

President's Message

Assessing to Learn and Learning to Assess

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With the public's attention focused on how well our schools are educating children in mathematics, students face assessment on a regular basis. At the classroom level, teachers use a variety of assessment measures and strategies to determine whether their students are learning the mathematics they are supposed to learn. Schools and school districts often administer tests across classrooms to determine whether students have reached a certain level of achievement or whether they are meeting particular benchmarks. Every state also administers large-scale accountability tests as required by law. Is all this testing too much, or does it help students learn? When we *assess to learn*, we seek information that allows teachers to find out what students know in order to improve their mathematics learning. This means *learning to assess* all the kinds of mathematical knowledge we identify as important. By assessing to learn and learning to assess, we can maximize the positive impact of assessment on students' learning without unnecessary negative consequences.

What Is Assessment For?

When a teacher wants to know whether a student or group of students is learning what is expected on a day-to-day basis, the teacher may use a variety of measures such as quizzes, interviews, projects, tests, or even purposeful conversation. If a test is used to determine the breadth of a student's mathematical knowledge and level of thinking, it is likely to include opportunities for the student to produce extended responses that demonstrate a thought process in addition to measuring a range of mathematical content and skills. To measure a program's effectiveness for a large number of students, a test needs to be efficient to administer and quick and economical to score. Each of these purposes calls for a different type of measure, with a specific format, scope, and context for administration.

Regardless of the purpose of an assessment, one factor is crucial to all assessments. They must be aligned with the particular mathematics that students are expected to learn. Ideally, this alignment will be evident in the content of the test or assessment and supported by the assessment format and manner in which the results are interpreted and used.

What Does Assessment Tell Us?

Teachers and students can benefit from assessment results that tell what a student knows and that identify a student's potential misunderstandings. The most useful assessment results for directly influencing students' learning are those that are immediate and specific. When we acknowledge what students are doing well and adjust or guide students as they first develop misunderstandings, they are far more likely to learn mathematics correctly


and have that learning last. An effective teacher knows that it is important to measure students' understanding of mathematical concepts and ideas, evaluate their proficiency in skills, and give them the opportunity to apply what they have learned to a variety of situations beyond the immediate context in which the mathematics was learned. Results of large-scale accountability tests should be interpreted and used carefully only for the purposes for which they were intended. For making day-to-day decisions, the teacher is the best person to assess mathematics learning, and the classroom is the best context in which to do so.

Too Much Testing?

Ideally, assessment should be seamlessly woven into the fabric of teaching and learning, minimizing interruptions in instructional time and maximizing the immediate impact on students' learning. When assessment is part of the learning process, it does not need to sidetrack an effective mathematics program.

The bottom line is that the purpose of any mathematics assessment must be to improve students' learning. When an assessment measure is well aligned with—and integrated into—the system of mathematics teaching and learning, preparing students to perform well should involve little more than teaching the mathematics program well.

Learning to Assess

Developers of accountability assessments can improve assessments by incorporating problem solving, open-ended items, and problems that assess understanding as well as skills. As consumers of test data, teachers, supervisors, administrators, and families can learn what test data do and do not tell us. In our own classrooms, we can refine our skills so that we design assessment measures that clearly show what students know, with assessment integrated as part of the teaching and learning process. Throughout the 2005–06 school year, NCTM will provide focused resources on assessment to help us learn to assess and assess to learn. Look for the magnifying glass icon  on the NCTM Web site and in NCTM publications for articles, ideas, and events that support this Professional Development Focus of the Year.

Meanwhile, let's start this school year by exchanging ideas about assessment. What ways have you found to determine how well your students are learning the mathematics expected of them on a day-to-day basis? Do you know of an effective and appropriate large-scale test to measure the mathematics students should know? Join me in a chat to talk about these and other related issues on Wednesday, September 21, at 4:00 p.m. ET. Submit comments and questions online at www.nctm.org/news/chat.htm. 