The State's Role in Supporting Data Use to Drive School Turnaround

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The intensive care unit (ICU) of a hospital cares for patients whose medical conditions place them in serious and immediate danger and therefore are in critical need of specialized medical attention and constant support. Upon arrival, each patient is given an individualized plan for treatments and outcomes and begins a regimen of constant monitoring to measure their progress against those plans. Every patient is connected to several automatic sensors monitoring their vital signs and raising immediate warnings if necessary. Specially trained critical care doctors and nurses closely monitor patient data for indications of recovery or any potential signs of danger. They also visit the patients regularly to assess their progress and adjust treatments if necessary. All interactions are carefully documented so all who work with the patient can see the complete treatment history and prognosis for recovery based on the recovery plan. With constant monitoring and personalized attention, ICU patients have a much greater chance to recover and thrive.

The roles of monitoring and data use are clear and intuitive in the scenario of an ICU. The patients there are in a precarious medical situation and must receive quick and appropriate intervention if their condition changes or fails to progress in an expected way. If an ICU were to only conduct occasional cursory tests, such as checking body temperature and blood pressure, the results could be disastrous. If the results of monitoring were only available several days or weeks after they were taken, it would often be much too late to intervene. Similarly, if doctors and nurses failed to share information from shift to shift, it would be impossible to monitor the patient's progress, creating information gaps and the potential for

warning signs to be missed. Indeed, monitoring and data analysis are among the top priorities of a successful ICU. Studies have confirmed that close adherence to established care processes are significantly correlated with hospital quality (Peterson et al., 2006).

Every public school district[1] in the United States has at least some students, and often entire schools, in need of intensive educational care. While it is difficult to imagine a medical ICU that does not closely monitor its patients, it is unfortunately common for a school, district, and state to let close monitoring and analysis of its struggling students, teachers, schools, or districts take a back seat to the many other responsibilities they have. However, if they hope to see improvement, states must expect districts to conduct themselves as educational ICUs and make individual student monitoring, data analysis, and data-driven action a priority in an "ongoing cycle of instructional improvement" (Hamilton et al., 2009, p. 10). The doctors and nurses of our turnaround schools are the principals and teachers who have the responsibility to carry out much of the monitoring and analysis of a wide range of outcomes and metrics. However, they cannot do it effectively without the proper tools and support provided to them by the district and state. Thus, the whole system has a key role in the provision of this intensive care.

In this chapter, we make the case that monitoring and data use is a critical foundation of any school turnaround. We offer a perspective on the possibilities for comprehensive data use at all levels and share some practical advice for states and districts on how to use data to improve decisions in a variety of contexts. We draw on the expertise gleaned from the experiences of the University of Virginia's Darden/Curry Partnership for Leaders in Education (PLE)[2] in our work with over 200 schools in dozens of school districts across the country as well as the best practices documented in the evolving literature on effective school turnarounds (Calkins, Guenthen, Belfiore, & Lash, 2007; Duke, n.d.; Hassel & Hassel, 2008; Herman et al., 2008; Player & Katz, 2013; Steiner, Kowal, Hassel, & Hassel, 2009)

For the purposes of this document, we use the term data to denote a wide array of progress indicators. Student diagnostic, formative, and interim assessment data is clearly the most critical component of a data portfolio. However, effective data use goes beyond test scores to capture other academic and behavioral outcomes such as course completion, discipline, attendance, and graduation and professional performance indicators for each teacher, school, and district. Together, a rich data system paints a full picture of the health of the education system in a state.

[1] When we reference "district" throughout this chapter, our recommendations apply not only to traditional "LEAs" but also to non-traditional districts and charter management organizations—any entity that oversees multiple schools.

[2] The PLE sponsors the School Turnaround Specialist Program (STSP), which has operated since 2003 to work with schools and districts to turn around persistently low performing schools in a variety of settings. The STSP emphasizes organizational improvement at the district level to support school turnaround. More information can be found http://www.darden.virginia.edu/web/darden-curry-ple/

Building a Structure to Foster Data Use

"Data rich and information poor" is a phrase a seasoned principal used to describe his district's situation as they began a turnaround partnership with the PLE. The district was gathering large amounts of data on a number of metrics. However, after collection it went largely unused by anyone at the district or school level. Unfortunately, this is a common situation in many districts that embark on turnaround efforts. Federal and state initiatives ensure that data are being collected on a whole host of student and teacher outcomes. In fact, a recent federal report found nearly all districts have electronic student information systems, and 70% have had them for at least 6 years (U.S. Department of Education, 2010). However, the data are often poorly organized, difficult to access, based on lagging indicators, misaligned with curriculum, and generally misunderstood. As a result, the data are collected, reported as required for compliance, and then forgotten. This effort comes at a great expense in terms of time and resources, and states and districts begin to view themselves as data collectors and compliance monitors rather than informed data users. Data by itself is nothing extraordinary. What is extraordinary is building a collaborative culture that embraces data as an efficient and effective tool for continual improvement rather than an additional burden to bear.

