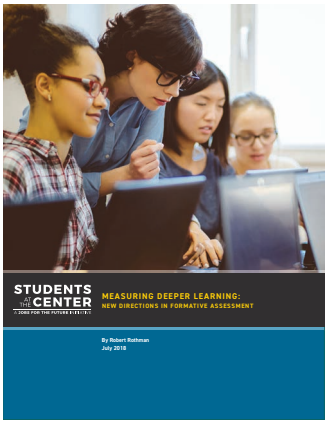
STUDENTS AT THE CENTER
A JOBS FOR THE FUTURE INITIATIVE

DEEPER LEARNING RESEARCH SERIES | JULY 2018

MEASURING DEEPER LEARNING:
NEW DIRECTIONS IN FORMATIVE ASSESSMENT

By Robert Rothman



Assessment has become an increasingly contentious issue in education over the past two decades. Teachers, parents, and students have raised objections to the amount of testing in schools and the influence of tests on instruction. Large numbers of students have opted out of mandated tests, and districts and states have sought to reduce the number of tests they administer.

Much of the objection to testing has focused on tests used for accountability purposes. But a growing chorus of educators argues that rather than getting rid of testing, the emphasis should be shifted to a different type of assessment—assessments that inform instruction and learning.

Assessments for learning represent a departure from prior formative assessment efforts in several ways. For one thing, many of them attempt to capture and measure deeper learning skills, such as the extent to which students can use knowledge to think critically and solve problems, not just know facts and procedures. In addition, many of the models use new technologies that both engage students who grew up in a digital world and provide students and teachers with a vast array of readily accessible information about student learning.

Evidence Base

The idea of systematically assessing and providing feedback to students on their learning took off sharply in the late 1990s, after a study found solid evidence of the effectiveness of this practice. The analysis drew on 43 quantitative studies of the practice across age groups from five-year-olds to university undergraduates, across several school subjects, and over several countries.[1] The study further showed that formative assessment is particularly effective for low-performing pupils, and thus had the potential to close achievement gaps.

More recent research has identified four core constituents of formative assessment that are tied together as learners move along the trajectory from basic understanding of an area toward increasingly complex knowledge and skills: [2]

- Identifying learning goals: Teachers and students agree upon a clear and specific sense from the outset of what students are expected to learn.
- Gathering evidence of learning: Teachers use formal means, such as an assessment task, or informal means, such as regular check-points in which students explain what they know and how they know it.

- Taking action: To close the gap between what students understand and their learning goals, students revise their work using feedback from the assessment, and teachers reteach concepts students did not grasp.
- Student involvement: By being engaged in understanding the learning goals and in monitoring their own work, students develop the lifelong skill of regulating their own learning.

These four constituents come together as learners move along the path from basic understanding to more complex knowledge and skills. For example, the Vermont Mathematics Partnership Ongoing Assessment Project developed a learning progression showing the development of multiplicative reasoning, from teachers identifying appropriate learning goals with students, to determining whether students got the right answer and, more importantly, how the problem was solved, and then to deciding what else needs to happen to advance to the next level.

Some Promising Models

In recent years, a number of organizations have developed new assessment models that lend themselves to formative uses and take advantage of advances in both assessment and learning science. Some illustrative examples include:

Cognitively-Based Assessment of, for, and as Learning (CBAL)

CBAL is a research initiative developed by the Educational Testing Service (ETS) to create a comprehensive assessment system that includes both formative and summative components. The assessments are intended to measure what students have learned (assessment of learning), to inform instruction (assessment for learning), and to provide engaging tasks that are educational (assessment as learning). Students are asked to perform a series of tasks completed on computers that are based on a model of student competency and subject-specific learning progressions, developed from cognitive research.

ConnectEd Studios

ConnectEd Studios helps teachers develop performance assessments for students participating in Linked Learning, a high school redesign model in place in 30 school districts in California, Michigan, Texas, Ohio, Illinois, and New York. The model is designed to combine rigorous academics with technical training and real-world experience that provide college and career pathways for high school students. Under the assessment system, teachers identify the competencies they want students to demonstrate—such as communication, collaboration, and digital literacy—and then choose a rubric to assess student work and identify learning goals. The platform includes validated rubrics developed by the Stanford Center for Assessment, Learning, and Equity (SCALE), Envision Learning Partners, and other organizations.

Games for Learning and Assessment (GlassLab)

GlassLab was created in 2012 as a partnership of leaders in video games, including Electronic Arts and the Entertainment Software Association, and leaders in assessment, such as ETS and Pearson, with funding from the Bill and Melinda Gates Foundation (Gates) and the John D. and Catherine T. MacArthur Foundation. GlassLab develops games that teach and assess a variety of competencies, including argumentation in English language arts, ratio and proportion in mathematics, and civics. For each game, students and teachers receive reports indicating their competency levels as well as intervention reports that provide real-time feedback on their progress so that students can make revisions.

