A Policymaker's Guide: Leveraging Longitudinal Student Data to Develop College and Career Ready High School Graduates

Introduction: The Power of Longitudinal Data

According to the 2008 Data Quality Campaign (DQC) Annual Survey, 46 states have implemented six or more of the DQC's ten essential elements in their longitudinal student data systems. However, building these systems is just the first step; in order to have maximum effect on student achievement, policymakers must begin to leverage the valuable data they house. Further, policymakers must take appropriate action in their states to push these systems to a level sophisticated enough to answer the most pressing questions in education.

For many, the idea of longitudinal student data is new and, while researchers have long asked for this type of data from states, many policymakers are just discovering the power of using longitudinal data to inform their work. Simply put, longitudinal data is information (e.g., enrollment, assessment, program, course, teacher, etc.) on individual students collected over time, all of which is linked together in a single student record with a unique student identifier. By having all of a student's academic and performance information in one place, it is very easy to see where students are in their education and much easier to identify when opportunities for intervention were missed or whether or a program that he/she was enrolled in had an impact.

On a statewide level, policymakers can look at the student body as a whole to identify success, mitigate failures, and allocate scarce resources effectively. Longitudinal data enables policymakers to ask sophisticated policy questions that get at the heart of student success. Are students who score proficient in the 3rd grade still proficient in the 8th grade? What effect does early grade retention have on later academic success? By asking the *right* questions, policymakers can obtain answers that help them to understand the full financial and educational impact of potential legislative and administrative changes in state education policies.

The Critical Need for Better Information

Given the state of our economy, it is critically important for states to allocate resources efficiently and effectively. Similarly, states are under tremendous pressure to create jobs and stimulate their local economy. To achieve economic recovery they must attract and retain employers and develop a workforce equipped with 21st century skills to compete in an increasingly global market. To this end, states are working to create an academic environment where students graduate from high school prepared for both college and work. While this isn't an easy endeavor, it will be impossible without access to the right data.

As states complete their longitudinal data systems and enhance their program funding to follow students, they will be able to better assess their return on investment (ROI) on programs and policies in the future. At this time, however, few states have connected their financial and student tracking systems but as resources become tighter this will be the next critical focus for states.

Policymakers Using Data

Regardless of the specific role of a policymaker (e.g., legislator, governor, state schools chief, or school board member), he/she makes countless decisions that impact education policies every year. These decisions may come in the form of support for an administrative rule change, an amendment to a bill, or a critical school board vote. To have an effective impact on student achievement, policymakers need to inform these decisions with high quality, longitudinal data.

For example, years ago, the Texas legislature reviewed a proposal to retain students in the 3rd and 5th grades who did not pass the state's annual assessment in a given year. With the aid of the state's longitudinal data system, policymakers analyzed data showing the likely number of students this would impact statewide and which schools/districts would be impacted the most. Did these elementary schools have adequate facilities/staff for an expanded 3rd grade? What was the cost of keeping this many students in school an extra year? They could also review students' subsequent 4th grade scores to determine which schools and districts did a good job of getting these students up to grade level proficiency if they were promoted to the next grade even though they had not passed the prior grade level test. This could help to identify best practices at these schools that might be replicated at others. Using longitudinal data to analyze various retention strategies enabled Texas policymakers to weigh the good and bad of proposed policies to determine the most effective policy for positively affecting student achievement.

Policy Questions and Real World Examples

What follows is a set of questions, real examples, and action steps that policymakers can use as a starting point in their efforts to leverage their state's longitudinal data to better inform the development of a 21st century workforce.

Early Warning System

An early warning system can take many forms -- it simply depends upon what you want to be warned about. Many states are attempting to use these powerful data systems to warn educators which students are at the greatest risk of dropping out of high school. Given the alarming statistics on dropouts, states are well served to focus their initial efforts at ensuring students are prepared to graduate from high school.

➢ Question: What percentage of students dropping out of high school showed early signs of being at risk of doing so?

➢ State Example: The Indiana Department of Education recently began a pilot project to identify students at risk of not graduating high school within four years of entering the 9th grade. They look at attendance, mobility, middle school assessment scores, and retention data to develop a rubric to identify those most at risk.

Decreasing the dropout rate is a critical step for states in their economic recovery plans. However, the next components of our early warning systems must dig deeper into the data. Current research indicates that students who score below proficient on 8th grade state tests are much less likely to enroll in a rigorous college prep curriculum and pass AP exams. Therefore, academic interventions in high

school will likely not increase their ability to graduate *college and career ready* if they are this far behind entering high school. States and all stakeholders involved would be better served if an early warning system were put into place to identify students in earlier grades that need academic interventions. For example, what percentage of students identified as "at risk" in the 3rd grade are still there in the 6th and 8th grades and which schools/districts are doing the best job getting them "out of risk"?

Longitudinal data systems can provide important early warning indicators beyond high school as well. As these systems link with postsecondary data, policymakers should be looking, for example, at the relationship between students enrolled in remedial courses and students not graduating college.

