

**VANCOUVER SCHOOL DISTRICT PRESENTATION ON
INTELLIGENT DATA SYSTEMS**

BACKGROUND

In an effort to showcase relevant and interesting work in local school districts, we contacted the Vancouver School district about its work on data systems for student achievement. In light of our discussions on accountability and student achievement, it seemed valuable for the SBE members to learn how one district works from the classroom to the board room, utilizing data to improve teaching and guide policy focused on student achievement. The Vancouver School Board examined the following question: What evidence do we have from a whole system perspective that our decisions are making a positive difference in student achievement?

The Vancouver School district maintains that successful school systems can narrow the achievement gap by adopting a data-based, 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; a key ingredient to performance management. Members of the Vancouver School District staff will share with the Board how they are currently using their data and their plans for its continued future implementation.

POLICY CONSIDERATION

There may be some policy elements that the SBE wishes to incorporate into its upcoming work on performance report cards.

EXPECTED ACTION

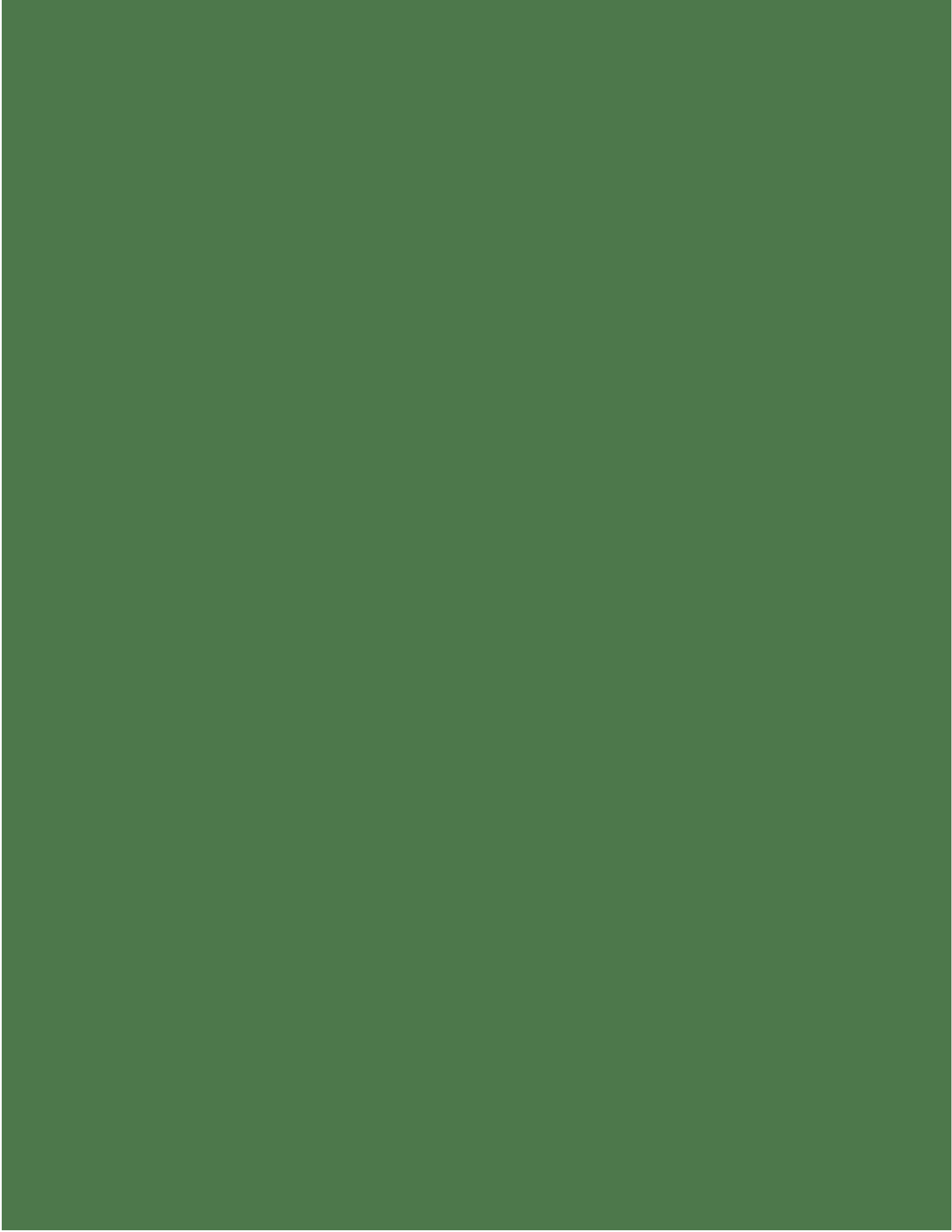
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*A Report for School Boards in Planning
for and Using Data Systemically*

