



Middle School Matters Field Guide: Research-Based Principles, Practices, and Tools

**Chapter 3: Informed Decision Making** 







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# Chapter 3: Informed Decision Making

Middle School Matters Field Guide, Second Edition, March 2016

## Introduction

The No Child Left Behind Act of 2001 (NCLB) increased awareness of educational accountability and the need for greater focus on educational outcomes. Education stakeholders—from school boards to parents, teachers, superintendents, and even state legislators—are now using data as an important lever in education reform. This is a necessary condition for implementing performance management as a framework for improving school and student performance. For the purposes of this discussion, the term performance management has been borrowed from the field of business to describe an approach to building the capacity of educators at all levels to use data to prioritize activities that advance core goals, measure progress toward meeting these goals, and make informed decisions about the best ways to improve student achievement. Looking systemically at how all the components of the education system work together to support student learning is the primary goal of this new management approach.

While much of the strategic planning for performance management happens at the district level, implementation happens at each school site in a school district. School principals are on the front line, carrying out new programs, interventions, and curriculum and instruction. As managers of teacher and student performance, principals need information about how every part of the school is operating. Education indicators provide leaders with new understanding of capacity and productivity to meet students' educational needs and can inform teachers and other educators of progress on improvements to the education system. Annual trends and outcomes, as well as day-to-day information on attendance, course performance, behavior, etc., are needed to monitor and fine-tune system performance. A primary goal of performance management is to aid schools and staff as they shift from an attitude of compliance to a new commitment to continuous improvement.

What follows are five practical and evidence-based principles that can be used to develop and implement effective performance management strategies in the middle grades, along with a description of the rationale behind each principle, and a few specific practices and examples that schools can follow to ensure success. These principles provide direction on using data to improve instruction and learning, monitoring progress toward goals, and evaluating the effectiveness of decisions.

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## Performance Management

### **Principle 1:**

# Establish and communicate a strong commitment to evidence-based decision making.

Research evidence has shown it is vital that school leadership establish and maintain a vision for school wide data use if it is to succeed.<sup>1, 2, 3, 4, 5, 6, 7</sup> School leadership must create an expectation for using data to inform decisions regarding instruction and student performance by establishing processes and practices and providing appropriate tools. Principals' perceptions toward data use have been found to be positively correlated to student achievement, and teachers with high use of data have been found to have students with higher assessment scores in middle school.<sup>8</sup> In fact, general data use practices and perceptions of teachers have been found to be significantly related to outcomes for students in mathematics at the middle school level. Research evidence has shown that it is important to ensure these supports are in place to foster a data-driven culture within the school.

**Practice 1:** The principal establishes a school wide data team with ongoing responsibility for promoting and ensuring effective data use.

Principals should engage a variety of stakeholders (assistant principals, department heads, teachers, parents,

and students) on the data team to ensure an understanding of all data within the school related to learning and student achievement. The data team should model how to effectively use data to improve student performance through data-informed instructional decisions.

A collaborative model should be promoted through a *distributed leadership*<sup>9</sup> culture where administrators and teachers share in the responsibility for using data in an inquiry cycle to ask questions, share ideas, and make decisions to improve instruction and learning. School cultural issues related to implicit power relationships can ruin such collaboration,<sup>10</sup> and care should be taken to ensure the process is truly collaborative.

Principals should consider existing ties among staff, networks, and central actors that can be leveraged to create a successful data use culture.<sup>11</sup> For example, knowing who teachers already go to for advice and mentoring and structuring data use teams that leverage these existing networks can improve data use reform in schools. Leaders also cannot forget the need to build capacity first within their own leadership network of assistant principals, instructional coaches, counselors and other leaders within a school. These leaders need the same capacity for data use to support teachers and model best practices. In this manner, there may be a less centralized structure for data use, with variation depending on the needs of the group of teachers supported by each leader.

#### **PRACTICE 1 EXAMPLE APPLICATION: Key Data Team Activities**

The following are key activities the school wide data team can include in its plan to support this project:

- Publish a school wide data collection calendar.
- Publish a data directory so staff know which departments collect and maintain different types of data and when data is reported.
- Adopt an Early Warning Indicator system to identify at-risk students.
- Review source data systems to ensure data is available.
- Determine reports that users will need and get feedback on report layout from end users.
- Plan for training of data entry staff to ensure data quality and security.
- Plan for training and coaching of classroom teachers on how to use data to drive improvements in the classroom.

**Practice 2:** Develop a data-use plan that articulates activities, roles, and responsibilities.

Communicating professional expectations for data use is an important first step for school leaders who seek to develop a culture of data use. More recently a framework for building a culture of data use has been proposed, which includes the following five elements:<sup>12</sup>

- Clarifying Expectations for Data Use: There are clear expectations about how to use data, and these expectations change over time as skills for data use grow. District, school, and teacher leaders frame consistent messages about how data can be used to support teachers' professional capacity and student learning.
- 2. Ensuring Access to Data: Data are accessed, coordinated, filtered, and prepared in ways that allow educators to quickly and efficiently analyze and interpret them to answer key questions and address important teaching and learning issues.
- 3. Making Meaning from Data: Teachers have opportunities to collectively make sense of what the data indicate and to explore how to move from data to evidence that will inform instruction. Protected time is available, focused on making meaning from data, and supported by the use of consistent inquiry-based practices.
- 4. Building Knowledge and Skills to Use Data: Teachers learn the key skills required to support data use, including strategies for data analysis and assessment literacy, and using data to inform instruction. Adequate time for professional learning is

integrated into daily practices and supports teachers in building content knowledge and data analysis skills over time. Professional learning is differentiated to support teachers' specific learning needs.

5. Leading a Culture of Data Use: Leadership nurtures and supports a culture of data use and develops organizational structures that include time and resources to conduct ongoing data dialogue, as well as feedback that will support users in acting on new knowledge. Acting on knowledge is supported at the administrative, teacher, and student levels. Leaders' use of data is central to helping educators interact around issues that will lead to improved learning outcomes.

