Creating Reports Using Longitudinal Data
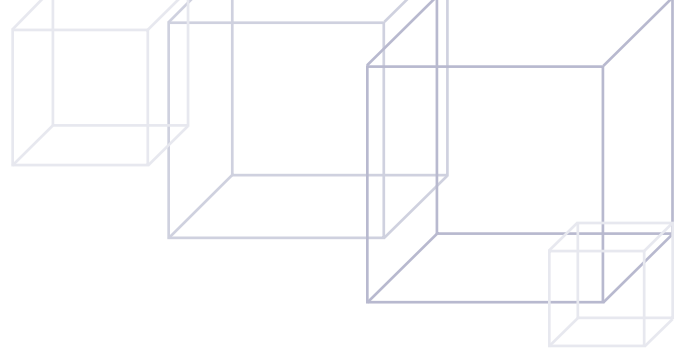
How States Can Present Information To Support Student Learning and School System Improvement

November 2010
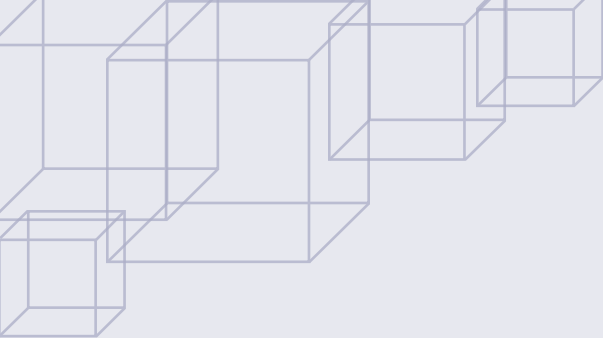
Contents

10 State Actions To Ensure Effective Data Use

Expand the ability of state longitudinal data systems to link across the P–20 education pipeline and across state agencies.
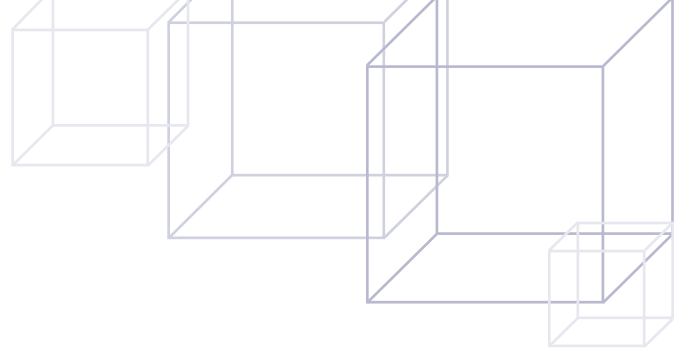
1 Link state K–12 data systems with early childhood, postsecondary education, workforce, social services and other critical state agency data systems.

2 Create stable, sustained support for robust state longitudinal data systems.

3 Develop governance structures to guide data collection, sharing and use.

4 Build state data repositories (e.g., data warehouses) that integrate student, staff, financial and facility data.

Ensure that data can be accessed, analyzed and used, and communicate data to all stakeholders to promote continuous improvement.

5 Implement systems to provide all stakeholders timely access to the information they need while protecting student privacy.

6 Create progress reports with individual student data that provide information educators, parents and students can use to improve student performance.

7 Create reports that include longitudinal statistics on school systems and groups of students to guide school-, district- and state-level improvement efforts.

Build the capacity of all stakeholders to use longitudinal data for effective decisionmaking.

8 Develop a purposeful research agenda and collaborate with universities, researchers and intermediary groups to explore the data for useful information.

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

10 Promote strategies to raise awareness of available data and ensure that all key stakeholders, including state policymakers, know how to access, analyze and use the information.

Taking the Next Step

Now that all 50 states and the District of Columbia are building statewide longitudinal data systems, the next step is to ensure that the information in these systems is used to improve student learning. The Data Quality Campaign (DQC) has identified 10 actions that states can take to ensure that the right data are available and accessible and that users have the knowledge and skills to use the data well (see "10 State Actions To Ensure Effective Data Use," page 2).

Information is more likely to be used if it is timely, user friendly, readily available and easy to interpret and if it addresses questions users need answered.[1] For most stakeholders, data must be organized into reports (online or hard copy) to make the information easy to understand. These reports can show information on *individual students* (Action 6 of the 10 State Actions) or aggregate-level information on *groups of students* (Action 7).[2] In addition, reports can show *snapshot data* — information on a group of students at a moment in time — or *longitudinal data* — information on the same students over multiple points in time.[3] Thus, reports may be divided into four categories based on these two criteria (Table 1).

Table 1: Types of Data in Reports

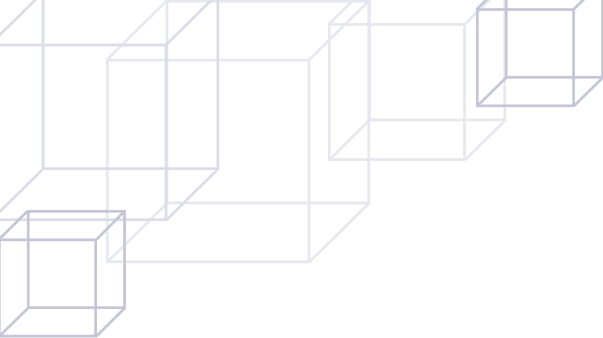|	Snapshot	Longitudinal
STUDENT LEVEL	Reports with data on individual students from a single point in time	Reports with data on individual students followed over time (Action 6)
AGGREGATE LEVEL *(groups of students)*	Reports with data on a group of students at a single point in time or on different groups at different times	Reports with data on the same group of students followed over time (Action 7)

Types of Longitudinal Data Reports

This paper discusses reports that states can create using longitudinal data. These reports include, but are not limited to:

▷ **Growth reports** looking at changes in the achievement of the same students over time;

▷ **Diagnostic reports** providing academic histories of students' mastery of specific concepts or skills;

▷ **Early warning reports** identifying students who need immediate help based on at-risk indicators;[4]

▷ **Predictive reports** showing the relationship between earlier and later student outcomes — for example, the relationship between 8th grade test scores and students' readiness for college and careers in 12th grade;[5]

▷ **Cohort graduation reports** showing graduation rates of groups of the same students followed since the beginning of 9th grade; and

▷ **Feedback reports** providing information on outcomes for students after they graduate from a school or district.

Many of these reports have both student- and aggregate-level versions. For example, while student-level growth reports can show which individual students met academic growth goals, aggregate-level growth reports can show the percentage of students in the school who met those goals.

Protecting the confidentiality of identifiable student-level data must be a priority — access needs to be limited to those stakeholders who have a specific, legitimate role. The appropriate consumers of student-level reports include school personnel who work with the students directly, parents who can see reports on their own children and students who can view reports on their own progress.[6] Reports using

aggregate data that do not reveal information on identifiable students are still valuable and can have a much broader audience, including parents, educators, business and community leaders, school board members, news reporters, state policymakers, taxpayers, and the public at large.

Many districts have their own longitudinal data systems, making it possible to create these types of reports separately in each district. However, it is far more cost-effective for the state to create the reports. Moreover, if the state creates the

reports, then it can guarantee that users in every district will have access to the reports. In addition, statewide data systems can follow students who move across districts within the same state and allow for statewide comparisons of schools and districts.

Tables 2 and 3 show how different stakeholder groups can use student- and aggregate-level reports. Following these tables, this paper discusses the specific types of reports in more detail and provides state examples of each one.

Table 2: Uses of Reports with Longitudinal Student-Level Data (Action 6)

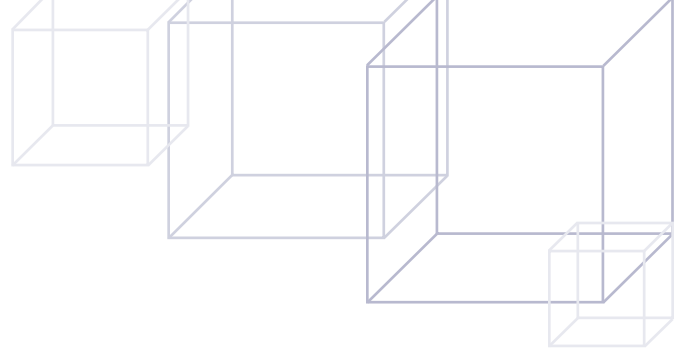| User audience	Diagnostic reports	Early warning reports	Growth reports
TEACHERS	• Work with other teachers to discuss and revise lesson plans • Regroup students and reteach skills • Adjust the pacing of instruction • Plan interventions for students • Communicate with parents about their children's needs	• Identify students who need special attention • Work with other teachers and counselors to plan interventions for at-risk students • Alert parents to the areas in which their children need help	• Set growth goals for students • Monitor student academic progress • Communicate with parents about the progress their children are making
SCHOOL LEADERSHIP TEAMS	• Work with teachers to plan changes in instruction for individual students	• Plan interventions for individual students and assign responsibilities to school staff	• Plan interventions for students based on the amount by which each student's growth needs to accelerate
SCHOOL COUNSELORS	• Work with teachers to plan interventions for students outside of class	• Work with teachers to plan interventions for at-risk students outside of class and to communicate with the students' parents	• Work with teachers to plan interventions for students as needed to ensure that students at all prior achievement levels make satisfactory progress
PARENTS	• Keep track of what their children's grades mean in terms of what they are learning • Understand the relationship between their children's homework assignments and what is taught in the classroom	• Become aware early if their children are at risk • Be informed about areas in which their children need their support	• See if their children's learning represents satisfactory progress toward long-term academic goals • If that is not the case, work with their children and their children's teachers to address the issue

