



Using Data To Improve Teacher Effectiveness

A Primer for State Policymakers

January 2012

Policymakers across the nation are leading efforts to ensure that every classroom has an effective teacher. Faced with the need to dramatically improve student outcomes, states have embraced a policy agenda that promotes and supports teacher quality in many ways, including developing evaluation and compensation policies, targeting professional development, determining the characteristics of effective teachers through research, and identifying effective teacher preparation programs.

It is incumbent upon state policymakers to invest time and resources into not only developing a shared vision for addressing teacher quality but also understanding the implications for state data systems to ensure the successful implementation of these policies. Without this proactive, deliberate approach, policymakers will find their plans constrained or undermined by data systems that do not meet policy needs.

State policymakers must prioritize these five actions to ensure that their state has the necessary data capacity and processes to inform and support state teacher effectiveness policies:

- ▶ Collect and link key data on students and teachers at the state level;
- ▶ Implement the policies and practices necessary to support a high-quality teacher-student data link;
- ▶ Provide educators with timely access to data;
- ▶ Ensure that educators receive training on data use to improve student achievement; and
- ▶ Implement state policies to ensure that teacher preparation programs use data to improve their programs and train teacher candidates to use data.

1. Collect and Link Key Data on Students and Teachers at the State Level

Many states collect data on students and teachers, but matching teachers to students by course (the teacher-student data link) at the state level is critical to understanding the connection between student academic growth and teacher training, qualifications and practice.

The Data Quality Campaign (DQC) defines the student data that need to be collected in the [10 Essential Elements](#). These data include critical student-level information such as attendance, enrollment, demographics, program participation, performance on state standardized exams, data on students not tested, transcript information, performance on college readiness exams (SAT, ACT, Advanced Placement, etc.), and graduation/dropout and other outcome data.

While the DQC does not define the teacher data that need to be collected in the 10 Essential Elements, best practices indicate that states should collect a set of teacher-level data that is equally as comprehensive as the student-level data outlined in the Elements. These data might include demographics, attendance, campus of employment, retention, types of certification and credentials, subjects currently teaching, college major, graduate degrees, certification exam scores, and salary. In 2005, just 14 states had the ability to link teachers and students at the state level ([DQC Element 5](#)); in 2011, 44 states reported this ability.

With the heightened focus on using student achievement as a primary indicator of educator and program effectiveness, a high-quality teacher-student data link has become the linchpin

of teacher quality efforts. While many states have a teacher-student data link in place, most were not intended for high-stakes decisionmaking. As a result, state and local data systems generally lack critical functions, including the abilities to:

- ▶ Account for the contributions of multiple educators in a single course;
- ▶ Enable a teacher to review his or her roster for accuracy;

- ▶ Incorporate common practices found in schools, including virtual classes, labs and team teaching; and
- ▶ Link students' and teachers' attendance records to track actual time of instruction for particular students and teachers.

A high-quality teacher-student data link connects students, teachers and courses in ways that capture the complex connections that exist in schools.