To address this "data rich and information poor" culture, states must first lead by example in modeling effective data use. Likewise, they must provide the resources and training to ensure data use is embedded in districts and schools in such a way that it becomes an inseparable part of the culture. To do this well, these organizations must analyze and respond to the data at all levels. District leaders must implement a system that enhances their understanding of what is working at a student, teacher, and school level and use this information to help administrators and teachers improve instruction. The state's greatest lever of influence over this district practice will be to provide the necessary resources and supports, model or highlight promising practice, monitor implementation, and hold districts accountable. Ultimately, states should monitor not only the summative performance of schools, akin to monitoring the mortality rates of hospitals, but more importantly, monitor and support districts in setting up systems that foster effective ongoing data use to prevent tragic outcomes for students. For the remainder of this chapter, we summarize the elements that are most important in building a culture of data use and how states can support their districts in implementation.

- Set clear expectations that data must be used to monitor progress and make instructional decisions.
- Provide rigorous common interim assessments that accurately capture learning objectives and provide specific post-assessment formative data.
- Provide a robust data system that captures data from a variety of student outcomes and school climate, is easily accessed, and presents results in a clear and intuitive way.

- Encourage structured time for collaboration and analysis in the annual calendar to make data-informed teacher and student plans in response to interim assessments and time in the weekly schedule to have data meetings.
- Deliver ongoing professional development that builds the capacity to analyze and respond to data effectively and is flexible to adapt to student learning needs.
- Build data-driven leadership capacity by requiring principal preparation programs to include courses on data-driven instruction, assessments, and data literacy.
- Pursue embedded follow-up to ensure school and teacher leaders receive regular, tailored coaching, feedback, and accountability.

Set Clear Expectations

The state's most important role in data use is to establish a clear expectation that data will be used to guide instruction and to monitor teacher performance. State leaders have an essential, irreplaceable role in influencing district practice. By being strategic in framing the importance of data-driven practice, establishing what evidence of district-level and school-level data-driven practice it expects to see, providing funds and guidance to support the achievement of these practices, and ensuring clear lines of communication, state leaders can be catalysts for action and change. States should use the levers available to them in a manner that conveys collaborative intent and sets the tone for continued, data-driven improvement.

Provide Rigorous Common Interim Assessments

The current assessment approach of many states and districts fails to meet the needs of the most vulnerable students. In many scenarios, high-quality, common interim assessments are not used to measure short-term student progress. Rather, districts and states rely on the annual state assessment and/or vendor-provided predictive/adaptive assessments to monitor student progress. However, we have found that both of these approaches are insufficient for a number of reasons. Often state summative results are not available until several months after the end of the school year. By that time, it is too late for the teacher or school to use the data to address student deficiencies. The results from these assessments are commonly referred to as "Autopsy Reports," as they arrive after the student has already failed. A slightly better approach is the use of predictive assessments that measure progress on the entire year's curriculum based on 30 to 50 questions.[3] While these assessments may gauge a student's performance level compared to his or her peers, they do not provide the detailed information

[3] We recommend instead cumulative assessments that measure performance against only standards covered to date.

a teacher requires to create a thorough learning plan for an individual student or small groups of students.

Although regular formative (or "short-cycle"), literacy, and other types of assessment data are useful, rigorous interim assessments best provide district and state leaders with a strategic intervention point, or leading indicator, to reliably understand if progress is being made and teachers with an objective mechanism to monitor retained learning. To fully leverage interim assessments, teachers and administrators must have access to user-friendly feedback reports that provide specific standard question and student-level analysis that can aid in determining the areas of mastery and deficiency. For example, the assessments might identify the students in the class who could not correctly answer computation questions that involved adding and subtracting fractions. Receiving this type of detailed information in a timely manner allows the teacher to assess the root cause of the deficiency by analyzing the types of mistakes students made and then immediately adjusting future instruction in response. Teachers could then devote class time to re-teaching addition and subtraction of fractions to the entire class, a targeted group of students, or an individual when appropriate.