Table 3: Uses of Reports with Longitudinal Aggregate Data (Action 7)

User audience	Diagnostic reports	Early warning reports	Growth reports, predictive reports	Cohort graduation reports	Feedback reports
SCHOOL AND DISTRICT LEADERSHIP TEAMS	• Realign curriculum as needed • Plan changes in instruction and professional development	• Develop short-term strategies to assist at-risk students • Develop long-term strategies to reduce the number of at-risk students	• Plan changes in curriculum, instruction and intervention to help students make satisfactory progress	• Revise curriculum, instruction and student support as needed to improve graduation rates	• Revise curriculum, instruction and student support as needed to better prepare students for life after graduation
SCHOOL BOARD MEMBERS, LOCAL COMMUNITY LEADERS	n/a	• Prioritize funding for long-term strategies to reduce the number of at-risk students	• See if students are making satisfactory progress toward long-term academic goals • Set district priorities accordingly	• Prioritize the need for interventions that improve graduation rates	• Prioritize the need for long-term policies in the district that better prepare students for life after graduation
STATE POLICYMAKERS	n/a	• Guide policy based on information about short- and long-term student risk factors	• Guide policy based on knowing the circumstances under which students make satisfactory progress	• Guide policy based on knowing the circumstances under which students graduate at high rates	• Guide policy based on knowledge of student preparation for life after graduation
PARENTS	n/a	• Become aware of risk factors that would be a special concern in their children	• Be alert to areas in which their children may fail to make adequate growth • Inform decisions about where to enroll their children	• Be alert to schoolwide problems that might affect whether their children will graduate	• Be alert to schoolwide problems in preparing students that might affect their children's preparation

Growth Reports

Growth reports show changes in the achievement of the same students over time. These reports may be categorized into four general types:[7]

1. **Descriptive growth reports,** which show how much students grew academically, without making comparisons with other students;

2. **Growth-to-standards reports**, which describe whether students' growth was adequate to put them on track to meeting standards at a future date or show students' progress from one achievement level to the next (e.g., from Basic to Proficient);

3. **Growth percentile reports,** which show, for example, that a student grew faster than 90 percent of other students; and

4. **Value-added reports,** which compare students' growth with that of a typical student with the same prior test scores and other relevant characteristics.[8]

Student-level growth reports can address questions such as:

▷ Is this student growing faster than typical students with the same prior achievement?

▷ How much faster must this student grow to reach the desired academic goal in the next three years?

▷ Would the student have to grow faster than 99 percent of students to reach the goal in the desired time period? (This answer should lead to thinking about how powerful the interventions need to be to get the student to the goal.)

▷ Looking at a display of the growth of each student in the teacher's class, do the higher-achieving students appear to be making adequate growth? Does the same hold true for the lower-achieving students?
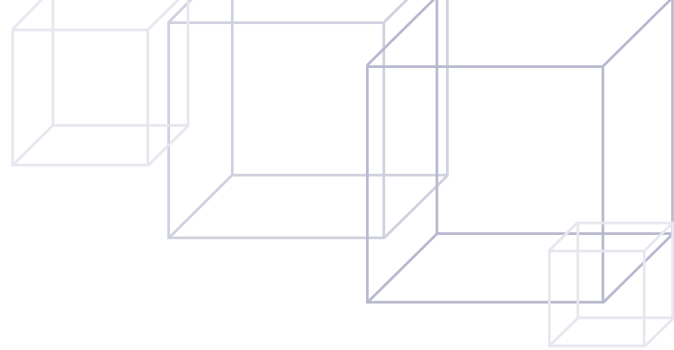
Aggregate-level growth reports can address questions such as:

▷ Are most students in this school averaging faster-than-typical growth?

▷ How rapidly are the academically behind students in this school growing compared with their counterparts in other schools?

▷ Are high-achieving students in this school also achieving strong academic growth?

All growth reports require that individual student records be linked over time — for example, a report on student growth from grades 5 through 8 requires linking student records across those grades. Some growth reports require that student achievement results in different grades be reported on a common scale so that student growth can be measured in score points; other reports simply indicate whether a student is moving up to higher achievement levels based on the state's standards, such as from Basic to Proficient or from Proficient to Advanced.

Uses of Growth Reports

Set growth goals for individual students. For example, based on a statewide analysis of the test scores associated with a high probability that students will be college and career ready by the end of high school, a student and his teachers might set a 10th grade reading growth goal at the 80th percentile to move into at least the middle of the Proficient range. Having a goal of above-typical reading growth might lead teachers to target more intensive assistance to the student, including extra help with academic vocabulary and background knowledge in content areas.

Inform parents and teachers about whether individual students are making adequate progress to reach desired goals. Student-level growth reports can show teachers where each of their students stands relative to the desired growth path and whether students who are academically behind are catching up over time. Teachers can use growth reports to inform parents if their children are making sufficient progress.

Inform educators, parents and the public about which schools have the most rapid academic growth. In addition, information can be made available about the growth of low- and high-achieving students in the same school.

Sample Growth Reports

Figure 1 shows a mock-up of Colorado's student-level growth report. Parents can gain password-protected access to reports on their own children, while teachers can view information on the students that they teach.

The figure shows how rapidly a hypothetical student grew in mathematics relative to other students with a similar test score history. For example, the student achieved below-typical growth in 7th grade (at the 26th growth percentile, growing as fast as or faster than 26 percent of students, but slower than the other 74 percent of students), well above typical growth in 8th grade and below typical growth in 9th grade.

With this growth pattern, the student started near the top of the state's Proficient range but ended near the bottom. He or she would need to achieve very high growth, near the top of the range of what students ordinarily accomplish, to move into the top half of the Proficient range by the end of grade 10.[9]

Figure 2 (page 8) shows one of Colorado's aggregate-level growth reports. In these reports, the growth information is aggregated by school and is available to the public on the Web. Each circle represents a school, with school size (total student enrollment) represented by the size of the circle.

The growth statistic shown on the horizontal axis is the school's median growth percentile — the growth percentile earned by the school's "middle" student, who performed better than about half the school's students and worse than the other half. The vertical axis shows the school's percent

Figure 1: Sample Colorado Student-Level Growth Report in Mathematics
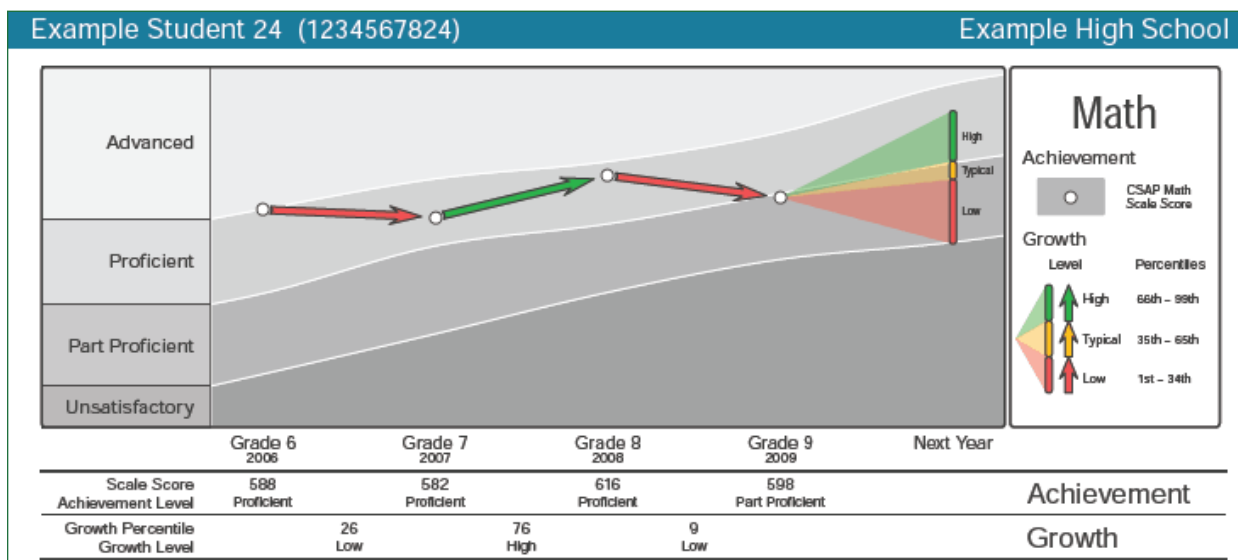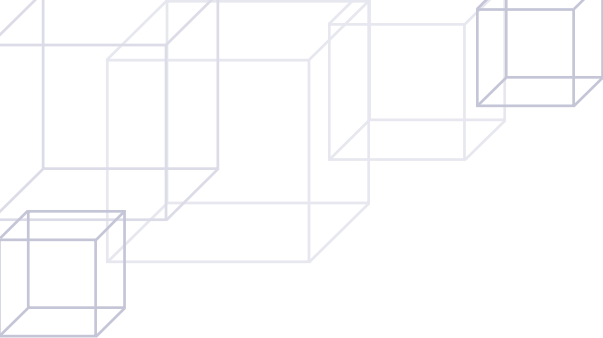
Figure 2: Sample Colorado School-Level Growth vs. Achievement Level Report in Mathematics

