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Opportunities flow from use of data

Data, data everywhere, yet what do we really know? Schools today are inundated with data. Access to and use of data are receiving considerable attention because of the prominent placement of data systems in the education portion of the American Recovery and Reinvestment Act. States have access to substantial funds to "establish pre-K through college or career data systems to track progress and foster continuous improvement" (http://www.ed.gov/policy/gen/leg/recovery/implementation.html).

Schools and districts have several opportunities related to data use. First is identifying the appropriate types of data to collect and maintain that will be useful in decision making. A second opportunity is ensuring that data systems are easily accessible to system, school, and classroom users. The third opportunity is to ensure that system and classroom users know how to use data to make informed decisions.
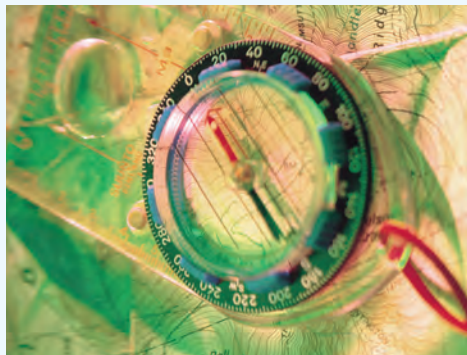
Teacher leaders can contribute in several ways to supporting effective use of data within their schools and districts to lead to improved student and professional learning.

Key responsibilities

Six key responsibilities of teacher leaders and coaches related to data use are:

1. Preparing disaggregated data from multiple sources for teacher use;
2. Teaching data access and organization;
3. Teaching analysis and interpretation of data from multiple sources;
4. Engaging teachers in data analysis and interpretation to determine student and teacher needs;
5. Designing professional learning that improves student achievement based on disaggregated data; and

6. Ensuring continuous analysis of school and classroom data to refine improvement strategies (Killion and Harrison, 2006, pp. 174-177).

Having access to data is meaningless if there is no plan for how to use them. When schools and districts attempt to solve problems by collecting data, they will fall short unless data collection is complemented with substantial opportunities to learn how to use data and receive support in the use of data. This work will require that developers and managers of data systems seek input from teachers on what they want to know about their students and their learning; from principals about what they want to know about their students and teachers; and from central office about what they want to know about student learning and staff and school performance.

A common myth about teachers and data is that teachers are apprehensive or fearful about data

For more information about NSDC's Standards for Staff Development, see www.nsdc.org/standards/index.cfm

Describe a problem, test a hypothesis

Data inform the learning processes for educators. Start with the fundamental questions below. Using those areas as a guide, coaches and teacher leaders support teachers in forming hypotheses that can be tested and designing classroom experiments to test them. Through shared experimentation and examination of results from the experiments across classrooms, teachers will have significant opportunities for professional learning connected deeply to their practice. When conducted across classrooms, the experiments described at right provide teachers evidence to examine and inform their learning and practice.

FUNDAMENTAL QUESTIONS

Of the factors educators influence and control, which might explain the results?

- **Curriculum:** What we are teaching and what we expect students to learn?

- **Instructional methodology and time:** How we teach and how much time we devote to teaching and practice of the learning?

- **Instructional materials:** What we use in the classroom to support instruction?

- **Assessment:** How we assess the learning? How well it matches authentic application of the learning?

- **Teacher knowledge and skills:** What we know about the content, how to teach it, how to accommodate differences in student learning, how to design student learning, and how to assess student instruction?

Sample experiments

INSTRUCTIONAL METHODOLOGY AND TIME

Possible explanation based on data:
We spent inadequate time in the classrooms practicing the learning.

Hypothesis to test:
If we add additional time for practicing the learning in more authentic ways, students will perform better on classroom, district, and state assessments.

Experiment:
Teachers add time in their schedule for additional practice and spread practice on this concept throughout the school year.

INSTRUCTIONAL MATERIALS

Possible explanation based on data:
We have insufficient classroom instructional resources to differentiate the learning experiences to meet the needs of all learners.

Hypothesis to test:
If we add resources to the classroom designed to meet the needs of students who are underperforming, students will perform better on classroom assessments.

Experiment:
Teachers work together to design instructional resources to meet the needs of students who are underperforming and implement them regularly in the classroom over the course of the school year.

TEACHER KNOWLEDGE AND SKILLS

Explanation based on data:
Teachers have inadequate knowledge about how to teach ELL or special needs students.

Hypothesis to test:
If we develop teachers' pedagogical expertise to meet the needs of students performing below expectations, teachers will implement new instructional strategies that meet students' learning needs, and students will perform better on a variety of assessments including state assessments.

Experiment:
Teachers participate in professional learning on pedagogy focused on meeting the needs of low-performing students and receive support in applying the learning in their classrooms.

and uncertain how to use it. Experiences with teacher teams and conversations with teachers and principals support a different view. Teachers find data informative and useful when they know what data are available, have easy access to them, and know how to use them within the framework of

their everyday experiences. When teachers leaders facilitate meetings in which teachers talk about the data they want about student learning, they build buy-in for data use.

Having data to confirm that something occurs does not offer solutions or even possible explanations. This is where inquiry meets hypothesis. The data can show that a small group of students in a class all miss the same questions on a math assessment the teacher used to check students' understanding. The underlying reasons and the needed actions are mysteries until the teacher mines the data and formulates one or more hypotheses, and ultimately conducts experiments to find out what strategies might address the issue. What the results of the quiz don't tell the teacher is whether students were misled by the one student in the group who thought she was helping and modeled something incorrectly for the small group; whether the teacher's instruction was insufficient; whether the students did not have a firm grasp on the prerequisite skills necessary to solve the problems, or whether the language on the assessment was unclear to students. Of course this list could continue.

Teachers' professional judgment and use of data come into play concomitantly to form hypotheses and test them as a part of their action planning. They can begin this process with a few fundamental questions on p. 8.

While it is possible to identify explanations that lie outside of the school or beyond the control or influence of educators within the school, it is only by focusing first on what is within the control of educators that they can have their greatest impact.

Student achievement results determine the content for teacher professional learning. The use of data offers multiple opportunities for teachers to formulate explanations, generate hypotheses within a framework of what is within their control or influence, and design within and across classroom experiments to test their hypotheses. It is within the scope of this work that teachers demonstrate their professionalism through continuous evidence-based practice.

Reference

Killion, J. & Harrison, C. (2006). *Taking the lead: New roles for teachers and school-based coaches.* Oxford, OH: NSDC. ◆

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