As a school board member, recognizing these challenges exist and creating an environment where thoughtful discussions can occur is important. Without serious consideration of each of the technology challenges, costly mistakes can be made. The current status and specific needs of the district should be carefuly reviewed before making decisions to move forward with new solutions. These decisions and strategies must then be built-in and supported over time. Purchasing and implementing the technology once will not support the needs and growth of the district forever.

Policy Questions

- *Other than resources, what barriers exist in using technology to support the culture of inquiry?*
- *What long-range planning needs to occur from a resource perspective to implement a longitudinal data system?*
- *What resources need to be set aside for technology to access the data?*
- *How can the school board communicate to the SEA the need for interoperability between the longitudinal data systems for collection and reporting of data?*

PROFESSIONAL DEVELOPMENT TO EFFECT CHANGE

Without question, professional development is one of the most important pieces that require an investment. Devoid of professional development, change will not occur. Change management must be structured, intentional and planned.

School board members must recognize that indispensable changes to existing structures might be needed. This may take the form of re-evaluating existing resources, school calendars, or even school schedules. Thoughtfully reflect on the needs of each of the stakeholders. Make determinations as to what will support the administration in reaching the goals and key performance indicators that are set by the school board.

In addition, the support structures call for designing professional development to be maintained. Professional development for dialogues around data use, types of data and technology needed, does not simply happen over a short period of time. It should be sustained and continuous for genuine data-driven decision making.

The National Center for Educational Statistics (NCES) is the federal agency responsible for collecting and analyzing data related to most aspects of education in the United States. In order to assist school districts, the National Forum on Education Statistics, a subset of NCES, created a curriculum for improving education data. The curriculum focuses on developing a culture for improving the quality of data and the planning needed in order for this to occur.

Policy Questions

- *Based on the various stakeholders, how do you provide the structures for activities needed for staff and other stakeholders to engage in the organizational change?*
- *What does the school board need to do to enable administrators to assess the culture in terms of data?*
- *How can we enable data to be used as a collaborative tool to serve students better?*
- *What conversations are needed with state and federal policy makers around the importance of professional development to analyze and use data to improve learning and teaching?*

MAKING DATA MEANINGFUL

"Transparency concerns assessing, communicating, and acting on data pertaining to the what, how and outcomes of change efforts."

Eric Hirsch, Director of Special Projects
New Teacher Center at the University of California at Santa Cruz

The phrase – *Make Data Meaningful* – provides a simplistic approach to a complex issue. Making data meaningful depends upon the stakeholders. Federal policymakers want very different data than a classroom teacher. At the most granular level, data systems need to provide information to classroom teachers to improve learning and teaching to the most macro level of federal policymakers desiring to make policy decisions regarding educational programs. ***"To improve student achievement results, use data to focus on a few simple, specific goals" (Schmoker, 2003).*** This statement sums up the use of data – set focused goals.

Presenting the data to the various stakeholders requires that this is also accomplished in a useful way. Portraying data in an unreadable format or in psychometric terms to teachers, does not aide them in using this data nor having conversations around this data. Tools ought to offer various formats and views to yield data that is easy to understand.

POLICIES FOR ACCESSING DATA

In making data meaningful, first determining which elements of it can and should be accessed by which staff is an important part of the data governance conversation. Because data touches positions across the district, and individuals with varying levels of expertise in data interpretation, it must be readily available, easy to understand, and easy to analyze to guide conclusions. As all of these data touch people and processes, how the data will be governed is a key factor.

- Who is going to have access to this data?
- What policies and systems will be put in place for data collection and maintenance?

Data itself can be readily interpreted for decision making for desired outcomes whether for the administration, professional learning, student and all other stakeholders.

- What is to be done with this data?
- How will this data be applied?
- What constitutes transparent data within the district?

Not all LEAs will have an individual to administer and monitor all of the data on the backend of these processes, so on the front end of these discussions that reality should be acknowledged and alternatives explored. The data crosses all organizational lines vertically and horizontally and making sound policy decisions up front saves frustration.

SUSTAINABILITY FOR CONTINUOUS IMPROVEMENT

Turnover rate for key LEA leadership is not a new issue. A desire exists to promote sustainability and move toward the embedded nature of the culture of the LEA and individual schools. Continuous improvement and sustainability remains at the heart of any initiative – especially when it involves using data to improve learning and teaching within a LEA.