Creating Reports Using Longitudinal Data: How States Can Present Information To Support Student Learning and School System Improvement
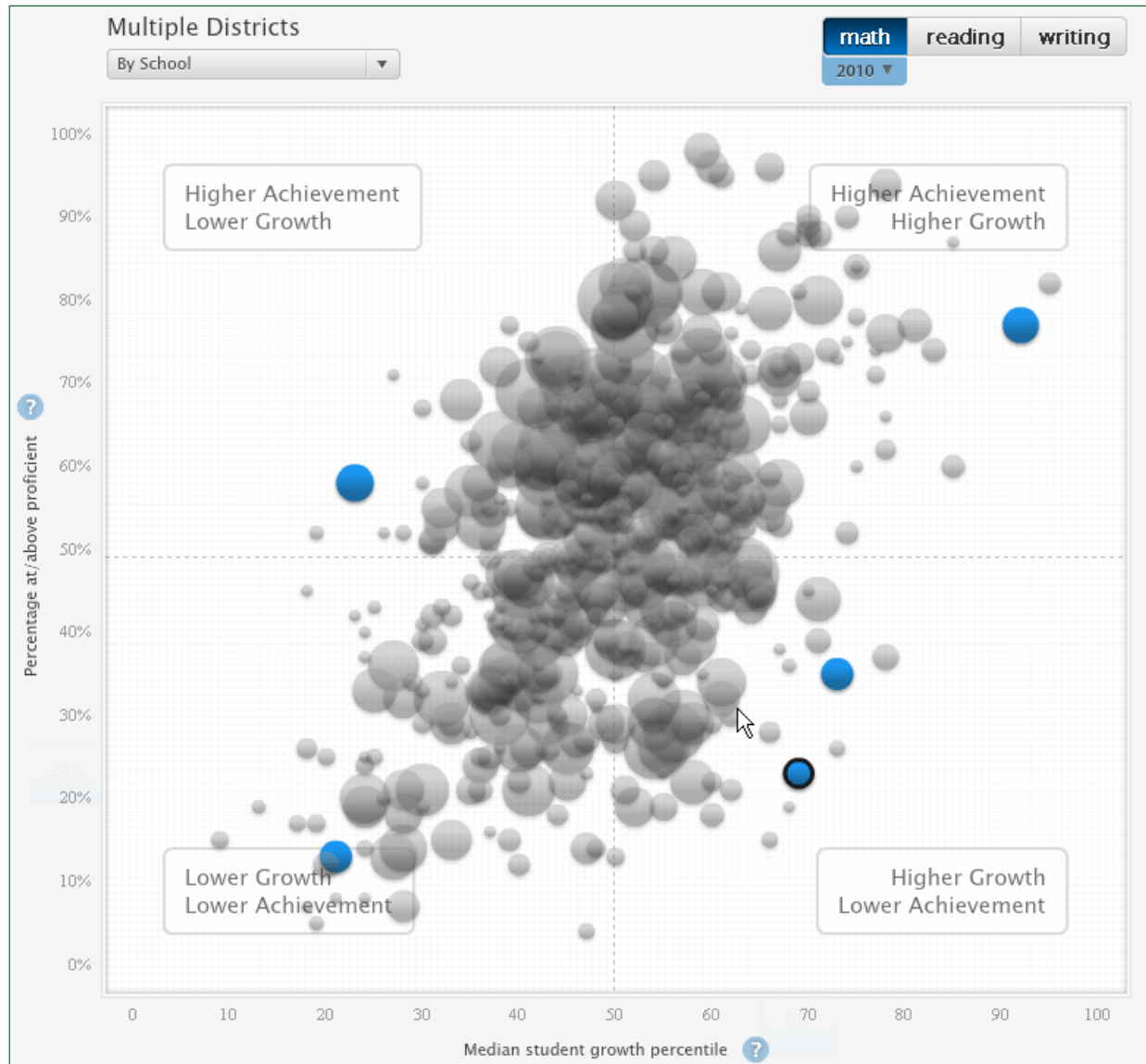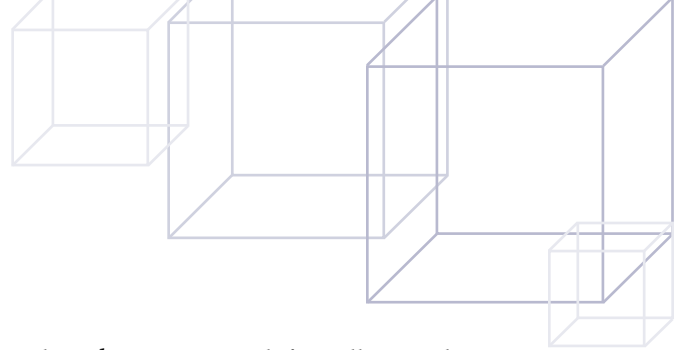
proficient on the current year's test — an achievement-level statistic, not a growth statistic.

The chart is divided into four labeled quadrants. The lower left quadrant represents "lower growth [and] lower achievement." Correspondingly, the circles in the lower left quadrant represent schools with fewer than half of their students reaching the state's proficiency standard and whose median students achieved below-typical growth; one of these schools is highlighted in blue. Likewise the schools in the lower right quadrant have fewer than half of their students reaching proficiency, but their median students had above-typical growth. Schools with majorities of proficient students and with below- and above-typical median growth are shown in the upper two quadrants.

Next Steps for States

1. Use the state's longitudinal database to **analyze how many academically behind students get on track to college and career readiness over what length of time.** For example, one analysis might examine the percentage of below-basic 3rd grade students who by 8th grade reach targets signaling they are on track for college and career readiness. This requires the state to identify college and career readiness performance targets on assessments and to adopt a consistent metric for how far behind the off-track students are.[10]

2. Based on this research, **identify single-year and multi-year growth goals for students** that are aimed at getting and keeping students on track to college and career readiness. These goals need to weigh the difficulty of getting students caught up (e.g., very few academically far behind students catch up in only one or two years) against the goal that students must eventually catch up. Additionally, states may want to establish growth goals for high-achieving students.

3. **Develop growth-to-standards reports** showing the percentage of students in each school and district and at each prior achievement level who are achieving their required growth goals.

4. **Develop a dissemination plan** to educate parents, teachers and members of the public in the use of growth reports.

Diagnostic Reports

Diagnostic reports provide timely information on students' mastery of specific concepts or skills. To provide up-to-date information on student learning, many school districts administer *interim assessments* in certain subjects (usually those covered in the state's accountability system) several times a year and provide snapshot reports to teachers of the results from each assessment. These assessments can show whether students have mastered the knowledge and skills taught in the previous weeks or months.

If these assessments are integrated into a longitudinal data system, student-level reports can show the results from multiple assessments to provide information on students' skill mastery over time. This can help teachers diagnose student difficulties with prerequisite skills. For example, a student might be having trouble with two-digit multi-plication in 3rd grade because he or she never mastered place value in 2nd grade.

35 states report having diagnostic reports.

— DQC Annual Survey, 2009–10

The DQC Annual Survey is self-reported by states. States that reported having diagnostic reports in the 2009–10 survey are counted in this statistic.

Diagnostic reports can also be provided based on state assessment results. How-ever, those results generally come only once a year and, therefore, are less helpful for immediate feedback. They are more helpful for school improvement planning and for giving information about students to their teachers in the following year.

Student-level diagnostic reports can address questions such as:

▷ Which students mastered each of the key skills and con-cepts that were taught in the previous nine weeks?

▷ How is students' mastery of currently taught knowledge and skills related to their earlier mastery of prerequisite knowledge and skills?

▷ Have students mastered the knowledge and skills needed to be prepared for what they are going to be taught next?

▷ Which students already know the concepts to be taught in the next unit and are ready for enrichment or more advanced work?

Aggregated at the classroom or school level, diagnostic reports can address questions such as:

▷ Do different classrooms show different patterns of skill mastery?

▷ Are there skill areas that need more emphasis schoolwide?

Uses of Diagnostic Reports

Identify students in need of intervention and select appro-priate interventions for those students. Diagnostic reports can help teachers identify interventions for students based on the areas in which each student needs help.

Modify lesson plans and instructional strategies based on student needs. Diagnostic reports can give teams of teachers a clear understanding of whether students are learning the necessary knowledge and skills over time, providing guid-ance for improving instruction.

Give parents detailed information on what their children have learned. Information on student skill mastery provides more than just an "A" or a "B" on a student report card. Teachers can use diagnostic reports to help parents under-stand what their children's grades mean in terms of content and skill mastery.
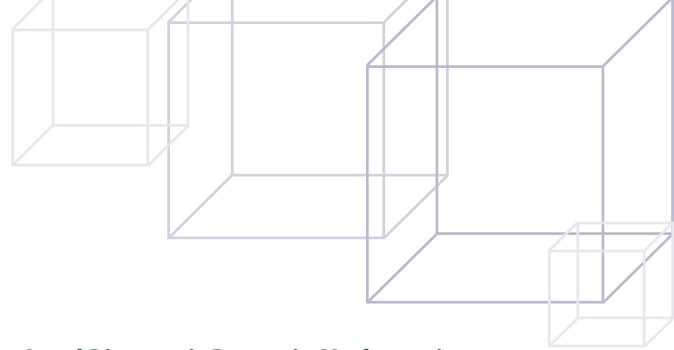
Sample Diagnostic Report

Figure 3 shows a longitudinal diagnostic report created by the state of Florida based on a student's performance on the Florida Comprehensive Assessment Test (FCAT) in grades 3, 4 and 5. This report compares the percentage of test questions the student answered correctly with the corresponding percentages for students in the district and state.

