# Data-Driven Decision Making:

## *A Powerful Tool for School Improvement*

*Compliments of:* **Sagebrush** ™
Corporation

# Overview

Schools have been collecting data for decades, but it hasn't been until recently that most school district leaders have discovered the power of data for promoting school improvement. Much of the recent focus on data has been triggered by the No Child Left Behind (NCLB) Act, legislation that is intended to increase student achievement across all socioeconomic boundaries and improve results at "low-performing" schools.

However, recent advances in technology and the increased demand for assessing student learning has led many school administrators to discover that the usefulness of data goes far beyond NCLB reporting requirements. Today, forward-thinking districts across the country are employing data-driven decision making techniques not only to analyze test scores and student achievement, but also to:

- Narrow achievement gaps between student subgroups
- Improve teacher quality
- Improve curriculum
- Share best practices among schools and districts
- Communicate education issues more effectively with key stakeholders
- Promote parental involvement in the education process
- Increase dialogue within the educational community

In its most basic form, data-driven decision making is about:

- Collecting appropriate data
- Analyzing that data in a meaningful fashion
- Getting the data into the hands of the people who need it
- Using the data to increase school efficiencies and improve student achievement
- Communicating data-driven decisions to key stakeholders

But for many districts, implementation of data-driven decision making practices can be daunting. Not only are there a variety of technical challenges to overcome, but resource, financial and data quality issues as well. Getting started can be the toughest challenge of all.

This paper will provide a basic framework for analyzing today's data-driven decision making options and outline information about the basic elements and steps involved in implementing a data-driven decision making system to facilitate more informed decision making, boost overall school performance and improve student achievement.

# The move toward data-driven decision making

## A brief history of data in schools

Data collection in schools is not a new concept. For years, districts have collected a vast array of student and institutional information, including such items as test scores, enrollment data, budget and finance information and human resources data. In fact, district and state administrators have been dealing with continuously expanding data reporting requirements for the past two decades.

In 2002, those responsibilities increased drastically with the passage of the No Child Left Behind (NCLB) Act. Whether or not you agree with the legislation's scope and intent, NCLB has heightened awareness and attention on student data to a new level across the country.

As a result of NCLB, school administrators are now responsible for monitoring and enabling student and teacher performance improvement, broken down by important subgroups. This kind of reporting typically requires a sophisticated system for data collection and analysis.

Moving into NCLB, all states and most districts have some sort of a data management system in place. Unfortunately, the average system is often composed of a number of spreadsheets, databases and paper reports that are loosely connected through various interfaces, making it difficult to retrieve and analyze the data in a comprehensive, integrated fashion.

Today, many districts are using NCLB as a catalyst to move to data-driven decision making. The most enlightened districts are using it to improve their technology infrastructure and formalize data collection and analysis procedures, allowing them to make informed decisions based on data rather than assumptions.

For example, many districts are faced with tight budgets and limited resources, having to make tough decisions about cutting programs. With a data-driven decision making system in place, administrators can quickly and easily analyze the correlation between student participation in these programs and other indicators such as student attendance, discipline incidents and student achievement, giving them a clear picture about the effectiveness of each program. When forced to make cuts, ineffective programs can be eliminated based on real-time facts and figures, rather than emotions or assumptions.

Data-driven decision making has opened a new world of opportunities for schools and districts to provide professional educators, students, and parents access to large amounts of information. Today, schools can enable key decision makers with data and information to facilitate more informed decision-making, boost overall school performance and improve student achievement.

## Districts could suffer without proper data

States and districts need an effective technology infrastructure not only to meet NCLB's data management and analysis expectations, but also to identify and fix operational inefficiencies and drive improvements in student performance.

If administrators fail to provide the necessary evidence of improvement required through NCLB, their districts could face several repercussions:

- A portion of their Title I dollars to support supplemental services and programs could be reallocated
- Students could exercise transfer options and enroll in other districts, resulting in decreased funding for those lost students
- Schools could face restructuring

But the repercussions go far beyond NCLB performance requirements. Without a formal data analysis system, districts often fail to uncover and address critical issues that occur at the school level. This puts them at risk for missing important opportunities to improve student achievement and attain greater operational efficiencies.

Running reports from a multitude of data sources without an integrated analysis tool also can be costly for school districts. Costs to upkeep all of the different data sources can be high, and it usually requires extra staff and resources to support it all.