States must be willing to provide districts and schools with the tools and types of assessments that generate the detailed performance data needed to monitor the students' academic health. Just as an ICU must monitor progress and adjust care on a frequent basis using state of the art equipment, educators must have access to interim assessments that accurately and precisely measure the students' academic situation and reflect teachers' efforts to improve student learning on a recurrent basis.

Some would argue that the creation and use of interim assessments ought to be left to the discretion of the district, schools, and teachers. However, this approach is akin to an ICU leaving patient monitoring entirely to the discretion of the doctors and nurses. While doctors and nurses are experts in treatment and patient care, it would be clearly beyond the scope of their expertise to be expected to devise all of the necessary techniques and equipment required to monitor patient health. It would also be inefficient to rely on each doctor and nurse to independently develop his or her own monitoring system for every patient. Instead, the hospital establishes clear protocols and provides the health care specialists with the tools they need to follow those protocols and leverage their expertise. Like ICU medical equipment, high-quality assessments undergo extensive pilot testing and refinement to ensure they accurately measure what they purport to measure. States can experience efficiency and quality gains by providing districts and schools with professionally created diagnostic assessments, common formative assessments, and supplemental assessment question banks aligned to the state's curriculum. Districts can leverage these high-quality assessments or question banks to create interims adapted to their instructional sequence and more formative, short-cycle assessments to allow them to continuously monitor student learning.

From a resource perspective, it is more efficient for the state to identify and continuously monitor high-quality assessments from a seemingly endless sea of options rather than expecting each district to do it independently.[4] It also sends the signal to districts about the importance the state places on using resources for assessments well. As an example of how this worked in practice, the state department of education in one southwestern U.S. state recently investigated interim assessment vendors to gauge their alignment with the state learning objectives and to assess the specificity of the formative post-assessment data provided to teachers and leaders. After identifying three vendors that sufficiently met these criteria, the state informed districts with low-performing schools that they would pay for assessments from any of these three vendors if the district chose to use them. The message was clear that districts and schools would be held responsible to use some form of interim assessment to guide instruction.

Provide Access to a Robust Data Collection System With Clear Outputs

An effective data system will provide a consistent repository for student-level assessment results that link teachers to students, including detailed interim assessment results and state assessment results for at least the previous two years. The system will also include program data, such as what types of classes the students are taking and any special services the students receive, as well as attendance data, discipline records, age, and other demographic information that might be relevant in making proactive academic plans for students and classes. The development of an integrated data collection system is not trivial and requires thoughtful execution (U.S. Department of Education, 2010). The student data must be easily accessible and interpretable by teachers and principals and include student-level progress indicators in multiple areas over multiple years. Ideally, educators should be able to log on and view the data any time they need it, or they will be unlikely to use it. Users also benefit from professional development and guided practice on how to use reports as they begin to incorporate them into their planning and course development.

Many districts do not have access to a student information system that provides the data necessary to improve student achievement. A case study of a Texas district confirmed that the usability of the student information system was the biggest deterrent to data use (Wayman, Cho, & Johnston, 2007). A school or district can collect and provide rich and useful data, but if it is not presented in an integrated way and in a format that is easy to digest and interpret, it will likely be underused. Such efficient, longitudinal reporting provides educators the data to hypothesize the root cause of student needs prior to the start of the school year and prevents them from having to sift through multiple reports to understand a student's academic and behavioral needs and progression.

[4] If a district has the capacity to identify or develop a suitable assessment system that is aligned with standards, the state should be open to learning from their efforts. Some larger districts may have capacity to develop high-quality interims, but typically these are lower quality than the market provides, and this discrepancy will increase as more rigorous, common core alignment is needed.

Even when districts manage to secure funding to procure such a system, it often lacks interoperability with other district and state level data systems, limiting usability, accuracy, and overall efficiency. This can be especially frustrating for districts with a transient student population. All too often, instructional time is lost and educational services are not provided due to students being inappropriately placed as the receiving school awaits a printed copy of the student's cumulative records or transcripts. State education agencies could correct this imperfection by working with districts to ensure state and local data systems are interconnected. If a student transfers from one district to another within the state, the receiving district should be able to access the state's data system to view the student's longitudinal assessment, program, and demographic data on the first day of enrollment. Even if a state is not ready to provide an interconnected system, it should provide technical assistance to help ensure districts choose robust and effective data systems.

Developing a statewide data system that can effectively collect data from school and district data systems to track student and teacher data on a statewide basis can also foster a culture of data use. As schools and districts develop sophisticated data systems, it is important that the state stay ahead of the tide and have a system that can be ready to receive the influx of new data and use it accordingly. States will also find it advantageous to use this new system to monitor the composition of the teacher workforce and student population to anticipate future demand and supply.