Schools should assess the current status of their data use to identify which of the five elements are not in place and need to be addressed. Next, the school wide data team should develop a well-articulated plan for attainable and measurable data use that takes into account schoolspecific culture and constraints. The plan should a) identify the types of data and frequency of review needed to document progress toward goals, b) link data to specific practices or strategies implemented, and c) develop a process to identify appropriate interventions. Roles and responsibilities for monitoring specific data should be clearly articulated. The plan should be reviewed and revised annually based on the changing needs of the students and school. Teachers should be given time to reflect on the results of their data plans to promote learning and to inform the next plan.<sup>13</sup> The strategic value of gathering each piece of data should also be defined annually. A sample data use plan for a mathematics department is shown in Table 1.

Month	Assessment	Who Collects Data?	Who Shares Data?	How Are Data Shared?	Progress Goals
Ongoing	Weekly analysis of student work samples	Mathematics teachers	Mathematics teachers	In small groups monthly	
January	Open-ended response item assessment (used as baseline)	Mathematics teachers	Department chair	Weekly mathematics department meeting	At least 35% of students meet the benchmark (set at baseline)
February	Ongoing Progress Monitoring Activities				
March	Open-ended response item Assessment A	Mathematics teachers	Department chair	Weekly mathematics department meeting	At least 50% of students meet the benchmark (set at baseline)
April	Ongoing Progress Monitoring Activities (state assessment typically April/May)				
Мау	Open-ended response item Assessment B	Mathematics teachers	Department chair	Weekly mathematics department meeting	At least 65% of students meet the benchmark
June	Reflection on the end-of-year state standardized assessment results	Principal	Principal and mathematics department chair prepare presentation	End-of-year mathematics department meeting	40% of students will meet proficiency in mathematics

Source: Adapted from Boudett, City, and Murnane (2008); p.153<sup>14</sup>

### Table 1. Sample Mathematics Department Calendar for Monitoring Progress

**Practice 3:** Develop common understanding of key terminology among all data users.

The data team should adopt a common vocabulary for discussing and using data to reduce misunderstanding and improve implementation. Terms such as achievement, evidence, and intervention should be clearly defined and understood by all staff. In most cases, terms should be defined at the district level and communicated to educators at all levels. During data team meetings, take time to discuss key terminology to ensure common understanding of words, goals, and data. Document these definitions and ensure all team members refer back to the definitions in discussion. In conversations with teachers and staff, school leaders should use these terms consistently to check for understanding and encourage others to do the same.

Examples of definitions for key terminology related to indicators follow:

**Key Performance Indicator (KPI):** A measure of how well the organization performs an operational, tactical, or strategic activity that is critical for the current and future success of the organization. Distinguished from other indicators, KPIs are those indicators <u>most critical</u> to gauging progress toward objectives. KPI can include both leading and lagging indicators.

- Lagging Indicators: Data that are reported on an annual basis, typically for accountability purposes, such as performance on standardized assessments, annual attendance, and yearly discipline referrals.
   Lagging indicators are used to inform goals, policies, and practices; such historical data are typically insufficient to inform action without consideration of more current data reported at multiple time points within a year.
- Leading Indicators: Data reported at multiple time points within the year, such as daily attendance, interim benchmark performance, or discipline referrals. Leading indicators should be used to inform action that is taken with students, schools, and districts.

**Early Warning Indicators (EWIs):** EWIs are indicators reported multiple times a year that have empirical evidence demonstrating their predictability of whether a student is on the right path toward success on any essential outcome.

#### PRACTICE 3 EXAMPLE APPLICATION: Establishing Shared Meanings, Perceptions, and Definitions

In a study of district efforts<sup>15</sup> to develop common understanding for data use, four important considerations were identified that could be considered when establishing a common language around data use in schools.

- 1. *Working Collectively*: Encouraging broad participation, a sense of community, development of relationships, and working together towards a common understanding.
- 2. Valuing the Process: Focusing on the value of the process rather than the outcomes, moving beyond having the correct chart to supporting one another through activities that enhance collaboration and produce a shared language.
- 3. *Allowing for Self-Determination*: Leveraging differences in interpretation and strategies to promote innovation, such as new ways to look at a problem balanced with efforts to create a common language.
- 4. *Continuing the Work*: Understanding that this is an ongoing, never ending, iterative process of creating and updating a shared language around data use for teaching and learning that includes accounting for turnover and the need for onboarding of new staff into this performance management culture.

### **Principle 2:**

# Identify and monitor indicators aligned with campus goals.

While instrumental to understanding issues and points for improvement, having access to quality data does not, by itself, solve educational challenges. Rather, it is the use of data and information to inform decisions that makes a difference. Determining what actions to take to address issues can be an overwhelming and time-consuming task; using data to identify points for improvement can be streamlined by the identification and monitoring of the most important indicators. The identification of such measurement efficiencies can begin with the alignment of campus goals to particular actionable indicators. **Practice 1:** *Review lagging data to determine performance goals.* 

Developing a habit of inquiry based on observable data, rather than preconceived assumptions about students, allows for deeper knowledge of the issues.<sup>16</sup> Through a culture of continuous improvement, appropriate time can be invested in identifying issues and root causes of performance challenges. Data investigations should begin by reviewing historical performance, which provides an understanding of where success has been achieved and what challenges continue to surface because little progress has been made. Discussion of these issues can lead naturally to further investigation and insight and to the development of shared goals for school personnel.

After shared goals for the school have been set, each teacher can personalize the goals by looking at lagging data for his or her students. The *Practice 1 Example Application* provides a set of questions teachers can ask as they identify goals and determine additional data to collect.

