



NCLB Leadership Summit White Paper

How States Can Use Information Technology to Support School Improvement Under NCLB

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The views expressed in this paper are the opinions of the author and may not represent the position of the U.S. Department of Education.



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The *No Child Left Behind Act's* assessment and reporting provisions cast a spotlight on the value of information for school improvement. At the same time, the law's accountability provisions push schools and districts to accelerate the pace of improvement. This calls for policy leaders to shift the state education agency's primary mission from compliance monitoring to that of a *State Education Information and Improvement Agency*. To make this happen, the state's political leadership must be willing to change budgetary and staffing priorities to give the agency the capacity to support its expanded data collection, analysis, and reporting responsibilities.

The discussion of information technology should begin with the products to be created. By collecting the right data, state agencies can promote the creation of three basic information products:

School performance reports that identify effective schools and highlight the improvement opportunities that these schools demonstrate. Educators serving the disadvantaged often believe that they are producing the best results reasonably possible with those students. Highlighting schools that are doing better with similar or more disadvantaged students can change those perceptions. Those reports can also point parents, educators, and community leaders to the schools whose practices they should learn more about.¹

Best practices reports that examine how the practices of consistently high-performing schools differ from those of average- and low-performing schools. These reports use surveys, site visits, and collection of documentary evidence and artifacts to examine what is going on in schools. They answer the question, "What are the high-performing schools doing to get their results? How is that different from what is happening in average- and low-performing schools?"

Diagnostic reports for educators on each student's mastery of specific skills and on which teachers have been most successful at getting their students to master those skills.

While the desirability of these three kinds of reports may seem obvious, what is less obvious is the critical role of state data collection in making these reports possible. Consider that:

¹ For example, the Just for the Kids Opportunity Gap Charts show the difference between a school's performance in each grade and subject and that of the highest-performing schools serving equally or more disadvantaged student populations. These charts are available on the U.S. Department of Education-sponsored Web site www.schoolresults.org and on the Just for the Kids Web site www.just4kids.org. The Just for the Kids site also contains Best Practices information and reports showing the accomplishments of schools that have been consistently high-performing in multiple grades, subjects, and years. The Education Trust's Dispelling the Myth charts on www.edtrust.org are another excellent example of this type of report.

- 1) Good best practice investigations depend on accurate identification of consistently high-performing schools.
- 2) Accurate identification of high-performing schools requires a longitudinal student information system that can follow the academic progress of students over time and identify how long each student has been enrolled in the school.²
- 3) When students change schools and districts, diagnostic information should follow the student.

In other words, the foundation of complete school reports, best practices investigations and diagnostic information for mobile students is a statewide longitudinal student information system.³

To assist in the creation of the three kinds of reports, a *State Education Information and Improvement Agency* can take the following three actions:

1. Create a statewide longitudinal student information system;
2. Convene a task force on investigation and dissemination of best practices; and
3. Make diagnostic information available to educators.

1. Create a Statewide Longitudinal Student Information System

A complete longitudinal student achievement information system should have at least nine components:⁴

- **A statewide student identifier** that makes it possible to match individual student records across databases and years, converting “snapshot” to longitudinal information.
- **Student-level enrollment, demographic, and program participation information** collected at a different time from the state test so the focus at the time of collection is on getting the student information right, not on test administration and security.
- **Student-level test data** that is stored permanently by the state so that it can be matched with later test results of the same students.

² Without information on the same students’ prior test scores, the “value-added” components of a school or program cannot be assessed. When comparing schools’ achievement levels, it is also important to know how long students have been enrolled in the same school. Otherwise the analysis may be based on students whose achievement is mostly the product of other schools. See Robert Meyer, Value-Added Indicators of School Performance: A Primer. *Economics of Education Review*, 16(3), 1997.

³ Section 1111(b) of the *No Child Left Behind Act* says that states “may incorporate the data from the assessments under this paragraph into a State-developed longitudinal data system that links student test scores, length of enrollment, and graduation records over time.”