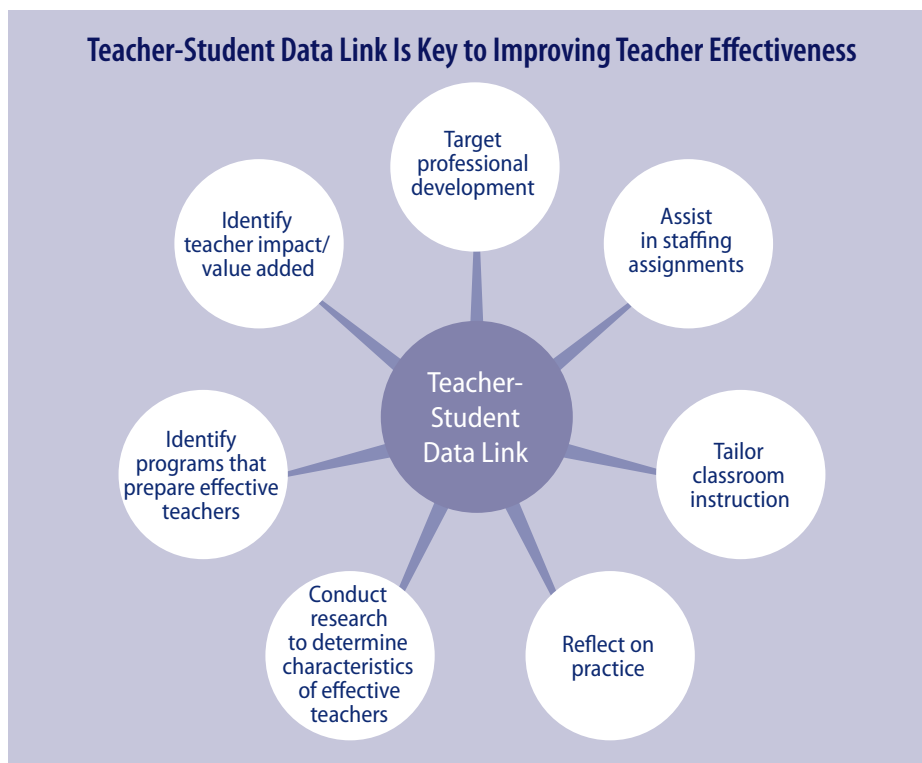
2. Implement the Policies and Practices Necessary To Support a High-Quality Teacher-Student Data Link

To develop a high-quality teacher-student data link, states must *first* determine and clearly communicate how linked teacher and student data will be used. The identified purposes should drive the policies and practices states develop to support teacher-student data link implementation. Once the state determines the ends, it can identify the adequate level of technical sophistication to match. Consequently, policymakers and educators must work closely with information technology (IT) and data staff — this data link is not only an IT issue but also an issue of policy and practice. All states, including those that already link teacher and student data, need to address the

following policy and process issues to ensure that the data and the teacher-student link are reliable and understood by critical stakeholders, particularly teachers.

Defining “teacher of record”

Today’s students learn from numerous teachers and staff. Efforts to understand educators’ impact on students must reflect this reality and address situations including team teaching, students who are pulled out for extra support and virtual learning environments. Furthermore, with an increasingly



The teacher-student data link lies at the center of all state efforts to improve the effectiveness of teachers. The stronger this link is, the more successful the state will be in policy implementation and evaluation.

Defining “Teacher of Record”

The [Teacher of Record Definition Framework](#) is the starting point for states to begin a dialogue about the purposes, characteristics and data elements required for an effective teacher-student data link. The five-step process below, drawn from the framework, is intended to guide states through the critical discussions related to defining “teacher of record.”

Step 1: Discuss and establish the purpose(s) for which the teacher-student data link and “teacher of record” definition will be used.

Step 2: Consider the characteristics of the “teacher of record” definition (e.g., accounting for all professionals and all educational settings).

Step 3: Discuss and define the educator roles to include (lead teacher, co-teacher, mentor, lead administrator, etc.).

Step 4: Use the definition template (following) to specify the words in quotations, matching the priorities and intended uses in the state. The

framework provides questions for each term in quotations to guide discussants in their thinking.

Definition Template: A Teacher of Record is an “educator” who is responsible for a “specified proportion” of a student’s “learning activities” that are within a “subject/course” and are aligned to “performance measures.”

Step 5: Consider the data elements required to support the chosen “teacher of record” definition and whether these can be gathered in a cost-effective manner.

This framework was developed by the Center for Educational Leadership and Technology (CELТ) in collaboration with five states participating in the Teacher-Student Data Link Project funded by the Bill & Melinda Gates Foundation.

mobile population, tracking the amount of time an educator actually spends with a student becomes ever more important. These complicated relationships must be captured accurately in the data system.

However, the path to suitable technical infrastructure begins with a definition of “teacher of record” that lays out clear policies for how to allocate responsibility for students’ learning to specific teachers. Absent an adequately sophisticated definition, states and districts will be unable to accurately attribute student learning to the appropriate educators. For example, given the diversity of learning environments and teacher-student assignments noted previously, state and local systems must be able to link multiple educators to each student within each course. But if the “teacher of record” definition does not specify how to account for the contributions of multiple educators to a student’s learning, the technical capacity to provide the necessary data will be lacking.