The questions are grouped into the broad skill categories of Number Sense, Measurement, Geometry, Algebraic Thinking and Data Analysis. Since categories such as Number Sense represent different skills in grades 3, 4 and 5, the user is cautioned not to compare the results across grades but to compare the student's performance with district and state averages for students in the same grade.

In turn, the Number Sense category includes (for grade 5) skills such as solving division problems, adding and subtracting fractions and decimals, and factoring composite numbers (e.g., 24 = 2 x 2 x 2 x 3).[11] To acquire a more detailed history of student mastery of these skills and their prerequisite skills, teachers must generally rely on the results of interim assessments provided by their school districts — yearly state tests do not have enough test questions per skill to create these histories.

Figure 3: Sample Florida Student-Level Diagnostic Report in Mathematics

Angela Barbariol << Back to Student FCAT

Student FCAT Content Area Scores

The data below shows student achievement by content area. Compare this data to the school, district, and state averages for the same year to make the best interpretation of this student's achievement. These content area scores should not be compared across years.

Student FCAT Math Content Area Scores

Number Sense

Test Year	Test Grade	Points Earned	Points Possible	Student Score	School Avg	District Avg	State Avg
2006	05	1	13	8 %	54 %	54 %	46 %
2005	04	5	11	45 %	64 %	64 %	64 %
2004	03	5	12	42 %	50 %	58 %	58 %

Measurement

Test Year	Test Grade	Points Earned	Points Possible	Student Score	School Avg	District Avg	State Avg
2006	05	4	11	36 %	64 %	55 %	55 %
2005	04	4	8	50 %	63 %	63 %	63 %
2004	03	3	8	38 %	63 %	63 %	63 %

Geometry

Test Year	Test Grade	Points Earned	Points Possible	Student Score	School Avg	District Avg	State Avg
2006	05	2	13	15 %	62 %	54 %	54 %
2005	04	1	7	14 %	57 %	57 %	57 %
2004	03	2	7	29 %	71 %	71 %	71 %

Algebraic Thinking

Test Year	Test Grade	Points Earned	Points Possible	Student Score	School Avg	District Avg	State Avg
2006	05	2	11	18 %	55 %	55 %	45 %
2005	04	3	7	43 %	71 %	71 %	57 %
2004	03	1	6	17 %	50 %	67 %	50 %

Data Analysis

Test Year	Test Grade	Points Earned	Points Possible	Student Score	School Avg	District Avg	State Avg
2006	05	2	12	17 %	58 %	50 %	50 %
2005	04		7	0 %	57 %	57 %	57 %
2004	03	2	7	29 %	57 %	71 %	71 %

a state-sponsored student information system that can be used voluntarily by districts that do not have their own.

2. **Ensure that teachers and school leaders in each district have access to high-quality interim assessments and diagnostic reports** that provide a history of each student's mastery of specific knowledge and skills.

3. Work with partners to **promote research on which prerequisite skills best predict students' mastery of subsequent skills in each grade and subject,** thus providing guidance to curriculum developers and report designers.

Next Steps for States

1. **Ensure that every district, regardless of size and wealth, has access to a student information system** that can store and manage frequently collected student assessment data. This can be done if policymakers fund

Early Warning Reports

Early warning reports are specialized diagnostic reports that flag students who need help immediately. These reports can provide teachers and counselors with a roster of individual students who need assistance. The reports also can provide school improvement planners and the public statistics on the numbers of students who need assistance, which schools can use to monitor whether long-term prevention and intervention efforts are reducing student risk factors and addressing current needs.

Early warning reports depend on prior research to determine which risk factors are the strongest predictors of the later outcome to be avoided (e.g., dropping out). For example, research by the Consortium on Chicago School Research found that student absenteeism and course failure were the strongest early predictors from 9th grade that a student would fail to graduate.[12] Early warning reports can assign greater weight to the most predictive risk factors.

Student-level early warning reports can address questions such as:

▷ Judging by specific risk factors, which students are at the greatest risk and need the most urgent personal attention?

▷ What attention and proven interventions do each student need based on the nature of his or her risk factors?

▷ Which students first began having difficulty when they entered high school, and which students' troubles date back to middle school and earlier?

Aggregate-level reports based on early warning statistics can address questions such as:

▷ Which risk factors are most common in which schools?

▷ To what extent does each high school's risk factors appear to be "inherited" from middle school and earlier, based on the number and percentage of at-risk students who also were having difficulty when they were in middle school?

Although the reports themselves may use locally collected data because of the need for timeliness — for example, students should be identified for immediate assistance as soon as they start to miss their classes — statewide longitudinal data can be used to research which indicators should be shown on the reports. In addition, some states have begun to develop a voluntary statewide student information system so that smaller districts can have electronically generated early warning reports based on locally collected data at reduced cost and burden.

24 states report having **early warning reports.**
— DQC Annual Survey, 2009–10

The DQC Annual Survey is self-reported by states. States that reported having student-level early warning indicator systems or readiness reports in the 2009–10 survey are counted in this statistic. The DQC understood readiness reports as providing an early warning on which students are not on track to college and career readiness.
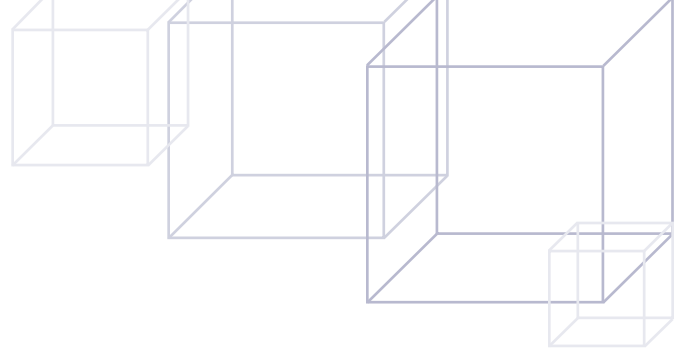
Uses of Early Warning Reports

Identify students in need of intervention along with the risk factors that caused those students to be identified. Teachers, counselors and school administrators can use this information to intervene quickly with students. Just as hospitals have established procedures for intervening with patients with medical emergencies, school personnel can have preplanned diagnostic and intervention procedures for students who display specific risk factors.

Inform parents when their children urgently need additional attention. For example, school personnel can contact parents of students who have a certain number of unexcused absences from class in a given six-week period, are chronically late to class, do not turn in homework or are having difficulty mastering the content taught in the previous few weeks.

Identify schools, neighborhoods and feeder patterns where these risk factors are especially prevalent. School system leaders can then coordinate with community leaders to disseminate public messages that alert the community to the problem in question and mobilize community support to combat it. For example, local religious institutions, businesses and community organizations might be involved in a campaign to urge students to do their homework and encourage parents to support high academic standards for their children.

Sample Early Warning Report

Figure 4 shows the criteria that Indiana uses in its early warning report that identifies entering 9th graders who are at risk of not graduating from high school.

Figure 4: Criteria Used by Indiana To Identify At-Risk Students

Age and Retention	Score
Student was not retained and will be 18 on June 30, 2013	0 points
Student was not retained but will be 19 on June 30, 2013	1 point
Student was retained or will be 20 on June 30, 2013	2 points
ISTEP+	
Student passed both subjects at grade 7 and grade 8	0 points
Student did not pass English at grade 7	1 point
Student did not pass Math at grade 7	1 point
Student did not pass English at grade 8	2 points
Student did not pass Math at grade 8	2 points
Mobility	
Student had no reported mobility	0 points
Student had one reported incident of mobility	1 point
Student had two or more reported incidents of mobility	2 points
Attendance	
Greater than 95%	0 points
90% to 95%	1 point
Less than 90% or more than 15 days unexcused absences	2 points
Based on total points, potential risk levels are assigned as:	
Low Risk	0–3 points
Medium Risk (highlighted yellow)	4–8 points
High Risk (highlighted red)	>9 points
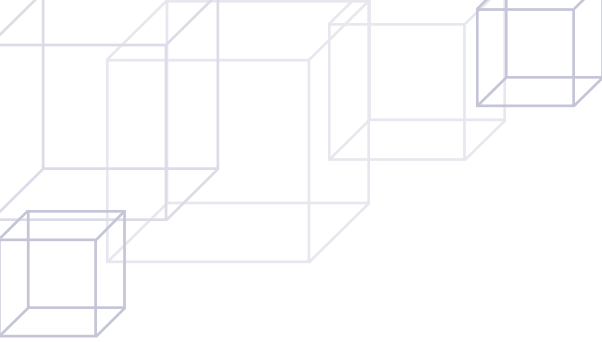
These criteria are the key to understanding the report in Figure 5, which identifies at-risk students so that the students' teachers and counselors can develop appropriate interventions. (In an actual version, the students' names would be on the report.)

For each student, the report shows the information that was used to determine that the student is at risk. For example, the students in the report are entering high school freshmen in fall 2009; a "B" in the column under "ISTEP" means that the student scored below passing on the state test. A student who would be 20 years old if she or he graduates in four years is around two years older than the typical 9th grader — a common risk factor among students who drop out.

Next Steps for States

1. **Extend the early warning concept** to include reports on students who are at risk of not graduating *college and career ready*, in addition to students who are at risk of dropping out.

2. **Develop early warning reports for students in elementary and middle school,** not just 8th graders and high school students.

3. **Guarantee that each school district in the state has access to a student information system** that can produce the necessary reports.

