Issue Brief

The Data Dilemma

Why Data Doesn't Always Make a Difference (And When It Really Does)

Has the age of "big data" finally entered the classroom? In some ways, the answer is yes. Teachers have access to an unprecedented amount of data, and it is changing teaching and learning in meaningful ways. Use of data mining and data analytics for education has increased substantially at both the classroom and administrative level over the last decade.

While we've been talking about "data-driven instruction" since the 1990s, more than half of U.S. teachers say that it is still more aspirational than actual in their classrooms. Eight in ten teachers say they would like to use data to make instructional decisions, but 70% believe that the tools they have today are inadequate[1]. Most say they are overwhelmed by the data they have available and are not sure how to make the best use of it.

In order for data to transform teaching and learning, it must be seamlessly integrated into classrooms and teacher workflows. Today's summative and formative assessment models don't give teachers the information they need at the time that they need it. To maximize student learning outcomes, teachers need tools that allow them to visualize and analyze student data in real time and make effective daily instructional decisions. In other words, we need to move beyond data collection to learning analytics.

Drowning in Data

The use of data in the classroom isn't new. Since the days of Socrates, teachers have used a variety of informal and formal methods to probe for student understanding and gain insight for instructional decision-making. Homework, quizzes and tests have long been used to assign grades and inform instruction.

[1] Bill and Melinda Gates Foundation (2015) Teachers Know Best: Making Data Work for Teachers and Students. Bill and Melinda Gates Foundation. Seattle, WA. Retrieved November 2015 from: https://s3.amazonaws.com/edtech-production/reports/Gates-TeachersKnowBest-MakingDataWork.pdf

Today's teachers now have access to more data than ever before. From benchmark and summative assessments to computerized activities, the volume of data has exploded. In theory, more data is a good thing: traditional test-and-homework data collection doesn't provide the depth of insight that is needed. Today, with more digital tools and automation, teachers can get data down to a specific standard or item type for individual students or entire classrooms, in real time or spanning multiple years.

However, just because data is available doesn't mean it is usable. Formal benchmark and summative assessments generally don't return data in time to make meaningful changes to instruction. And the sheer volume of information can be daunting. Often, teachers are struggling with large volumes of data from disparate sources, making collection and analysis difficult and time consuming. In addition, much of the data they do have may be of limited value for day-to-day decision-making.

Many teachers say that the time they spend dealing with data takes away from the limited time they have for teaching and planning or time spent connecting with students. Teachers need better tools that reduce the administrative burden of collecting and analyzing data so they can stay focused on actual teaching.

What Teachers Really Need: Characteristics of Effective Data

So what is it that teachers really need? Research has shown that high-quality data for instructional decision-making has several important characteristics. Data must be:

- **Timely:** Data needs to work at the "speed of teaching": in other words, teachers need to have immediate access to data so it can make a difference in daily instruction. Real-time analysis can close the gap between gathering data and actually using it to inform teaching decisions, creating positive feedback loops that accelerate learning for students. Timely feedback makes learning more efficient by reaching students at critical moments in the learning cycle. It allows students to quickly correct misunderstandings and master foundational skills before moving on to new learning.

- **Comparable:** Data from one assessment tool, curriculum resource or technology product can't stand alone; it must be easily comparable to other sources of data. Data tied to standards allows for easy comparison across grade levels, programs and classrooms.

Teach

Adjust

Practice

Analyze
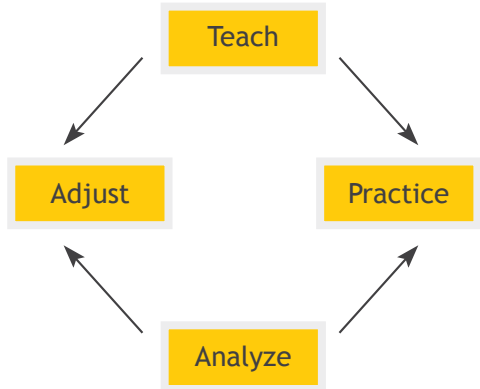
The Data-Driven Instructional Cycle

Timely, effective data generates a positive feedback loop that accelerates student mastery. In the data-driven instructional model, teachers continually adjust instruction in response to real-time information about student performance.

- **Predictive:** Teachers need more than just a snapshot. They need to be able to compare progress over time and analyze growth and learning trajectories. Effective analytics allows teachers to easily see trends over time for both individuals and classes so they can adjust instruction to achieve learning goals.

- **Granular:** Data must be meaningful and consequential for instruction. Teachers need to know more than whether an activity has been attempted or completed; they need to be able to see where breakdowns in understanding are occurring so they know exactly where they need to focus teaching. Item type analysis can help to identify the specific sub-skills that students need to practice.

- **Simple:** Instructional data must be easy to access and analyze and put both whole-class data and individual data at teachers' fingertips. Learning analytics tools should make the information teachers really need for instructional purposes visual and easy to find and understand, so teachers don't have to wade through extraneous detail that doesn't help them in the classroom.

- **Automated:** Too many teachers are still using systems that require manual input of assessment scores onto a spreadsheet for tracking and analysis. This is far too time consuming and labor intensive, and makes it hard to track and manipulate data over time. We need to provide teachers with tools that reduce manual work and automate data collection and analysis.

- **Accessible:** Data should be easily accessible for ALL stakeholders: teachers, students, parents and administrators. Automating reporting takes the administrative burden off of teachers and administrators so they can more easily meet accountability requirements. Giving students access to their own learning data in real time increases motivation and generates feedback loops that accelerate mastery. Parents need access to data, too, so they can stay involved with their child's education and support learning at home.

Living Up to the Promise of Data-Driven Instruction

Done right, data-driven instruction allows teachers to make the shift from a teacher-centered classroom to a truly learner-centered environment. But to get there, it's not enough to give teachers lots of data. Learning analytics tools should illuminate timely, relevant information and help teachers draw meaningful insights out of the data they collect. With the right tools, data-driven instruction—and the benefits it brings—can truly transform learning for every student in every classroom.

IXL Analytics: Making Data Delightful!

At IXL, we believe that data-driven teaching should be delightful, not taxing. IXL Analytics was explicitly designed to reduce the burden of data collection and analysis and give teachers the insights they need to accelerate student learning.

IXL Analytics supports best practices in data-driven instruction.

- Our system provides **real-time**, **actionable** insights to inform daily instructional decisions.

- Our **adaptable reports** can be used across all types of classrooms, including lab settings, 1:1 and flipped classrooms, rotational models, and small group work, and they're easily **accessible for all stakeholders**, including teachers, students, parents and administrators.

- Teachers can **track learning trajectories** over time and **monitor class and individual progress** towards individual state standards and CCSS.

With **intuitive reports** and data visualization tools, IXL makes student progress come alive. IXL delivers just the right amount of information by **detailing areas that matter**, including item analysis and trouble spots, without overwhelming teachers with data.