Five Steps to Structuring Data-Informed Conversations and Action in Education

REL PACIFIC Regional Educational Laboratory | IES Institute of Education Sciences

In the current education landscape, using data strategically to guide decisions and actions is as important as ever. Data can enable policymakers to make objective decisions about education systems and provide states with information on program effectiveness; can provide teachers and administrators with information on student learning to influence instruction, programming, and professional development; and can be shared with students to help motivate and engage them in their own learning.[1]

Data Commonly Used in Education Settings

Demographic data include descriptors of students, such as gender, ethnicity, and socioeconomic status, and descriptors of the organization, including enrollment and attendance. These data can be most useful when broken down by subgroup.

Examples:

- Percentage of students in each ethnic category.
- Number of students who live within five miles of the school.
- Average attendance rate for the school year. (for all students, by student subgroup, such as gender and ethnicity).

Perceptual data provide information on how stakeholders feel or what they observe about the organization or its activities. This may include, for example, stakeholder (student, parent, staff, community member, graduate) surveys or questionnaires.

Examples:

- Parents' perceptions of school quality.
- Students' opinions on the importance of education.
- Community members' thoughts about a new school calendar.

Performance data include information on how students are performing and on their education outcomes. These data can include information on types of assessments, grades and grade point averages, graduation and dropout rates, mobility rates, suspensions and expulsions, remediation rates, college acceptance and attendance rates, and career readiness.

Examples:

- Percentage of students who scored proficient or above on standardized assessments.
- Percentage of students who enroll in a four-year college after high school.
- Number of suspensions in the middle school over the last school year.

Program data include descriptive information on how education and related activities are conducted within the organization. They include the textbooks used, the levels of staffing or professional development at the school, the schedule of classes, curricular sequences, instruction strategies, the nature and frequency of assessments, extracurricular activities, and even the school setting.

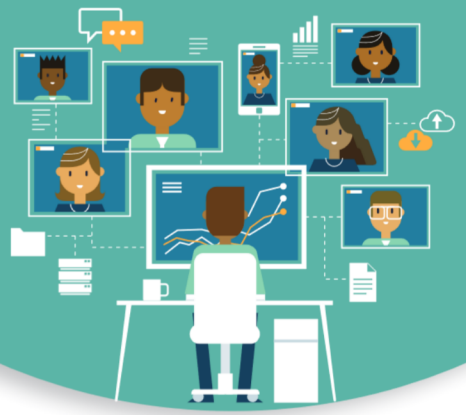
Examples:

- Teacher-student ratio in the school district.
- Number of afterschool activities offered in the high school.
- Average number of years of experience for all elementary school teachers in the state.

Data Considerations for a Virtual Education Environment

As a result of the COVID-19 pandemic, many schools and districts abruptly were required to shift to entirely online or blended instruction, making data collection more challenging. Existing data collection systems have typically been developed in support of and alignment with in-person instruction, and virtual instruction can differ markedly from that model. For example, attendance/seat time is often used as a data point for in-person instruction, but can be more difficult to measure when students access instruction wholly or partially online.[2]

Additionally, the move to a virtual platform can blur the line between instruction and homework, which can be problematic given federal and state mandates on instructional time.[3] Nonetheless, virtual education data can offer more precise information, new data on student learning, and real-time feedback. For example, student response systems can capture the length of time or number of tries required for a student to solve a problem, and gaming-based tools can allow teachers to see the specific path a student took to solve a problem.[4]



The Five Steps[5]

The following steps can help educators begin or continue data-informed conversations on their high-leverage problems of practice.

1. Setting the stage: identify the question to be addressed, the information needed to answer it, and the feasibility of accessing the information.

- Craft a clear research question that enables data-informed conversations. The question may be very broad to start with, but narrowing the question makes identifying and interpreting data clearer and easier.
- Identify sources of information to answer the research question.
- Gather multiple sources of raw or analyzed data that are appropriate for the research question. A lack of adequate or reliable data can inform recommendations for future data collection, even if the questions cannot yet be answered.