Figure 5: Sample Indiana Report to School Personnel on At-Risk Students

Age 30–Jun 2013	ISTEP Fall 2007			ISTEP Fall 2008			Grade Retained	Unexcused Absences	Attendance Rate 06–07, 07–08, 08–09	Mobility (MS Moves)	At-Risk Index
	GR	Engl	Math	GR	Engl	Math					
20	7	B	B	8	B	B	7	26.0	93.4%	3	12
20	7	B	B	8	B	B	6	42.0	91.8%	3	12
20	7	B	B	8	B	B	6	29.5	94.1%	4	12
19	7	B	B	8	B	B		23.0	94.4%	2	11
19	7	B	B	8	B	B		28.5	92.0%	2	11
19	7	B	B	8	B	B		28.0	93.2%	2	11
19	7	B	B	8	B	B	7	18.0	96.0%	2	11
19	7	B	B	8	B	B		27.5	94.9%	2	11
19	7	B	B	8	B	B		54.5	87.8%	3	11
19	7	B	B	8	B	B		26.5	94.5%	2	11
18	7	B	B	8	B	B		26.5	90.3%	2	10
19	7	B	B	8	B	B		45.0	88.3%	1	10
19	7	B	B	8	B	B		8.5	94.5%	2	10
18	7	B	B	8	B	B		33.5	92.8%	4	10

Note: In this figure, "MS Moves" means "Middle School Moves."

Predictive Reports

Predictive reports show how students' success later in the P–20/workforce pipeline is related to the status of the same students earlier in the pipeline — for example, how student academic achievement and engagement indicators in 4th grade are related to their success in 8th grade, how students' academic indicators in 8th grade are related to the odds that the same students will graduate from high school ready for college or career, or how students' need for remediation in higher education is related to the odds that they will earn a degree or certificate and get a job in their chosen field.

Unlike early warning reports, predictive reports are not focused on identifying individual at-risk students. Instead, they are mainly used at the aggregate level to identify why it is important for students to reach certain standards ("80% of students who were below college and career readiness targets in 8th grade mathematics failed at least one of their high school end-of-course mathematics exams"); to identify schools, programs and interventions that have beaten the statewide odds; and to show whether the system as a whole is improving the odds for students over time.

Predictive reports do not necessarily predict the odds for an individual student — the student may receive more effective instruction and support than was typical for the group of students on whom the report was based. However, the reports can serve as a warning that specific students or groups of students need greater-than-average levels of assistance to succeed.

Predictive reports can address questions such as:

▷ What percentage of students at different achievement levels in 4th grade reading or mathematics were on track to college and career readiness in various subjects in 8th grade?

▷ How were middle school grades, test scores and student engagement survey results related to high school course completion and end-of-course test results?

▷ How were high school course completion and end-of-course test results related to college enrollment, need for remediation, courses taken in the same subject, grades in those courses, persistence into the second year and graduation?

▷ How were higher education courses, grades and completion of specific majors or training programs related to later employment and earnings in related fields?

Uses of Predictive Reports

Inform educators, parents and students about the value of reaching specific learning goals. Predictive reports can show how attaining those goals increases the odds that students will be successful in school, college and the workforce.

15 states report having **predictive reports.**
— DQC Annual Survey, 2009–10

The DQC Annual Survey is self-reported by states. States that reported having student-level predictive reports or aggregate reports that include relational analysis in the 2009–10 survey are counted in this statistic.

Identify schools and programs that are beating the predicted odds. For example, if only 10 percent of below-proficient 8th grade students in mathematics meet college and career readiness benchmarks by grade 12, a high school that raises that number to 30 or 40 percent year after year is beating the odds.

Guide resource allocation decisions related to early intervention and prevention. Coupled with evaluations of the effectiveness of interventions at different times, predictive reports can help policymakers and educational leaders make decisions about how to allocate resources among interventions at various stages in students' academic careers.

Sample Predictive Report

Figure 6 is a report showing the relationship between Virginia students' proficiency on end-of-course exams and the same students' enrollment in four-year higher education institutions, including colleges in other states. Data from the National Student Clearinghouse were used to capture students who enrolled in out-of-state college and universities.

The odds shown in predictive reports should be interpreted with caution — for example, if every student in Virginia reached the Advanced Proficient level on the Algebra I end-of-course exam, four-year college enrollment rates would not necessarily rise to 75 percent. Other variables, such as family support and the generosity of financial aid packages, are likely to affect college enrollment rates, and these variables might not change in lockstep with the change in advanced proficiency rates. However, the strong relationship shown in the chart between academic proficiency and college enrollment can be investigated further with research projects that examine the influence of these other variables.

Next Steps for States

1. **Develop predictive reports related to each important student transition,** for example, from elementary to middle school, from middle to high school, from high school to postsecondary education, and from high school or postsecondary education to the workforce. For example, the elementary to middle school report might show the relationship between mathematics achievement in 3rd or 4th grade and student success in middle school math and science courses, including students' mastery of algebra by 8th grade.

2. **Develop interpretive materials** that help parents, educators, community leaders and policymakers understand the implications of those reports.

Figure 6: Sample Virginia Report on High School Proficiency and College Enrollment

High School Class of 2007: Percent Enrolled in Four-Year Institutions within One Year of Graduation*

Proficiency Level	Algebra I	Geometry	Algebra II	English Reading	English Writing
Advanced Proficient	75%	75%	79%	64%	72%
Proficient	39%	41%	50%	25%	31%
Fail	7%	12%	23%	3%	4%

Enrollment based on VDOE data and data provided by the National Student Clearinghouse

*Approximately 87 percent of Virginia's students who enroll in four-year colleges persist into their second year. VDOE data are not effective predictors of persistence.

VIRGINIA DEPARTMENT OF EDUCATION

Cohort Graduation Reports

Cohort graduation reports commonly use the method for calculating the four-year graduation rate agreed to by 48 states and the National Governors Association (NGA). Calculating this rate requires identifying each new cohort of first-time 9th graders in a high school or school district and keeping track of transfers in, transfers out and dropouts from that group of students.

The difficulty of distinguishing between dropouts and students transferring to another educational setting makes calculating accurate graduation rates hard.[13] States must take care to audit the use of transfer categories, such as "returned to home country" or "left to be home schooled," so that schools and districts do not end up misclassifying most of their dropouts as transfer students.

Cohort graduation reports can address questions such as:

▷ What high schools and school systems had the highest graduation rates among males or females from particular minority groups?

▷ How were these graduation rates related to students' academic preparation leaving 8th grade?

▷ How were these graduation rates related to other identified student risk factors?

Graduation reports are generally provided at the aggregate level. However, informative student-level reports might also be created. For example, teachers and counselors might receive a list of nongraduating students in the same cohort as the current year's graduating students, along with information on the risk factors of each graduating and nongraduating student. Such a report might show how the patterns of risk factors differ for the two groups of students.

Uses of Cohort Graduation Reports

Inform parents, educators, and state and local policy leaders about trends in graduation rates among specific student populations. Educators and community leaders can work to address the risk factors that are most prevalent in those populations.

Inform parents, educators, and state and local policy leaders about trends in graduation rates in each high school and school district. Educators and community leaders can work to identify causes of the low graduation rates and take steps to address these causes.

15 states report having **cohort graduation reports.**
— DQC Annual Survey, 2009–10

The DQC Annual Survey is self-reported by states. States that reported having aggregate graduation and completion reports in the 2009–10 survey are counted in this statistic.

Identify whether graduation rates rise or fall after certain policies and programs are implemented. The best analyses also look at whether these graduation rate changes are related to the degree of implementation of the policy or program in different locations.

Sample Cohort Graduation Report

Figure 7 (page 18) shows a page from Michigan's cohort graduation report.[14] Based on the NGA's graduation rate methodology, the Michigan report follows first-time 9th graders in fall 2005 through four years of high school, accounting for the number of transfers in, transfers out, dropouts, students who left to acquire a GED, four-year graduates and students who are still in high school after four years but have not graduated.

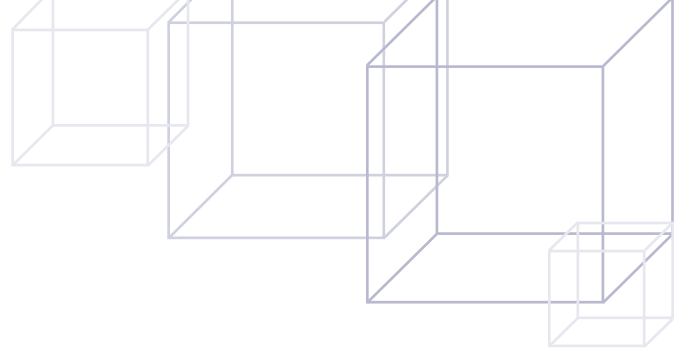## Figure 7: Sample Michigan Cohort Graduation Report[15]

State of Michigan 2009 Cohort 4-Year Graduation and Dropout Rate Report
Final Results