While a school goal might be to increase the percent of students meeting a particular standard on a benchmark assessment, a teacher of accelerated students may need to set a higher goal for his or her students. Without including this option to personalize goals, some teachers may feel that use of data to inform teaching and learning does not apply to them, since their students have already met a prior passing standard.

#### PRACTICE 1 EXAMPLE APPLICATION: Sample Questions to Guide Goal Setting and Data Collection

Teachers can answer questions, such as these below, as they set goals and collect data after examining lagging data for their own students:

- Goal Identification
  - Who will you collaborate with to determine your goals?
  - What are your goals?
  - What are some activities that support your goals?
  - What are some measurable and observable objectives you can set that relate to your goals?
- Data Collection
  - What data do you currently have access to and what have you learned by looking at that data?
  - What else do you need to know?
  - Who is responsible for collecting that data?
  - How can you get access to that data?

Note: These questions are informed by a recursive data-based decision-making model by Cramer, Little and McHatton (2014); pp. 392-393.<sup>17</sup>

# **Practice 2:** Determine indicators for measuring progress toward goals.

Once goals are clearly defined, the school wide data team should determine a set of indicators to systematically measure progress toward meeting these goals. Individually, each indicator should show the progress toward meeting a specific goal. Collectively, the indicators should tell a story about how well the student, teacher, or school is performing now and will perform in the near future. A good indicator typically possesses the following characteristics:

- is accepted by and meaningful to the end user;
- tells how well goals and objectives are being met;
- is simple, understandable, logical, and repeatable;
- shows a trend;
- is defined unambiguously;
- is timely; and
- is sensitive.

Most importantly, select indicators focus attention on what matters most and drive appropriate action. Using a defined process for developing performance indicators and supporting metrics enables the school to quickly identify and add new metrics as changes occur and new issues surface. This process involves considering the issue or goal the indicator must address and conducting a review of research supporting potential related indicators.

#### **Examples of EWI Data to Review**

Robert Balfanz of Johns Hopkins University notes specifically that poor attendance, behavior issues, and course failures as early as sixth grade place students at risk of eventually dropping out of school. Frequent monitoring of such performance indicators, or EWIs, helps educators quickly identify and address the needs of struggling students and empowers district and campus leaders to focus and shift resources where they are needed most to meet student and school performance goals.

# **Practice 3:** Establish targets for indicators based on school goals.

Once indicators are selected, baseline data should be established to identify the current status on each indicator and to set performance targets. If the school year has not yet begun and current performance data are not available, use historical performance data, such as averages from the previous year, as a starting point. Care should be taken to set realistic, near-term targets aligned with annual district and campus goals. If the gap between the baseline and goal is very large, multiple, more immediate targets might be set for a particular indicator so that staff can see the minimum performance gains needed throughout the school year to be on-track for achieving goals. These intermediate targets can be used to identify trends and spotlight areas in need of special attention and/or intervention. Each target should be communicated verbally to all staff and viewable within campus performance management dashboards.

### **Principle 3:**

### Guide and support teachers in the use of data to meet the needs of students and to support them in reaching their goals.

Research supports making data part of an ongoing cycle of instructional improvement.<sup>3, 18, 19, 20, 21, 22</sup> The inquiry cycle of gathering data, developing and testing theories, and modifying instruction is fundamental to using assessment data to guide instruction. Principals should provide guidance, support, and tools to ensure teachers are knowledgeable and prepared to use data effectively to inform classroom decisions. The school wide data team, through example and support, should strive to develop the capacity of the entire school community to use data to drive decision making. This can be accomplished through professional development, data meetings with teachers, and ongoing guidance on data-informed decision making.

**Practice 1:** *Provide targeted professional development and ongoing data support.* 

Using data to drive decisions that improve student and school performance requires open and honest dialogue among teachers, administrators, parents, and other stakeholders. Discussions focused primarily on data for accountability purposes often stop short of determining root causes. Differentiating performance management efforts from accountability and compliance fosters open discussions about data, possible root causes of poor performance, and potential solutions. Such dialogue necessitates a common language around indicators, what they measure, and how they will be acted upon. A clear understanding of these indicators can also help educators better understand their role in meeting targets and overall goals (see *Practice 1 Example Application*).

To gain support and foster open communication about data, professional development can ensure that all staff and stakeholders understand the following:

- Why the indicator was selected, including supporting evidence from research: Ensure that alignment with district and campus goals and strategies is communicated as the primary reason for the selection of the indicators and that this alignment is clear and meaningful;
- Exactly what the indicator measures: While by name some indicators may seem straightforward, specifics regarding data elements and calculations used in the indicator help ensure that everyone clearly understands what is being measured and uses a common language to discuss status of the indicator; and
- How the indicator will or will not be used: To gain commitment from educators, there should be a clear understanding that EWIs and other indicators will be used to inform decision making to improve student performance and are not punitive in nature.

Assessment data provides teachers with a rich source of data to support instructional improvement. The following are four recommendations<sup>23</sup> for successful professional development to help teachers use student assessment results to improve instruction:

- **1.** Provide support for an effective work group by setting clear expectations and goals for the work.
- **2.** Focus on school-based data that relates to teachers and their classes to make activities more authentic.
- **3.** Devote professional development time to working with each teacher's classroom data.
- **4.** Provide a forum, such as "data teams," for sharing ideas about using data to improve instruction among teachers.

When teachers were asked about their professional learning needs around data use, the following common needs were found:<sup>24</sup>

- How to ask appropriate questions of data (to guide analysis and use);
- How to access and operate district data systems;
- How to gain basic knowledge and skills in data literacy and interpretation;
- How to integrate data use into day-do-day practice;
- How to share information via collaboration; and
- How to implement the process of knowledge codification (moving from tacit to explicit knowledge).

One of the most valuable experiences teachers can have while learning a new computerized data system is to practice data use with their own classroom data. Without this practical application, training in computer data systems lacks the professional learning experience needed to improve data use.