WHAT SCHOOL BOARDS NEED TO KNOW:

Data Conversations





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School board members serve their local communities as stewards of public trust charged with making decisions that ensure all students have access to high quality learning experiences in efficient and well managed environments.

To govern effectively, it is essential that school board members have access to the kinds of data that will result in informed decisions. For more than a decade, the National School Boards Association has helped school boards think about their role within the context of an eight-part framework called the Key Work of School Boards. Although each component of this model can be supported by data, the particular type of data and its usefulness will vary as boards move their discussions through this framework.

The topic of data can be complex and confusing to individuals who are not accustomed to defining, collecting, storing, manipulating, analyzing, interpreting, sharing, or displaying it as a routine part of their jobs. This document is designed to provide board members with a common vocabulary around data, an explanation of the various types of data, a series of critical questions that should be asked at various points in data conversations, and resources to assist in those conversations. This document focuses

on the local education agency (LEA) and its use of data in policy considerations at the local, state, and federal levels. School board members need a comfort level about data that allows them to ask the district staff meaningful questions based on the information presented to the school board

DATA RICH AND INFORMATION POOR

Historically data has been utilized within K-12 education to inform decisions at many different levels, from the classroom teacher's decision about what grade to assign or which instructional intervention to use to an administrator's projections about student enrollment or school boundaries and bus routes. Unfortunately, districts have frequently been left with a multitude of data points, yet very little information on which to base decisions. This is a result of systems that were difficult to access, the failure to collect the right piece of data, or the timeliness with which the data could be reviewed.

Data is neutral. It is neither positive nor negative, yet how it is perceived and used within a district's decision-making structure establishes a culture that views its use as either a punitive club or a tool that contributes to positive, continuous improvement efforts. Often questions are asked and data provided that do not align directly with the initial question because there is a lack of understanding about what a particular piece of data represents. Necessary longitudinal data systems and the establishment of appropriate policies at the local, state and federal level need to be understood in greater depth by all education stakeholders: school board members, superintendents, teachers, parents and community



members. This is critical to advance the use of data for strategic decisions. A *longitudinal data system* can be defined as a data system capable of tracking student information over time and efficiently and accurately managing, analyzing, and using education data and information.

We are at a crucial point in education in the United States of America. We have an opportunity to provide students with an unprecedented educational experience. A paradigm shift is underway for the next plateau – a use of *Intelligent Data* to inform learning, teaching, and operational decisions. When looking closer at intelligence, it can be defined as what people do in terms of abstract reasoning and deduction. When applying to this data, and specifically intelligent data, skilled data analysis must be aligned to using this data in an intelligent manner for data-driven decisions. Data intelligence is relational to the intelligent use of data.

This paradigm shift includes moving away from simply reporting data to the state department of education, to using data in thoughtful ways to inform all decisions at the school district level: administrative, human resource, financial and instructional. Having strategic and thoughtful data-driven dialogue that produces effective decisions should be a priority with a school board. When a school board identifies where it can make effective use of data as a part of its systemic process, the decisions linked to that data can be evaluated resulting in increased accountability.

