

## **Building and Using Longitudinal Data Systems for Effective Reporting and to Improve Student Achievement**

### **Introduction:**

The American Youth Policy Forum (AYPF), in collaboration with the Data Quality Campaign (DQC), held a Learning Exchange in Washington, D.C. June 23-24, 2009 to help invited states as they develop, implement, and use longitudinal data systems (LDS) to track educational performance and outcomes. The Learning Exchange afforded teams of state policymakers from District of Columbia, Idaho, Maryland, New Jersey, and Vermont to have the opportunity to hear from national experts and to learn about exemplary work in Massachusetts and Kansas. This Issue Brief highlights the key issues discussed at the AYPF/DQC Learning Exchange.

Too often, data is used for the sole purpose of reporting on overall program accountability and is not used to inform the instructional process. Moving from simply collecting data for accountability purposes, data can be used as a tool to improve student achievement, for example longitudinal data collection allows an examination performance over time. Collecting data on an ongoing-basis throughout the school year and across multiple school years can help teachers improve instruction, by allowing them to make curricular and instructional decisions based upon data on each student's needs.

### **State Longitudinal Data Systems (LDS)**

A state LDS is intended to enhance the ability of a state to efficiently and accurately manage, analyze, and use education data, including individual student records. Recognizing that each state education system and data system is unique, the DQC has developed 10 Essential Elements applicable to all state longitudinal data systems. These include:

1. A Unique Statewide Student Identifier
2. Student-level Enrollment, Demographic, and Program Participation Information
3. The Ability to Match Individual Students' Test Records from Year to Year to Measure Academic Growth
4. Information on Untested Students
5. Teacher Identifier System with the Ability to Match Teachers to Students
6. Student-Level Transcript Information, Including Information on Courses Completed and Grades Earned
7. Student-Level College Readiness Test Scores
8. Student-Level Graduation and Dropout Data
9. The Ability to Match Student Records from Pre-K-12 and Postsecondary Systems
10. A State Data Audit System Assessing Data Quality, Validity and Reliability

To learn more about the 10 Essential Elements and see a state's progress towards meeting these Elements, please visit [www.dataqualitycampaign.org](http://www.dataqualitycampaign.org)

As states realize that data is necessary to effectively improve student performance, there is a need to move beyond the ability to simply collect data to a system that enables use of the data. Continued development of LDS is also being accelerated because of resources newly available through the American Recovery and Reinvestment Act (ARRA) and the strong leadership from the Obama Administration which has stressed the value of data and use of data to improve student achievement.

This brief will focus on the three issues presented at the AYPF/DQC Learning Exchange: developing a data culture, effective data governance, and creating an LDS with the ability to connect across agencies and states. Following the discussion of each issue, there will be resources to guide states as they work to develop a comprehensive LDS.

**Background:**

The No Child Left Behind Act (NCLB) is often cited as the initial impetus for many states to develop a longitudinal data system. Signed into law in 2002, NCLB requires annual testing and public reports of student success by schools, districts, and states. For the purposes of NCLB, most states were only gathering data yearly and not required to connect student performance information from year to year. Thus, many states' current systems are only able to produce a "snapshot," or information on student performance at particular point in time.

Building data systems that have the ability to demonstrate student progress over multiple years will help educators identify skill strengths and areas in need of improvement. With this information they can more effectively provide the best service for each student. According to Chrys Dougherty, writing for the Education Commission for the States, only certain questions can be answered with longitudinal data:

- How well do students do who have been enrolled in this school or program for more than one year?
- How does the success of students enrolled in this school for three years or longer compare with that of students enrolled for three years in other schools?
- How much academic progress do students make in a given grade?
- How do the graduates of an elementary school do in middle school?
- How well do the graduates of a high school do in college? How many of them go to college?
- How well do students perform at the end of their enrollment in a school compared with how they were performing when they arrived?
- How does a school perform with students who entered the school well-prepared in a given subject? How does the same school perform with students who were poorly prepared?
- How many students who were "average" when they entered high school end up taking challenging college-preparatory courses?<sup>i</sup>

Longitudinal data allows these questions, and others, to accurately be answered and highlights areas within a state's education system that need change in order for every student to be successful. With such information, states can more effectively focus resources, receive feedback on the value of different efforts, and continuously seek ways to improve their school systems.