A framework for professional learning around data use should include the following components:<sup>24</sup>

- Data Capture: Accessing and organizing data in preparation for an inquiry activity
- *Meaning Making:* Interpreting data and choosing next steps, such as instructional change
- Information Sharing: Sharing data knowledge and expertise with others in the school
- *Knowledge Codification:* Sharing documents and processes that are used consistently within the school community

A major value of this framework is that professional learning is not seen as individually focused, but rather includes mechanisms for preserving knowledge and making that knowledge accessible to others throughout an organization. This should lead to greater sustainability of the culture of data use.

To promote a culture of using data to improve student outcomes, professional development must also be connected with the daily work of the school staff so they see the value and relevance of the use of data to their own work. Because of time constraints and workloads, a flexible, blended professional development approach that provides opportunities for online, on-demand, and face-toface training should be used. The examples at the end of Practice 1 provide additional information to guide schools in their work with teachers around data.

Teachers can consider these questions as they reflect on students' data that they have collected and reviewed:<sup>17</sup>

- What are the data telling you about the issue you identified and the related goal?
- What action will you take based on this data?
- Who else will you involve that can share the responsibility or support you in your work?
- How can you involve parents or other stakeholders?

To use data to inform instruction, teachers need to develop Data Literacy Skills.<sup>13</sup> There are three areas of data literacy skills:

- *Problem focused skills:* Framing a question, identifying problems, and making decisions
- *Data-focused skills:* Being able to access, generate, and interpret data
- *Process-focused skills*: Knowing how to engage in collaborative inquiry and evaluate cause and effect

• *Data quality skills*: Understanding strengths and limitations of data collection and reporting tools

Development of these skills should not happen in isolation, but within the context of instructional improvement in collaboration with colleagues where everyone contributes to the inquiry process.

#### **PRACTICE 1 EXAMPLE APPLICATION: Using Data for School Improvement**

Provide opportunities for teachers to learn how data use can contribute to school improvement:

- It provides a structure for achieving school goals.
- It encourages connecting data analysis to instructional changes.
- It builds an awareness and appreciation for the role of a principal in school improvement by supporting teachers to improve their practice.

#### HONEST REFLECTION AROUND DATA

At the 2009 Conference of the Council of State School Officers, a district reported that in their work with school data, they realized a majority of students were high performing, but some were persistently low performing. Schools were missing Annual Yearly Progress (AYP) because they could not move the achievement of these students. The district worked with school leaders to look deeply at their data, focusing specifically on persistently low-performing students. They discovered that the stated district and school goals of having high expectations and meeting the needs of all students were not being practiced consistently. The district and schools began honest conversations about addressing the needs of all students. They also made changes in how the students were taught. If the district had not been willing to be honest about their needs based on the data, to be reflective about their practice, and to spend that extra time, they would not have discovered this important key to making AYP.

#### NEEDS ASSESSMENT

Data should be gathered to evaluate the needs of the school staff and assess professional development. The following are some guidelines to follow for successful professional development:

- Assess needs and target resources to address them
- Set goals and keep track of whether they are being accomplished
- Track the impact of staff development efforts

## **Practice 2:** Designate a school-based facilitator who meets with teachers to discuss data.

The school principal should designate a data facilitator or coach to provide a systematic way for teachers to use data to inform instructional decisions. The role of the data facilitator is to increase the capacity of teachers to use data to identify student needs and develop appropriate action plans. This can occur through monthly meetings with teachers to discuss student performance data, identify trends, and consider appropriate responses. By modeling how to use data to gauge progress toward learning goals and drive instructional decisions, data facilitators can help teachers feel more confident in their own abilities as they develop a better appreciation for the value of using data to manage student performance.

The school-based facilitator can also add value by providing teachers with a structured protocol for reviewing data (see *Practice 2 Example Application*). Without structure, teachers may tend to classify students in ways that are not helpful to improve teaching and learning, such as referring to kids as the "fast kids" or the "slow kids," rather than focusing on teaching practice or other areas teachers can have influence over. The facilitator should push for "depth of inquiry" discussions, which involve the following higher-level thinking skills: analysis, synthesis, critique, goal setting, reflection, and monitoring.<sup>25</sup> Conversations that are less effective focus on telling information, retelling, describing, and storytelling.

One approach for working toward depth of inquiry uses a concept of "zooming in" and "zooming out" when looking at data.  $^{26}\,$ 

- Zooming in: Taking a look at a particular event or activity and developing a deeper understanding of the practices and perspectives at that moment in time. What patterns are observed? What can be inferred from the data?
- Zooming out: Consider the instructional routines, ways of teaching and learning related to the data. For example, classroom practices, school rules, or other context that influences behavior and learning.

The following are some effective behaviors for supporting teachers in data use to improve teaching and learning:<sup>25</sup>

- Providing targeted advice, such as for a particular grade level, rather than general advice across all grades
- Focusing on factors impacting data that teachers can influence (e.g., language deficits) rather than factors beyond teachers' control (e.g. poverty levels, parenting)
- Providing direction about what data to collect
- Advancing the inquiry process by encouraging synthesis of knowledge discussed
- Summarizing team discussions, progress, and establishing an action plan with next steps
- Providing resources (research literature, reports, and tools) related to the team discussion

#### **PRACTICE 2 EXAMPLE APPLICATION: Using Data to Improve Teacher and Student Attendance**

A school district in Texas was trying to improve mathematics achievement for 9th grade students. School data revealed that absentee rates for teachers were a serious concern. The schools implemented strategies for talking to teachers when they returned from an absence and discussed strategies with teachers for improving attendance (such as taking the car to the repair shop on the weekend). Teacher attendance improved, as did 9th grade achievement.

At another Texas high school, the campus leadership team discovered from its review of student data that there was a high student absentee rate for the six weeks before the state assessment. Student absences were associated with poorer performance on the state assessment the previous year. The school implemented strategies to improve student attendance in the six weeks before the state assessment and saw an increase in test scores beginning that year.