Improving student achievement should serve as a key motivator for all district decisions. Modern data systems, with tools that let teachers, administrators and board members see results in a timely fashion, encourage greater use of these data. As the demand for data has grown, so too has the need for better leadership training around its use in the classroom and the boardroom. In addition, community members who want to evaluate schools in different neighborhoods, or parents who want to track how their child is doing in school, need the knowledge base and skill set to correctly use the data that is made available in print and online. While technology tools for data analysis and presentation are increasingly common, many districts have yet to experience the transformational impact that data-driven decision-making can have on a learning community.

As a school board member, asking questions is your responsibility. Some of the questions school boards need to be critically asking, discussing and thinking about include:

- *How do we measure our success?*
- *Is the data collected aligned to produce results in a format that can be used to reflect on the success of the organization?*
- *How are we using data to inform decisions in a way that impacts our definition of success?*
- *In what way do the data system and processes promote action?*
- *Have we allowed time on the calendar for data driven discussions that are productive and focused?*
- *What processes are in place that will ensure continuity for year-to-year review of progress, even if there are staff changes?*

As this report dives into each of these topics in greater detail, school board members will be better prepared to understand what barriers may be in the way of these conversations as well as how to further the strategic goals and objectives of the school district – ultimately increasing student achievement for each individual student.



Local education agencies (LEAs) and state departments of education (SEAs) have historically not been consistent about the use of data.

Some state departments of education collected data longitudinally for some time and others are just beginning. This data may or may not have made the way back to LEAs in a timely fashion to impact decisions being made in the classroom. While data played an important role in terms of reporting and high-level accountability, these data have not been useful in a transformative way for LEAs or even SEAs in programmatic improvement.

Widely, LEAs have not used or collected data longitudinally. There are numerous reasons. Some of these include:

- the fact that the data provided to LEAs from the SEAs is not very informative for strategic decisions at an LEA level
- the data is sent too late in order to make instructional decisions
- a lack of data quality exists and timely information is missing
- the frequency with which the data is collected is not sufficient
- disparate data systems with no deployed capability of data interoperability, exchange or reporting standards
- a lack of capacity to build comprehensive longitudinal data systems

Since the No Child Left Behind Act of 2001, a greater emphasis has been placed upon the effective use of data. With the accountability required of LEAs and SEAs, educational organizations have paid closer attention to data being collected as well as the quality of this data. Performance and financial information have been tied to the data and accuracy of reporting has never been higher.

WHERE ARE WE TODAY?

Since 2002, the federal government has provided funding for state longitudinal data systems as part of the Educational Technical Assistance Act. This competitive grant administered by the Institute of Educational Sciences (IES), is intended to help states create “systems that are intended to enhance the ability of states to efficiently and accurately manage, analyze, and use education data, including individual student records. The data systems developed with funds from these grants should help states, districts, schools, and teachers make data-driven decisions to improve student learning, as well as facilitate research to increase student achievement and close achievement gaps.” This grant program, referred to as the State Longitudinal Data Systems (SLDS) Grant Program, has been a starting point for many SEAs. To date 41 states and the District of Columbia have received one of the State Longitudinal Data Systems Grants. The focus for most of the states has been to build greater capacity within the existing SLDS, or begin building a SLDS.

The Data Quality Campaign and Managing Partners have identified ten essential elements for a longitudinal data system. These ten essential elements serve as a basic foundation for state departments of education to build a longitudinal data system. The key piece to understand is how these elements relate to a district longitudinal data system.



As states receive the SLDS grants, a disconnect often exists between the SEA and LEA data systems. An emphasis should be placed on vertical reporting and the connections between the various data systems. Vertical reporting involves getting quality data from the LEA up to the state's data system and also from the state's data system down to the LEA. Districts and states must engage in conversation with one another around ways to identify, collect and report data. Specifically this includes:

- data transaction
- data transformation
- data analysis
- decision outcomes for student performance and achievement.

As a school board member, it is important to establish that your district's staff is engaged in an ongoing dialogue with the state education agency to ensure the needs of the LEAs are represented in data collection, management and analysis.

These data transactions between the LEA and SEA are vital for several reasons. The data that the school district collects must be represented accurately, with the same meaning and in the same format for the state to understand and utilize.

