

This year, every issue of delta-K will devote a section to the NCTM Standards. In this issue, the focus will be on the Assessment Standards for School Mathematics (1995).

NCTM Standards in Action

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According to the NCTM *Assessment Standards for School Mathematics* (1995), assessment is the process of gathering evidence about a student's knowledge of, ability to use, and disposition toward, mathematics and of making inferences from that evidence for a variety of purposes. Evaluation, on the other hand, refers to the process of determining the worth of, or assigning a value to, something on the basis of careful examination and judgment.

The Assessment Standards have been designed to expand on and complement the Evaluation Standards. The Evaluation Standards propose that

- student assessment be aligned with, and integral to, instruction;
- multiple sources of assessment information be used;
- assessment methods be appropriate for this purpose;
- all aspects of mathematical knowledge and its connection be assessed; and
- instruction and curriculum be considered equally in judging the quality of a program.

Assessment involves several interrelated, but nonsequential, phases:

- Planning the assessment
 - ✧ What purpose does the assessment serve?
 - ✧ What framework is used to give focus and balance to the activities?
 - ✧ What methods are used for gathering and interpreting evidence?
 - ✧ What criteria are used for judging performances on activities?
 - ✧ What formats are used for summarizing judgments and reporting results?
- Gathering evidence
 - ✧ How are activities and tasks created or selected?
 - ✧ How are procedures selected for engaging students in the activities?
 - ✧ How are methods for creating and preserving evidence of the performances to be judged?

- Interpreting the evidence
 - ✧ How is the quality of the evidence determined?
 - ✧ How is an understanding of the performance to be inferred from the evidence?
 - ✧ What specific criteria are applied to judge the performances?
 - ✧ Have the criteria been applied appropriately?
 - ✧ How will the judgments be summarized as results?
- Using the results
 - ✧ How will the results be reported?
 - ✧ How should inferences from the results be made?
 - ✧ What action will be taken based on the inferences?
 - ✧ How can it be ensured that these results will be incorporated in subsequent instruction and assessment?

More specifically, there are six assessment standards which, when used, constitute a dynamic process that informs teachers, students, parents and others and supports each student's continuing growth in mathematical power. These are as follows:

1. Assessment should reflect the mathematics that all students need to know and be able to do.
2. Assessment should enhance mathematics learning.
3. Assessment should promote equality.
4. Assessment should be an open process.
5. Assessment should promote valid inferences about mathematics learning.
6. Assessment should be a coherent process.

As stated in *The Common Curriculum Framework for K-12 Mathematics* (Alberta Education 1995), our goals for students in school mathematics are to

- use mathematics confidently to solve problems,
- communicate and reason mathematically,
- appreciate and value mathematics,
- commit themselves to lifelong learning, and
- become mathematically literate adults, using mathematics to contribute to society. (p. 3)

Clearly connected to these goals and an important outcome is the development of positive attitudes toward mathematics among all students. Implicit in our vision are also clearly stated expectations of what our students must know and be able to use and how their progress is to be assessed. In order for school assessment practices to inform educators as they progress toward these goals, it is essential that we move away from the "rank order of achievement" approach in assessment toward an approach that is philosophically consistent with our overall vision of school mathematics and classroom practices.

From the three articles that follow, it is evident that a new approach to assessment is evolving in many schools and classrooms. The new assessment

approaches endorse the setting of high expectations for all students, but a convergence of information from a variety of balanced and equitable sources. It is important that the new assessment practices allow much more information to be derived by teachers during the process of instruction. Teachers are the people who are in the best position to judge the development of students' progress, hence must be considered the primary assessors of students.

References

- Alberta Education. *The Common Curriculum Framework for K-12 Mathematics*. Edmonton: Author, 1995.
- National Council of Teachers of Mathematics. *Assessment Standards for School Mathematics*. Reston, Va.: Author, 1995.

Loose Cash

What is the largest sum of money—all in current coins and no silver dollars—that I could have in my pocket without being able to give change for a dollar, half dollar, quarter, dime or nickel?