To date, “teacher of record” definitions have been simple and reflective of compliance reporting, such as the federal requirements for highly qualified teachers. Examples of these definitions include “the teacher who assigns the grade” and “the homeroom teacher.” Increasingly, high-stakes purposes, including teacher evaluation, tenure decisions and teacher preparation program accountability, demand that states revisit “teacher of record” and design a definition that aligns to the stated purposes.

The Teacher of Record Definition Framework (see box above) provides a guide for states. With an urgent timeline, states may consider adopting a “teacher of record” definition from a state that has an established teacher-student data link. However, successful implementation depends on the involvement of critical stakeholders in the conversation around definitions and use. At the end of this process, how a state chooses to define “teacher of record” will communicate a great deal about what the state values and what the state intends to report about its educator workforce.

Roster verification

To ensure data quality and to assure teachers that decisions are being made based on accurate information, teachers must be given an opportunity to verify their rosters of students and submit corrections. An accurate roster also will enable the

Teacher-Student Data Link Project

The Teacher-Student Data Link Project is a cross-state, collaborative effort focused on developing a common, best-practice definition of “teacher of record” and business processes for collecting and validating linked teacher and student data. This important initiative brings five states (Arkansas, Florida, Georgia, Louisiana and Ohio) and 15 pilot districts together to leverage their collective experiences, knowledge and resources to address one of the most critical components of their data systems and a key step in using data to increase student learning and improve teacher quality. For more information on this effort and to learn about all of the emerging teacher-student data link best practices, please visit www.tsdl.org.

state to return vital longitudinal student data and analysis to the appropriate teacher. Teachers need access to data on their current students to reflect on their practice or effectively differentiate instruction based on student needs. Whether through transferring data more frequently between local and state-level information systems or providing schools with a roster verification application, states must develop some mechanism for teachers and principals to verify the accuracy of rosters.

States' efforts to implement evaluation and compensation models that rely in part on student achievement, target professional development to individual strengths and weaknesses, equitably distribute effective teachers, and assign teachers to students based on strengths all hinge on

the quality of the data used to drive these decisions. The need for consistent, comparable information across a state becomes paramount.

To reliably inform personnel decisions at the local level and develop evidence-based policies at the state level, the definition of "teacher of record" must be consistent across districts within the state. States and districts also may face valid skepticism from educators over proposed policies that directly affect them if steps are not taken to make certain that decisions are informed by consistent, high-quality data. For more information on the possible implications of policies that fail to adequately account for data needs, see *Effectively Linking Teachers and Students: The Key to Improving Teacher Quality*.

Providing Services at *Scale*: How the State Can Support Districts

Many details of teacher quality issues are local concerns, but in some areas the state is best suited to lead because it can provide value to districts through efficiency, cost savings, and ensuring comparable and consistent data. State-level action provides the following benefits:

- The state already collects the student and teacher data needed for growth and value-added measures. Rather than asking districts to shoulder more data analysis and reporting, the state can complete the analysis as a service to districts.
- By developing a *single* growth/value-added model that is available to *all* districts in the state, the state can spare districts the cost of developing and implementing a model.
- With a statewide model, the resulting information will be comparable across districts throughout the state. This proves critical because

many of the potential uses of the data, such as equitably distributing effective teachers and holding teacher preparation programs accountable, demand comparable and consistent information.

- By providing access to quality, consistent longitudinal data to all educators, the state positions itself as a service provider that ensures equal access to data regardless of local capacity. (Watch this brief [video clip](#) demonstrating how Georgia has provided this service to its districts and educators.)

In practice, Colorado developed the Colorado Growth Model, designed the [School View portal](#) and provides these tools as a service to 178 districts throughout the state. This service obviates the need for districts to expend the resources to secure the human and technical capacity to provide these services on their own.

