



Establishing Data Systems and Using Data for Improvement

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This brief provides information to Colorado’s Longitudinal Data Systems Race to the Top (R2T) committee. It is intended to complement the white paper prepared by the Colorado Department of Education (CDE), *Colorado’s Race to the Top and the American Recovery and Reinvestment Act (ARRA): Data Systems to Support Instruction*. This brief begins with background on Colorado’s education system, additional information on R2T, and discusses the strengths and weaknesses of current statewide data collection and use, as well as the impact of a fully effective and transparent statewide data system and what that will mean for teachers, principals, parents, and students in schools throughout Colorado.

Colorado Background

Public K-12 schools in the state of Colorado serve approximately 820,000 students and are staffed by about 49,000 teachers. Colorado is one of the few states that constitutionally require local control of education. As a result, our state department of education traditionally has been fairly small, and many important decisions about education are made in our 178 very diverse school districts. Colorado school districts range in enrollment from 54 students to over 85,000, with half of all the state’s students in the 10 largest districts. More than half of all districts (108) are facing declining enrollment. They serve students that come from isolated rural poor, urban immigrant, and affluent suburban populations. Colorado public education offers students a great variety in how and where to learn. In addition to the traditional neighborhood schools, a student can take classes online, or attend a charter school, another school in the district, or even a school outside the district. Colorado ranks 40th in per-pupil expenditures adjusted for regional cost differences, and per-pupil revenues are nearly \$1,500 below the national average. Although the state tends to perform well on national exams, it struggles with achievement gaps; that is, low-income and Hispanic students (who represent over one-quarter of the student population) have much lower achievement, graduation rates and college attendance than white and middle/high income students.

Race to the Top (R2T) Background

The Race to the Top (R2T) competition will provide \$300 million to \$500 million, per state, in stimulus funds to be awarded by the U.S. Department of Education. Awards will be based on the strength of state plans to address four “assurances:”

- Adopting rigorous college- and career-ready standards and high-quality assessments;
- Establishing data systems and using data for improvement;
- Increasing teacher effectiveness and equitable distribution of effective teachers; and

- Turning around the lowest-performing schools.

R2T is a one-time investment in education reform over a two- to four-year period. R2T funds should not be spent developing new programs that cannot be sustained after the funds have been expended, but rather, funds should be invested in developing capital and capacity to improve education. This can include physical capital, such as computer systems, as well as human capacity, such as the knowledge and skills of educators, policymakers and parents. This knowledge capacity may also include products such as new curricula, assessment systems, and training modules. The R2T offers the opportunity to drive and accelerate reforms and the state's progress toward realizing goals for improved student achievement.

Colorado's Statewide Data System

Colorado education stakeholders understand the importance of timely, relevant and useful data to help educators make instructional and resource decisions to support student achievement. While Colorado has made tremendous progress in upgrading its data systems and assisting districts to use data more effectively, much work remains to be done. The R2T funds offer Colorado the opportunity to address a critical need in its data systems: to build *human capacity* in schools and districts throughout Colorado to effectively use data. This capacity will be realized by developing (1) trusting environments (transparency), (2) key partnerships (among schools, districts, the Department of Education, researchers, universities, professional associations, etc.), and (3) seamless technology (creating common data dictionaries and establishing data flow among the state, districts and schools) that puts data into the right hands in user-friendly formats. The state must ensure implementation of a data system in conjunction with sustained and comprehensive professional development opportunities that will equip districts and schools to collect, analyze and use data to identify strategies and resources needed at each school building to improve student achievement. Colorado's plan should take into consideration that R2T is a one-time investment in education reform over a short period. A substantial investment must be made to train and develop teachers, principals and district staff to implement systems and learn to analyze and interpret data to improve instruction.

Strengths: Technology, Quality, and Political Will

Many Colorado school districts use sophisticated data systems to make instructional and resource decisions, including linking teacher performance to student achievement data. The larger Denver metropolitan districts, in particular, have the resources, technology and know-how to decipher data reports, create user-friendly "pictures" of data, analyze and make sense of the data, and translate that analysis into the proper instructional decisions for individual students. Many administrators also know how to draw teams of teachers into the analysis and decision-making process to collaborate to improve student achievement.

In addition, the state has taken considerable steps to assemble a comprehensive statewide data system to support school and district use of data for improved instruction. As noted in the CDE paper, Colorado's system has met seven of the 10 "essential elements" of a statewide data system recommended by the Data Quality Campaign, and education leaders are working on meeting the other three. As part of its efforts to strengthen the state's data system, Colorado recently passed three

pieces of legislation: HB 1065, the Educator Identifier Pilot Program; HB 1285, Creation of a Data Advisory Board; and HB 1364, Executive Branch Data Sharing. In addition, the Colorado education system enjoys the full support of its governor and legislature, as well as much-improved collaboration among the Department of Education, the higher education community, research organizations and professional associations across the state.

Weaknesses: Technological Infrastructure, Compatibility, and Professional Development

In terms of data system infrastructure and technology, huge inconsistencies exist across the state. As noted above, the larger metropolitan districts have both the technology and, in many cases, trained staff to collect and make sense of data. Smaller districts – and over 100 districts in the state have fewer than 600 students – simply do not have the tools or personnel necessary to collect and analyze data. In addition, many districts do not use aligned and high quality internal assessments of any kind that would produce usable data for instructional decisions. In other words, if the state does not provide the data – i.e., CSAP – then smaller, lower resourced districts do not have the capacity to examine data on their students, and they cannot make decisions about the effectiveness of their curricula, teachers or instruction. This represents a huge gap in access and capacity that needs to be addressed. Most data systems across the state also do not allow for district-to-district data exchange, which is critical as students move in and out of districts. Indeed, the state should ensure compatibility of systems among districts, and also that all of the various state data systems – including health and human services – can “talk” to each other, are relevant for districts and schools (i.e., user friendly, accessible and the data is delivered in time to make decisions), and that districts, organizations and agencies can share data seamlessly.