Example: A data team is interested in investigating how professional learning programs support teacher instruction in their schools. The team asks the following research question: "In what ways have professional learning programs supported teachers' instruction?" To gain a deeper understanding of how professional learning programs support teachers' instruction, the data team identifies both quantitative and qualitative data sources. Quantitative data sources include student academic outcome data, such as grades and standardized test scores. Qualitative data sources include teacher and administrator experiences, which are collected through interviews. Teacher walkthrough data could be either qualitative or quantitative, depending on the information collected.

2. Examining the data: look for patterns and initial observations and then explore any data limitations.

- Look for patterns after examining the data and begin characterizing findings as "strengths" and "challenges."
- If possible, compare different sources of data and look into further research that may examine any causal relationships of interest.

Example: Now the data team begins looking for patterns in the data to identify strengths and challenges in how their professional learning programs support teachers' instruction. The data team may note how teachers used different programs to improve their instruction and their perceptions of those programs, how changes in teachers' instruction compared to changes in students' academic outcomes, how teachers' walkthrough data and their confidence in their instruction may change after participating in programs. The data team also may note areas where they need to conduct further research to better understand how programs supported teachers' instruction.

3. Understanding the findings: use observations of the data to identify driving factors and discuss key challenges with the data team.

- Identify a few actionable, high-priority challenges to focus on, but keep in mind the broader context of the team's ultimate goal.
- Identify driving factors while recognizing limitations, uncertainty, and possible biases. Ask "why" questions followed by "because" responses.

Example: The data team may find that professional learning programs dedicated to supporting teachers' math instruction have improved students' academic outcomes and teachers' walkthrough data; however, programs dedicated to supporting teachers' English instruction have not achieved the same results. Therefore, the data team may decide to investigate why the math instruction programs have fared better at supporting teachers' instruction to improve the English programs. After identifying several program differences between the math and English programs and surveying teachers, the data team may decide to make changes to the English program to better align with the math programs to see if these changes result in the program better supporting teachers' instruction.

The Five Steps[5]

4. Developing an action plan: set goals and identify key stakeholders.

- Create a SMART (specific, measurable, achievable, relevant, and time-bound) plan that includes short-term objectives and a long-term goal.
- Brainstorm potential strategies to achieve these goals, then identify the time and resources you will need.

Example: Before implementing changes to the English professional learning program, the data team establishes a plan and develops several measurable goals that they hope to achieve. These goals may include identifying ways in which they believe changes may better support teachers' instruction, which can be measured during walkthroughs and through teacher surveys, and setting benchmarks for improvements in students' academic outcomes and teachers' walkthrough data. The data team may also identify several stakeholders to collaborate with to achieve these goals, such as program instructors and administrators.

5. Monitoring progress/measuring success: keep the action plan on-track and determine whether the goal has been reached.

- Regularly check in with other data team members to identify challenges and celebrate successes. If the action plan gets off track, determine what to do.
- Evaluate the effectiveness of an action plan, using the same data used to identify challenges/successes.

Example: The data team meets every two weeks to monitor their progress and review collected data. The data team members may see that changes to the English professional learning program were implemented sooner than expected and, therefore, they can begin to see if changes resulted in improvements in students' academic outcomes, teacher walkthrough observations, and teacher perceptions of support, earlier than previously anticipated. The data team may then update the action plan to match these schedule changes.

Assembling a Data Team

Although forming a data team is not required for having data-informed conversations, a collaborative team can identify the resources and personnel needed to collect and organize data and provide diverse perspectives on questions, analyses, and actions.

Data teams address challenges, field questions, and collect insights from the greater community. Data teams can be diverse or include individuals with similar roles, but all members are expected to enrich and strengthen both the process and the results of data-informed conversations.

References

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