## Data can be a powerful tool for districts

Knowledge is power, and there's nothing more powerful than data to help district and school leaders develop a solid blueprint with measurable results for continuous improvement. Through the proper use of data, districts can:

**Narrow achievement gaps.** Data provides quantifiable evidence, taking the emotion and guesswork out of what can be tough calls for superintendents and school boards. With an effective data-driven decision making system, states and districts can more easily analyze performance data by important student subgroups, challenge assumptions and address problems at the school and classroom level. On a classroom level, many principals are already using data to determine student composition. If they find that one or two classes are over-populated with low-achieving students, they can allocate extra support resources for those classrooms, or re-distribute students to other classrooms to balance the mix.

**Improve teacher quality.** Districts can employ data-driven decision making systems to highlight specific and targeted professional development needs of district staff and make better staff development investments. For example, an analysis of student achievement data can help superintendents understand which instructional strategies are creating the best results and see where additional training might be needed.

**Improve curriculum development.** A data-driven decision making system allows administrators and teachers to adopt a proactive approach to curriculum design and development. Perceptions data, for instance, can tell superintendents about parent, student and staff satisfaction with the learning environment, which also could reveal areas in need of improvement. Demographic data can be used to provide valuable information about meeting the learning needs of students now and in the future.

**Find the root causes of problems.** Data helps districts and administrators see things they might not otherwise see. When data is examined from all angles, it may highlight a program that, although popular, is not helping students learn. Data can help drill down to the root causes of a problem, allowing districts to solve the whole problem and not just the symptom. This gives educators great insight into interventions such as summer school and after-school programs, allowing them to continue to promote effective programs and to modify or discontinue programs that are not working.

**Share best practices.** Data can provide useful information within and across classes and schools in formats that educators at all levels can quickly use to determine best practices. These examples of performance excellence can then be shared with other schools and educators, providing the opportunity for staff to learn from each other.

**Communicate more effectively with key stakeholders.** Instead of responding defensively to critics or the media, data can arm administrators with facts and figures that tell a more complete story and help key audiences understand the root causes of the challenges faced by their schools.

**Motivate students and increase parental involvement.** By analyzing data, teachers can identify a student's weakness in a particular subject. Rather than reviewing the entire curriculum, which can be overwhelming for many students, special focus can be given to just the strands the student needs to concentrate on to improve test scores. Teachers can encourage students by showing them how successful they were in other strands, while helping them to focus on the task at hand. This approach also can be very motivating for parents, helping to increase their involvement in everything from nightly homework to long-term educational planning.

# Common elements of a data-driven decision making system

Districts can choose to implement everything from "homegrown" data-driven decision making solutions to purchasing complete, turnkey data management and analysis technologies and services from a wide variety of vendors. In *Making Sense of the Data*, a report by Eduventures, Inc. that examines the K-12 data management and analysis market, the author notes that "most systems built internally lack sophisticated technology infrastructures and data collection processes that allow the system to grow with the needs of the state and/or district."

The report goes on to say that "states and districts are finding that partnering with vendors to develop an appropriate data management and analysis (DMA) system can be more efficient than developing a system internally. …Working with vendors enables states and districts to streamline their DMA investments, mitigating the costs associated with the unpredictability of the development and maintenance of these systems."

The following illustrates a full-scale, comprehensive data-driven decision making model. Districts may choose to implement all or part of the following model, based on their specific needs and budget considerations.
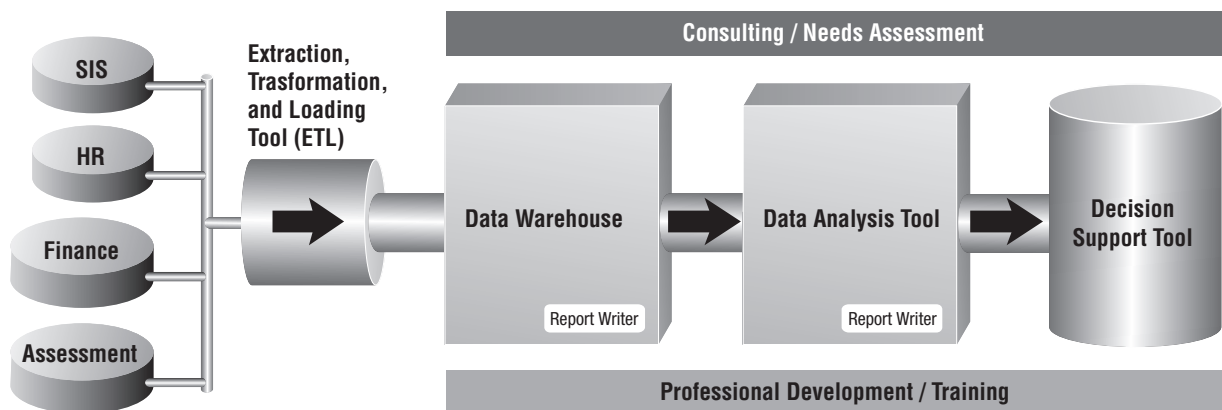