3. Provide Educators with Timely Access to Data

In addition to data systems that allow leaders and policymakers to make decisions based on evidence regarding efficacy, educators at all levels need access to information systems and ample training on data use to enhance their effectiveness. The state is best positioned to take the lead in setting policies and promoting practices that will result in educators having better access to actionable data as well as the ability to understand how to use the information to improve student performance.

Educators' own reflection on and adjustments to practice will be critical to ensuring continuous improvement within the teaching profession. It therefore becomes imperative that educators have access to accurate, timely data on their current students so they can plan instruction. Empowering teachers to improve their own practice requires that teachers have access to the data

that are being used to measure their effectiveness. For example, Tennessee recently prioritized making data from the Tennessee Value-Added Assessment System available to all educators, whereas previously only 14 percent of educators had been assigned an account and password. In doing this, Tennessee acknowledged that, while external evaluation and support is critical to educator development, teachers can also act on the same data to advance themselves. Furthermore, states must ensure that the information made accessible to educators is actionable. Creating reports, such as diagnostic, early warning and growth reports ([DQC State Action 6](#)), maximizes teachers' time by allowing them to focus on how the data can inform their teaching methods rather than getting caught up in sorting through mountains of raw or unrelated data.

4. Ensure That Educators Receive Training on Data Use To Improve Student Achievement

Making the data available to educators is not sufficient to drive increased data use at the classroom level. If educators lack strong skills in data analysis, interpretation and use, new systems will not lead to the desired changes in student performance. States must therefore focus on rich professional development centered on the appropriate interpretation and use of data. This professional development will enable teachers and principals to better define problems and identify suitable strategies to improve instructional practices and thus improve student performance. Furthermore, providing educators with adequate professional development on effective data use to inform their own development is an integral component of building the trust necessary for effective implementation of policies that carry high stakes.

While there is much work to be done to systematically build the capacity of educators to use data, a handful of states have instituted initiatives and developed models that can be adapted across states. For example, through the [Oregon DATA Project](#), the state has successfully developed a comprehensive training program to increase educators' capacity to use data and to assist school/district leaders in creating a culture of data use. Training sessions across the state teach strategies for accessing, analyzing and using data to target instruction within schools and classrooms.

DQC State Action 9: Implement policies and promote practices, including professional development and credentialing, to ensure that educators know how to access, analyze and use data appropriately.

To be considered as having taken this Action, a state should demonstrate that it:

- Provides training opportunities to educators on using data reports;
- Leverages its licensing authority to require educators to demonstrate an adequate ability to interpret and use data;
- Leverages its program approval authority to require preservice programs to demonstrate that they are preparing teachers to use and interpret data;
- Provides instruction to teachers and principals on how to use student-level data to tailor classroom instruction; and
- Automatically shares aggregate-level data with its educator preparation programs, particularly information about how teachers perform as measured through their students' performance.

According to *Data for Action 2011: DQC's State Analysis*, three states (Florida, North Carolina and South Carolina) have taken all of the steps necessary to [build educator capacity to use data](#).

5. Implement State Policies To Ensure That Teacher Preparation Programs Use Data To Improve Their Programs and Train Teacher Candidates To Use Data

In addition to enhancing the quality of the current educator workforce, states are also focused on developing a greater supply of effective teachers. States are well suited to establish expectations for educators' preparation around data interpretation and use and to share information that will enable evaluation of these efforts and drive continuous program improvement.

Educator licensure and certification

Requiring educators (teachers and principals) seeking certification or certification upgrades to demonstrate competence in the analysis, interpretation and use of data is a key component of

a state's sustainability plan. Eleven states have taken this step to establish expectations for educator knowledge and practice around data use. For example, Tennessee now requires educator candidates to demonstrate understanding of Tennessee Value-Added Assessment System data, and proficiency in data use is included in South Carolina's [ADEPT Performance Standards](#), which lay out the requirements for what is expected of educators. In addition, the Interstate New Teacher Assessment and Support Consortium, led by the Council of Chief State School Officers, updated the [Model Core Teaching Standards](#) in 2010; data use skills pervade these standards, which are widely used for defining expected skills and characteristics of educators.