Data transformation involves a revolution in how data is collected, managed, used and discussed. Unless LEAs and SEAs work together to, strategically discuss these issues, both groups will become frustrated. A common and mutually agreed upon way data is talked about by the state and the district will provide a radical shift and an improvement in schools.

Decision outcomes for student performance and achievement require timely reporting of data bi-directionally – from the LEA to the SEA and from the SEA to the LEA. It is necessary for this data flow to be timely. For example, data from state assessments often is referred to as “autopsy data.” The results from the assessment are returned after students have moved on to another grade level. This data is not the best data to use in the classroom for individual students, but can be used in other ways. For example, looking at state results in fourth grade mathematics over time may indicate that for the measurement standard, students perform at a low level. Using this piece of data can inform the LEA leaders and ask questions such as: is the fourth grade not sufficiently addressing measurement across the

elementary grade levels or does the LEA need to offer professional development for the elementary grades in content and instructional strategies for teaching measurement?

Determining how to use this data and what the decision outcomes for this data are going to be, will provide a consistent dialogue between the LEA and SEA and set appropriate expectations around the data. In addition, school board members will know the suitable questions that can be asked based upon the data.

From the school board perspective, there are several questions that can be addressed to SEA and state policy makers around connecting state and local longitudinal data systems:

- What information do you need in order to have a meaningful dialogue with the SEA and policymakers?
- What type of questions would the school district likely be able to answer from the existing longitudinal data?
- What should the LEA consider as the state is building the LDS?
- How can we ensure the LEA is considered when designing the state LDS to take into account seamless data transactions?

MOVING TO MEANINGFUL DATA

Longitudinal Data Systems and Trend Analytics

A misconception often exists between longitudinal data systems and trend analytics. Longitudinal data systems are typically those that are described as collecting student level data. This data most often includes basic enrollment, demographic, program participation and assessment performance. In addition, funding for each program is typically represented. Longitudinal data systems do not often support continuous growth in learning amongst students. The data elements that could be used for student achievement, such as formative assessments, are lacking.

Student performance data has typically been reported by grade level. While this information can be helpful in improving curriculum and lessons by grade level, this information is not as meaningful in improving learning for each individual student. For example, if a student in third grade takes a mathematics assessment, the data is reported under

third grade. When that student takes the fourth grade math assessment, the data is reported under fourth grade results. This information is not detailed enough to track student-level progress through the grade levels. A teacher requires reports that provide student progress against the learning standards, the student's misconceptions and where instruction can be provided to further that individual student. Without this timely and actionable data, teachers simply cannot personalize education for every student which would ultimately increase student achievement. In addition, effective collaboration and best practice sharing around this data and instructional strategies with peers is required.

What appears to be trend data can be misleading. Trend analytics can be defined as what has happened in the past in terms of student performance, attendance, or even business processes, and analyzing the data in order to make assumptions and predictions of what will happen in the future in order to help each individual student. Policy makers, teachers, community members and school boards are losing confidence in public education. These data truly fail to show the progress of the students over time because the data systems report snapshots of the current population rather than track a cohort of students, or the same group of students over time. Many reports are collected and building a longitudinal data system that can truly represent cohorts of students over time serves as critical to the improvement of school districts. School board members should consider if they are looking at snapshots of populations, or comparing a cohort of students and viewing their progress over time.

Many reports can be derived from a longitudinal data system. A system needs to be in place to find what is meaningful in the next steps towards improving student achievement or business processes. How do these data systems raise flags to the surface such that those specific pieces of data are displayed? An attendance report can be important in traditional longitudinal data, but transforming that report by marrying the demographics of those individuals and their attendance might prove more valuable in providing support for those specific students.

Consider dropouts in a school district. Certain data is collected about these students. In the analysis of the data collected, a trend has been identified that certain characteristics of a specific cohort of dropouts exist. Based on this data, how might we apply this information to provide assistance to those students? How can the school district provide this information

in a timely, proactive fashion? These types of trend analytics provide clearer answers to address the individual student and not just the same grade level statistics from year to year. There is tremendous potential to impact the educational experience through facilitating dialogue around effective reports.