According to Newman (2007), creating a culture for a shared understanding of, and collective commitment to, central goals as well as developing a continuous loop of asking how to improve, having reflective dialogue and allowing for critical discussion, provide the opportunity for entrenching continuous improvement in the school district.

Redding identifies two first-steps that must be taken in building sustainable continuous improvement:

1) decision-making structures to monitor progress and alter practices to achieve the best results, and
2) data processes that provide frequent and reliable measures of student learning and operational information. Once these two foundational steps exist, implementing programs and processes to advance identified areas in need of improvement can occur.

Without intentionally planning for sustainability, all work might be wasted when the leader of the school district leaves. Putting structures in place to ensure data-driven decision making becomes embedded in the culture can prevent this from occurring.

Policy Questions

- *What key values and processes need to be in place within the LEA to ensure that a culture of inquiry is the core of improvement?*
- *How can we incorporate data driven dialogue into core business practices and processes?*
- *What structures need to be in place to intentionally build sustainable continuous improvement?*

HORRY COUNTY SCHOOLS

Located in coastal South Carolina, Horry County Schools covers a large geographical area. The school district administration aspired to focus more on data-driven decision making. The goal behind this was to optimize student learning, which would mean the need to:

- Facilitate individualized instruction
- Facilitate continuous improvement through program evaluation and curriculum alignment
- Evaluate the allocation of resources
- Provide trend analysis and forecasting capability
- Provide easy access to data

This would entail not only making changes technologically, but also in reporting, professional development and a shift in culture.

Over the past five years, Horry County Schools has combined data silos into an integrated data warehouse; streamlined data sharing using SIF; provided dynamic reporting from the data warehouse; provided a single sign-on portal for teachers, parents, students and administrators; provided data analysis for program evaluation; provided analysis of key performance indicators and seamlessly sent reports vertically up to the state department of education.

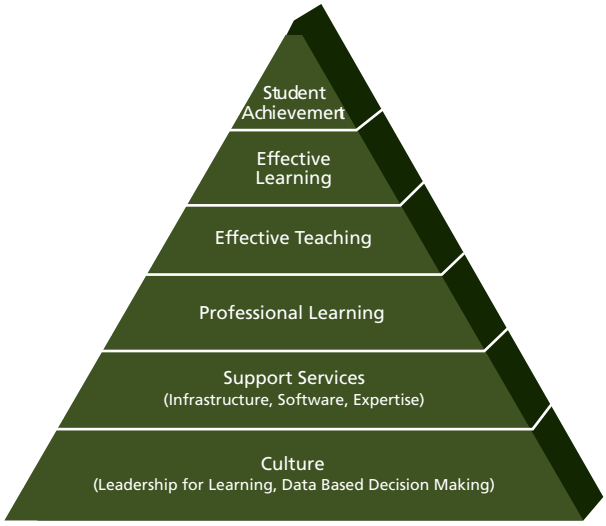
As a result of all of these changes, the district administration has seen:

- Immediacy of data to stakeholders– necessary information is available immediately to allow administrators to make timely decisions for instruction and provide a wider range of services for students and staff
- Time savings – duplicate entry and export/import procedures have been identified and eliminated
- Data quality increases – reduction of errors and inconsistencies between applications is a reality
- Cost savings – accurate data is available more rapidly, allowing Horry County Schools to reallocate resources, so that time once spent doing mundane tasks is now utilized for analysis, under standing and use of that data to support instructional and administrative decisions

As a school board member, the first step in determining the data intelligence roadmap is beginning the conversation.

These conversations should occur at the district level with the administration and at the city, state and federal level with policy makers. An understanding as to the criticality of data and the systems necessary remains a challenge in most school districts.

Student achievement is the pinnacle of all processes, projects, initiatives and focus of every LEA. Implementing data systems, and the needed support, is one of those. An ecosystem must be present, balancing all of the LEA needs and systems involved. The diagram below summarizes the foundational pieces required to reach this pinnacle.



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In creating a data intelligence roadmap, we discussed several things that should be considered:

1. Data Needs for Various Stakeholders
Spend time up front involving representatives from each of the stakeholder groups in conversations around data and support services needed.