By asking the right question, policymakers can more efficiently allocate resources to the students most at risk of failing to reach their potential.

Graduation Rate

Employers are looking for real information on what is happening with students in the state's P-12 system. A key indicator that helps them (and others) evaluate the local workforce is the graduation rate. However, many have been skeptical of published graduation rates because there are numerous ways to calculate these rates and few lend themselves to comparison. With longitudinal student-level data we have a clearer picture of the academic competencies of our graduates including information on the type of diploma earned and the pathways taken to get there. An increasing number of states report the ability to calculate the rate identified in the NGA Graduation Rate Compact and we are finally getting to a place of consistency across states.

- ➢ Question: What is the four-year graduation rate as defined by the National Governor's Association and what is the outcome for all students?

- ➢ State example: The Delaware Department of Education's website provides both the NCLB and the NGA graduation rates for the state, districts, and schools disaggregated by subgroup (e.g., ethnicity, English language learner, Special Education, etc.).

- ➢ State example: The Louisiana Department of Education has expanded its accountability system to include other indicators that reflect student outcomes. High schools are awarded points based on student outcome with the most points awarded for students who graduate on time after completing a college ready curriculum. Fewer points are awarded for students who obtain a regular diploma, a GED, or dropout altogether. The new system is causing school officials to work harder to reduce their dropout rate and to increase student participation in college and career ready courses of study.

Understanding which schools and districts are producing the best outcomes for its students enables a state to better define best practices and assist the schools that aren't performing at a high enough level. As stakeholders gain confidence in the state's indicators, parents can make better decisions for their children and employers can have a clear picture of the state's workforce.

Teacher Effectiveness

One of the most powerful uses of a longitudinal data system is the ability to examine the teacher student link. It is well documented that teachers are the single most important factor in student achievement. It is with this in mind that the NCLB law places great emphasis on Highly Qualified Teachers. However, without longitudinal data, we cannot truly know how effective a teacher is in the classroom. By linking data about teachers to student data, states will have evidence of teacher effectiveness that can be used in a variety of ways (e.g., targeted professional development, student placement, evaluating teacher preparation programs, etc.). While this is a more recent topic of conversation in most states, a few have been working on this issue for some time and many states can learn from their experiences.

> ➢ Question: Which teachers have the highest percentage of students achieving one year's growth after one year of instruction and what do these teachers have in common (e.g., years of service, credential type, teacher prep program, district, etc.)?

> ➢ State example: Tennessee's Value-Added Assessment System (TVAAS) is a statistical methodology that looks at a student's entire testing history to estimate a projected academic path for that student. When the student deviates (either positively or negatively) from the expectation, the difference is attributed to effectiveness of the teacher.

> ➢ State example: The Louisiana Educational Accountability System links students with teachers and researchers, using a value-added model, compare teachers from different teacher preparation programs to determine program effectiveness. As a result, the state's teacher preparation programs that are identified as producing the most ineffective teachers have had to redesign their program or face declining enrollment.

The examples above demonstrate the valuable ways that this information can impact student achievement. When we can identify effective teachers, we can better highlight best practices and provide targeted professional development. We can also begin to work with the higher education community in designing programs that prepare better teachers at the outset, further reducing the cost of professional development.

College and Career Ready Graduates

Educating students so that they graduate fully prepared for the demands of college or the challenges of entering the increasingly competitive workforce is perhaps the most critical issue facing policymakers today. In today's economy, states cannot afford to wait until students arrive in college to determine if they were adequately prepared in high school and employers can't afford to hire a state's graduates who are woefully unprepared for entry level work. Currently, states are appropriating huge sums of money by having to teach the same content twice – once in high school and then again in college remediation courses. Employers are seeing decreasing productivity and are, therefore, losing the edge in this global market. Policymakers must ask "actionable" questions of their state data systems to ensure that graduates are prepared.

> ➢ Question: What percentage of students scoring proficient on the state's test still require remediation once enrolled in college?

➤ State example: The California State University system worked with the California Department of Education to add a voluntary section to the state's 11th grade assessment reflecting English and math college-ready standards. As a result of learning their score, students know as they enter the 12th grade if they are ready for college level courses. If their score indicates that remediation would be needed upon enrollment, they can use their senior year to get extra support in these subjects. If their score is high enough, they can skip the placement test once enrolled.

Action Steps for State Policymakers

➤ *Advocate* for stable annual funding for your state's longitudinal student data system. Engage your state education agency in discussions around the cost of developing and maintaining a data system that includes, at a minimum, DQC's ten essential elements.   While there are some up front information technology (IT) costs, the bulk of the costs post-development should be geared towards building the capacity to use the system and the data at the state, district, and school levels.

➤ *Implement* standardized course and exit codes statewide. When districts and schools use different definitions and codes across the state, it is difficult to maintain data quality and difficult to effectively deal with an increasingly mobile student body. Exit codes must be reflective of actual student outcomes to ensure that students not graduating in four years are not labeled as "dropouts".

