6 steps for putting data into action

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Data is ubiquitous and inseparable from the human experience. It constantly informs and transforms our interactions, decisions, and understanding. If the total amount of all the data created daily was printed on paper, it would fill a library the size of 110 Libraries of Congress (Johnston, 2012; Duarte, 2024).

As a senior research consultant for an education market research and social impact consulting firm, I have guided professional learning organizations in implementing continuous improvement strategies and frameworks while researching data-driven decision-making. This has fueled my enthusiasm about the transformative power of data in education and learning.

Schools and the broader education system can benefit by embracing a data-backed culture that integrates science into decision-making, grounded in evidence rather than assumptions. This is essential for continuous improvement. Through my work, I have identified six strategies to help educators build an insight-driven culture for improving student outcomes.

When educators develop a learning mindset, involve everyone in data gathering and its use, and make it easy and more routine to collect data and take action, they are better able to quickly detect problem areas and pivot.

When schools set aside time to discuss their data, leveraging existing expertise and technology to make sense of it, they can gain valuable insights and are more equipped to learn from it and make meaningful changes. By carrying out those strategies, teachers and teacher leaders can spread the ideas that work within their school system and beyond.

MAKING DATA ACTIONABLE FOR EVERYONE

Data in itself is insufficient. It only becomes useful once it tells a story and is actionable. In other words, data and insights are two sides of the same coin. Businesses are quick to see this connection because they use data to optimize their sales and marketing engines to increase revenue or personalize user experience. While many industries capitalize on data for improvement, the education sector has yet to fully come on board.

Education systems must regularly measure student performance, but the purpose is more often for accountability rather than learning. The Every Student Succeeds Act (U.S. Department of Education, 2015), which reauthorizes the Elementary and Secondary Education Act, has given schools some flexibility over what they measure.

The legislation has moved away from prescriptive and punitive accountability systems limited to test scores as a measure of school performance to broader measures of student success. While this represents a significant step, teachers are not using data as extensively as they could. When data is used, it tends to focus on student outcomes rather than informing ongoing practices.

The issue with data focused on student outcomes or accountability is that it is received too late in the cycle and can be insufficient for informing meaningful improvements. Conversely, data for improvement should occur frequently and reveal processes that produce the desired outcome.

A strategy that provides data for learning over accountability is the best way to answer questions such as: What do we want to achieve? Are we seeing what we want to see in terms of adult practice and student experiences? What is or is not working, for whom, and under what conditions?

COLLECTING ACCURATE AND USEFUL DATA

Data for learning already exists in various pockets across the instructional core: Teachers make observations, students assess their knowledge, and technology and devices gather information. This often occurs in silos, with teachers lacking the time or expertise to effectively use or process this data. Or the data arrives too late to influence teaching practices.

Teachers may additionally feel reluctant to provide honest survey responses, fearing that the information may be used against them in some way. As a graduate researcher at Columbia University, I experienced teachers' reluctance to complete surveys designed to illuminate their practices and feelings about curriculum implementation.

I heard statements like, "Would this be used to grade me and assess my performance?" and "Would I lose my job as a result of this?" I needed to assuage their fears, making it clear to teachers that the survey was to support administrators in designing aligned professional learning to improve curriculum implementation, not to assess teacher effectiveness. Even so, I could see how teachers' concerns might lead to response bias if they felt the need to only present a positive picture of the work.

TURNING DATA INTO ACTIONABLE INSIGHTS

Accurate and actionable student data is required to tailor learning experiences to target students' needs and improve teachers' practice. In *Learning to Improve: How America's Schools Can Get Better at Getting Better*, Bryk et al. (2015) emphasize the importance of measurement in advancing quality and reliability at scale: "We cannot improve at scale what we can't measure." Yet measurement is just one side of the equation because data and measurement are only as good as the questions they help to answer.

Even though data can be ubiquitous or overwhelming, the goal is to turn it into actionable insights. One high school English language arts teacher in a RAND survey of teachers' perception of instructional coherence noted that "nobody is telling us how to look at the data or why this data is valuable. Are we looking at those assessments and actually seeing what kids need to do well on those assessments? No, it's more like, let's just keep testing everybody and hopefully the data is going to look good" (Pauketat et al., 2023).

This teacher's perception was that data did not serve to inform instructional improvement. Instead, its purpose was to demonstrate school performance.

Data will improve education only if it leads to insightful actions. It is also important to provide guidance and training for school leaders to

incorporate data analysis into their school culture. Simply having data doesn't imply that it would be used or that things would get better automatically.

For teachers, each data cycle should act as a learning loop that inspires new processes for working in pursuit of better outcomes. This continuous cycle of disciplined inquiry combines the interplay of theory, measurement, and practical insights as used in scientific fields. Data should have practical implications for day-to-day teaching life.

Administrators should make sure that data acts as a driver for equity and improvement. Questions that should guide the work include: What does this help me do? What questions would I be able to answer as a result of this? Will the data help me answer what is working and what isn't, under what conditions, and for whom? Otherwise, we risk collecting data for data's sake.

STEPS TO AN INSIGHT-DRIVEN CULTURE

To improve learning for all students, Learning Forward's Standards for Professional Learning stress setting expectations and building capacity for the use of data and evidence to plan educator learning and foster a culture of collaborative inquiry that continuously seeks improvement (Learning Forward, 2022). The following six strategies can help educators create an insight-driven culture that enables improvement for better outcomes.

1. Reorient mindsets and beliefs.

In education, there is no one-size-fits-all solution to the complex issues we face. What works in one context may not be effective in another, and the process of achieving success requires tacit evidence, insights, and data, all powered by a willingness to learn from experience and experimentation, which inevitably includes some failures.