2. Understanding the Types of Data Needed
Each stakeholder group desires and uses different data types. The data system must include these. In addition, understanding what questions cannot be answered by the data is important.

3. Organizational Change in Closing the Achievement Gap
Putting the system in place to manage change often is overlooked. This must be addressed intentionally.

4. Technology Challenges
A dialogue around all aspects of technology should occur. Without addressing and understanding the components of what is currently in place, what needs to occur and how to get there, the successful implementation of data-driven decision making will be hindered.

5. Professional Development to Effect Change
Providing opportunities for all stakeholders should be purposeful. Each subset of the stakeholders groups should be afforded opportunities to understand the data needed and their unique role in the process. Structures should be in place to support these efforts.

6. Making Data Meaningful
As with understanding the types of data needed, consider each stakeholder. Also, determine ways to present the data so that it can be discussed and used.

7. Sustainability for Continuous Improvement
Create and supply structures that will promote and encourage sustainability.

Relative to the pyramid, an alignment between the seven specific areas and foci on student achievement must be present. Each of these steps proves vital in systematically and systemically changing the conversations in a LEA. Each one is dependent upon the other in a symbiotic relationship. For example, without professional development, the conversation around types of data and the appropriate use of data will not occur. Without the technology, a data system cannot exist.

ORANGE CITY SCHOOLS

Challenges

Orange City Schools in Pepper Pike, Ohio were looking for an effective way to identify at-risk students so that appropriate interventions could be provided. Anecdotally the administrators and teachers knew which students were not thriving academically but a data solution was needed to accurately and precisely determine where the students stood. The school board historically had been supportive of the district leadership and an understanding of specifically what data and how to capture that data would be vital in a successful solution.

Solutions

Orange City Schools evaluated a number of commercially available data solutions. With the Board's approval, a solution was chosen that seemed to be the best fit for the school district's needs. After what was thought to be a thorough and complete preparation, implementation of the solution did not go as planned. There were many factors involved in what ultimately became a failed attempt to implement the solution.

The largest problem for Orange City Schools became apparent when the district tried to scrub data so that it could be used by the commercial solution. For many Ohio schools student data is reported to the State via regional data centers known as Instructional Technology Centers (ITC). The format required for reporting the data to the State Department of Education via the ITC caused what was eventually recognized as an insurmountable problem. The district was unable to import the data into the commercial product. After a year of struggling, Orange City Schools ultimately abandoned the project. All of the parties involved were at least partially accountable for the failure, and the company that had been chosen for the solution tried to make amends by offering other products in lieu of the solution purchased.

As a result of the continued desire to find a solution, administrators took a step back, analyzed the existing longitudinal data and determined what data would be needed to answer the questions of what data would be needed to identify at risk students so appropriate interventions could be provided. Orange City Schools decided a way could be found by manipulating the data in-house by pulling the data out of the State Department of Education's longitudinal data system.

While this solution did not give Orange City Schools the "dashboard" view desired, it did present the data in a usable format. This allowed the district to pinpoint students who were struggling to pass their state tests and accurately identified which areas of the tests were presenting difficulties. Orange City Schools knew this was just the first step.

The Ohio Department of Education also developed the Success Portal web site. This web site provides tools that can help in understanding Ohio's statewide assessments for the Ohio Achievement Tests (OAT) and for the Ohio Graduation Tests (OGT). This is a no-cost solution for the school district and it plays a large part in identifying students at risk.

Lessons Learned

As a result of lost time, energy, and investment, the school district learned that data formats can be a fickle thing. While data may work fine in one application, it may not work as flawlessly in another application no matter how straight forward exporting and importing data might seem.

While there was not success with the first attempt, administrators learned a great deal about utilizing data; even when educators have access to data they often do not know what to do with it. As a part of the search for a solution, the school district was able to educate teachers, principals, administrators and school board members in how to analyze the data presented to them, ask appropriate questions and to make well informed instructional and operational decisions.

In the case of the Orange City Schools, taking a step back from what was thought to be a solution and examining what data was needed, proved a beneficial step in providing students the assistance that was necessary. Initially sticking with a basic solution provided the school district with the initial data and information that was needed.