Encourage Districts to Create Structured Time for Collaboration and Analysis

District calendars and daily school schedules are often tight and allow little discretionary time for data analysis. If time is not explicitly reserved for assessments, data analysis, and action planning, then it will not take hold. At the district level, annual calendars should include specific times to administer interim assessments and time for teachers to analyze and formulate individual plans to address class-wide and student-level needs based on their results, including additional time following major assessments (Bambrick-Santoyo, 2010). Having a dedicated time on the calendar ensures that schools recognize data use as a priority.

Effective turnaround schools must regularly analyze and respond to data on student learning including both assessments and student work. To accomplish this, districts that work with the University of Virginia's School Turnaround Specialist Program are encouraged to have turnaround schools set aside a minimum of 90 minutes of uninterrupted time each week for teachers to attend collaborative data-team meetings (Rowan, Chiang, & Miller, 1997). These 90-minute meetings, attended by teams of teachers either within a grade level or content area, must be a regular part of each school's master schedule, and districts must provide ongoing support and accountability to ensure this time is used effectively. Additionally, as interim and critical common short-cycle assessments are

completed, district calendars should include built-in time to examine new data points and make adjustments as indicated by the evidence.

In a PLE partner state, the number one goal of the state board of education is to support accountability for all public schools by establishing policies that help schools increase the academic success of all students, especially those who are at-risk or in underperforming school systems. To achieve this goal, this state, like many others, has passed education policies that mandate school year start and end dates, the minimum number of yearly instructional hours, the required number of teacher work days, remediation classes for students, intervention requirements for schools, and many other strategies. However, we have not yet worked in a state with policies that mandate the minimum number of minutes required for collaborative teacher meeting time or incentivized scheduling changes that prioritize collaboration that results in data-based instructional action. This critical instructional infrastructure lever is generally left to the discretion of the individual school administrator and is generally treated as an afterthought when creating the school master schedule. Mandated instructional hours and remediation courses will not have the expected impact on student achievement if schools do not provide the structured collaborative meeting time to allow teachers the opportunity to work together to analyze student achievement data, create teacher action plans, and develop and review intervention strategies.

Deliver Ongoing Professional Development and Support Aligned to the Districts' Data-Driven Instructional Needs

Data-driven instruction and school turnaround cannot be accomplished using only a bottom up approach. Focused attention on individual schools, with little to no improvements and enforced expectations at the district level, will not produce sustainable turnaround. Based on our experience working with turnaround schools, we focus our energy on the roles and responsibilities of the district leaders. For example, districts that work with the PLE send district leaders to a four-day executive education boot camp designed to prepare them to establish an instructional infrastructure with valid assessments, responsive data systems, and a high-quality curriculum with corresponding instructional strategies to meet student needs, along with many other important levers in turnaround.

State education agencies play a key role in building the district and school leaders' capacity to help them learn to use the data available and coach teachers to adjust their instruction in response to it. This is particularly important when states embark on a new initiative such as the common core. It ultimately will not make a significant difference if teachers have access to higher quality assessments and rigorous common core curriculum and are provided with more collaboration time unless district and school leaders know how to support and monitor collaboration time and instructional action plans to ensure instructional approaches are adapted based on evidence and individual student needs. State support can come in the form of general support, such as statewide professional

development, or in embedded support based on the needs of individual districts. Based on the responses of some schools, embedded data coaches who specialize in interpreting student data have been reported as being more useful than general professional development around data use (U.S. Department of Education, 2010). The provision of data coaches or other efforts to prioritize data-based capacity, however, is likely to occur only if the district or state provides structural and financial support for the effort.

Make Additional Efforts to Build Data-Driven Leadership Capacity

Data use among school leaders is a critical component to building a culture of data use (Hamilton et al., 2009). Leaders can effectively use data to recognize the relative strengths and weaknesses of their schools and teachers and to make midcourse corrections to address major areas of concern. Just as teachers can better address student needs with data that allows them to make preventive course corrections, leaders can better support teacher needs with a data-driven mindset. Leaders will also find it advantageous to collect data beyond just student assessment scores in order to better identify potential teacher challenges. For example, if data on walk-through observations, teacher absences, and a teacher's prior effectiveness are well-organized and combined with achievement data, leaders can make more informed decisions, anticipate needs, and tailor coaching.