### Diverse Data Sources

Information can come from functional district databases, such as Student Information Systems (SIS), Human Resources, Finance and Transportation, as well as Test Data, which could include everything from state tests and benchmark assessments to specialized tests developed on the school or classroom level.

Many districts also have information stored in a vast array of specialized databases, collecting information on items such as special education programs, disciplinary referrals, professional development and teacher certification, technology support help line calls, community survey results and more. These databases shouldn't be overlooked in the data collection process, as they help to bring a multidimensional perspective to the data.

### Extraction, Transformation and Loading Tool (ETL)

This is the interface between the databases and the data warehouse. As data passes through the ETL, it is combed for missing, incorrect or inconsistent data. These discrepancies are flagged, allowing users to remedy problems and maintain the quality of their data.

### Data Warehouse

A data warehouse is an organized storage area for data elements that are pulled from the various databases. It is the integration of all data into one central repository. A well-designed and well-built data warehouse can serve as the foundational layer for a strong data-driven decision making system.

### Data Analysis Tool

The data analysis tool is the "engine" that drives a data-driven decision making system. It is a user-friendly, non-cryptic reporting and analytical tool that conducts mining, forecasting and analysis of the information that resides in the various data sources and/or data warehouse. It typically offers an integrated reporting tool that allows users to run real-time, pre-formatted and customized reports, putting data into the hands of those who need it most to expedite analysis and improvement efforts.

It also speeds those efforts by reducing the time and effort it takes to manually pull together data from diverse information systems. In just minutes, staff can conduct a detailed analysis of a subject, investigate alternative causes or correlations and analyze the results from a number of different perspectives.

### Decision Support Tool

A decision support tool takes analysis one step further by recommending and prescribing corrective measures to help administrators and educators address problems highlighted by the data analysis tool. These tools foster a culture of continuous improvement by providing recommendations, real-time alerts, and automatic actions for administrators, teachers and staff.

## Important Features of a Student Data Analysis System

*User Friendliness*

- Software is intuitive and easy to use
- Software requires little training
- Presentation is familiar to user
- Access speed is fast and efficient

*User Features*

- Comprehensive query tools available for every level of user
- Flexible drill-down capability from any form of data aggregation
- Data can be accessed from anywhere

*Information Access*

- Multiple ways to access the information
- Varied methods of representing information (e.g. tables, graphs)
- Wide range of data available for analysis
- Interface provides immediate access to relevant information
- Pre-formatted reports are clear, varied, relevant and comprehensive
- Longitudinal presentation of data available at every user level

*Creating and Sustaining Quality Data*

- Provides capacity to enable clean data
- Company accepts responsibility to facilitate data process with schools
- System allows for expansion past initial implementation
- System provides proper security for data transmission
- Integration of different areas of information is seamless to the user
- Software accepts many common data formats

*Additional Features*

- Online student work samples available
- Software exports into common programs
- Users can access electronic discussion groups
- Easy access to learning standards information
- Software offers capacity to link individual teacher data to student data

**Support Services**

Many vendors who offer data-driven decision making solutions also offer consulting support services such as needs assessment, professional development and training.  With a needs assessment, the vendor works directly with the district to identify technology, infrastructure, data, educational and organizational goals up-front, providing a virtual roadmap for implementation.

Once the implementation process has begun, it's important to make sure that system users learn effective, appropriate strategies for applying the data to support and facilitate improved student outcomes and achieve greater operational efficiencies.  Some vendors offer professional development and training services as part of their data-driven decision making packages.