About Orange City Schools

Orange City Schools is located just outside of Cleveland, Ohio. 2,300 students make up the district population. Three schools house the students: one for pre-K, one for grades 6-8 and one for grades 9-12. The student demographics include:

- Black, non-Hispanic 23.7%
- Asian or Pacific Islander 4.3%
- Hispanic .9%
- Multi-Racial 4.8%
- White, non-Hispanic 66%
- Economically Disadvantaged 13.8%
- Limited English Proficiency 1.4%
- Students with Disabilities 15.5%

Orange City Schools' mission is to authentically engage students in a positive, supportive, nurturing and safe environment in order to develop critical-thinking and civic-minded citizens who will contribute to the local community and our global society. Based on this mission, the Orange Schools community was framed by a commitment to excellence in student learning. From classrooms to playing fields, from academics to co-curricular activities, from instruction to support, decisions were made based on what worked best to engage students in their learning.

VANCOUVER PUBLIC SCHOOLS

Intelligent data systems support personalized learning and help a progressive school system prepare all students for college, career and life

Challenges

High performing governance teams provide leadership focused on improving student achievement through planning, policy setting, advocating for children, and monitoring of performance so that every student succeeds. In Vancouver Public Schools, knowing each and every child by name and need is the district's "true north." The mission is about preparing young people with the knowledge, skills, and habits to be college, career and life ready. Staff is committed to personalized learning and proficiency-driven outcomes for each student. Vancouver Public Schools recognize that the conversations of school boards make a difference. Those conversations should focus primarily on learning and results.

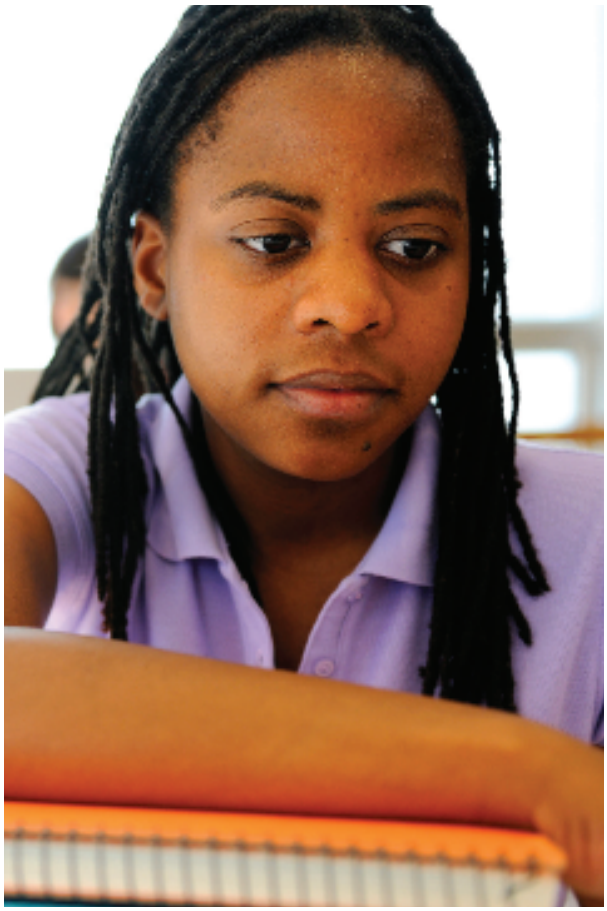
Skillful uses of data at the board level can help shape policy, support, resource and accountability decisions, and subsequent performance results. Beyond those fundamentals however, data-driven decision-making requires using multiple sources of information to improve instructional practice and to examine relationships among investments, improvement strategies and outcomes. In a learning organization, the governance team adds value by asking this question: What evidence do we have from a whole system perspective that our decisions are making a positive difference in student achievement?

Successful school systems that narrow the achievement gap adopt a continuous improvement model. Such a model charts and guides individual student growth over time, requiring and using data systems that provide real-time information to students, teachers, parents, administrators, and board members. The representation of data should be tailored to the needs and purpose of each audience. Most importantly, the data must be actionable; the collected information must assist with performance management. Data must cause the user to wonder, to pose questions, to explore relationships, and to determine some course of action to improve results. Robust data systems report data trends over time, but the more enlightened models are based on individual student growth. Reporting trend data is about system accountability. Reporting student achievement growth longitudinally is about learning. In Vancouver Public Schools, there is the belief that the use of both approaches strikes the right balance.