#### **Practice 3:** Dedicate structured time for staff collaboration.

For data use to be part of a school's culture, principals need to ensure teachers collaborate with other teachers and school staff to analyze, interpret, and understand changes and trends in data. Meeting times should be structured so that teachers and facilitators come prepared with the data, have sufficient time to think about teaching and learning and then test their theories with the data, and conclude with practical data-based action steps they can take into the classroom to improve learning and reach achievement goals. Effective principals must monitor the outcomes of this work so that teachers not only talk about data, but also change their practices as part of a continuous improvement cycle. The latter step is the part of performance management that takes the lessons learned from data and turns them into actions, raising the bar for expectations in the use of data and changing teacher behavior in the process.

The more that professional learning can be infused into the routine workday of teachers, the more effective the learning opportunity.<sup>15</sup> Everyday tasks such as attendance, grading, and lesson planning are opportunities for data discussions. It is important to make relevant content connections, such as bringing mathematics teachers mathematics-related data in line with their instructional scope and sequence. It is also important for teachers to have time to work with and share their knowledge in a community, such as middle school grade-level teams. These relationship-supportive structures can equip teachers with the data use skills they need and also develop expertise that can be shared within the larger community.<sup>25</sup> Positive peer pressure in these groups can also encourage changes in data use practice for more resistant teachers.

The *Practice 3 Example Application* that follows describes how this approach was carried out in one middle school.

A sample planning tool to help data team meetings focus on progress monitoring is provided in Table 2.

#### **PRACTICE 3 EXAMPLE APPLICATION: Ask Important Questions**

Boston's McCormack Middle School<sup>23</sup> decided to ask this question:

Are particular middle school math teachers especially effective at teaching certain topics?

The results showed that the school had some teachers whose students outperformed the state average on a subset of questions on the 8th grade state assessment. Teachers shared their specific strategies for teaching the topics related to these questions during interviews. This information was used to guide professional development the next year.

You never know what can be accomplished with just one person asking one question—so step up and ask!

Data Type	Indicator and Measurement Activity	People Involved	Schedule for Gathering Data	Schedule for Sharing and Interpreting Data
Short-term data	Individual conference with students about one of their work samples	Classroom teacher	Individual conferences with five students per week (record notes on conference sheet)	Teachers share key findings at grade level team meetings October through April
Short-term data	Observe small group discussions related to a class assignment	Principal, assistant principal, representative from the school wide data team	Once in the fall (November) and once in the spring (March), conduct student-focused classroom observations	Post-observation discussion with teacher the same day his or her class is observed Findings across observations of teachers shared at whole-faculty meeting (December, April)
Medium-term data	District benchmark assessment	Classroom teacher, principal, assistant principal, data team representative	Administer benchmark assessment to all students at the start of the school year (September), middle of the year (December), and end of the year (April) Classroom teachers review scores of their own students	School wide data team creates report with data displays and presents the findings at a whole-faculty meeting Grade-level data reports with data displays are provided to grade-level teams for deeper discussion during grade- level team meetings.
Long-term data	Use of state assessment end-of- year test results to determine annual yearly progress	Principal, assistant principal, data team representative	Administration of state assessment in May Provide teachers with results in September for planning for the new year.	Data team provides report and data displays for the faculty at the first whole school faculty meeting in September led by the principal

Source: Adapted from Boudett, City, and Murnane (2008); p. 148<sup>14</sup>

### Table 2. Sample Team Meeting Plan for Progress Monitoring

In addition to grade-level team meetings, vertical alignment meetings that include a data discussion can also be important. In this approach, school goals are examined across grades, with a focus on common activities, expectations, and vocabulary, in addition to crosscurricular and cross-grade activities. It can be helpful for teachers of one grade to understand how standards were taught the prior year and recognize when they are teaching a standard for the first time. Vertical team discussions can support alignment of instruction and assessment across the grade levels to support the school goals.

#### PRACTICE 3 EXAMPLE APPLICATION: Vertical Alignment Meeting Agenda

Lee Middle School in the San Angelo Independent School District shared the following sample agenda:

English and Language Arts Department Vertical Alignment Meeting Agenda

- · School wide mathematics activities related to school goals
- Modeling the think-aloud process for good writing in all ELA classes
- · Discussion of how to evaluate reading/writing intervention effectiveness
- Selection of academic vocabulary for the next six weeks and use of Frayer Model with words
- · Review of vertical team goal: Use of Leveled Questions to improve student understanding

It is important to have a checklist or protocol for data meetings to articulate objectives and roles, determine an action plan, and then revisit the action plan over time and make adjustments.<sup>13</sup> The facilitator plays a vital role in making sure each person shares information and also listens to others. In addition, keeping the focus on evidence prevents discussions of topics like "a child not caring about school" and replaces them with topics like "a child not turning in assignments" and possible solutions.

In 2014, The Regional Educational Laboratory Northeast and Islands created a toolkit entitled "Practitioner Data Use in Schools: Workshop Toolkit." They describe this toolkit as being "designed to help teachers and administrators use education data more systematically and accurately."<sup>27</sup> The toolkit includes activities for teams of practitioners to investigate specific questions and make decisions about instructional planning. There are many valuable resources for maximizing the structured time teachers spend examining data to improve teaching and learning. http://ies.ed.gov/ncee/edlabs/projects/project.asp?ProjectI D=400 **Practice 4:** Organize and prepare a variety of data about students and student learning.

Recent research shows that small collaborative structures (e.g., grade level teams) that meet regularly support learning; in addition, research demonstrates that short targeted learning sessions focused on one new data use skill can be more effective than a longer, more extended professional learning experience.<sup>15</sup> Furthermore, it is important that teachers immediately apply what they have learned to their own data. Keeping the time and learning task short allows teachers to receive immediate feedback to modify their practice. Finally, learning from one short session should be connected to the next session so that knowledge accumulates and skills are strengthened.