School districts have limited resources and time, so as a school board member, having these conversations with district staff, state and federal policy makers can add those lenses to data, which would then prove the data invaluable. School districts must purposely and in a focused way accomplish this. Quality longitudinal data systems can support districts in achieving this.

WESTERN HEIGHTS PUBLIC SCHOOL DISTRICT

Western Heights Public School District in Oklahoma City, Oklahoma has been utilizing longitudinal data as an integral part of school improvement for over a decade. This school district of 3,200 students is very culturally diverse and possesses a high mobility rate. The district administration desired to use longitudinal data, based on cohorts, to identify necessary areas for improvement and target each individual student for continued growth in student achievement.

Western Heights Public School District decided to implement the Schools Interoperability Framework (SIF) to solve the problems of interoperability between all of the various software applications. The SIF Specification is an open standard designed to define data and how to move that data consistently within a school district and between a school district and the state department of education. The district staff knew that the data needed to be accurate and get to the right place at the right time. All of the data from the account login, two assessment systems, student information system, food services, grade book, library, data warehouse, instructional management system and transportations systems are now available to everyone in almost real-time through a dashboard.

Once placing such an importance on longitudinal data, Western Heights Public School District in an 18 month time frame:

- increased student achievement over 30%
- generated \$1.3M in 18 months in additional federal and state funding
- improved accuracy, consistency, and timeliness of student data

“All aspects of the system need consideration including technical, professional development, curriculum, assessment, data reporting and many others. We want to change from what we have done to what we want to be able to do.”

2008 Data and Learning Summit Final Report

This paradigm shift of using *Intelligent Data* to inform learning and teaching requires considerations for the entire system. As a school board member, you want to ensure resources are aligned to provide tools that support a culture of inquiry, and shift from a monologue to a dialogue about the role of data in decision making. School boards can model the kinds of questions they ask and then act on the findings by appropriately resourcing the functional areas.

In order for this to occur, it will be necessary to allocate resources, from a financial and time perspective, to manage the shift in culture. In order to facilitate this change, think about:

- What communication mechanisms are in place?
- What questions should the school board ask that will better enable the administrator to build a culture of collaboration and inquiry?
- What resources may need to be shifted to obtain the long term gain?
- What barriers exist that need to be addressed?
- What possible professional development does the school board need to better understand to enable a culture of inquiry?

As the remainder of this document addresses additional components to be considered when building a culture of collaboration, building a longitudinal data system and informing policy at a local, state and national level, reflect on the current situation in the LEA that you serve.



DATA NEEDS FOR VARIOUS STAKEHOLDERS

Numerous stakeholders within the education ecosystem exist. In making decisions regarding a longitudinal data system in the school district, the stakeholders that need to be considered include:

- Teachers
- Administrators
- Students
- Parents
- Community members
- Higher Education Staff
- Local, State and Federal Policymakers
- Information Technology/Information System Managers
- Chief Information Officers/Chief Technology Officers

Each of the stakeholders will want to ask different questions and need different types of data and information. Teachers will want information about their students that can impact their decisions in the classroom in teaching and learning. The focus for *Administrators* will change based on which stakeholder group has raised a question, and will vary depending on where their positions are based – the building or the district. For example, a district administrator might want to focus on data based across all fourth grade students to make needed changes in the curriculum. A building administrator will want to know about teacher performance and to determine professional development strategies.

Students and Parents will care about data pertaining to their assessments, progress toward learning standards and meeting graduation requirements. Parents will also be interested in attendance and disciplinary actions while the community is interested in the overall performance of its schools because of the impact on everything from the quality of the future workforce, to the value of real estate. *Higher Education* is interested in student success factors, identifying necessary remediation, monitoring the performance of graduates from their institutions and developing predictive models to target potential students for success in their environment.

Finally, State and Federal Policymakers focus on what data is necessary to impact decisions at programmatic funding levels. For example, what programs are most successful or which programs can be replicated to

impact student achievement? Because answers to such questions drive funding decisions to expand or eliminate programs, it is essential that individuals have the best possible data in a format that helps clarify their thinking.