The American Recovery and Reinvestment Act (ARRA) passed in February 2009 made an unprecedented investment in education. As the Department of Education considers how to distribute these funds, they have highlighted building and using an LDS as critical criteria for what states receive funds. Inclusion of an LDS indicates the value the Department places on creating a data system that will aid in overall education reform. Within ARRA, the Statewide Longitudinal Data System Grant Program overseen by Institute of Education Sciences (IES) received an additional \$250 million. Any state is eligible to apply for this program, which awards up to nine million dollars per grantee. To learn more about this program visit the following website: <http://nces.ed.gov/programs/slds/>.

## Critical Issues from the AYPF/DQC Learning Exchange:

### *Developing a Data Culture*

Developing an LDS as a tool with the dual purposes of reporting for accountability and improving student achievement is best accomplished when the system is central to all functions including the allocation of resources and identification of effective programs. This concept often referred to as a data culture is an education system that relies on data to gather information about progress of students, teachers and programs to assess success, make decisions about system improvement and identify metrics to evaluate their success.

A data culture is often developed from a shared vision that is derived directly from data generated by an LDS aimed at answering key policy questions. At the AYPF/DQC Learning Exchange, Paige Kowalski, a Senior Associate at the DQC, provided a foundation for asking these questions. She led an exercise focused on developing “killer questions,” key political and policy questions that can be answered through analysis of longitudinal data.

David Wakelyn, Program Director, Education Division of the Center for Best Practices at the National Governors Association, continued to theme of developing a data culture his presentation at the AYPF/DQC Learning Exchange. Noting that an effective strategy for convening key stakeholders can be exposing the questions that each state’s current data system cannot answer such as: How many 8<sup>th</sup> grade students are on track to completing high school? And how many are at risk of dropping out?<sup>ii</sup> Discussing these questions will highlight what data needs to be collected and subsequently inform the needed capacities of an LDS. The data generated from the improved LDS will illustrate vulnerabilities in a state’s education system, which will help policymakers determine how to allocate resources to strengthen those areas. Success of those initiatives can be judged with data generated by the LDS, thus creating a data-driven decision making system and strong data culture.

Developing a strong data culture is difficult. Robert Curtin, the Manager of Data Analysis and Reporting for the Massachusetts (MA) Department of Elementary and Secondary Education, indicated during his presentation at the AYPF/DQC Learning Exchange, “People are scared of data.” Curtin said data exposes the weaknesses of a state’s education system. For example, the first reports generated from the state’s system, the Student Information Management System (SIMS), demonstrated an increase in the dropout rate. Rather than shirk from the information, policymakers in the state saw this information as a rallying cry to improve their education system.

### **Resources**

To learn more about “killer questions,” please visit the following resources:

- Presentation by Paige Kowalski, Senior Associate, DQC at AYPF/DQC Learning Exchange, available online at <http://www.aypf.org/documents/06232409DQCPPT.pdf>
- Killer Questions Template developed by the New Mexico Office of Education Accountability, available online at <http://www.dataqualitycampaign.org/resources/447>
- Connecting Policy and Data; Determining Your State's Killer Questions, Presentation by Aimee Guidera, Director, DQC, and Peter Winograd, Director, Office of Education Accountability, NM, available online at <http://www.dataqualitycampaign.org/resources/442>

### ***Effective Data Governance***

Based upon Kansas' experience shared at the AYPF/DQC Learning Exchange, effective data governance can influence the development of a data culture. Data is only reliable when it is entered correctly, is not duplicated, and is reported in a timely manner. If a culture of data is expected to thrive, then the data it utilizes must be unassailable. However, it is also very important to determine who "owns" the data in terms of use and maintenance, and who is responsible for its security.

Establishing a firm data maintenance program will further protect student privacy and security, since careful input and output of data protects it from misinterpretation, misuse, or potential tampering of the data. When data are regularly updated and reviewed it ensures, not only that it is accurate, but also that it is closely monitored, which reduces the risk of a student's identity being compromised. Although this process can be very technical, it is imperative that data maintenance is perceived as developing "a mechanism for issue identification and resolution"<sup>iii</sup> rather than a mundane, obsessively detail-oriented task.