At first searching for vendors who offer data-driven decision making solutions can seem daunting.  A report published by the Center for Research on the Education of Students Placed At Risk outlines on the previous page the features to look for in a student data analysis system.

Although it's not likely that any single provider offers all of these features, administrators should identify those features that are most important to their districts and choose a vendor based on identified needs.

# Getting started

One of the biggest challenges for any district implementing data-driven decision making is knowing where to begin.  Often, there is so much data to choose from that the process can be overwhelming.

Key to creating momentum behind any data-driven decision making effort is a proactive leader who understands the vision, champions the cause, helps others in the district realize the impact of data analysis and understands that the entire process takes time.

## Who Does What?

Data-driven decision making, especially in the early stages, demands that district leaders point the way.
Superintendents and school boards both must play important but distinct roles.

*The superintendent generally:*

- Translates the board's vision for the school district into measurable goals based on data
- Works with district faculty, staff, parents and other community stakeholders to craft plans for meeting goals by certain dates
- Collects data to show clear, steady progress
- Celebrates successes, evaluates shortcomings and revises plans for improvement based on data, along with the board

*The school board generally:*

- Establishes a vision for the school district based on data showing what has been achieved so far and what progress is necessary
- Spells out, for the superintendent and other employees and stakeholders, how district performance will be evaluated
- Reviews relevant data to evaluate district progress toward identified goals
- Revises goals and plans for improvement based on data

*Broad participation in improvement efforts serves to:*

- Promote a high level of support for those efforts
- Generate sound solutions by expanding the discussion
- Motivate participants and their associates
- Increase the likelihood that the effort will lead to constructive action

- Prepare participants for their role in implementing improvements
- Increase ownership of and commitment to specific strategies
- Empower important stakeholder groups
- Foster lasting, rather than temporary, change

*Source:* "At Your Fingertips: Using Everyday Data to Improve Schools", 1998.  In:  "Using Data to Improve Schools: What's Working", a report produced by the American Association of School Administrators, 2002.

The best way for the leader to get started is to lay the groundwork for a district-wide shift to a culture of information, education and communication. One way to do that is to find "data champions" throughout the organization. These "believers" should come from all levels within the system and show enthusiasm over the possibilities of data-driven decision making. Their enthusiasm will quickly spread to their peers, building momentum and increasing the likelihood of buy-in at the district level. It may take time, but it is crucial that administrators and other district leaders are on-board to ensure full participation in the process.

Successful integration of data-driven decision making also requires a team approach – particularly between the board of education and the superintendent. The district's expectations must be clearly articulated, measurable and attainable, and individual roles must be clearly defined. The table on the previous page outlines suggested roles for both the superintendent and the school board:

## Overcoming implementation barriers

For leaders who are committed to supporting data-driven decision making in their districts, there are a variety of technical challenges to overcome, many of them involving availability and reliability of data. Some examples include:

- A shortage of staff and resources
- Difficulties cleaning up data from multiple sources so that they are compatible
- Various entry and accuracy errors that, once analyzed, can lead to incorrect conclusions
- The need to digitize large quantities of information

Quality of data also can be an issue. Data analysis is only as strong as the quality of data from which it is derived. If the data is suspect, concerns can be raised about the quality of decisions that administrators are making based on that data. Losing trust at this stage of the process could make it difficult to rebuild trust moving forward.

### Bringing Student Achievement into Focus

St. Paul is an urban district serving 43,000 students in Minnesota. With 34 percent of its students identified as Limited English Proficient and a high mobility index of 22 percent, analyzing student achievement proved to be difficult. To better meet the needs of its students, the district piloted a data-driven decision making system at one of its schools, Arlington Senior High School. The trial was set up as a targeted assistance model, serving the "highest" needs students who receive the most assistance.

To do that, staff needed to examine test data on a regular basis and use it to identify the most academically challenged students in order to improve their test scores and provide them with an opportunity to graduate. Easier said than done.

Prior to implementing the data-driven decision making system, teachers would start the year with little or no knowledge of their students' past performance. Data was only available for students who had taken tests in their building the previous spring, and it was not easy to use and required extra time for the teacher to retrieve. As a result of these obstacles, teachers used only overall test scores and pass/fail status.

Data-driven decision making changed all of that. Upon implementation of data analysis techniques, teachers were able to look at scale score improvements on standardized tests to evaluate their curriculum, instruction and services. They could look at strands within a test to determine trends in performance and adjust curriculum and instruction accordingly. They also looked at strands to identify and assist students through the school's comprehensive tutoring program.