Solutions

In January 2008, the board of directors for Vancouver Public Schools adopted Design II, the next generation strategic plan, which will guide the district for five to 10 years. In addition to 18 goals, the plan identifies Key Performance Indicators (KPIs) – those metrics by which the school district will measure and report their results. Sixty-two KPIs fall within seven broad criteria: student learning; student and stakeholder satisfaction; budgetary and financial; employees; organizational effectiveness; leadership, character and social responsibility; and national benchmarking.

Identified KPIs provide the basis for ensuring the alignment of action plans, measurable goals and results across our system, from professional learning communities, school improvement plans, district goal area task forces, and business unit work plans to the highest level of policy, established by the board of directors. This alignment will enable Vancouver Public Schools to achieve the ultimate vision – that each student leaves the school system ready for college, career and life experiences.



To achieve this vision, the school district needs a data system that supports performance management. Accordingly, Vancouver Public Schools is developing dashboards and scorecards using business intelligence software. Dashboards provide a graphical view of summary level data, customized to the user, with the ability to explore the data intelligently and to drill down to see subgroup and individual student information. Dashboards also give automatic alerts to notify users of conditions requiring a response.

Scorecards align performance indicators with the district's strategic plan and report results on an annual basis. Two types of scorecards are currently in development: the Vancouver Public Schools District Scorecard, which compiles targets and reports results across all strategic goals for a given year; and the Vancouver Public Schools Benchmark Milestone Scorecard, which reports system-level targets for the year 2014 and progress toward those targets on an annual basis.

Design of the scorecards began in the spring of 2009 with an initial deployment anticipated for October 2009. A joint venture of the Information Technology Services and Research and Evaluation work groups, the development and design process requirements include the following:

- Identifying data specifications for each KPI
- Ensuring business practices and processes are in place to collect KPI data in electronic format from source systems and other electronic records
- Moving the data and business rules for reporting into the district's data warehouse
- Using business intelligence tools to develop actionable displays of data, customized to the user or user groups
- Validating accuracy of source data and report displays

Data dashboard and scorecard development initially will address district/school administrator and program specialist needs for actionable views of data. Existing online applications then will provide data to the classroom level. The Vancouver Public Schools Learner Profile, a tool used since 2004, collects and reports data and information about each student's performance and progress in literacy and mathematics. Pathway guidance documents assist with the assignment of specific interventions and instructional strategies based on available data.

Each student's Learner Profile is archived from year to year and made available to classroom teachers. Various reports enable class and grade level views of data. Collaborative Academic Support Teams (CAST) composed of principals, literacy specialists, counselors, psychologists, and other educators also view the data for all students in their assigned schools. CAST meetings are held three times a year to facilitate reviews of progress. Vertical Teams review Learner Profile data and information to ensure appropriate placement of students and to help them make successful transitions. Secondary Intervention Teams, including the principal, school psychologist, and data facilitator, also meet frequently to discuss the needs of every student. District administrators examine aggregated data or drill down to information about classrooms and individual students.

Continued development of our data systems will focus on the following:

- Expanding from trend views to longitudinal views that depict progress in terms of continuous improvement
- Enacting prospective analytics that use historical information to forecast future performance, and support informed interventions
- Enabling program evaluation that supports resource decision-making based on return on investment principles
- Implementing best practice professional development in the use of data to impact student learning and system performance

Lessons Learned

The Vancouver Public Schools' leadership team continues to reflect upon the continuing development of a longitudinal data system to support data-driven decisions. Many of the lessons learned along the way speak to the need to think strategically about practices that remove barriers and build capacity. Three specific areas of awareness are the identification of targets and outcomes, resource capitalization, and building capacity for data-driven decision-making.

Targets and Outcomes

All levels of the system must be engaged in a continuous improvement model. One of the first steps is to engage stakeholders in identifying those measures by which an organization will monitor and evaluate its success. Those measures, or key performance indicators, then create a common vocabulary and the basis upon which a longitudinal data system can deliver data that enables performance management at every level.

Resource Capitalization

Once priorities are established by the board of directors in the form of high leverage or high yield key performance indicators, financial and human resources can be aligned for maximum impact. This step includes establishing a partnership with a vendor that can deliver a solution tailored to the particular specifications of a K-12 environment. Development of a Request for Proposal (RFP) and Proof of Concept (POC) are crucial in the articulation of these specifications. Crucial also is the availability of a consultant or contractor who understands K-12 context and can apply best practice performance management design within that environment.