Colorado organizationsⁱ that have worked on professional development regarding data-driven decision-making note that Colorado schools and districts do not use data uniformly and consistently across the state to drive improved instruction; that data are not delivered in time for proper instructional use (CSAP data is also a snapshot in time, delivered too late to make decisions on day-to-day class instruction); that schools do not know how to use data consistently in decision-making; and that data rarely come in user-friendly formats. These shortcomings are often a function of a lack of technological resources and software, professional development, access, and staff training, which illustrates the critical need for developing human capacity to use the statewide data system. An important element of developing this capacity is to find ways to provide and develop partnerships (with universities, associations and researchers) to assist rural and lower-resourced districts to create interim and benchmark assessments that give schools meaningful data to make instructional changes.

Opportunities: Creating Optimum Conditions Through Capacity-Building Efforts

The R2T grant provides an opportunity for districts and schools to ensure that the necessary factors and conditions that support effective data use are present. A 2001 report from the Education Commission of the Statesⁱⁱ recommends the following professional development and capacity-building strategies to support data use. Ideally, the R2T grant could direct resources to assist district and schools in developing the capacity to achieve the following:

- The superintendent and school board members should be developed to know how to lead and support data use in the district. They should capitalize on central office staff skills and provide latitude and support for these key staff.
- Districts should develop long-term change management strategies to train all principals, teachers and other key staff to use data for improvement purposes. They should also have a long-term plan for technology hardware and software implementation.
- Districts should use the state standards to create benchmark assessments and objectives for all grades that provide focus and guidance for teachers' instruction. This condition is particularly timely for Colorado with the revision of the state's model content standards under way. Every effort should be made to integrate the new standards with assessments and thus, the statewide data system.
- Districts should have data-driven comprehensive school-improvement processes. Schools should then write school improvement plans and measure progress toward those plans.
- Principals should lead and support the use of data within the school. Principals should expect every teacher to use data, and meet with teachers regularly to review student achievement data. To do this, principals need to be developed in their preparation programs to be able to take on this type of leadership.
- Schools should have a mechanism to analyze and disaggregate data quickly. This varies from the central office providing data runs on requested variables, to schools having their own state accountability and other data provided on a CD, and schools using a software package to conduct their own runs and add their own data.
- Each school should designate a person (beyond the principal) whose role is to deal with data. (Small and/or rural districts and schools may need to "share" this person/ expertise.) This person scores student tests, runs data analysis and provides results to teachers. In some cases, this person may have the content skills to remediate students or provide teachers with new instructional strategies.
- Schools and teachers should have access to effective intervention strategies so that once the data identify a problem, staff have the capability to do something about it. Schools should have access to options and promising practices to improve their programs and instruction.
- Schools should provide time for teacher teams to review data. Vertical and horizontal grade-level teams are effective strategies for collaboration and coordination.

To make these conditions a reality, Colorado also has to ensure rigorous implementation of the new state policies, i.e., educator identifier and the creation of seamless data systems. The state should also create new professional development systems and supports that will make certain that all districts can, in fact, *use* data for decision-making. If policies and practices are not clearly articulated, supported or carefully implemented, with the collaboration of all the stakeholders in the system, further improvements and developments of data use for school improvement across the state may be jeopardized.

Lastly, the R2T grant provides the opportunity for the state to establish a deeply needed pipeline of data experts – individuals to be employed in schools and districts who are trained to understand and use education data to make decisions on instruction. Working collaboratively, the Department of Education, colleges and universities, and research organizations can create this pathway to serve the state’s schools and districts to strengthen the education system overall.

Threats: Politics, Sustained Support, and Data Culture

As education stakeholders are aware, local politics come into play with any state-level policy mandate or guidelines. So in the process of improving the Colorado education data system, great care should be taken to be collaborative, transparent, and explicit on the use, purposes, and needs of data. For example, in implementing the teacher identifier legislation, Colorado education leaders should emphasize the link between teachers and student achievement for the purposes of mentoring teachers and improving student achievement. The state and districts need to be unambiguous about their intentions for and use of the data system to avoid unintended consequences or uses.

In addition, improved data-sharing practices among districts and government agencies should come with the needed time to address legal requirements of sharing data and agreements on what data can be used for and who has access to it. These conversations need to take place at both the state and district levels with appropriate guidance from knowledgeable individuals who understand the requirements.

Last, providing the resources – both technological and professional – that will develop the capacity of schools and districts to collect and use data is fundamental to the state’s efforts to improve its data system. The biggest risk with the R2T grant would be for the state to spend millions of dollars to improve data collection, quality and structures, and then see the system not used effectively because of a lack of knowledge and understanding of how to access it and what the data mean. Districts and schools can use the R2T grant as an opportunity to create a culture of support, trust and continuous improvement around data use. Education leaders, universities, professional associations and researchers are well positioned – and should be actively engaged by the state – to promote such a data culture that recognizes and promotes the value of education data and its usefulness for increasing academic achievement.

Endnotes

ⁱ Interview with Julie Oxenford O’Brian, Director, Center for Transforming Learning and Teaching, University of Colorado Denver.

ⁱⁱ Armstrong and Anthes (2001). *Identifying the Factors, Conditions and Policies that Support Schools’ Use of Data for Decisionmaking and School Improvement: Summary of Findings* (Denver, CO: Education Commission of the States).