Summit Public Schools

At Summit Public Schools, an 11-school charter network in California and Washington State, each student maintains a "playlist"—an online record of work for the year. It includes students' goals—such as earning certain grades or getting into certain colleges—and identifies the knowledge and skills needed to attain those goals. Students then track their progress on the performance tasks that make up the curriculum at Summit Public Schools. These tasks include written products, presentations, portfolios, and other demonstrations of knowledge and skills. The online platform includes measures of student progress and rubrics for evaluating student work.

Assessment for Learning Project

One of the most ambitious efforts to spark a new generation of assessments is a grant project funded by the William and Flora Hewlett Foundation and Gates Foundation and managed by the Center for Innovation in Education at the University of Kentucky, and Next Generation Learning Challenges. In March 2016, the two organizations regranted

$2 million to 12 organizations to catalyze the development and scaling of new approaches that tap a broad and deep definition of student success and place a stronger emphasis on assessment for learning and on student agency. The grant recipients include individual schools, school districts, district consortia and research organizations.

Common Features

Although these new formative assessment models vary in significant ways, they share some common features suggesting promise for improving instruction and learning. These include the following:

- The models tap a broad range of student competencies, including deeper learning competencies. The use of well-developed rubrics for evaluating student work helps ensure that the assessments measure deeper learning competencies that are critical to college and career success and can contribute to the attainment of those goals.
- The models use technology to engage students and yield a wealth of data on student learning. In many cases, the assessments are completed on computers, and take advantage of digital technology to make possible tasks that would be difficult, if not impossible, to simulate in a pencil-and-paper test. Computer-based assessments also enable students to again access to a wide array of materials, such as primary-source documents, and to collaborate with peers who are elsewhere.
- The models provide tools that help teachers to personalize learning for each student. The use of formative assessments helps support personalization by enabling teachers to identify each student's progress and tailor interventions or support for each student.

Issues in the Field

While the new models appear promising, they also highlight some of the issues in the formative assessment field. These are:

- The role of students. Developers of the new models all agree on the importance of feedback to students and the need for students to take ownership of their own learning. But many have stopped short of engaging students in determining the criteria for success.
- Generic versus subject-specific assessments. Most of the formative assessment practices used in schools today are home-grown and low-technology. However, researchers suggest that formative assessment is more effective when it is subject-area-specific. That is, formative assessment depends on the knowledge and skills inherent in a subject area or cognitive domain.
- The relationship between formative and summative assessments. To maximize the effectiveness of both forms of assessments, states and districts should develop systems of assessment in which both types contribute information to different audiences at different times, based on the same learning goals.

Meeting the Scale Challenge

Ultimately, for formative assessment to be effective on a large scale, schools will need to do more than adopt new assessment models and tools such as those profiled here. To make the best use of such models, school leaders will need to reconsider curriculum and instruction as well. Many teachers today feel pressured to move quickly through lessons in what they and their students experience as a packed curriculum. The types of extended projects that lend themselves well to periodic assessments simply do not fit in such a curriculum. Teachers will also need professional development support, not only in developing assessment tasks and interpreting results, but also in changing their instructional practices to build deeper student understanding.[3]

Endnotes

1. Paul Black and Dylan Wiliam, "Inside the Black Box: Raising Standards through Classroom Assessment," *Kappan* (October 1998): 2.
2. Margaret Heritage, *Formative Assessment in Practice: A Process of Inquiry and Action* (Cambridge, MA: Harvard Education Press, 2013).
3. The work that organizations such as SCALE and Envision Learning Partners are doing to engage teachers in making such a fundamental shift is described in another paper in this JFF series on assessment: Redesigning Assessment Systems: Emerging Lessons from Three States (Pecheone et al., 2018).

JOBS FOR THE FUTURE

JFF is a national nonprofit that drives transformation in the American workforce and education systems. For 35 years, JFF has led the way in designing innovative and scalable solutions that create access to economic advancement for all. Join us as we build a future that works.

WWW.JFF.ORG

STUDENTS AT THE CENTER
A **JOBS FOR THE FUTURE** INITIATIVE

Students at the Center is a leading national voice for the knowledge, skills, and dispositions all youth need to succeed in college, career, and civic life. Our work synthesizes—and adapts for practice—current research on key components of student-centered approaches to learning that lead to deeper learning outcomes. Our goal is to strengthen the ability of practitioners and policymakers to engage each student—and especially low-income and marginalized youth—in acquiring the skills, knowledge, and expertise they need to succeed in today's and tomorrow's economy and be lifelong learners.

WWW.JFF.ORG/DEEPERLEARNING

This report was funded by The William and Flora Hewlett Foundation.

Suggested citation: Rothman, Robert. 2018. *Measuring Deeper Learning: New Directions in Formative Assessment*. Students at the Center: Deeper Learning Research Series. Boston, MA: Jobs for the Future.