A project task force ideally includes a Project Manager and a team of technical and subject area experts. Establishing a project scope and timeline determines the size of the team as well as the particular skill sets that will be required at each step. In the case of Vancouver Public Schools, an ambitious scope and Phase I timeline led to the understanding that an additional developer was needed on the technical team to meet deployment dates, validate data sets and ensure continuing development of the data dashboard model. As the work progresses, the school district anticipates the need to consider staffing changes to provide more statistical support and training.

Technical data integration, which refers to third-party providers of data, also impacts resource decisions. Vancouver has identified those data sources which will be kept in the data warehouse, therefore making them available for the data dashboard. In many cases, ensuring the quality of data from third party systems is problematic. Vancouver's team includes staff assigned to validate and scrub data. As accuracy issues are identified, we continue to consider systemic strategies for monitoring and improving the accuracy rate. In many cases, the validation process highlights the need for changes in business practices related to collection of data.

Engagement, Capacity Building and Professional Development

Engagement strategies at all levels are critical so that all stakeholders – board members, administration, leadership, classroom teachers and support staff – understand the "big picture" of results and the impact of their work on targeted outcomes. In addition to engagement, an ongoing professional development plan that promotes best practices in data-driven decision-making will enable a continuous improvement model at the classroom, school, work group and system level. Finally, structures and protocols to support formative and summative use of data must be in place. In addition to the CAST processes identified in an earlier section, this year, Vancouver Public Schools is implementing Professional Learning Communities (PLC) for teachers and leaders at all levels. PLCs will provide the context in which data-driven decision-making becomes routine.

About Vancouver Public Schools

Located in Southwest Washington across the Columbia River from Portland, Oregon, Vancouver Public Schools serves 22,500 students pre-kindergarten through 12th grade. The district's boundaries encompass 58 square miles. Vancouver is an urban-suburban community with increasingly diverse characteristics. Forty-seven percent of students qualify for subsidized meals, and 18 percent change schools during the year. Seventy-six languages are spoken in the district, and 17 percent of students live in households where the primary language is not English.

The district has 21 elementary schools, six middle schools, and six high schools. More than 20 programs of choice are offered including International Baccalaureate, Spanish and Chinese language immersion, and an arts and academics magnet school for students in grades 6-12. Family-Community Resource Centers in several schools highly impacted by poverty provide academic and enrichment opportunities, early childhood education and childcare programs, health and wellness programs, and family support services.

Vancouver is a founding member of the Western States Benchmarking Consortium, a collaboration of seven leading school districts that share best practices. On two occasions, Vancouver Public Schools has been honored to host site visits of the National School Boards Association's Institute for the Transfer of Technology to Education. For more information about the district, please visit www.vansd.org.

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About the National School Boards Association

The National School Boards Association is a not-for-profit organization representing State Associations of school boards and their member districts across the United States. Its mission is to work with and through all its State Association Members to foster excellence and equity in public education through school board leadership. NSBA achieves that mission by representing the school board perspective before federal government agencies and with national organizations that affect education, and by providing vital information and services to state associations of school boards and local school boards. NSBA advocates local school boards as the ultimate expression of grassroots democracy. Founded in 1940, NSBA represents its State Association members and their 95,000 local school board members, virtually all of whom are elected. These local officials govern 14,500+ local school districts serving the nation's 50 million public school students.

About TLN

NSBA's Technology Leadership Network (TLN) has provided technology information for more than 20 years to the state school boards associations and local school districts through print and electronic media, site visits, and its annual T+L Conference, and The TLN is designed for education leaders who establish policies and implement technology decisions that enhance teaching and learning, administrative operations, and community outreach efforts.

About the SIF Association

The SIF Association is a unique, non-profit collaboration composed of over 2,300 schools, districts, states, U.S. Department of Education, International Ministries of Education, software vendors and consultants who collectively define the rules and regulations for educational software data interoperability. The SIF Implementation Specification enables diverse applications to interact and share data and information efficiently, reliably, and securely regardless of the platform hosting those applications. The SIF Association has united these education technology end users and providers in an unprecedented effort to give teachers more time to do what they do best: teach. For further information, visit http://www.sifassociation.org.

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