District / Building Name (Code)	Totals				Cohort Status				Cohort	
	First Time 9th Grade in Fall 2005	(+)Transfers In	(-)Transfers Out & Exempt	Cohort	On-Track Graduated	Dropouts (Reported & MER)	Off-Track Cont.	Other Completer (GED, etc.)	Graduation Rate	Dropout Rate
State	142,618	9,111	9,407	142,322	107,074	16,124	17,604	1,520	75.23%	11.33%
Adams Township School District (31020)	40	7	3	44	44	< 10	< 10	< 10	100.00%	0.00%
Jeffers High School (01893)	40	7	3	44	44	< 10	< 10	< 10	100.00%	0.00%
Addison Community Schools (46020)	101	21	20	102	83	11	< 10	< 10	81.37%	10.78%
Addison Jr/Sr High School (00023)	101	18	21	98	83	< 10	< 10	< 10	84.69%	8.16%
Adrian City School District (46010)	316	81	49	348	235	43	70	< 10	67.53%	12.36%
Adrian Adult and Alternative Education (07431)	< 10	36	0	36	< 10	< 10	23	< 10	11.11%	25.00%
Adrian High School (00027)	316	33	75	274	222	22	30	< 10	81.02%	8.03%
Airport Community School District (58020)	285	46	53	278	229	18	25	< 10	82.37%	6.47%
Airport Senior High School (01086)	285	40	55	270	228	13	24	< 10	84.44%	4.81%
Akron-Fairgrove Schools (79010)	43	4	10	37	32	< 10	< 10	< 10	86.49%	8.11%
Akron-Fairgrove Jr/Sr High School (00034)	43	4	10	37	32	< 10	< 10	< 10	86.49%	8.11%
Alanson Public Schools (24030)	22	5	6	21	14	< 10	< 10	< 10	66.67%	19.05%
Alanson Public School (02241)	22	5	6	21	14	< 10	< 10	< 10	66.67%	19.05%
Alba Public Schools (05010)	24	4	10	18	13	< 10	< 10	< 10	72.22%	5.56%
Alba School (06938)	24	3	10	17	13	< 10	< 10	< 10	76.47%	0.00%
Albion Public Schools (13010)	141	36	39	138	89	28	20	< 10	64.49%	20.29%
Albion Alternative Education (07819) #	< 10	2	0	< 10	N/A	< 10	< 10	< 10	N/A	100.00%
Albion Senior High School (04936)	141	26	42	125	89	17	18	< 10	71.20%	13.60%
Alcona Community Schools (01010)	76	9	11	74	56	17	< 10	< 10	75.68%	22.97%
Alcona Community High School (00044)	76	9	11	74	56	17	< 10	< 10	75.68%	22.97%
Algonac Community School District (74030)	229	23	57	195	180	10	< 10	< 10	92.31%	5.13%
Algonac High School (00054)	229	22	57	194	179	10	< 10	< 10	92.27%	5.15%
Allegan Public Schools (03030)	231	83	43	271	158	41	54	18	58.30%	15.13%

"< 10" indicates that there were less than ten or zero students in the cohort or in a status at the building for two count days or the district for one count day. "*" indicates that the building/district has closed. "#" indicates that the building/district does not graduate students or are not responsible for submitting Graduation Rates. "N/A" indicates "Not Applicable" for this entity.

04/02/2010　　Data provided by the Center for Educational Performance & Information from SRSD/MSDS Fall 2005 to Fall 2009, and GAD Spring 2010　　8 of 171

Next Steps for States

1. **Keep track of college- and career-ready graduation rates,** not just whether students are meeting minimum graduation standards. Typically the two will be different, as denying graduation to every student who is not deemed to be college and career ready is likely to lead either to too low a standard for college and career readiness or to disqualifying a politically unacceptable percentage of students from receiving diplomas.[16]

2. **Do not rely on course completion as the sole criterion for whether students are graduating college and career ready.** Other indicators, such as assessment results and students' need for remediation in higher education, can be used to identify whether students have learned course content that prepares them well for college and postsecondary career learning opportunities.[17]

3. **Disaggregate college- and career-ready graduation rates by 8th grade achievement level.** This is likely to show the importance of preparing students well in elementary and middle school.

4. **Disaggregate both overall graduation rates and college- and career-ready graduation rates by other appropriate risk factors** to show the importance of those factors.

5. **Develop reports that count students who take more than four years to graduate.**

Feedback Reports

Feedback reports provide information on how the graduates of a district, school or program fared in their next endeavor — for example, the number of graduates from a given high school who enrolled in higher education and the college grades those students earned or the percentage of students completing a career and technology education program who landed jobs in their specialty within a year after graduation. Unlike predictive reports, feedback reports focus on the school, institution or district that the students previously attended. These reports' purpose is to inform the school about whether it is adequately preparing students to succeed at the next level.

Feedback reports can address questions such as:

▷ What percentage of students from particular minority groups from each high school and school district enrolled in two- and four-year colleges within a year after high school graduation?

▷ What percentage of students did not enroll right away but enrolled up to three years later?

▷ How many students from each school and district needed remediation in specific subjects in higher education?

▷ What grades did students from different schools and districts earn in specific entry-level college courses?

Uses of Feedback Reports

Inform parents, educators and policymakers about whether a school system's graduates are well prepared for life after high school. Low course grades or the need for remediation can indicate that graduates were poorly prepared in specific academic subjects.

Inform students and leaders at higher education institutions about whether the graduates of those institutions are finding employment in their chosen fields. This requires the collection of data on the occupations of individuals in the workforce — something Florida has done.

Enable school and district leaders and other stakeholders to compare student success on contemporaneous measures such as test scores with the same students' success on various measures after graduation. This requires that student-level test score records from P–12 be matched with data indicators of the same students' success after graduation. These indicators might include student enrollment in higher education, course grades, degrees or certificates earned, employment, and earnings.

Sample Feedback Reports

Figure 8 (page 20) shows how Missouri provides information to high schools on the number of students from each of their graduating classes who attended and graduated from Missouri colleges within the following six years.[18] College graduates are calculated as a percentage of those who enrolled in college the first year after high school graduation, not as a percentage of the entire class of students who graduated from high school; in addition, students who enter college later or who enroll out of state are not accounted for.

Other feedback reports, such as the Texas report in Figure 9 (page 20), show enrollment in specific colleges and universities in the state. In the Texas report, nonenrollees and out-of-state enrollees are combined in the "not found" category; "not trackable" students may be missing a suitable student identifier. A third type of feedback report created by Kentucky (Figure 10, page 21) accounts for former students who enter the workforce and the military, as well as higher education institutions.

> **16 states** report having **feedback reports.**
> — DQC Annual Survey, 2009–10
>
> The DQC Annual Survey is self-reported by states. States that reported having aggregate feedback reports in the 2009–10 survey are counted in this statistic.
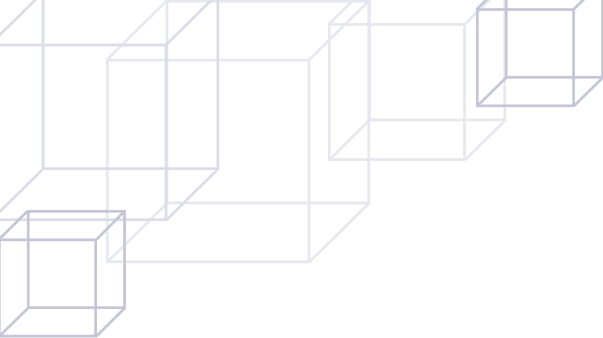
Figure 8: Sample Missouri Feedback Report on Six-Year College Graduation by High School

High School	Fall Semester	First Time Freshmen	No Degree, but still enrolled	Avg. Percent Enrolled	Received 2-year degree within 6 years	Received 4-year degree within 6 years	Received both 2 and 4-year degrees within..	Total graduated from public institutions	Avg. Percent Graduated	Out of Public System*2
BLAIR OAKS HIGH SCHOOL, JEFFERSON CITY	1996	17				12		12	71	5
	1997	23				17		17	74	6
	1998	26	5	19		11		14	54	7
	1999	37		8	9	12		21	57	13
	2000	42	1	2	6	23		29	69	12
	2001	40	2	5	9	19	2	30	75	8
	2002	41	3	7	6	17	1	24	59	14
	2003	44	1	2	8	23	2	33	75	10

Statewide										
	Fall Semester	First Time Fre..	No Degree, bu..	Avg. Percent ..	Received 2-ye..	Received 4-ye..	Received both..	Total graduate..	Avg. Percent ..	Out of Public ..
	2003	21,440	1,607	8	2,462	6,555	767	9,784	44	9,928

Average Graduation Rate for the state total in 2009 is 45 percent
Average Graduation frate for high schools in 2009 is 44 percent
*1: Missing data indicates no data are disclsed in cases involving fewer than 5 students
*2: Those defined as "out of public system" include students who either dropped out or transferred to independent or non-Missouri institutions.
*3: Due to some students' simultaneous enrollments at both two- and four-year institutions the sum of sector-bsed headcount may exceed the total number reported in the overall summary.