Rather than having to key in data manually, the student information was updated nightly, giving teachers real-time information about the students sitting in front of them. They could review classes by overall test score/performance and drill down to the strand/sub skill level to see how students performed.

As a result of looking at data by class and grade level, Arlington began curriculum mapping and a building-wide literacy initiative. Seeing the data in "black and white" and taking the time to understand and interpret the data helped Arlington solve critical building-wide curriculum and instructional issues.

The project was so successful that efforts are underway to expand the data-driven decision making system's use across the district.

To overcome these barriers, many districts have opted to pilot their data-driven decision making systems on a smaller scale with a specific school, program or group of students. By showing success on this level, they are able to build trust, create "data believers" and increase the likelihood of buy-in on a district level.

Many districts also are leveraging the power of cooperatives to ease the burden of implementing data-driven decision making systems. By working as a team to set universal goals, explore shared data opportunities and identify common problem areas, district staff and educators not only enjoy the synergies created by bringing multiple perspectives to the table, they also are able to build momentum and share time and resources on matters such as staffing, training and data entry.

# Five simple implementation steps

Once there's buy-in and district-wide support for a move toward data-driven decision making, formal implementation can begin. Although the task may look daunting at first, breaking it down into smaller, more manageable steps will make the process go much easier. While each district's needs and resources may differ, the following steps outline some of the basic activities needed for successful implementation of a data-driven decision making system

## 1. Conduct an information inventory/audit

A good place to begin is to ask the question: What do we want to learn? As districts go about answering that question, they should consider a broad vision of data collection. Think beyond just high-stakes test scores. When it comes to student learning, no one test can possibly provide a full picture of what students understand and can do in relation to national or local standards and curricula.

Once districts have determined what it is they want to learn, a good next step is to conduct an information audit to identify data that is already being collected and determine if the various data sources are compatible. If not, districts should identify the obstacles to making those connections work.

Next, districts need to determine what additional data is needed. The idea here is to take a multidimensional approach to data collection. Think creatively and go beyond the confines of traditional transactional databases, gathering both qualitative and quantitative data. Qualitative information, which usually describes what people say, do, think or feel, puts a human face on quantitative data. Examples of targeted qualitative data sources include:

- Surveys and questionnaires (of teachers, students, parents, employers, community members, etc.)
- Interviews or focus groups
- Teacher logs/diaries
- Classroom observations of actual instructional practices and student responses
- Alternative assessments (e.g. work samples, portfolios, senior projects and performance tasks)
- Locally developed pretests and posttests

The final item to determine is how frequently important data needs to be collected – daily, weekly, monthly, yearly or over multiple years.

## 2. Standardize data management

In its simplest form, data-driven decision making is all about correlating data elements and exploring those factors that contribute both positively and negatively to student and teacher performance. Correlating data elements can be nearly impossible if the process for collecting them hasn't been standardized.

To begin, consider developing data standards that apply to the whole organization. Some basic standards could include eliminating paper systems, entering all data directly into compatible computer systems and across networks, and organizing data sets with universal keys.

It's also important to assign ownership for specific data elements. A clear chain of accountability will result in greater data quality and integrity.

This also is an ideal time in the process to assess the district's information systems to determine if they can handle the data collection and analysis that needs to be done. The first option should be to maximize existing information systems. If that's not possible, it may be time to begin searching for compatible data management vendors.

## 3. Analyze the data

Education reform is a hot topic that will continue to be scrutinized by the media, politicians and community stakeholders for years to come. With such intense focus on school improvement, it is vital that any data collected be interpreted accurately and fairly and communicated clearly. Employing the following steps will improve that process:

**Provide ongoing training for system users.** Data-driven decision making requires new knowledge and skills. System users need to know fundamental spreadsheet and database techniques such as filtering, sorting and creating tables and graphs. They also need to be comfortable with fundamental data analysis concepts such as causation, correlation and disaggregation. Make sure that the vendor you choose offers training as part of its implementation package.

**Take a long-term approach to data collection.** Reacting to a single test score is perhaps the most common mistake made when interpreting data. Longitudinal measurement – conducted consistently from year to year — is necessary to properly measure progress, growth and change.