Educator preparation program approval

States' program approval authority is another lever that states should use to promote the development of educators' data use skills. In their accreditation policies for teacher preparation programs, states can require the programs to demonstrate that they are training candidates to interpret and use data. Twenty-one states have exercised this authority.

Sharing teacher performance data with teacher preparation programs

Just as states and districts need data about their teachers to drive improvement, teacher preparation programs require this information to ensure continuous improvement of their program offerings. Rather than having each program independently track the teachers it graduates, states are best positioned to collect and link data on all teachers in the state and share those data with teacher preparation programs. Currently, six states automatically share teacher performance data with teacher preparation programs. As evidence of student performance is one critical indicator of teacher performance, a

Leveraging State Longitudinal Data Systems To Inform Teacher Preparation and Continuous Improvement

As states move toward using data for continuous improvement, it is essential that they bring critical stakeholders together to determine what teacher data the state should be collecting and matching to student data and how the information will be used. Use the DQC's template (www.DataQualityCampaign.org/resources/details/1008) as a tool to prompt discussion and strategic planning around these issues, including what will be shared with teacher preparation programs.

high-quality teacher-student data link is necessary for sharing information with teacher preparation programs that will help them refine their curriculum, improve their recruitment efforts, improve the clinical experiences they offer and understand how their graduates are performing in the field.

Conclusion

Equipped with high-quality teacher data, high-quality student data and the ability to link this information in a sufficiently sophisticated manner, states will be able to support districts, teacher preparation programs and professional development initiatives as they seek to develop and improve the educator workforce statewide. Educators want data that will help them improve their practice. Policymakers have the responsibility to understand and implement policies that will enable teachers to access and use data to improve student achievement. With appropriate access to data and improved preservice and

in-service training, educators will have the tools and support necessary to meet the higher expectations that states are setting for teacher quality. Through collaborative and thoughtful implementation of the teacher-student data link, states can ensure that this important work is informed by timely, accurate, relevant information, enabling all students to benefit from an effective teacher. Absent this, leaders will find that, instead of sound policy decisions with manageable data implications, data decisions will result in unintended policy implications.

Does Your State Have the Necessary Data Capacity?

The checklist below serves as a guide to the key considerations policymakers must address as they develop policies to improve teacher effectiveness. The “National Landscape” numbers indicate how many states report “yes” based on *Data for Action 2011: DQC’s State Analysis*. **How does your state fit into this landscape?**

STATE ROLE	STATE RESPONSIBILITIES	NATIONAL LANDSCAPE
Collect and Link Teacher and Student Data	<p>Collect and link the data necessary to address the identified policy and research questions and ensure the successful development, implementation and evaluation of policies.</p> <ul style="list-style-type: none"> ✓ Implement the DQC’s 10 Essential Elements. ✓ Collect critical teacher data: <ul style="list-style-type: none"> • Teacher attendance data; • Teacher evaluation ratings; and • Tenure status. ✓ Link teacher data with student data (DQC’s Element 5: the teacher-student data link): <ul style="list-style-type: none"> • Link teacher performance data to teacher education programs; • Collect these data more than once a year; and • Connect these data to student growth data. 	<ul style="list-style-type: none"> ✓ 36 states ✓ 11 states ✓ 10 states ✓ 7 states ✓ 44 states ✓ 10 states ✓ 35 states ✓ 26 states
Implement Promising Practices Linking Teachers and Students	<p>Ensure that teachers are linked to students reliably and consistently to inform teacher effectiveness policies with high-quality information.</p> <ul style="list-style-type: none"> ✓ Implement a statewide definition of “teacher of record.” ✓ Connect multiple teachers per student per course. ✓ Establish a process for teachers to verify their class rosters. 	<ul style="list-style-type: none"> ✓ 25 states ✓ 38 states ✓ 22 states
Ensure Educator Access to Data	<p>Ensure that educators have role-based access to appropriate and timely data to enable decisionmaking at the local level.</p> <ul style="list-style-type: none"> ✓ Ensure that educators have access to appropriate student-level data. ✓ Ensure that teachers have access to student-level reports created by the state: <ul style="list-style-type: none"> • Diagnostic; • Early warning; and • Growth. 	<ul style="list-style-type: none"> ✓ 28 states ✓ 30 states ✓ 11 states ✓ 31 states
Build the Capacity of Educators To Use Data	<p>Build the capacity of all educators, including preservice, to analyze and use data to improve student achievement.</p> <ul style="list-style-type: none"> ✓ Automatically share teacher performance data with teacher preparation programs. ✓ Provide training for educators to use data to tailor instruction. ✓ Establish credential policies that require teachers to demonstrate the ability to use data to be licensed. 	<ul style="list-style-type: none"> ✓ 6 states ✓ 40 states ✓ 14 states