Figure 9: Sample Texas Feedback Report to High Schools on Enrollment by College

Texas High School Graduates From FY 2009 438
Enrolled in Texas Public or Independent Higher Education Fall 2009

County=TRAVIS

| District	High School	HS Code	Institution	Students
			Not found	87
			Total high school graduates	198
AUSTIN ISD	LBJ HIGH SCHOOL	227901014	AUSTIN COMMUNITY COLLEGE	24
			BLINN COLLEGE	8
			PRAIRIE VIEW A&M UNIVERSITY	7
			TEXAS A&M UNIVERSITY	6
			U. OF TEXAS AT AUSTIN	5
			U. OF TEXAS AT SAN ANTONIO	5
			UNIVERSITY OF HOUSTON	5
			Other Pub/Ind 4-yr Inst. (14)	23
			Other Pub/Ind 2-yr Inst. (4)	4
			Not trackable	18
			Not found	72
			Total high school graduates	177
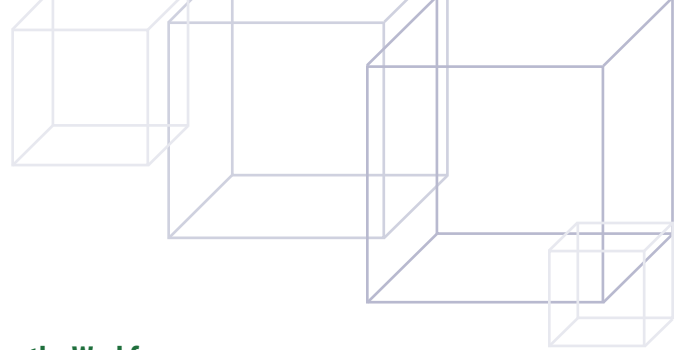
Figure 10: Sample Kentucky Feedback Report Accounting for Graduates Entering the Workforce

