



Indicator: The district provides schools with technology, training, and support for integrated data collection, reporting, and analysis systems. (6)

Explanation: Data management systems offer technology that can allow for enhanced educator access to, and use of, data to enhance instruction. Districts are highly influential in determining the degree to which school staffs use data in ways that lead to school improvement, but often focus resources on simply ensuring that data management systems are in place and that educators know how to use them. Districts must take more active roles in ensuring that the data provided to schools is used effectively to enhance achievement. These roles include helping schools target the appropriate data for focus at both the school and classroom level (through formative assessment), ensuring on-going conversations between district and school staff, communicating the expectation for data use, eliciting feedback on data systems, and providing professional development that is collaborative and relevant to educators' work, and takes place within their immediate context.

Questions: Does the district allocate sufficient resources to help schools use the technology and data management systems provided? Are data aligned across multiple levels of the system? What professional development is provided to ensure that principals and teachers use data effectively? Is this professional development directly relevant to educators' work, on-site, and involve collaboration as educators are trained? Are data coaches and/or PLCs used to support educator's use of data? How does the district communicate the expectation of the importance of using data for school improvement? Does the district provide and encourage analysis of the type of fine-grained data and formative assessments that can impact daily instruction? Is communication two-way to include staff feedback on data systems?

Today's computer data systems offer enhanced access to educational data, and include functionalities such as the integration and disaggregation of longitudinal data by various factors, and the projection of future academic performance (Means, Padilla, DeBarger, & Bakia, 2009; Wayman, Shaw, & Cho, 2017). Data systems offer the potential for educators to examine a wide range of information to inform classroom instruction, from taking a wide view of classroom performance overall to drilling down to individual student performance (Means, et al., 2009; Wayman, et al., 2017). For example, data management systems make frequent, benchmark assessments of progress easier and quicker to administer and score, so that learning can be closely monitored and changes implemented quickly if necessary during the school year (Bottoms & Schmidt-Davis, 2010). These systems also include features such as customized reporting for teachers or other audiences, data on individual student strengths and weaknesses, and profiles of group or classroom-level instructional needs (Wayman, Cho, & Richards, 2010). Furthermore, computer data systems are not simply repositories that house student data, but have the potential to benefit educators' decisions for students through features such as links to outside instructional resources of relevance to the data being examined (Wayman, Cho, & Shaw, 2009). Data dashboards, which integrate data from assessments, educator observations, and learning tools, represent student progress in real time and allow for timely and actionable feedback about student learning that can inform instruction (U.S. Department of Education, 2016). Not surprisingly, district investment

in these types of technologies and computer-based data systems has grown rapidly over the past decade (Cho & Wayman, 2014).

What is the District's Role in Helping Schools Use Data Management Systems for Improvement?

Research suggests that school systems are highly influential in supporting schools and educators in their use of data, and alignment across multiple levels of the district is essential to ensure that data are accessible and data-based decision making strategies are implemented evenly and with fidelity (Anderson, Leithwood, & Strauss, 2010; Farrell, 2014). Data management technology and systems can increase efficiency and serve accountability purposes, but should also be used as mechanisms to enhance teaching and learning (Murray, 2014). Research suggests, however, that districts often invest more on these systems themselves than they do on infusing them into the work practices of educators (Cho & Wayman, 2014; 2015). In addition, simply increasing data access for educators may not automatically result in achievement gains for students, and helping educators understand student data is helpful but not sufficient for achieving learning gains (Carlson, Borman, & Robinson, 2011; Konstantopolous, Miller, van der Ploeg, & Li, 2016; Slavin, Cheung, Holmes, Madden, & Chamberlain, 2013). For example, researchers thus far have been unable to link student achievement to teachers' use of interim assessment data management systems and/or data dashboards (Konstantopolous, et al., 2016; Wayman, et al., 2017; Tyler, 2013). While educators may have access to a variety of data sources, they often lack the knowledge and skills to determine questions, select appropriate measures, analyze results, and develop strategies for improvement (Mandinach & Gummer, 2013). District leaders facing the task of supporting schools' use of data must consider a menu of options for how best to invest resources so that educators use these data systems effectively (Cho & Wayman, 2015; Hamilton, et al., 2009; Wayman, et al., 2017).

In a review of research, Honig & Venkateswaran (2012) concluded that district staff support school level data use when they:

1. Actively participate in the flow of data to schools by focusing staffs' attention on particular information within supportive contexts that develop close ties between the district and school staff.
2. Help school staffs interpret data by helping them set aside the time these processes require, provide and engage them in the processes of goal setting and benchmarks to anchor their sense-making processes, and directly facilitate challenging conversations about data. These conversations should be ongoing and can serve as dialogues about data to both expand technical knowledge and reshape understanding about data use (Cho & Wayman, 2014).
3. Create and communicate the professional expectation that school staff use evidence for planning for improvement. Districts should also be attentive about how staffs perceive the usefulness of data provided by continually seeking feedback, and develop methods of "sharing out" effective practices used around the district (Cho & Wayman, 2014). Methods of communication can include web 2.0 technologies such as self-produced online videos, wikis, and blogs to develop "communities of practice" around effective data use practices.
4. Provide professional development for data use, especially modeling and collaborative learning. Research that has shown positive relationships between data use and achievement has involved embedding data use within initiatives to reshape pedagogy, such as coaching and professional development (Marsh, McCombs, & Martorell, 2010; Wayman & Jimerson, 2014). A recent research summary concluded that teachers benefit from data-related professional learning that is collaborative and relevant to their current work, and that takes place within their immediate professional context (Wayman & Jimerson, 2014). Investments are being made to support teacher data use through the use of data/instructional coaches, and using data within Professional Learning Communities (PLCs). One case study of six low-performing middle schools that supported teacher data use via literacy coaches, data coaches and data teams/PLCs, found all of these practices were important to mediating teachers' responses to data (Marsh, Bertrand, & Huguet, 2015). Other research has demonstrated that teachers working together on data teams were more likely to shift from attributing poor student learning outcomes to external factors (e.g., "I planned and taught the lesson but they didn't learn it because of their family background."), towards a more productive assumption of professional learning and continuous improvement ("You haven't

taught the lesson until they've learned.") (Gallimore, Ermeling, Saunders, & Goldenberg, 2009).

Districts are further recommended to build school staff's capacities by developing protocols for teachers to assist with "drilling down" on individual student learning needs, and then creating instructional plans that are aligned with these needs (The Center on School Turnaround, 2017). In addition, districts can "develop teachers' capacity to use formative assessments of student progress aligned with district expectations for student learning, and to use formative data in devising and implementing interventions during the school year" (Louis, et al., 2010). This practice can help teachers see that data use enables them to improve their teaching by working together continuously and collaboratively, rather than simply providing information about learning outcomes (Bowers, Shoho, & Barnett, 2014; Knudson, Shambaugh, & O'Day, 2011).

References and Resources

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