States can download a version of this checklist for their own use at www.DataQualityCampaign.org/resources/TEchecklists.

Additional Resources

Case studies

- ▶ Oregon DATA Project — Building Educators’ Capacity to Use Data: The Oregon Direct Access to Achievement (DATA) Project provides two types of training — one aimed at instructional professional development and one focused on technical training for data stewards. Training sessions across the state teach strategies for accessing, analyzing and using data to target instruction within schools and classrooms.
- ▶ Louisiana’s Data-Driven Teacher Preparation Reform: Louisiana was the first state to evaluate teacher preparation programs based on a value-added assessment model and conduct related qualitative research to identify how to prepare highly effective teachers.
- ▶ Using Value-Added Assessment To Drive Decisionmaking in Tennessee: Tennessee’s Value-Added Assessment System provides information to educators, parents and the public on how schools are doing in helping each child make academic gains each year. This information is used by principals to better assign students to teachers and by teachers to tailor instruction based on the identified progress of the student.

State legislation

Tennessee: **SB 7005, the First to the Top Act**

- ▶ Requires annual multiple-measure teacher and principal effectiveness evaluations with 50 percent of the evaluation based on student achievement data.
- ▶ Tennessee Value-Added Assessment data will be used to measure the effectiveness of teacher preparation programs.
- ▶ Corresponding First to the Top plan supports implementation through efforts including in-service and preservice training for educators on data use.

Colorado: **SB 191, Great Teachers and Leaders**

- ▶ Requires the development of a system for teacher evaluations with 50 percent of the evaluation determined by student academic growth.

Louisiana: **HB 1033**

- ▶ Requires that 50 percent of teacher and administrator evaluations be based on evidence of student achievement, using a value-added assessment model where available.

Reports and briefs

- ▶ *Data for Action 2011: DQC’s State Analysis*, www.DataQualityCampaign.org/stateanalysis/executive_summary.

- ▶ *Using Longitudinal Data Systems To Inform State Teacher Quality Efforts*, 2010, Partnership for Teacher Quality (American Association of Colleges for Teacher Education and National Education Association), www.DataQualityCampaign.org/resources/952.
- ▶ *Effectively Linking Teachers and Students: The Key to Improving Teacher Quality*, 2010, Data Quality Campaign, www.DataQualityCampaign.org/resources/details/993.
- ▶ State Action 9: Educator Capacity To Use Data, 2009, Data Quality Campaign, www.DataQualityCampaign.org/resources/details/783.
- ▶ *Leveraging State Longitudinal Data Systems To Inform Teacher Preparation and Continuous Improvement: A Data-Sharing Template To Prompt Discussion and Strategic Planning*, 2010, Data Quality Campaign, www.DataQualityCampaign.org/resources/details/1008.
- ▶ Teacher-Student Data Link Project, Center for Educational Leadership and Technology, www.tsdl.org.



To download DQC resources, visit www.DataQualityCampaign.org and follow us on Twitter (@EdDataCampaign).

The **Data Quality Campaign (DQC)** is a national, collaborative initiative to encourage and support state policymakers’ efforts to improve the availability and use of high-quality education data to improve student achievement. The campaign will provide tools and resources that will help states implement and use longitudinal data systems, while providing a national forum for reducing duplication of effort and promoting greater coordination and consensus among the organizations focused on improving data quality, access and use.