**Drill down into data to find the real picture.** The drill-down process is an effective method of disaggregating data. It begins with a general question, then "drills down" the question into smaller and smaller parts. While drilling down into data can be rewarding, it can also be misleading. For instance, the further you drill down into a set of data, the smaller the sample size available. As a result, the less accurate your conclusions. Be careful not to drill down so far that the data group is too small to draw acceptable conclusions.

### Key Analysis Techniques

**Disaggregation:** Breaking data down to find out what a number looks like for different sub-groups hidden within an average or basic percentage. Users typically do this with a drill-down process, which begins with a general question, followed by increasingly specific questions that focus on smaller subsets of data.

**Longitudinal data:** Data measured consistently over a period of weeks, months or years to track progress, growth and/or change over time. True longitudinal studies eliminate any students who were not present and tested in each of the years of the study.

**Cross-tabulation:** Cross-tabulation is comparing data among multiple sets or subgroups. For example, you could start by looking at a simple statistic by one characteristic, such as race. Next, you could cross-tabulate it by an important educational opportunity such as passing rates or reading scores.

**Interpret and share results as they become available.** It's not necessary to wait until all data is collected before analysis begins. Early in the process, districts can begin to observe important trends that will lead to more informed decisions once all the information is available. The practical side of data analysis involves helping teachers and administrators learn how to interpret data and respond with the best resources and strategies for implementation.

**Create a culture of information in the district.** It's important to get the data into the hands of the people who need it most – teachers, administrators and other stakeholders – and to encourage these groups to engage in dialogues that will help them come to a deeper and shared understanding of the data. According to Nancy Love, author of the comprehensive guide Using Data/Getting Results, "These dialogues help participants gain skills in data analysis. They learn to separate data from inference, to bring out multiple perspectives, to test out interpretations of data with additional data and relevant research, and to explore not just obvious explanations, but the root causes of problems."

## 4. Strive for continuous improvement

Increasingly, school districts are using data-driven decision making to ensure continuous improvement. Once districts have identified relationships or gaps in data, they can take the most important step – making changes and defining new strategies. Whether the decision for change is big or small, the key is to make the most informed decision possible given the data that is available.

There is no end to data analysis, and once district staff understand how to effectively use data, it will become easier and easier for them to identify new opportunities for collecting and analyzing data. Districts must continue to look at answers to old questions, include new information as it becomes available and make new, more informed decisions. Once these decisions have been made, the process of identifying relationships and implementing remedies begins again.

Forward-looking districts also move beyond the initial work of assessing their own schools' performance by reaching out beyond their borders and benchmarking their schools' performance against that of other top-performing schools across the country. Benchmarking is more than comparing test scores. Done well, benchmarking helps districts learn what it takes to be effective, how well they are using key strategies, where improvements are possible or necessary, and how they can learn from the best practices of other successful districts.

## 5. Communicate results

An effective way to build public support and increase community confidence is to show key stakeholders how districts and schools are being held accountable for results. Sharing data in easy-to-read charts and short, jargon-free reports not only lets community members know that schools are making informed decisions based on data, but also can create a deeper community understanding of the issues facing public education.

### User-Friendly Report Cards

Here are some helpful guidelines to ensure that a school's report card is read and used:

- Keep school report cards short, such as a six-panel brochure —Have a more detailed version available for people who want more data

- Add short narrative descriptions—School data are not self-explanatory to non-experts

- Advise parents and others how they can use the data—It's not obvious to most

- Spend as much time working on distribution as on production—Research shows that even most teachers say they've never seen district report cards

*Source:* "Reporting Results: What the Public Wants to Know About Schools", 1999. In: Using Data to Improve Schools: What's Working, a report produced by the American Association of School Administrators, 2002.

Districts shouldn't rely on the media alone to communicate the message. Limited time and space, combined with a lack of understanding of the complete information, often lead them to report only the basic facts, which are usually misinterpreted because the details behind the data are not provided.

Many successful districts are reporting information directly to their communities. One method for doing so is a school report card or annual performance report. This report is used to guide discussions on performance and education priorities at various school forums, and at parent, staff and school board meetings. Training teachers and principals to help facilitate these conversations ensures that everyone is focused on the data, what the data reveals about performance and how to improve instruction in the classroom.

# Conclusion

Data-driven decision making goes well beyond simply complying with NCLB performance requirements. It can serve as a powerful process for districts to facilitate more informed decision making, boost overall school performance and improve student achievement.