States must do a better job requiring principal preparation programs to better prepare their graduates for the current era of accountability. A study of 56 principal preparation programs found that less than 5% of the course weeks addressed instruction on managing school improvement via data, technology, or empirical research (Hess & Andrews, 2005). States are in a position to provide guidance, and perhaps appropriate incentives, to the credentialing organizations within their states to develop courses that address this need. Changing practices in universities is often difficult due to the internal obstacles created by the universities themselves. However, we believe that this change can happen if state and university leaders would work together to redesign their current programs based on lessons learned from the field.

Provide Embedded Follow-Up

A state education leader might only have the capacity to visit his or her lowest-performing schools once a year. Many times, these visits help maintain professional relationships and establish an aligned presence but are limited in direct impact. The key to effective state education leadership is to impact practice at the district level by developing collaborative, trusting interactions at the district level, monitoring implementation of best practices, and holding district leaders accountable. Improving and maximizing these ongoing visits can be an impactful leverage point for the state. We recommend that states monitor and support district efforts to improve their key data levers: assessments, curriculum, data

system, calendar, data-based professional development, embedded follow-up, and evidence-based decision making.

Conclusion

Returning to our metaphor of turnaround schools as ICUs, patient recovery does not typically occur by chance. It is the culmination of careful, deliberate, and immediate treatment in response to the patient's real-time condition. None of this is possible without accurate monitoring and analysis. In the same way, a state cannot expect a turnaround school to experience marked improvement if teachers and leaders are not carefully monitoring the progress of students and adjusting instruction based on the immediate needs. Their ability to do so, however, hinges in large part upon the state's ability to provide the necessary resources and direction that impact district practice.

The culture of data use begins at the top, with states modeling effective practices for how and when data are to be used. As states emphasize the importance of demonstrating progress and results, districts will recognize the need to be monitoring progress among their schools. When districts begin to catch this vision, they will see the importance of providing their schools with the tools, support, and professional development necessary to ensure that data use is happening on the ground. When teachers begin to see data use as a way to provide them with greater instructional support, the students in our lowest performing schools will begin to see steady improvement.

State Leader Action Principles

Set clear expectations and model effective use of data.

- Clearly establish the expectation that data will be used to guide instruction and to monitor student and teacher performance.
- Identify specific metrics to assess district performance and track school turnaround efforts to model effective data use.

Provide rigorous common interim assessments and/or question banks to create assessments, and ensure districts administer them every six to nine weeks.

- Screen for assessments and questions aligned to the state curricula with appropriate rigor, similar in format as the state assessment, and cumulative based on standards taught up to the time of administration.
- Ensure districts adapt curriculum and assessments to ensure alignment between assessments and pacing guides.
- Ensure results are returned to district in a user-friendly format that allows teachers to complete an item analysis within 48 hours after administration.

Provide access to a robust data collection system that produces clear outputs.

- Design district and state student information systems to be interconnected.
- Screen for robust data systems that provide detailed longitudinal interim and state assessment results that are connected to the names of the students' current and previous teachers. The system should also include program, demographic, attendance, and behavioral data that might be relevant in making proactive academic plans for students and classes.
- Ensure district student information systems produce clear outputs and are easily accessed by school administrators and teachers.

Encourage districts to create structured time for collaboration and analysis.

- Ensure teachers have a minimum of 90 minutes of uninterrupted, structured collaborative meeting time each week to work together to analyze student achievement data, create teacher action plans, and develop and review intervention strategies.
- Provide teachers with additional time after common interim assessments to make rigorous instructional plans based on the data.
- Revisit requirements related to school days and hours to provide districts with greater flexibility and thus ability to creatively establish collaboration time.

Provide professional development and support aligned to the districts' data-driven instructional needs.

- Ensure district leaders establish common expectations for data use in their schools.
- Provide the necessary capacity-building support to district and, when relevant, school leaders to help them build capacity of teachers to use data to drive instruction.
- Provide ongoing professional development to all district leaders and construct embedded support based on the needs of each district.

Make additional efforts to build data-driven leadership capacity.

- Require principal preparation programs to include additional courses on data-driven instruction, assessments, and data literacy.
- Work with university leaders to redesign principal preparation programs based on lessons learned from the field.
- Offer incentives, such as grants, to encourage colleges and universities to develop stronger data courses for teachers and administrators.

Provide embedded follow-up and explicit means of accountability.

- Impact district practice by developing collaborative, trusting interactions at the district level, monitoring implementation of best practices, and holding district leaders accountable.
- Set up clear means to track district data use, and hold districts accountable for developing and utilizing effective data systems.

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