⁴ Chrys Dougherty, “Nine Essential Elements of Statewide Data-Collection Systems,” Education Commission of the States, 2003, available for download on www.nc4ea.org.



- **Information on untested students**—a *No Child Left Behind* requirement that requires accurate accounting for all students enrolled in tested grades at the time of the test. Absent and exempt students should be accounted for along with the reason for each student's exemption so that trends in test participation of different student populations can be tracked over time.
- **Student-level course completion information** to see how many students are taking challenging academic courses in middle and high school.
- **Student-level SAT, ACT, and AP exam results** to show how many students from different backgrounds are participating in these exams and demonstrating readiness for college.
- **Student-level dropout and graduation information** that flags students who leave the state's public education system and accounts, as well as possible, for where these students went.
- **Ability to connect K-12 and college records** to see how the state's high school graduates fare in college.
- **A state data audit system** that uses both statistical checks and occasional site visits to review school district records.

School districts can develop longitudinal student information systems with all of these elements, but without a similar system at the state level they lose the advantage of statewide comparisons. Who wants to be limited to a single school district in finding the most successful schools?⁵

Given the cost of developing such a system, state policy leaders must be prepared to explain the benefits. Those benefits include:

- **Parents** can have better information on students' academic progress and can distinguish high "value added" schools from those that coast on the success of entering students. Parents of a new sixth-grade student, for example, can have access to better reports on the success of the school's sixth grade.
- **Educators** can learn from the practices of the most successful schools in the state. Educators in schools with highly disadvantaged or mobile student populations can be shown where others have succeeded with similar students. Reports on the academic achievement of continuously enrolled students can erase the perception that low test scores are explained by the performance of students who just showed up. Middle and high school educators can assess how their schools perform with students who enter at different levels of academic preparation. For example, how does our high school do with students who were proficient on the state's eighth grade exam? How successful are we compared to other high schools when working with students who had failed the eighth grade exam?

⁵ Direct nationwide comparisons are not possible because states give different tests. However, a multi-state directory of high-performing schools can be created once these schools are identified in each state.

- **School district leaders** can analyze the success of their schools based on the academic preparation of entering students.
- **Researchers** can evaluate schools and programs based on student academic growth and the length of student enrollment. They can assess strategies that work well with mobile student populations. They can follow students from one level of education to the next to evaluate the schools' long-term success.
- **State policy leaders** can have better information on which policies are working.

A longitudinal student information system relieves school districts of having to reconstruct, every time students are tested, all of the background information on every student: each student's ethnicity, economic disadvantaged status, English Language Learner status, special education participation, migrant status, and gifted and talented enrollment. For previously enrolled students that information needs only to be updated. The inaccuracies resulting from having to rebuild all of the information from scratch are well known.⁶ Inaccurate information on student membership in disaggregated groups can lead to faulty identification of which schools made Adequate Yearly Progress (AYP).

2. Convene a Task Force on Investigation and Dissemination of Best Practices

The *State Education Information and Improvement Agency* should work with other entities in the state—nonprofit research organizations, universities, and business-education alliances—to organize the process by which effective practices are researched and disseminated.

“Best practices” has sometimes been used by advocates as a label to market their favorite educational philosophies. What distinguishes the practices discussed here is that they are validated by empirical research or data in one of two ways: either they are found by experimental research to be effective, or they are found to be present in high-performing schools at much greater frequency than in average- or low-performing schools.⁷

The new generation of best practices reports are distinguished by four additional features. First, in states with longitudinal student information systems, the reports are grounded in better data on high-performing schools. Second, the reports are based on a conceptual framework that provides the following information on each practice:

- Nature of the practice.
- Level of the practice: district, school, or classroom. (For example, each level may have different responsibilities in developing and implementing the practice.)

⁶ These inaccuracies are discussed in Chrys Dougherty, “States Must Improve Data for No Child Left Behind,” *Education Assessment Advisor*, August 2002, available under “Data Collection” on the Web site www.nc4ea.org.

⁷ The latter approach to best practice research is more common since true experimental research is rare in education.