Key to successful implementation of data-driven decision making is an outspoken leader who understands the vision, champions the cause and helps others in the district realize the impact of data analysis. Finding and using "data champions" throughout the district is an important strategy, creating enthusiasm at all levels and building a district-wide culture of information, education and communication.

Achieving district-wide support takes time. One successful strategy for getting started is piloting data-driven decision making initiatives on a smaller scale, building trust and buy-in from the ground up. Other districts have leveraged the power of cooperatives to ease the burden and tackle the process as a team, sharing resources and benefiting from the synergies that bringing multiple perspectives to the table can bring.

Once education leaders have committed to the process and there is district-wide support for the program, getting started can be the biggest challenge. Breaking the process down into smaller, more manageable steps can ease the burden on individual staff members or departments and significantly improve your district's chances for successful implementation.

School districts don't have to go through the process alone. Several technology vendors on the market offer everything from simple, easy-to-implement data analysis modules to complete, turnkey data management and analysis technologies and services. When your district is interviewing technology vendors, be sure to identify the features you need up front and choose a vendor based on those needs.

When used appropriately, data-driven decision making can be a powerful process for schools and districts. It can help to: narrow achievement gaps, improve teacher quality, improve curriculum development, promote better communication with key stakeholders, motivate students and enhance parental involvement in the education process. But even more important than that, it can help districts maximize the use of limited funds to achieve the best impact possible on student achievement.

## Resources

"The Administrator's Guide to Data-Driven Decision Making." Todd McIntire. *Technology & Learning,* June 2002.

"Cooking with Data to Reduce Achievement Gaps." Craig Jerald. *ENC Focus*, electronic version, Volume 10, Number 1.

"Data Analysis in Administrators' Hands. An Oxymoron?" Theodore B. Creighton. *The School Administrator*, April 2001.

"Data in Your Hands." Raymond Yeagley. *The School Administrator*, April 2001.

"Data: Mining with a Mission." Judy Salpeter. *Technology & Learning*, March 2004.

"How Data Can Help: Putting Information to Work to Raise Student Achievement." Jane Armstrong and Katy Anthes. *American School Board Journal*, November 2001.

"Improving Teaching and Learning with Data-Based Decisions: Asking the Right Questions and Acting on the Answers." Nancy Protheroe. *ERS Spectrum*, Summer 2001.

"An Interview with Nancy Love: Building a Professional Learning Community." Ken Mayer. *ENC Focus*, electronic version, Volume 10, Number 1.

"Making Sense of the Data. Overview of the K-12 Data Management and Analysis Market." A report produced by Eduventures, Inc., November 2003.

"Software Enabling School Improvement through Analysis of Student Data." Report No. 67, published by the Center for Research on the Education of Students Placed At Risk, a national research and development center supported by a grant from the Institute of Education Sciences, U.S. Department of Education; January 2004. For a full copy of the report: www.csos.jhu.edu/systemics/datause.htm.

"Turning Skeptics into Supporters." Elaine M. Coffin and Laura M. Seese. *ENC Focus*, electronic version, Volume 10, Number 1.

"Uses and Abuses of Data." Nancy Love. *ENC Focus*, electronic version, Volume 10, Number 1.

"Using Data to Improve Schools: What's Working." A report produced by the American Association of School Administrators, 2002.

## About the Author:

John Messelt has 32 years of experience in the Education field as a Teacher in Special Education, a Director of Special Education, Superintendent of Schools, and currently the Executive Director of the Central Minnesota Educational Research and Development Council. He has an undergraduate degree in Industrial Education, as well as a graduate degree in Special Education from St. Cloud State University and an Educational Specialist degree from the University of St. Thomas. He has been an active member of the Minnesota Association of School Administrators and has served as President of the Minnesota Administrators of Special Education. For the past ten years, he has been an associate of The Cambridge Group, providing strategic planning services throughout the United States and Canada. Through his consulting work, he provided many organizations with training in planning, team-building, and conflict management.

**Sagebrush**
*Corporation* ™

3601 Minnesota Drive
Minneapolis, Minnesota 55435

1-800-533-5430 U.S. and Canada
1-507-725-5411 Worldwide
1-507-725-2301 Fax

info@sagebrushcorp.com
www.sagebrushcorp.com