Examining student work is one way teachers can learn about differences in teacher expectations, content covered in other classes, and variances in student understanding that can inform instructional decisions. To best understand these differences, a variety of data should be collected in addition to state assessment indicators; focusing only on state assessments can result in teachers' aligning instructional practices with the assessment, which is exacerbated by pressures of high stakes accountability. Schools should also include instructional practices as data to explore relationships between specific practices and student performance.<sup>28, 29</sup> Conducting benchmark or interim assessments can provide data throughout the year to monitor progress and inform instructional decisions. As illustrated in Figure 1, additional data to consider in instructional decisions are demographic data, attendance and behavior data, perception data from questionnaires and surveys, and school process data (e.g., instructional practices used at a school).



Source: Adapted from Berhnardt (2006); p. 11<sup>30</sup>

# Figure 1. Dimensions of Data Available for School Analysis

**Practice 5:** Interpret data and develop theories about how to improve student learning.

Teachers can better understand the needs of different classes by examining data to interpret areas of relative strength and weakness for each class. Teachers can then use this information to prioritize time and make instructional decisions. Triangulation of data using multiple indicators can inform theories about student learning patterns and plans to test those theories. For example, using the EWIs discussed earlier, teachers and principals can use attendance, course grades, and behavior data to design a summer intervention for at-risk students. Talking to teachers and parents about student needs and factoring in those results can further strengthen this plan.

The school data facilitator can work with teachers to help them identify the intersection between two or more indicators (e.g., demographics and student learning; demographics, perceptions, and student learning). This information can then be included in an effective professional development program for teachers that focuses on use of data to improve instruction and student learning. However, it is vital that teachers receive data in a timely manner so they can analyze it and change their instruction as needed.<sup>31</sup> Receiving data too late is a chief complaint of teachers who would prefer to have real-time data to change instruction before they even complete a unit of study. When the data arrives late, it may no longer be relevant to what is currently being taught, which leaves teachers no motivation to analyze the data or to use it to inform changes to practice.

**Practice 6:** Modify instruction to test theories and increase student learning.

Instructional changes can be made to improve student achievement by examining time allocation, assessing the scope and sequence of curriculum, identifying students for interventions, learning new instructional strategies, aligning expectations of teachers in the same grade level, and vertically aligning curriculum across grade levels.

#### PRACTICE 6 EXAMPLE APPLICATION: Using Data to Understand Individual Student Needs

The following are examples of ways state assessment data reports can be used to understand the needs of diverse learners, according to teachers in New York City<sup>20</sup> who engaged with student data three to six times a year:

- Determine the strengths and weaknesses of each class.
- Focus on and provide more practice in areas where a class scored low.
- Look at ways to integrate low-scoring content areas throughout the year.
- Spend less time on content areas where students score well.
- Use data about student strengths and weaknesses to make yearlong pacing and lesson planning decisions.
- Create student learning groups based on student-level data.
- Individualize assignments based on student-level data.
- Use data to create peer tutoring pairs comprised of a low- and high-performing student in an area.
- Identify students who are near the cut-point for meeting the passing standard for targeted interventions and provide them with extra school resources.
- Use assessment data in addition to other sources of classroom data (observation, class assignments, homework, quizzes, and tests) to better understand student needs and progress and to make decisions about student grouping and assignments.

The New York City teachers found this kind of interaction with class-level data important for their own instructional planning because it revealed required standards and skills they had not been teaching. For areas where students were scoring low, this interaction helped teachers assess how they were teaching a skill or concept and obtain ideas for successful strategies from other teachers. The interaction also allowed new teachers to better understand content standards and how they are assessed and thereby better understand what to teach.

### **Principle 4:**

Guide and support parents and students to stay on track to postsecondary success by selecting goals and monitoring their progress toward those goals.

Teaching students to look at data to understand their own performance, set goals for learning, and monitor progress toward those goals can motivate them to achieve more. Families can also use data to stay informed about their child's progress and learn more about the overall performance of the schools that serve their children. For this communication to occur, data must be reported in a user-friendly format and be aligned with both learning objectives and long-term goals that schools and families share, such as graduation and college readiness. Research supports teaching students to examine their own data and set learning goals.<sup>3, 32, 33, 34</sup>

#### Practice 1: Explain expectations and assessment criteria.

Teachers can explain the expectations for student performance for the year and how they relate to long-term goals by setting explicit goals for individual learning and tying these to students' personal goals. Assessments aligned with these goals provide students and teachers with a means to evaluate progress throughout the academic year. Reports of student data in a user-friendly format can have the following benefits for students and their families:<sup>20</sup>

- They can provide a starting point for discussion among parents, students, teachers, and administrators regarding student progress toward learning goals.
- They can provide concrete examples of areas of strength and weakness for a child connected to content standards.
- They can promote conversation about types of curriculum supplements and activities students and their families can use to achieve their goals.

#### PRACTICE 1 EXAMPLE APPLICATION: Guiding Students to Take Ownership of Their Learning

Teachers in New York City<sup>20</sup> found a few ways to help students take ownership of their learning through use of personalized data. Here are some examples:

- Provide students with a binder that contains their performance data report, along with information on performance by content standard.
- Discuss the performance data report with students, including the structure of the report, what the scores mean, and how to find areas of strength and areas in need of improvement.
- Meet individually with students to discuss strengths and weakness as identified by their performance data report. (See sample student conference sheet below.)
- Have students write down three areas they would like to improve based on the performance data report. Students can be provided with times each week to work on these areas using supplemental curriculum materials and then check their understanding by practicing with released test items.

Student Name:	
Date:	
Class and Period:	
Skill to Focus On:	
Teacher's questions:	Summarize what the student was asked to think/talk about
Student's responses:	Summarize the key points from the student's response
Student's understanding:	Describe what the student's response reveals about his or her understanding of the concept or skill that was the focus of this conference.
Implications for Instruction:	What changes will be made to instruction based on the student's response?