- Evidence that the practice is more commonly found in high- than in average- or low-performing schools, districts, or classrooms.
- Supporting conditions that make it more likely for the practice to be implemented and succeed. For example, a relatively clear set of state academic standards can facilitate the development of a clear and specific curriculum at the district level.

Third, the reports are designed to be easily usable by practitioners, providing examples of what these practices look like in specific high-performing schools.⁸ Finally, the reports are accompanied by self-audit tools that enable educators or involved laypersons to assess the extent to which each practice is present in their own classroom, school, or district.⁹

3. Make Diagnostic Information Available to Educators

The increase in state testing is providing information on the specific academic skills mastered by each student. This information should be supplemented by local assessments that cover more skills than a state test of reasonable length can address. These local assessments can be given during the course of the school year so that teachers pinpoint their students' academic strengths and weaknesses in a timely manner and can intervene quickly. This rich set of diagnostic information on the achievement of each student can be organized into a database that provides teachers and school administrators detailed information on which students need additional assistance.¹⁰

The student diagnostic information can be organized by classroom in two ways:

1. By the student's classroom in the *tested* year, so that teachers and school administrators can monitor student progress and see which teachers are doing the best job of teaching which academic skills. For example, if Mrs. Jones does a better job teaching fractions than Mrs. Smith, then perhaps Mrs. Smith can be paired up with Mrs. Jones to learn what she is doing. Mrs. Smith can reciprocate if there is an area of teaching in which she is stronger than Mrs. Jones.
2. By the student's classroom at the beginning of the *following* school year, so that teachers get a detailed picture of the academic skills of their incoming students and can plan instruction accordingly.

The state agency can assist in the design of a common architecture for these databases so that software written for one district can serve the needs of another. In addition, the state can write software to put its own test results into that database and supply the information to the districts.

⁸ For example, if "High-Performing Schools do Frequent Diagnostic Assessments," the reports provide examples of what these assessments look like in specific districts and schools and a detailed discussion of how the assessments are used by principals and teachers in collaborative efforts to assist students who are having difficulty.

⁹ The Web site www.just4kids.org contains a set of best practices reports that have all of the features described here.

¹⁰ The database can also show which students have mastered the curriculum early and are ready to move on so that advanced students can receive appropriate instruction at their level. The Northwest Evaluation Association (www.nwea.org) has specialized in developing computerized diagnostic testing systems that assess the skills and academic growth of students, including those who are performing well above or below grade level. They have a large item bank from which assessments aligned with a specific state's standards can be built.

Finally, the state may wish to have a common set of data analysis software written for all of the districts so that everyone is able to cut their data in the same ways, and a teacher or administrator moving between districts does not have to learn an entirely new data system.

Questions for State Education Policy Leaders

1. How do the state education agency's mission statement, staffing patterns, and budgetary priorities reflect its new mission as a state education information agency?
2. How do the agency's staffing patterns and budgetary priorities enable the agency to carry out the three specific activities—collect the right information, promote best practices, and make diagnostic data available to educators—that have a significant potential to help schools meet the ambitious improvement goals established under the *No Child Left Behind Act*?
3. When is the Web-based state school report card available to the public for the previous spring's testing? What constraints are delaying the availability of this information to parents, educators, and the public?
4. How are the policy leaders in the state supporting the state agency's capacity to collect the right information, make timely diagnostic information available to educators, and make timely school reports available to the public?
5. What process exists in your state to evaluate the usefulness of the state's Web-based school reports to educators, parents, and other members of the public?
6. What infrastructure exists in your state for investigating and disseminating best practices and assisting low performing schools in implementing these practices?
7. What infrastructure exists in your state to make diagnostic information available to educators? Who is working on a solution to this problem?

Web sites

State Data Collection

www.nc4ea.org

<http://evalsoft07.evalsoft.com/pbdmi>

School Reports

www.schoolresults.org

www.just4kids.org

www.edtrust.org

Best Practices Reports

www.just4kids.org

Diagnostic Testing Systems

www.nwea.org