Developing effective data governance requires implementing a structure for gathering, reporting, and reviewing data, defining the specific roles and responsibilities of the individuals conducting those tasks, and establishing a work process that fosters communication, culture, and continuous improvement, as Kathy Gosa, the Director of Information Technology for the Kansas State Department of Education, outlined in her presentation at the AYPF /DQC Learning Exchange. Kansas approached the development of their LDS with the mindset that "Data governance is a process, not an event!" Keeping that notion at the forefront ensured that Kansas developed a data system that was not meant to collect data for the sole purpose of reporting, but could be used as a tool to improve student achievement. Additionally, their success was due to their strategic planning. They began by determining their approach, establishing a structure, and then explicitly defining the roles and responsibilities of the individuals incorporated in the structure they created. It wasn't until these roles were defined that they identified individuals to perform them. These individuals are provided with on-going training and capacity building, and the entire system perpetuates itself through expansion and improvement each year.

Improvement of the system can only occur when the individuals making it work are invested in the process, which is why it is important to celebrate any success achieved in the data system. Gosa illustrated this when she described the recognition individuals received when they completed the Data Quality Certification program in Kansas. Each participant receives a certificate and lapel pin, and in one case, a principal presented the awards in a special assembly held at the school. Such a display speaks to the value Kansas has placed on data quality and the culture that emphasis has fostered.

### **Resources**

Data Governance helps protect student privacy and produces a strong data culture because of the direct interaction between people and the LDS that is necessary for the execution of this task. This requires clear and strategic planning for all the elements of the process, from the definition of various roles to the organization of a data reporting system. States should look to the best practices of other states as a means of gathering ideas, and focus on using Data Maintenance as a means of enhancing data culture and not a monotonous, compulsory procedure. Kansas is an excellent resource and information about their Data Governance system can be found in Gosa's PowerPoint Presentation on the [AYPF website](http://www.aypf.org/documents/06232409KansasPPT.pdf): (<http://www.aypf.org/documents/06232409KansasPPT.pdf>).

***Creating an LDS with the Ability to Connect to Other Agencies and States***

The final issue discussed at the AYPF/DQC learning exchange was developing an LDS with the ability to connect to other agencies and states. This ability is necessary to track students beyond the K12 system into higher education and the workforce, both within a state and across state lines. Being able to link various state data systems represents one of the many potential connections an LDS may be required to make as development of these systems becomes more pervasive. As our reliance on data grows, an LDS will need the ability to provide a complete picture of a student, which may require connections to other data systems in other sectors, such as health care, public safety, and social services. To ensure that every child is college-and-career ready, data will need to be collected from the workforce in order to determine if they had the skills necessary to be successful.

This discussion at the AYPF/DQC Learning Exchange on the ability of an LDS to connect across agencies and across states was a presentation of the key issues for consideration as states begin to tackle the difficult task of integrating diverse data systems and creating consensus of our common data needs.

**Linkage between Elementary and Secondary with Postsecondary Institutions**

States are initially focused on developing an LDS with the capacity to link P-12 data with data from postsecondary institutions to create an effective P-16 or P-20 data system. Creating an LDS with this ability is necessary to understand how well prepared students are when they enter college. Additionally, postsecondary institutions need to be able to share with districts the number of students that enroll in remedial classes, so that districts can ensure their standards and assessments align with the demands of college curriculum.

Kathy Gosa, in her presentation at the AYPF/DQC learning exchange, described three options Kansas considered to navigate this issue: legislative action through their state legislature, state regulation through their attorney general's office, and direct executive order from the governor's office. As linking this data expands the view teachers, schools, and districts have about the knowledge and skills students need to be successful beyond the K-12 spectrum, the education leaders in Kansas opted to pursue an executive order. The other options were deemed too cumbersome, and an executive order was the best course of action for the political climate in Kansas since the Governor was a strong proponent of education reform.<sup>iv</sup> In addition to the executive order, a Memorandum of Understanding (MOU) was signed, calling for the Kansas Department of Education (KSDE) and the Kansas Board of Regents (KBOR) to share data across agencies for the purposes of student achievement. The Governor's role in the development of a P-16 system indicates the need to develop a strong data culture throughout the education system to ensure effective progress is made.