At a district level, the focus is on the student key performance indicators (KPIs) that impact student achievement. Key performance indicators include metrics that measure and report out results. For example, if we are measuring student achievement, KPI might be the course completion rate, instructional time or increasing scores on assessments. Defining the KPIs first ensures expectations are expressed and that this data can be included in the data set to report out for those measures.

As school board members, it is important to understand each point of view as the school district begins to build or improve upon the current longitudinal data system and processes that exist within the LEA.

Policy Questions

- *What other stakeholders need to be considered in the school district served?*
- *What is the best way to include each of these stakeholders in a conversation around data?*
- *What mechanisms need to be put into place to ensure communication is present and consistent across all stakeholders?*
- *What potential questions need to be asked of the data system to provide answers to each of these stakeholders?*
- *What messages need to be communicated about possible resources to each of these stakeholders?*

UNDERSTANDING THE TYPES OF DATA NEEDED

“Since NCLB, schools have learned they must use data to improve student learning for all students. As schools use data, they quickly learn they must use more than student achievement data to understand what they can do differently to get better results.”

Victoria Bernhardt, Executive Director
Education for the Future Initiative

According to Victoria Bernhardt, there are four types of data that school districts collect – student learning, demographic, perceptual and school process data. These different data types focus on different areas of data to improve not only instruction, but the overall educational organization. Each of these types of data is important for school districts to be aware of in order to make systemic policy decisions. In addition, according to Knapp, et. al, teacher characteristics, behavior and professional learning need to be taken into consideration.

The Family Education Rights Privacy Act (FERPA) provides federal legislation for the protection of identifiable data and information about students and families. Appropriate state legislation should be in place to ensure that the needs of schools are met as well as meeting the federal law. Guidance is provided by the United States Department of Education around the interpretation and implementation of FERPA.

In further examination of the types of data necessary to support students and student achievement, Reeves (2005) suggests that there are three tiers of information to be accounted for:

1. Typical accountability data
2. Measurable indicators to reflect professional practices
3. School narrative



The typical accountability data includes test scores, attendance, discipline, etc. At the surface, these types of data provide basic snapshot and demographic information. Also included in this information should be overall assessment data – formative, summative, benchmark and diagnostic. This data should also be able to answer individual questions about the student and their progress towards achievement at the individual level. For example, what science courses has a student taken and what was the science assessment score?

Like student learning, creating measurable indicators to reflect professional practice can be difficult. Pinpointing the appropriate data to capture information about curriculum, teaching and leadership proves important when creating a culture of inquiry and in analyzing practices at the school district.

Finally, school narrative data presents a qualitative context for quantitative data – the story behind the numbers. Data and information can be portrayed any way to support the cause or point that a LEA is trying to make and/or support. However, the more important question remains as to what is the data truly representing? ***The true story behind the numbers is critical to systematic improvement and analysis. Once the story is represented, a school district can move from analysis to action.***

Policy Questions

- *What needs to be in place in order to determine what this data should include?*
- *What information does our LEA need in order to better provide support for students and in reaching greater levels of achievement?*
- *What do the district leaders need to communicate to the state department of education and other state policy makers about the types of data that need to be collected?*
- *What barriers exist in preventing this data from being collected?*
- *How is the state interpreting FERPA and how does that impact the data that is needed for a longitudinal data system?*
- *How does the LEA define professional practice and what data needs to be collected to reflect this?*

ORGANIZATIONAL CHANGE IN CLOSING THE ACHIEVEMENT GAP

Organizational structure is one of the most important components. Change management without structure to sustain that change will cause failure and unnecessary stresses to the organizational structure. Without the underlying foundation in place, the support and follow-through will not occur. According to the Colorado Learning Foundation Guidebook for Best Practices in Closing the Achievement Gap (2008), the following must be adhered to:

- Culture of high expectations and accountability for all students
- Targeted assessments and intensive use of data to guide instruction
- Individualized support for struggling students
- Active engagement of teachers in school leadership and decision-making
- Substantial time for collaborative planning and options for professional development
- Commitment to core academics and standards but not at the expense of other important learning in the arts and humanities
- Stable and consistent leadership
- Small learning communities of educators
- Flexibility to use resources to support student needs and reinforce school culture
- Economically integrated student bodies

In the role of a school board member, ensuring that the administration has the support to implement organizational change is crucial. Without this leadership, shifting to the use of intelligent data will not occur. Barriers that exist may be difficult to remove, but the results will be worthwhile.

