on student achievement and ways in which the high school program needed to improve.

Leadership Structures That Support Data Use

The case study provided evidence of the mutual roles school leaders can play in fostering widespread use of data in high schools. In the two high schools in which data use was most effective, the use of data was strongly influenced by the leadership of the principal. It was also influenced by the shared leadership roles played by other administrators and teacher leaders in the schools. The involvement of assistant principals, SLC directors, department chairs, and teacher leaders from the interdisciplinary 9th-grade teams also was essential in establishing multiple types of data use in the schools. Transition coaches and instructional/literacy coaches provided follow-up assistance to various data users in the school and also played an important role in motivating teachers to use data. In addition, the combined strategy of using a data team and a data coach underscored the importance of the facilitator role in sustaining a focus on data use in the midst of extensive high school restructuring. Not all principals, even if they support data use, have all of the skills or time needed to move the process forward productively, especially in high school settings where the restructuring process is particularly complex and demanding.

Although two of the high schools had particularly high-functioning data teams, the case examples across all of the study sites contributed new knowledge about the role this type of school team can play in high school reform. The activities of the data teams were central to increasing communication among school staff about the trends and issues shown in the data. Because data team members were peers of other school staff, they played a key role in overcoming staff perceptions that data were inaccurate or not relevant to teacher concerns. Key tasks of the data teams included helping to improve the quality and accuracy of school-level data files, ensuring the timely retrieval of data from the district, disseminating data to different groups in the school, helping staff analyze and interpret data, targeting and monitoring goals for improvement, and responding to additional data requests by school staff.

The case study provided evidence about the collaborative role of a data coach in guiding a high school’s transition toward a culture where data are used strategically throughout the school. It also contributed new knowledge about this aspect of coaching in high school reform. The data coach was a coach in the true sense in that various uses of data were modeled, but school staff were responsible for the analysis and interpretation of the data. Documentation of how the schools used the coaching assistance shed light on the importance of the coaching role in helping
school staff with limited previous experience in data analysis develop the skills to use data effectively. Case study data across the five high schools suggest that the use of a data coach can reinforce a data-team structure and help team members problem solve how to foster ongoing data use by school personnel whose time and energy is consumed by the daily demands and requirements of high school restructuring. Specific dimensions of the data coach role include: (a) procedural assistance in identifying and addressing data-quality issues and improving the use of data for schoolwide planning and improvement; and (b) modeling and skill-building assistance in focusing data use around critical questions, using data to monitor the progress of students on multiple measures, and identifying areas of strength in student learning as well as areas for intervention and additional support to students. The work of the data coach and the evolution of a data team structure varied somewhat in the different high school sites based on the unique context of the school. However, the case study evidence indicates that as data teams mature, the role of a data coach decreases as team members and other school staff develop deeper understandings of the institutional function of data use in a school.

THE POLICY AND PRACTICE IMPLICATIONS OF IMPLEMENTING A DATA-USE PROCESS IN URBAN HIGH SCHOOLS

For high school leaders seeking to establish a schoolwide process of data use, the case study holds many lessons about factors that contribute to success. Not all of the high schools were equally successful in the progress they made over the 4-year period in establishing and sustaining effective data use by multiple school staff. However, they all made some progress, and they were all strongly committed to a continuous process of data use by the end of the study. An important aspect of this commitment was the fact that the use of data for continuous improvement was viewed as a central element, versus just an activity, in all of their reform plans. The lesson is that school leaders need to view and champion data use as integral to school reform processes.

Another important lesson is that many urban schools and districts would profit from a technical review of their procedures for collecting and updating student data. Districts may need stronger data-verification and data-management procedures to ensure the accurate and timely collection, storage, and analysis of essential data. The study also confirms research that cites the importance of data-warehousing technology in providing high-level data disaggregation and the capability to integrate or link multiple types of student performance data, demographic data, and data on students’ educational experiences (Wayman et al., 2004). In an education reform context that requires the use of high-quality disaggregated data for the
purposes of accountability and improvement, district leaders need to develop better understandings of this technology.

As highlighted in previous literature (Lachat, 2002; NFIE, 2003), the case study also shows that effective data use requires procedures for providing timely data to school staff. In particular, as high schools make the transition to SLCs, teacher teams need pertinent information about the students assigned to an SLC. Data access policies that help high schools get timely information on the characteristics and past performance of incoming freshmen can have a positive impact on the school’s ability to immediately provide interventions that reduce literacy achievement gaps. This is particularly important in high-poverty urban settings where many students enter high schools with poor literacy skills. The study also highlights the need for better communication between school personnel and the people who control data in a district. This is essential to ensuring the efficient transfer of data and to helping schools move beyond their role as “data providers” toward the role of “data users.”

The case study also supports the importance of teacher collaboration in analyzing data around a set of clearly defined questions (Holcomb, 2001; Love, 2000). School leaders need to recognize, however, that the practice of collaborative inquiry requires sufficient time for staff to have data-driven conversations. Securing adequate, uninterrupted meeting time is essential to examining the implications of data and exploring options for improvement. Contract issues and the multiple demands on school staff during a high school restructuring process need to be recognized as potential barriers. School policies that integrate the use of data into staff meetings already occurring in the school, such as department meetings and SLC meetings, can overcome time barriers. For example, schools that have established common planning time for teacher teams can set an expectation that teachers will schedule time on a regular basis to examine a variety of student performance data.

The implementation of a schoolwide data-use process in low-performing high schools is greatly enhanced by leadership structures that mutually involve the principal and other administrators, teacher teams, department chairs, and a data team. The case study suggests that the multiple roles played by different school staff contribute to more widespread use of data. The efforts of data team members can be particularly important in increasing communication among school staff about trends and issues shown in the data. To increase their effectiveness, the data team should be representative of school leadership, teachers, SLC structures, and department structures. This can be accomplished by maintaining a relatively small data team with a nucleus of permanent members and including other personnel in targeted data use meetings and follow-up activities.

Finally, the study illustrates how the type of facilitation assistance provided by a data coach contributes to the use of data for accountability and improvement. A data coach can help build school staff capacity to use data by providing procedural
assistance in addressing data-quality and data-access issues, as well as by modeling various uses of data by different school staff.

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