Source: Adapted from Boudett, City, and Murnane (2008); p.142<sup>14</sup>

The following is an example from Lee Middle School in San Angelo Independent School District of a grade 8 student goal sheet co-created with a Social Studies teacher.

#### **MY 8TH GRADE SOCIAL STUDIES GOAL**

I, \_\_\_\_\_\_, understand that my goal for my American History course is to meet \_\_\_\_\_%, which is above the average expectation. I understand that I must work hard every day and take something from every assignment and lesson in order to ACHIEVE my personal goal.

My teacher and I will accept no less from me! We accept nothing less than the best, and I promise to give and do my best, and to aim high!

(Signature)

Assessment Name	My Achievement	Reflection
Curriculum Check #1: Exploration & Colonization		
Curriculum Check #2: Causes of the Revolution & Revolutionary War		
Curriculum Check #3: Articles of Confederation, Constitution, Bill of Rights		
Fall Semester Exam		
Curriculum Check #4: New Republic & Jacksonian Era		
District Spring Benchmark		
8 <sup>th</sup> Grade Social Studies State Assessment		

## **Practice 2:** *Provide feedback to students that is timely, specific, well formatted, and constructive.*

For feedback to be informative, it should be given in time for students to improve their understanding and be specific enough to provide concrete information about what and how to improve. For example, providing a student with practical examples could motivate them to improve while also providing a model of expectations.

# **Practice 3:** *Provide tools that help students learn from feedback.*

Provide students with a paper or computer-based tool to use when responding to feedback, such as correcting items that were incorrect following an example or answering a list of questions to improve the learning that results from the feedback process. **Practice 4:** Use students' data analyses to guide instructional changes.

Using data, students can identify individual goals they want to achieve, or an entire class can identify instructional areas in need of review. Teachers can use this information to plan lessons that target students' needs and motivate student learning.

#### PRACTICE 4 EXAMPLE APPLICATION: Student Goal Setting and Action Plan

Below is a sample student goal sheet shared by Lee Middle School in San Angelo Independent School District to support students in setting goals and having an action plan to prepare for the end of year state mathematics assessment.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

My Math Goal is: \_\_\_\_\_

I, \_\_\_\_\_, pledge to do my best to achieve this goal. I pledge to review the objectives and ask question on topics that I do not understand.

#### **State Assessment Review**

Parent/Guardian,

Please initial in the boxes below verifying that your student has gone over the review handout on the dates provided. Each day is worth 20 points for a total of 100 points toward a test grade. Thank you for helping your child prepare for the state test.

Date	Monday	Tuesday	Wednesday	Thursday
Initials				

### **Principle 5:**

### Ensure that school-level and student data needs are incorporated into districtwide data management system planning and implementation.

While research supports the creation and maintenance of a comprehensive data management system that meets the needs of the teachers and school instructional leaders,<sup>3, 6, 35, 36, 37, 38, 39, 40, 41</sup> many schools are not directly involved in making decisions about the data management system used in their district.

Recent research has shown that when districts attempt to set a mission about data use, there are several challenges that hinder performance management:<sup>15</sup>

- Lack of common understanding about data use for teaching and learning
- No structured time for learning how to use data
- Difficulty designing and implementing data-related activities for teachers and leaders
- Lack of an integrated data system

Schools should participate in identifying recommended requirements for the data systems relative to user needs and in planning the implementation of new data systems to inform teaching and learning. Schools should advocate for district professional development time to engage in performance management learning opportunities. **Practice 1:** *Involve a variety of stakeholders in defining user requirements for the system.* 

The following stakeholders all have different data needs and should be included in the discussion of selecting a data system that will meet these needs: administrators, counselors, information technology staff, support staff (e.g., attendance clerks), teachers, parents, and students. The school wide data team should be able to effectively represent the data needs of these stakeholders to inform the school principal and district administration about data needs on an ongoing basis, not only when selecting a new data system.

Principals, in particular, need data tailored for their needs. Examples of how data can inform the work of school administrators include the following:

- Based on the data, what are the areas of need where we should target resources?
- What are the results of investments the school is making in interventions, professional development, or other improvement efforts?
- How can this data inform school planning activities?
- How does this data help to support conversations school administrators will have with different stakeholders (parents, teachers, and other administrators)
- In what ways should professional development be shaped based on this data?

Ensuring data is presented in a user-friendly format is critical to long-term, consistent use of data by staff. Preformed reports provide summaries of data and are available for viewing and printing with little or no input from the user. A report of class achievement results on a state assessment is an example of a pre-formed report. For advanced users, query tools allow users to browse through data and create customized reports. For example, a teacher could select a specific class and look at student achievement by a specific subgroup of students.

The following three aspects of effective data system implementation have been identified:<sup>15</sup>

- Integrated, centrally-supported systems: Systems should allow connection among educators, leaders, and campuses within the district so that when students move from one campus to the next, their needs can be met spontaneously. The system is less about storage and more about a web of student support.
- 2. Widespread, easy access: The goal is for educators at all levels to be able to take in information from multidimensions and respond in real-time in order to be responsive to student needs. This requires access to a variety of data (e.g., period attendance for a child for

not only the period a teacher teaches the child, but also all other periods) without barriers. However, the access also needs to be user-friendly, despite the variety of robust interrelated data available within the system. A well-designed user interface reduces the time it takes an educator to access the needed data, allowing more time for the review and use of the data.

3. Collegial relationships: A growing trend is to develop data systems that support collaboration, sharing expertise, and leveraging knowledge. For example, a system could recommend resources (print, electronic, or in-person) on a particular topic for support. Similarly, data systems can be developed where a group of people who support a particular student can share information among the group, such as strategies that have been found effective, to better address student needs.