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KENTUCKY DEPARTMENT OF EDUCATION - OFFICE OF ASSESSMENT AND ACCOUNTABILITY                                    12:48 Friday, April 17, 2009
TRENDS IN NON-ACADEMIC DATA - SCHOOL, DISTRICT, AREA DEVELOPMENT DISTRICT & STATE TOTALS
TRANSITION TO ADULT LIFE DATA - (PUBLIC SCHOOLS)
                                     COLLEGE        COLLEGE       VOC./TECH.                              COMBINED        NOT         TOTAL       TOTAL      SUCCESSFUL
SCHOOL                               IN KY          OUT OF KY     SPEC. SCH.    MILITARY     EMPLOYED     WORK/SCH.    SUCCESSFUL    SUCCESSFUL   NUMBER OF   TRANSITION
YEAR    DISTRICT NAME   SCHOOL NAME   #     %        #      %       #     %      #     %       #     %      #     %      #     %      TRANSITION   GRADUATES     RATE
```

SCHOOL YEAR	DISTRICT NAME	SCHOOL NAME	COLLEGE IN KY #	%	COLLEGE OUT OF KY #	%	VOC./TECH. SPEC. SCH. #	%	MILITARY #	%	EMPLOYED #	%	COMBINED WORK/SCH. #	%	NOT SUCCESSFUL #	%	TOTAL SUCCESSFUL TRANSITION	TOTAL NUMBER OF GRADUATES	SUCCESSFUL TRANSITION RATE
2004	ADAIR COUNTY	---DISTRICT TOTALS---	86	50.0%	2	1.2%	6	3.5%	2	1.2%	50	29.1%	4	2.3%	22	12.8%	150	172	87.21
2005	ADAIR COUNTY	---DISTRICT TOTALS---	95	59.0%	0	0.0%	3	1.9%	0	0.0%	44	27.3%	2	1.2%	17	10.6%	144	161	89.44
2006	ADAIR COUNTY	---DISTRICT TOTALS---	90	50.6%	3	1.7%	15	8.4%	6	3.4%	36	20.2%	0	0.0%	28	15.7%	150	178	84.27
2007	ADAIR COUNTY	---DISTRICT TOTALS---	98	51.6%	7	3.7%	0	0.0%	9	4.7%	52	27.4%	1	0.5%	23	12.1%	167	190	87.89
2008	ADAIR COUNTY	---DISTRICT TOTALS---	100	57.8%	2	1.2%	2	1.2%	3	1.7%	47	27.2%	6	3.5%	13	7.5%	160	173	92.49
2004	ADAIR COUNTY	Adair County High Sch	86	54.8%	2	1.3%	6	3.8%	2	1.3%	49	31.2%	4	2.5%	8	5.1%	149	157	94.90
2005	ADAIR COUNTY	Adair County High Sch	95	62.5%	0	0.0%	3	2.0%	0	0.0%	43	28.3%	2	1.3%	9	5.9%	143	152	94.08
2006	ADAIR COUNTY	Adair County High Sch	90	56.3%	3	1.9%	15	9.4%	6	3.8%	36	22.5%	0	0.0%	10	6.3%	150	160	93.75
2007	ADAIR COUNTY	Adair County High Sch	98	55.4%	7	4.0%	0	0.0%	9	5.1%	52	29.4%	1	0.6%	10	5.6%	167	177	94.35
2008	ADAIR COUNTY	Adair County High Sch	100	59.2%	2	1.2%	2	1.2%	3	1.8%	47	27.8%	6	3.6%	9	5.3%	160	169	94.67
2004	ALLEN COUNTY	---DISTRICT TOTALS---	66	35.7%	5	2.7%	14	7.6%	11	5.9%	74	40.0%	10	5.4%	5	2.7%	180	185	97.30
2005	ALLEN COUNTY	---DISTRICT TOTALS---	95	50.0%	8	4.2%	17	8.9%	4	2.1%	61	32.1%	2	1.1%	3	1.6%	187	190	98.42
2006	ALLEN COUNTY	---DISTRICT TOTALS---	92	45.1%	12	5.9%	13	6.4%	12	5.9%	69	33.8%	0	0.0%	6	2.9%	198	204	97.06
2007	ALLEN COUNTY	---DISTRICT TOTALS---	83	40.3%	9	4.4%	20	9.7%	8	3.9%	76	36.9%	3	1.5%	7	3.4%	199	206	96.60
2008	ALLEN COUNTY	---DISTRICT TOTALS---	78	39.0%	5	2.5%	13	6.5%	6	3.0%	82	41.0%	6	3.0%	10	5.0%	190	200	95.00
2004	ALLEN COUNTY	Allen County High Sch	66	35.7%	5	2.7%	14	7.6%	11	5.9%	74	40.0%	10	5.4%	5	2.7%	180	185	97.30
2005	ALLEN COUNTY	Allen County High Sch	95	50.0%	8	4.2%	17	8.9%	4	2.1%	61	32.1%	2	1.1%	3	1.6%	187	190	98.42
2006	ALLEN COUNTY	Allen County High Sch	92	45.1%	12	5.9%	13	6.4%	12	5.9%	69	33.8%	0	0.0%	6	2.9%	198	204	97.06
2007	ALLEN COUNTY	Allen County High Sch	83	40.3%	9	4.4%	20	9.7%	8	3.9%	76	36.9%	3	1.5%	7	3.4%	199	206	96.60
2008	ALLEN COUNTY	Allen County High Sch	78	39.0%	5	2.5%	13	6.5%	6	3.0%	82	41.0%	6	3.0%	10	5.0%	190	200	95.00
2004	ANDERSON COUNTY	---DISTRICT TOTALS---	107	46.5%	7	3.0%	40	17.4%	2	0.9%	72	31.3%	0	0.0%	2	0.9%	228	230	99.13
2005	ANDERSON COUNTY	---DISTRICT TOTALS---	77	32.5%	1	0.4%	67	28.3%	6	2.5%	83	35.0%	0	0.0%	3	1.3%	234	237	98.73
2006	ANDERSON COUNTY	---DISTRICT TOTALS---	131	53.9%	4	1.6%	32	13.2%	5	2.1%	69	28.4%	0	0.0%	2	0.8%	241	243	99.18
2007	ANDERSON COUNTY	---DISTRICT TOTALS---	152	59.4%	10	3.9%	8	3.1%	4	1.6%	79	30.9%	3	1.2%	0	0.0%	256	256	100.00
2008	ANDERSON COUNTY	---DISTRICT TOTALS---	122	44.9%	9	3.3%	27	9.9%	9	3.3%	77	28.3%	25	9.2%	3	1.1%	269	272	98.90
2004	ANDERSON COUNTY	Anderson County High	107	46.5%	7	3.0%	40	17.4%	2	0.9%	72	31.3%	0	0.0%	2	0.9%	228	230	99.13
2005	ANDERSON COUNTY	Anderson County High	77	32.5%	1	0.4%	67	28.3%	6	2.5%	83	35.0%	0	0.0%	3	1.3%	234	237	98.73
2006	ANDERSON COUNTY	Anderson County High	131	53.9%	4	1.6%	32	13.2%	5	2.1%	69	28.4%	0	0.0%	2	0.8%	241	243	99.18
2007	ANDERSON COUNTY	Anderson County High	152	59.4%	10	3.9%	8	3.1%	4	1.6%	79	30.9%	3	1.2%	0	0.0%	256	256	100.00
2008	ANDERSON COUNTY	Anderson County High	122	44.9%	9	3.3%	27	9.9%	9	3.3%	77	28.3%	25	9.2%	3	1.1%	269	272	98.90

Next Steps for States

1. **Develop additional feedback reports that disaggregate graduates' higher education or workforce outcomes by student demographics or achievement indicators in P–12.** For example, a high school could be informed about how many of its graduating students who had scored below proficient in 8th grade mathematics later enrolled in higher education without the need for remediation in the subject. These reports would be available for schools and districts that have a large enough number of students in the group in question.

2. **Develop reports that account for students who enter postsecondary education late,** for example, students who take a gap year or enroll in community college two years after high school graduation.

3. **Consider additional higher education and workforce indicators to include in feedback reports.** For example, student success after graduation is strongly affected by student motivation, work and study habits, and individuals' career focus.[19] Feedback reports might incorporate results from student surveys that address some of these issues.

4. **Develop feedback reports for middle schools, elementary schools and early learning programs** on how their graduates fare in high school, middle school and elementary school.

5. **Produce reports in a variety of formats** in addition to tables and spreadsheets.
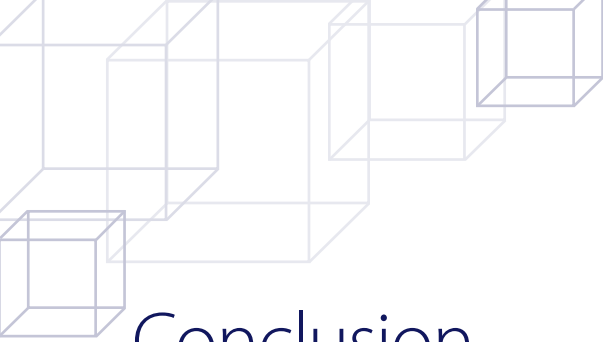
Conclusion

In *The Next Step*, the Data Quality Campaign emphasized the importance of providing data to users in forms that are easy to interpret and that facilitate making better decisions. With the right research support, the state agencies building longitudinal data systems have the ability to create reports that meet these criteria. The research and analysis needed to design the reports can be done either by state agency personnel or by outside entities.[20] Getting the right student- and aggregate-level reports into the right hands in a way that protects student privacy should substantially improve the capacity of educators and other stakeholders to improve student learning.

Resources

Longitudinal Data in Reports (general)

Data Quality Campaign (2009), *The Next Step: Using Longitudinal Data Systems To Improve Student Success,* www.DataQualityCampaign.org/resources/384.

Dougherty, Chrys (2008), *Information Won't Be Used if No One Can See It,* Data Quality Campaign, www.DataQualityCampaign.org/resources/details/305.

Dougherty, Chrys (2009), *Using the Right Data to Determine if High School Interventions Are Working to Prepare Students for College and Careers,* National High School Center, www.betterhighschools.org/docs/NCEA_CollegeCareerReadiness.pdf.

Student Privacy

Dougherty, Chrys (2008), "Getting FERPA Right: Improving Data Access While Protecting Student Privacy," in Marci Kanstoroom and Eric Osberg, eds. (2008), *A Byte at the Apple: Rethinking Education Data for the Post-NCLB Era,* Thomas B. Fordham Institute.

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Wright, Patricia (2010), *Presentation on Virginia's College and Career Readiness Initiative,* www.doe.virginia.gov/instruction/college_career_readiness/index.shtml.

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Center for Educational Performance and Information (2010), *State of Michigan 2009 Cohort 4-Year & 2008 Cohort 5-Year Graduation and Dropout Rate Reports,* www.michigan.gov/documents/cepi/2009-2008_MI_Grad-Drop_Rate_318381_7.pdf.

Feedback Reports

Kentucky Feedback Report: www.education.ky.gov/NR/rdonlyres/AE0A3AB1-FFA1-43EA-8AE7-CC4A00450A53/0/Trans0408.pdf.

Missouri Feedback Report: http://dhe.mo.gov/hsgrtable3.html.

Texas Feedback Reports: www.thecb.state.tx.us/Reports/PDF/1802.pdf and www.thecb.state.tx.us/Reports/PDF/1670.pdf.

Endnotes

1 See Dougherty, C. (2008), *Information Won't Be Used if No One Can See It,* Data Quality Campaign, www.DataQualityCampaign.org/resources/details/305.

2 Statistics on "disaggregated" groups such as African-American students or English language learners are still aggregate data as long as the information shown is on groups of students and not individuals.

3 Data collected at different points in time are snapshots if the individual student records cannot be easily linked. For example, a state may have student-level test scores from five separate years but no reliable way of linking the same students' scores from different years to follow individual students over time.

4 In the DQC Annual Survey, these reports fall under the "Student Level: Indicator systems" category.

5 In the DQC Annual Survey, these reports fall under the "Aggregate: Relationship analysis" category.

6 Under federal privacy laws, data on identifiable students can be viewed only by the student, his or her parents, and educators working with that student. Other users must have the parent's permission to view the data or must fall under specific exceptions described in the law. For a more detailed discussion of the main federal education privacy law, the Family Educational Rights and Privacy Act (FERPA), see Chrys Dougherty, "Getting FERPA Right: Improving Data Access While Protecting Student Privacy," in Marci Kanstoroom and Eric Osberg, eds. (2008), *A Byte at the Apple: Rethinking Education Data for the Post-NCLB Era,* Thomas B. Fordham Institute. A short summary of the law is found at www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html.

7 The DQC Annual Survey is self-reported by states. The 2009–10 survey did not ask states specifically about growth reports; therefore, no 2009–10 survey data are shown for this type of report. It is likely that many states included growth reports in the "other types" category.

8 Aggregated value-added data can be used as a source of information when examining the impact of schools, programs or individual teachers. For a discussion of data quality issues in accurately matching teachers with their students in each academic subject to provide information on value-added by teacher, see Data Quality Campaign (2010), *Effectively Linking Teachers and Students: The Key to Improving Data Quality,* www.DataQualityCampaign.org/resources/details/993. For a discussion of the complex issue of using value-added analysis in conjunction with other information in evaluating teacher effectiveness, see Olivia Little, Laura Goe and Courtney Bell (2009), *A Practical Guide to Evaluating Teacher Effectiveness,* National Comprehensive Center for Teacher Quality, www.tqsource.org/publications/practicalGuide.pdf.

9 This sample report is available at www.schoolview.org/documents/ISR_explanation.pdf.

10 See Dougherty, C. (2009), *Using the Right Data to Determine if High School Interventions Are Working to Prepare Students for College and Careers,* National High School Center, www.betterhighschools.org/docs/NCEA_CollegeCareerReadiness.pdf.

11 The Florida FCAT test specifications for grades 3–5 at http://fcat.fldoe.org/pdf/specifications/MathGrades3-5.pdf contain more detailed descriptions of the specific skills tested. See the "benchmark clarifications" on pages 115–129 for what is tested in 5th grade under Number and Operations (the skill area corresponding to Number Sense in the report).

12 Allensworth, E., and Easton, J.Q. (2007), *What Matters for Staying On-Track and Graduating in Chicago Public Schools,* Consortium on Chicago School Research, http://ccsr.uchicago.edu/content/publications.php?pub_id=116.

13 Council of Chief State School Officers (2006), *Implementing the NGA Graduation Rate Compact: State Level Issues,* www.DataQualityCampaign.org/files/Publications-Implementing_the_NGA_Graduation_Rate_Compact_State-level_Issues.pdf.

14 See www.michigan.gov/documents/cepi/2009-2008_MI_Grad-Drop_Rate_318381_7.pdf.

15 In the header row of this table "MER" refers to students who are missing expected records and therefore could not be traced. "GAD" in the footnote refers to the state's Graduation/Dropout Review and Comment Application by which school districts submit requested corrections to the student-level graduate and dropout data. See www.prioritychildren.org/2008 Fact Sheets/3.4 High School Drop Out Rates.pdf.

16 Dougherty, C., Mellor, L., and Smith, N. (2006), *Identifying Appropriate College-Readiness Standards for All Students,* National Center for Educational Achievement, www.nc4ea.org/files/appropriate_college-readiness_standards_for_all_students-05-03-06.pdf.

17 Dougherty, C., and Mellor, L. (2009), *Preparation Matters,* National Center for Educational Achievement, www.nc4ea.org/files/preparation_matters-04-01-09.pdf.

18 See http://dhe.mo.gov/hsgrtable3.html.

19 Allen, J., and Robbins, S. (2010), "Effects of Interest-Major Congruence, Motivation, and Academic Performance on Timely Degree Attainment." *Journal of Counseling Psychology,* 57(1): 23–35.

20 Mandinach, E. (in press), *State Research and Analytic Capacity: Are We Effectively Leveraging State Longitudinal Data Systems?* Data Quality Campaign.

DATAQUALITY CAMPAIGN
Using Data To Improve Student Achievement
www.DataQualityCampaign.org

The Data Quality Campaign (DQC) is a national, collaborative effort to encourage and support state policymakers 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.

Visit www.DataQualityCampaign.org for more about the:

▷ 10 Essential Elements and the 10 State Actions required to establish, maintain and use a quality longitudinal data system;

▷ Results of the DQC's annual update of its survey that show where your state stands on the 10 Essential Elements and the 10 State Actions;

▷ Tools, materials, meetings and information that can aid states and interested organizations seeking to ensure increased quality, accessibility and use of data; and

▷ Information on how your organization can partner with the DQC to generate the understanding and will to build and use state longitudinal data systems.

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▶ Alliance for Excellent Education
▶ Council of Chief State School Officers
▶ Education Commission of the States
▶ The Education Trust

▶ National Association of State Boards of Education
▶ National Association of System Heads
▶ National Center for Educational Achievement
▶ National Center for Higher Education Management Systems
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▶ National Governors Association Center for Best Practices
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▶ State Educational Technology Directors Association
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▶ American Association of State Colleges and Universities
▶ American Board for Certification of Teacher Excellence
▶ American Federation of Teachers
▶ American Productivity and Quality Center
▶ American Society for Quality
▶ American Youth Policy Forum
▶ Arise Citizens' Policy Project
▶ Association for Career and Technical Education
▶ Business Higher Education Forum
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▶ Center for Teaching Quality
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▶ College Summit
▶ Complete College America
▶ Consortium for School Networking
▶ Education Equality Project
▶ Educational Policy Institute
▶ ETS
▶ Forum for Youth Investment
▶ Foundation for Excellence in Education

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▶ League of Education Voters Foundation
▶ Learning Forward (formerly NSDC)
▶ Learning Point Associates
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▶ Michigan League for Human Services
▶ Midwestern Higher Education Compact
▶ Military Child Education Coalition
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▶ National Association of Early Childhood Specialists in State Departments of Education
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