With the executive order in effect, KSDE and KBOR are able to connect P-12 data with postsecondary data. The process of connecting data from the P-12 system to the postsecondary data is conducted through the use of unique student identifiers. Matching these students through a P-16 spectrum has allowed Kansas to collect longitudinal data, which helps them identify successful programs for students that go to college at public institutions in Kansas, and indicators that teachers should look for throughout the P-12 system that determine if a student will successfully complete high school and enter college.

### **Linkage between Data Systems from State to State**

When discussing the linkage between the P-12 system and postsecondary institutions, it is important to keep mobility in mind. Students are not limited to attend public universities in their home state, nor are teachers necessarily going to practice in the state in which they were trained. As the movement of students across state lines during their P-12 years has become commonplace, state leaders need to consider the ability of their system not only to connect to education systems within the state, but to education systems across state lines as well.

During the AYPF/DQC Learning Exchange, Chris Lohse, the Director of Data Policy and Research at the Council for Chief State School Officers (CCSSO), emphasized the inability of current state LDS's to communicate across state lines to track students that move out of state. This inability could lead to duplicated information about a student, since the home state may maintain information as well as the state to which the student transferred. More alarming, the student could be completely dropped from the system, severely damaging the ability of teachers and schools to track the progress of the student and have a full set of data on the unique needs of the student.

Teachers are also as mobile as students. Many educators are participating in programs that encourage them to move to a low-income or high need area to begin their teaching career in exchange for student loan forgiveness, a higher salary, or other incentives. Consequently, teachers are not limited to serving in the area in which they completed their student teaching program. States need to know if the teachers in their state are being trained more effectively by programs within or outside their borders, so they can restructure their teacher training programs to develop the most effective teachers for their students. Neither the tracking of students nor teachers will be complete unless an LDS has the ability to connect with data systems across state lines.

### **Incorporating Data beyond the Education Sector**

The classroom is not the only place that impacts a student's education. An LDS needs to link to other data systems in order to provide a complete portrait of a student's educational experience. Connections to health and mental health systems, law enforcement, social services, housing, childcare, and other providers of education and youth services should be incorporated into an LDS, so that all systems can work more effectively to meet the needs of each student. Stakeholders from various systems need to be involved in the development of LDS so that it captures data from other systems and is not limited to the education system alone.

### **Conclusion**

As states continue to develop longitudinal data systems, they need to consider these critical issues. Developing a data culture, effective data governance, and creating an LDS with the ability to connect across agencies and states are at the cornerstone of systems that can effectively be used to improve student achievement.

Now is an opportune time to undertake this challenge because LDS development has the strong support of President Obama, who stated in remarks on July 24, 2009, "Success should be judged by results, and data is a powerful tool to determine results. We can't ignore facts. We can't ignore data."<sup>v</sup>

<sup>i</sup> Chrys Dougherty, "A Policymaker's Guide to the Value of Longitudinal Student Data," Education Commission of the States online, retrieved 7/8/2009 <http://www.ecs.org/clearinghouse/40/21/4021.htm>

<sup>ii</sup> David Wakelyn, "Six Questions Your Governor May Want Answered," PowerPoint Presentation, American Youth Policy Forum online, retrieved 7/27/2009 <http://www.aypf.org/documents/SixQuestions.pdf>

<sup>iii</sup> Corey Chatis, "Implementing Data Governance as the Foundation of a LDS," PowerPoint Presentation, Data Quality Campaign online, retrieved 7/10/2009 [http://www.dataqualitycampaign.org/files/presentation-implementing\\_data\\_governance\\_as\\_the\\_foundation\\_of\\_a\\_lds\\_presentation-020108.pdf](http://www.dataqualitycampaign.org/files/presentation-implementing_data_governance_as_the_foundation_of_a_lds_presentation-020108.pdf)

<sup>iv</sup> The comments for this section came directly from a follow-up email between Stephanie Remick and Kathy Gosa. The majority of the text was taken directly from an email from Gosa to Remick on 7/21/2009.

<sup>v</sup> President Barack Obama, "Remarks by the President on Education," White House Online, retrieved 8/7/2009 [http://www.whitehouse.gov/the\\_press\\_office/Remarks-by-the-President-at-the-Department-of-Education/](http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-at-the-Department-of-Education/)