#### PRACTICE 1 EXAMPLE APPLICATION: Teacher Analysis of Data by Class Section

Provide a user-friendly data interface to access state and district assessment results that is customized for teachers according to each class they teach with the following information:

- *How did my students do?* This part of the report can provide data for students grouped by state standard and whether the student performed far below to far above standard.
- What do my students need to learn? This part of the report can provide data related to how students did according to the state's key ideas or objectives, as well as in comparison to other students in the city, district, or state.
- What tools are on the Web? Student and class needs can be identified and prioritized using previous year's
  assessments. If possible, this part of the report can provide teachers with a description of the skill or standards to be
  targeted, common causes of learning difficulties in those areas, and research-based instructional strategies with links
  to external resources (i.e., instructional materials) that are district- or state-approved.

Today, districts have many options to choose from to organize their student data. Some districts have the capacity to develop the desired data management system with user-friendly reports for administrators and teachers. Other districts do not have that capacity, so they look for product vendors. It can be a challenge to identify which of the many products available is best for your district and school needs. Below are a few things to consider:

- Attendance: Can the product display attendance by class period? Many products display daily attendance, but significantly fewer can display period attendance. This is important in states where daily attendance is taken at a certain period of the day (e.g., second period). Students then learn they may skip other periods without notice since administrative reports only include the period where daily attendance is recorded. Consider the amount of learning a child is missing by skipping one or two periods a day over time. Userfriendly reports with "red flags," or other mechanisms for highlighting students with more than 2 period absences in a week, can be helpful for administrators and teachers in identifying and providing support to students to keep them on track for success.
- Grades: Can the product manage a variety of types of grade data (e.g., numeric, letter, by standard)? Many districts and a few states are moving toward standards-based grading. In these states, it is important to have a data system that can help track student mastery of grade-level content standards. In addition, some districts have moved away from letter grades (where a grade of F relates to 50 points and all other letter grades are associated with 10 additional points) to numeric grades: 1, 2, 3, and 4. It is important that the product selected for data management be aligned to the grading system a district or school selects.
- Behavior and Interventions: Can the product track the type of behavior incidents, type of follow-up with students and their families, and types of interventions?Do all teachers and administrators working with a child

have access to this type of data? Consider how important it is for one teacher to know whether another teacher or administrator has had contact with a child and/or his or her family so that the teacher can be part of a system of support for the child instead of working in isolation, unaware of what each person in a school is doing. In addition to tracking contact with students and their family, it is important to have a single place to access information about interventions or other supports a student has received, the start date, any data on progress they have made toward their goals, and when they are exited from a program or stop receiving intervention services.

User-friendly Reports: How well does the product allow the user to obtain data at a classroom level, student level, and period level, as well as within and across types of data? For some purposes it is important to look at aggregate data across students in a particular school or class. At other times it is important to focus on a group of students or particular student and then see a variety of data for that student or small group. Consider the types of questions you have and what types of data you would need and then see how easy it would be to get access to that data. How many windows do you have to open, or how many links do you need to click on? The more userfriendly the interface and reporting, the more likely it will be used by teachers. For example, many districts now have EWI reports sent to teachers every few weeks with red, green, or yellow flags based on students' attendance, behavior, and course grades. These reports support teachers and school administrators in identifying students in need of academic or behavioral support.

• **Dissemination:** How easy is it to share a data report with a teacher or a parent? When working toward improved student success, it is important to share data and information with everyone involved in a child's life. Having the ability to export and/or e-mail a student data report is important and allows everyone in the child's circle of support to remain informed.

These are just a few of the recommendations to consider when developing a data management system or selecting a product from a vendor. Many providers will make promises that they can give you what you need and work with the data you have, but it is important that the features just described be non-negotiable to support performance management in your district.

### Practice 2: Plan and implement a data system.

Work closely with district or other individuals responsible for implementing a data system to ensure all potential users have appropriate access and training. A campusspecific plan is needed that addresses the roll-out of the data system, including its purpose and role in supporting campus goals, professional development for all who will have access to the data, clearly defined roles and responsibilities for users of the data, and opportunities for ongoing support and technical assistance as users become familiar with the new system.

### **District Support for Performance Management**

According to Anderson, Leithwood, and Strauss (2010)<sup>28</sup>, districts can play a valuable role in supporting schools in performance management by doing the following:

- setting expectations and monitoring data use for school improvement;
- modeling data use in district decision-making;
- providing access to supplementary tools and resources to facilitate data use (e.g., data reports for schools, curriculum-embedded teacher assessment instruments, time and data use teams); and
- sharing the expertise that they develop locally or provide schools with external expertise to support effective data use to improve teaching and learning.

When district administrators regularly engage in data discussions with school principals and teachers, data use becomes more of a routine practice.<sup>28</sup> For example, district administrators can work with school administrators to link their school goals and progress reports to student performance data. In addition, district leaders can support the gathering of best practices through evidence rather than informal observations and opinions. Districts can also set expectations for data-based evidence to justify expenditures. For example, if a school requests funding for specific targeted professional development, a district could request that data be provided to justify the area of focus of improvement addressed by the professional development.

A final key way districts can support performance management is to design benchmark assessments aligned with standards and expectations to assess performance of students and provide school leaders and teachers with data for performance management.

## Conclusion

High quality research about effective data use is very limited, despite the attention and funding this issue has received over the last 10 years. It is difficult for researchers to tease out this topic from the larger contexts within which data play a role, such as leadership, effective instruction, and dropout prevention. It is often difficult to attribute causality in a study of these aspects of schooling to the role of data in achieving greater student outcomes.

The recommendations in this section are based on the expert opinion of both researchers and practitioners that have worked directly with schools to use data to improve instruction. The recommendations represent best practices used widely in successful schools. Further research that focuses specifically on those aspects of data use that seem to contribute most to positive outcomes for students and schools is critically needed to support education professionals who work with teachers, principals, students and parents.

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