➤ *Require* state institutions of higher education to link and share data with the state's P-12 system. Your state will never have the evidence to demonstrate college and career readiness without data on higher education enrollment, persistence, remediation, and graduation.   High schools need to have this information on their graduates if they hope to effectively redesign their schools to increase these rates.

➤ *Require* that your state's teachers be given a unique identifier and that their records be linked with their students' records. Work collaboratively with teacher unions to appropriately and effectively develop this link as it is critical in state efforts to evaluate and improve teacher preparation programs, direct professional development funds effectively, and hold teachers accountable for their performance.

Moving from Building to Sustaining

It may surprise some that the difficulty in building these systems is not primarily technical in nature but political and cultural. State IT staff, working closely with top vendors, have successfully navigated the technology involved in building the systems and sharing the data. What we have been less successful at is negotiating the inherent changes in how education stakeholders think about and use data. Everyone from Governors on down to teachers and parents have access to student level data for the first time and are trying to understand how it's different and what it enables them to do. It is these very real cultural changes that slow down and hold up the full implementation of longitudinal data systems.

In order to effectively use longitudinal data systems to inform policy and improve student achievement over the long term, policymakers need to work to sustain their data systems in the following ways.

➢ *Culturally*, all stakeholders need to shift from reporting data for compliance purposes to using data to guide all education decisions, especially those focused on improving teaching and learning.

➢ *Politically*, policymakers need to ensure that educational institutions and other critical systems, such as postsecondary and pre-k education, child welfare, juvenile justice and health care, share student-level data—while protecting student confidentiality—to improve student achievement.

➢ *Organizationally*, states need to create governance structures to ensure the effective and appropriate collection and use of high-quality longitudinal data, especially as data are shared across agencies, districts and other traditional boundaries.

➢ *Financially*, states need to continue to invest in the development, maintenance and growth of their education data systems, including helping educators, parents and other stakeholders learn how to use the information produced by the systems.

Policymakers need to become champions of their data systems so that IT professionals can develop and maintain a state of the art system flexible enough to collect the data that will answer the policy questions of today, tomorrow, and ten years from now. The need for data to inform policy will not change, but the technology and infrastructure needs to be able to answer those questions will and policymakers need to provide sustained support to ensure they have the tools they need to do their jobs.

Conclusion

All 50 states are moving towards implementing longitudinal student data systems. However, if these systems are simply used as a means to more efficiently report data for compliance purposes we will have missed a great opportunity for real innovation in our efforts to increase student achievement and build a 21st century workforce. Their true power comes from our ability to use the valuable data housed in these systems to make better decisions and, as a result, allocate resources more efficiently within states. Policymakers must take advantage of this unique opportunity to engage education stakeholders in their states and begin a discussion about how to leverage this data and develop state specific questions whose answers will lead to real change.

Resources

1. Data Quality Campaign, *Measuring What Matters: Creating a Longitudinal Data System to Improve Student Achievement*, http://www.dataqualitycampaign.org/files/publications-measuring_what_matters.pdf

2. The Center for Public Education, *Measuring student growth: A guide for informed decision making,* http://www.centerforpubliceducation.org/site/c.kjJXJ5MPIwE/b.3570269/k.B44C/Measuring_student_growth_A_guide_for_informed_decision_making.htm

3. Data Quality Campaign, *Every Student Counted: Using Longitudinal Data Systems to Calculate the National Governors Association's High School graduation Rate and Improve Student Success,* http://www.dataqualitycampaign.org/files/Publications-Every_Student_Counted-073107.pdf

4. Data Quality Campaign, *Developing and Supporting P-20 Education Data Systems: Different States, Different Models*, http://www.dataqualitycampaign.org/files/meetings-dqc_quarterly_issue_brief_011508.pdf

5. Achieve, *Closing the Expectations Gap 2008: An Annual 50-State Progress Report on the Alignment of High School Policies with the Demands of College and Careers,* http://www.achieve.org/files/50-state-2008-final02-25-08.pdf

6. Data Quality Campaign, *Linking Teacher and Student Data to Improve Teacher and Teaching Quality*, http://www.dataqualitycampaign.org/files/Meetings-DQC_Quarterly_Issue_Brief_031207.pdf

7. Data Quality Campaign, *Benefits of and Lessons Learned from Linking Teacher and Student Data,* http://www.dataqualitycampaign.org/files/publications-benefits_of_and_lessons_learned_from_linking_teacher_and_student_data-120607.pdf

8. Achieve and The Education Trust, *Making College and Career Readiness the Mission for High Schools: A Guide for State Policymakers*, http://www2.edtrust.org/NR/rdonlyres/C95222E3-A526-4E70-9FC6-52B93C10FD01/0/MakingCollegeandCareerReadinesstheMission111908.pdf

9. Achieve, *Identifying Potential Dropouts: Key Lessons for Building an Early Warning Data System,* http://achieve.org/dropouts