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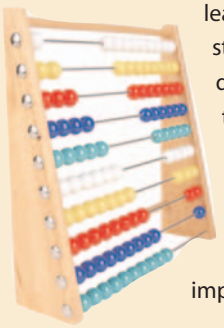
How to spread the wealth of data

Today's schools have the luxury of being data-rich. School districts increasingly have data warehouses, assessment and evaluation specialists, and data from a wide variety of assessments. Unfortunately, not all available data turn into information to guide improvement efforts. The difference is stark. Data are merely numbers or words. Information is meaning made from those data.

Schools have data; principals have data; yet not all teachers have data. School-based staff developers or coaches have three primary responsibilities related to helping teachers, and principals, too, turn data into information. These responsibilities can be summarized simply as access, analyze, act on.

DATA

Staff development that improves the learning of all students uses disaggregated data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.



Access data

Because there are so many types of data from state assessments to nationally normed tests, to common benchmark, and program assessments such as DIBELS®, teachers are often overwhelmed with accessing data. Coaches can help in four ways.

First, they can help teachers know what types of data are available to them. Victoria Bernhardt, nationally recognized expert of using data for school improvement, describes four types of data. (See table below.)

Second, coaches can demonstrate for the whole staff or for small groups of teachers how to use the school or district data management system to access data for their students. This often means helping teachers log-in, know about available data reports, and what information is included in each.

Third, coaches can assist teachers individually or in small groups with accessing specific data for an area of interest or need.

Last, coaches can also, although they will want to limit this, access data for teachers. While teachers are often grateful for this assistance, coaches want to build teacher capacity to access data independently and decrease dependency on coaches to do this.

Analyze data

Coaches can also help colleagues with data analysis. Data analysis is the process of turning numbers or words into meaning. The process involves making observations, inferences, and generalizations. Observations are the facts.

TYPE OF DATA	EXAMPLES
Achievement	State assessment tests, grades, classroom tests, benchmark assessments, etc.
Demographic	Number of siblings, number of family members, socioeconomic status, race, gender, etc.
Perception	Parent beliefs about the school's success, students' sense of safety at school, student attitudes about school, etc.
School processes	How decisions are made, assigning students to classes/teachers, student scheduling, intervention programs for students, counseling services, etc.

When analyzing data, it is important to differentiate between fact and inference. An inference is a conclusion drawn from the data or facts. (See box at right.) During data analysis, the coach assists teachers to use the data to answer several questions:

- **What patterns exist across multiple data sets?**

Investigating this question gives teachers information about whether the pattern is a strong one, meaning that the same observation appears in multiple data sets or whether it is a weak one, meaning that it appears in only one instance. Before deciding to intervene, it is helpful to know if there is a need for intervention or if the area is an anomaly, appearing only in one particular data set or in one year's data set. Identify strong patterns that can be supported with multiple years of data and across multiple types of data.

- **Which skill or knowledge areas are contributing to students' performance?**

You must know more than "math is low" in order to do something about it. If coaches help teachers probe the data so they discover that problem solving is the lowest area, then teachers can act on that information by designing appropriate interventions for problem solving in math.

- **Which students?**

When teachers can determine which students have particular needs, they can address those needs through appropriate instructional interventions. If female students who are non-English speakers are underperforming in algebraic reasoning, then teachers can identify appropriate, laser-like instructional interventions to target this need rather than revisit algebraic reasoning with every student.

- **What might be causing this problem?**

Part of the analysis process is hypothesizing about possible causes for the patterns. Coaches help teachers explore possible causes and use data to determine which are probable, those that may significantly contribute to student performance. With this information, design interventions. For example, if female non-English-speaking students are underperforming in math, then it might be probable that language is a significant contributing factor. A viable cause is something that educational systems can change. A condition is something that exists, such as the students' gender, that can't be changed. Teachers can change instructional methods and use non-linguistic representation. There are several broad categories of causes teachers can explore: instructional methodology, curriculum, professional knowledge and skill, assessment, and instructional resources.

While teachers are analyzing student data, coaches, too, are analyzing the same data to help them with professional development decisions. Coaches identify target areas for their small group and individual interactions with teachers and which ones might merit a whole-school focus. Coaches might want to identify teachers who could help other teachers. Like teachers, they will want to know if there are strong patterns.

FACTS	INFERENCES
• 43% of 8th graders are proficient in math. • 62% of the students who are proficient are males.	• Our students are not doing well. • Males are better in math than females.
That 43% proficient may be double the percentage of students who were proficient last year. Perhaps only girls in 8th grade were underperforming male students.	These inferences may be true; however, based on only the data in the first column, they are inferences until supported with additional data.

Act on data

Once teachers have analyzed data, then coaches can help them act on the data. This involves identifying a plan of action either for the school, a department, course, or grade, and/or for individuals to determine what actions to address the target areas.

Knowing the students and their learning characteristics makes it easier to locate or create interventions that have greater potential for success. Coaches and teachers pinpoint evidence-based, classroom interventions to address specific target areas. For example, non-English-speaking students may benefit from using more non-linguistic representations, such as manipulatives, diagrams, organizers, etc. rather than linguistic representations that depend on language fluency. In this step, coaches need access to research, resources, or content and instructional specialists who can provide information. When coaches know the research on teaching and learning and

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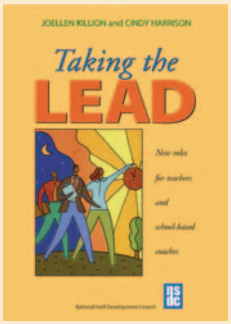
can assist teachers in creating action research processes to test proposed interventions, acting on data will be more efficient.

Coaches also act on data by choosing interventions for teachers that are more appropriate for their particular grade, subject, department, students, career history, etc. Coaches have a variety of interventions available including providing resources, conducting demonstration lessons, conducting classroom observations and giving feedback, co-teaching, or a vast array of professional learning designs to engage teachers in collaborative work and learning.

If data are accessed, analyzed, and acted on, students and teachers benefit.



Teachers Teaching Teachers (T3)™ is published eight times a year by the National Staff Development Council, 5995 Fairfield Road, #4, Oxford, OH 45056.

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