Once policies have been established to provide a venue for each of these guidelines to occur, ongoing structure and support will be needed. Intentional conversations and structures are essential to continue growth and ensure the changes become engrained into the culture of the school district.

Policy Questions

- *As a school board, what needs to be considered to enable the best practices?*
- *How is this information best communicated to state leaders in order to build support for resources? For example,*
 - *What needs to be communicated to support time for collaborative planning?*
 - *What resources are needed to support and develop targeted assessment?*
 - *What policies need to be in place to ensure that the LEA has the flexibility to use resources to support student needs?*

TECHNOLOGY CHALLENGES

“If schools are to make data-driven decisions about effective organizations so that educators can do their best work, information must be available and readily accessible.”

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

Technology plays a critical component in implementing a longitudinal data system. Without the appropriate infrastructure and software applications, data collected may not be able to be accessed or may not be collected.

According to the 2008 Data and Learning Summit report, some of the challenges in the use of technology include a lack of interoperability, the proper use of technologies and applications, a lack of data warehouses at the SEA level, insufficient infrastructure, insufficient access to the data, limited storage space and the consolidation of legacy systems.

An important consideration for the technology remains not only the overall structure and implementation, but the transaction component as well. This includes moving the data from application to application and to the state in a seamless, timely fashion. Connecting all of these disparate systems, without requiring manual exchange, proves critical for the ease, use, transparency and representation of the data. With interoperability, this data from the disparate systems can be accessed and used for streamlined reporting to all stakeholders.

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 carefully 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:

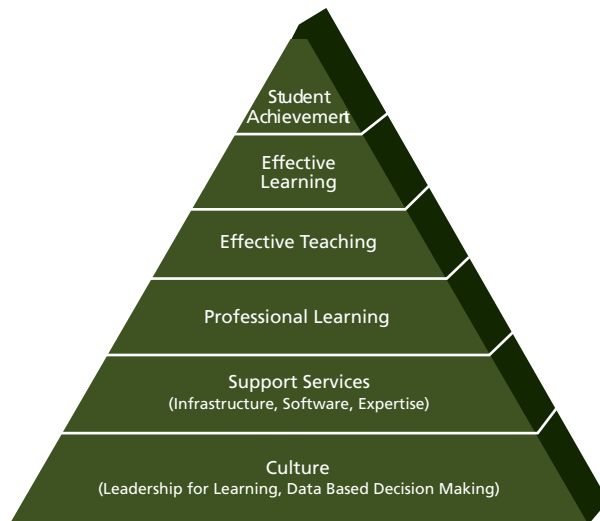
- Immediacy of data to stakeholders– necessary information is available immediately to allow administrators to make timely decisions for instruction and provide a wider range of services for students and staff
- Time savings – duplicate entry and export/import procedures have been identified and eliminated
- 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, understanding 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.



Used by permission of Wayne RESA

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 state-wide 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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**Vancouver Public Schools
Balanced Scorecard - Key Performance Indicators**

1. STUDENT LEARNING RESULTS

1.1 Evidence that our students can meet and exceed state learning standards

- 1.1.1 Pre-K readiness to learn rates
- 1.1.2 Third grade reading exit standard rate
- 1.1.3 Percent of students proficient in all forms of literacy - standardized tests
- 1.1.4 On-time graduation rate and extended completion rate
- 1.1.5 Annual drop out rate
- 1.1.6 Measures of disproportional results - achievement gap

1.2 Evidence that students have clear post secondary goals and attain them

- 1.2.1 College readiness/acceptance/completion rate
- 1.2.2 Professional technical readiness/acceptance/completion rate
- 1.2.3 Post secondary transition study - world of work, education, military service, etc.