In systems that emphasize certain outcomes, the system operates toward reaching those outcomes. Using data and insights to pivot, innovate, and strive for more equitable outcomes can seem onerous. Failure to meet outcomes can be disastrous. But helping teachers adopt a learning mindset in a culture that doesn't penalize failure can yield powerful learning and results.

With this mindset, data can be used for learning over accountability. Failures can be reframed as learning opportunities. Schools can continually examine their already existing best practices, discarding those lacking in evidence collected by and for the school.

This fosters a high trust culture of psychological safety. Teachers can then learn from the data on what is or isn't working instead of attempting to replicate a new educational philosophy or someone else's vision of what good teaching looks like.

In addition, the mindset that gathering data is for punitive purposes, which I experienced when collecting data, needs to be expunged by clearly and consistently communicating the expectations for its collection, usage, and dissemination. This would reduce the tendency for bias and resistance to data collection.

2. Include everyone.

Data collection, creation, and usage should not be limited to those who have an extensive data background. After all, data shows the extent to which the work is producing results and for whom. As such, data should be integrated into the standard work of everyone by building collective activity for everyone to create, access, and use data — not just data nerds.

For example, every teacher may be required to have a data responsibility such as implementing strong and consistent data entry procedures or requiring them to flag problems and opportunities for improvement when there is a deviation in the data from performance expectations.

In addition, teachers need to have the authority and opportunity to interrogate and interpret data based on their contextual and historical knowledge — for example, in small discussion groups. This process recognizes teachers as experts, leveraging their insights and ideas for improvement.

Teachers frequently find themselves in bureaucratic environments where top-down mandates leave little or no room for their feedback or opportunities to deviate. Yet the complex and diverse nature of the educational system necessitates contextual approaches and teacher leadership.

Specialized data analytics staff may take on more complex data functions such as creating systemwide processes for measuring and understanding statistical properties and connections between data.

3. Increase data collection ease and frequency.

In car manufacturing in Japan, workers have the authority to stop production lines by pulling on a thin nylon rope that hangs on hooks along the assembly line if they see a potential problem. Schools need to have this, too. By embedding practical measurements in the existing work of teachers and students, trouble spots can be detected immediately, incentivizing teachers to be reflexive and report concerns so issues can have a prompt, collaborative response.

Everyone should be expected to look constantly for ways to improve the school system by valuing this kind of productivity and adopting a learning attitude. Teachers can flag the process that is not working and brainstorm improvements to problems as they occur.

With this type of quick data collection, teachers can spot and repair gaps in knowledge. For example, school leadership teams can set benchmarks that trigger immediate reporting and troubleshooting once the data reveals a range below a certain threshold for a particular process or outcome of interest within a reporting period — for example, teachers need to alert

instructional coaches when over 50% of students are struggling to grasp a concept.

Equity data that is actionable and connects with teaching activities should also be collected — for example, when a student on the free and reduced lunch program is absent for more than two days in a row.

4. Hold sensemaking and collective learning meetings.

Education systems must make space to talk about data from academics, professional learning, and teaching on a regular basis. Through these meetings, cross-functional teams of teachers, administrators, support staff, and students coalesce to interrogate, synthesize, and create meaning from the data. The group leverages its experience to extract insights across functions, identify bright spots, and raise concerns where data is not showing the desired results.

Within this step, there are four ways to go about this work. First is to observe and make sense of the data. Educators choose a piece of data, disaggregate by subgroups (if applicable), and consider the deeper meaning behind the data by answering questions regarding the past, present, and future of this data point.

Second, create themes with it. Select another piece of related data (if applicable), compare the two, draw connections, look for patterns, and organize it according to themes to capture anything interesting or meaningful through comparison.

Third, extract insights and intelligence. Review the themes to identify the essence of what it is about to uncover the key takeaways by asking why, how, and so what.

Fourth, create an action plan. These insights can then be conceptualized into an actionable set of strategies for experimentation and decision-making.

5. Leverage existing expertise and technology.

Technology opens up opportunities to collect data and interpret it for improvement. Digital learning tools can now create simple reporting dashboards that support teachers in identifying students who are struggling and provide suggestions for small-group instruction.

Technology tools can also aggregate and compare data from core and supplemental curriculum and interventions while offering immediate cues and long-term suggestions to teachers that validate what they experience in the classroom. Schools can also identify data and technology teacher champions to create user-friendly and dynamic reports after data has been collected and interpreted.

6. Spread ideas for scale.

Good practice often sits in silos with teachers working in their own bubbles. School systems must be conscious of how their knowledge management systems work in both collecting and disseminating insights and good practice. Once data collection yields insights from sensemaking, school leaders should set systems and routines to share successful practices gained from data by highlighting positive achievement bright spots. This should include knowledge sharing of successes and learnings.

Existing systems, like professional learning communities, professional learning sessions, and teacher observation programs, can serve as platforms for knowledge dissemination. The key is to ensure that valuable insights are conserved and actively codified, then shared and applied to ensure equitable outcomes across the board.

UNTAPPED POTENTIAL

The potential for data to transform the education sector is immense yet largely untapped. By shifting the focus from data as a tool for accountability to one for enhancing learning and teaching practices, we can cultivate a more supportive and effective educational environment.

This shift requires a change in mindset from all stakeholders in education —administrators, teachers, and policymakers — who must recognize the value of data not as a punitive measure but as a cornerstone of continuous improvement.

Embracing a data-driven culture in education doesn't simply mean collecting more data, but rather improving the quality of the data collected, the access to it, and the ways it is used. This means prioritizing data that offers actionable insights and supports pedagogical refinement. Schools that adopt this approach can nurture a dynamic learning environment where teachers are empowered and students' diverse needs are met more effectively.

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