1.3 Evidence that our students can succeed in college

- 1.3.1 College remedial coursework (percent of failures, reading/English/math)
- 1.3.2 College grade point average (GPA) rankings
- 1.3.3 College acceptance rate
- 1.3.4 College completion rate

2. STUDENT AND STAKEHOLDER SATISFACTION RESULTS

- 2.1.1 Percent of student and stakeholder satisfaction/dissatisfaction
- 2.1.2 Percent of student and stakeholder perceived value, persistence and relationship building

3. BUDGETARY AND FINANCIAL RESULTS

- 3.1.1 Percent of ending fund balance
- 3.1.2 Percent of resources to classroom/instructional services
- 3.1.3 Percent of expenditures across activities
- 3.1.4 Percent of K-12 market share
- 3.1.5 Percent of cost containment - unfunded mandates

4. EMPLOYEE RESULTS

4.1 Evidence of Quality of Teachers

- 4.1.1 Teacher retention rate
- 4.1.2 Percent of teachers with Master's degree
- 4.1.3 Percent of teachers with "highly qualified" designation
- 4.1.4 Percent of teachers with National Board Certified Teacher (NBCT) designation
- 4.1.5 Percent of teachers participating in professional development
- 4.1.6 Frequency of innovative practices
- 4.1.7 Percent of teacher/staff satisfaction rates

4.2 Evidence of Employee Development

- 4.2.1 Frequency of cross functioning work teams
- 4.2.2 Frequency and systems of cross training
- 4.2.3 Leadership development and pathways
- 4.2.4 Frequency of course completion rates
- 4.2.5 Diversity targets
- 4.2.6 High Quality Professional Development

5. ORGANIZATIONAL EFFECTIVENESS RESULTS

5.1 Evidence that our students have access to a breadth of program offerings that are responsive to students' needs

- 5.1.1 Percent of students enrolled in the arts
- 5.1.2 Percent of students enrolled in career-technical education (CTE) or applied learning programs
- 5.1.3 Percent of students enrolled in Advanced Placement, International Baccalaureate, Middle Years Programme, Advancement Via Individual Determination (AVID)
- 5.1.4 Percent of students enrolled in schools or programs of choice
- 5.1.5 Increase in program offerings, e.g., AVID, language immersion
- 5.1.6 Percent of students enrolled in online courses
- 5.1.7 Percent of students participating in internships/apprenticeships

5.2 Evidence that partners needs and relationships are supportive of student learning

- 5.2.1 Increased number of families engaged in district/school activities
- 5.2.2 Increased number of volunteers
- 5.2.3 Increased number of partnerships
- 5.2.4 Increased patron resources in service of children and families

6. LEADERSHIP, CHARACTER, AND SOCIAL RESPONSIBILITY RESULTS

6.1 Evidence that the organization behaves ethically and practices effective citizenship

- 6.1.1 Measures of stakeholder trust
- 6.1.2 Audit reports - fiscal stewardship
- 6.1.3 Fiscal accountability
- 6.1.4 Regulatory and legal compliance
- 6.1.5 Public policy advocacy results

6.2 Evidence that our graduates are engaged and compassionate citizens

- 6.2.1 Student discipline rates/organization action
- 6.2.2 Student graduate follow-up study
- 6.2.3 Service learning participation rates
- 6.2.4 Student attendance rates

7. NATIONAL BENCHMARKING RESULTS

7.1 Evidence that Vancouver Public Schools benchmarks with other world class systems

- 7.1.1 Standardized test results
- 7.1.2 Post secondary student success
- 7.1.3 National Merit Scholars
- 7.1.4 Nationally recognized schools/programs
- 7.1.5 National awards and recognition
- 7.1.6 Professional association, business and government recognition
- 7.1.7 Articles, publications, media coverage
- 7.1.8 Dignitary visits and tours

Criterion

Trait

Key Performance Indicator