Foreword

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Assessment of student learning has never been more important. State and local tests are being increasingly used to document levels of learning and build accountability into the education system. But educators committed to learning for all need more than standardized tests and end assessments. To meet the challenge of learning for all, teachers need processes and tools for monitoring student growth every day and over time.

The idea of using continuous classroom assessment every day to enhance teaching and learning evolved out of the authors' work with teachers to improve science education over many years. Beginning in the early 1990s, they worked with more than 250 teachers to improve science teaching and learning. They engaged teachers in learning science content through inquiry themselves, and created the environment and conditions for exploration. They focused on science topics in depth, and emphasized habits of mind associated with science—inquiry, skepticism, discovery, and collaboration. At the time, "science as inquiry" was a foreign concept to most teachers, and the *National Science Education Standards* (NRC, 1996) and *Benchmarks for Science Literacy* (AAAS, 1993) were still in development.

As the authors provided professional development in science they learned quite a bit about what teachers needed to use inquiry effectively. The open-ended nature of teaching science as inquiry thrust teachers into unknown territory. Along with their participating teachers, they began to raise questions about their role as the teacher and to ask, "What does it really look like to use inquiry in the classroom?" "How does one do it well?" and "When I use an inquiry approach, how do I know what students are learning? How do I assess student learning?"

Over time they realized effective teaching involved guiding students as they engaged in the inquiry process to ensure that students were productive and developed understanding of science concepts. They realized being a good facilitator of learning required knowing how children think about science concepts, recognizing misconceptions they often hold, and having strategies for

challenging such misconceptions. To address this need, the authors began to weave instruction in science inquiry together with the practice of assessment.

This launched a new development in the work of the authors. Teachers learned to observe and listen closely to students in order to capture their ideas and abilities in the moment. With the teachers as co-developers, they created methods for day-to-day observation and documentation of students' work, thinking, and ideas. They worked closely with these teachers as they reflected on their classroom practices and were able to identify the strategies and the tools they found helpful. For example, the teachers became attuned to really listening to and gaining understanding of their students' scientific ideas. The authors worked with the teachers to help them with questioning techniques and introduced them to the strategy of having science conversations and "scientists' meetings" to learn what their students were thinking and able to do. Note taking, video- and audio taping, photographs, digital pictures, student writing, and student products took on a whole new meaning as they became simple "tools" of assessment. Many teachers told of ways they were now able to incorporate the data gained from using these tools as they applied them in their own classrooms.

The authors observed how using these techniques and tools in the classroom opened up a new world to teachers. Knowing how students were thinking about the science and what they were struggling with gave the teachers insight into how best to support learning. In real time, they saw how children truly "build" their understanding. The techniques and tools gave them the ability to see children's building blocks of understanding and help students modify those to reach higher understanding.

The idea of continuous assessment is simple, yet powerful. When teachers focus on students' ideas, they are able to make better decisions about instruction. They can become more deliberate about the hundreds of interactions they have with students every day. They can identify the concepts students are having trouble with and address them long before the state and local assessments are given and the results tabulated. In the case of the teachers involved in the project, using continuous or formative assessment increased their efficacy and their students' understanding of science and inquiry.

Continuous assessment as a way of monitoring student learning and helping teachers make better instructional choices is a valuable practice. Adding to its value is its contribution to teacher growth. As someone who designs and studies professional development programs, I see continuous assessment as a powerful mechanism for teachers to learn from their own practice. Examining student work and ideas has become recognized as a key strategy for teacher learning. As Loucks-Horsley, Hewson, Love, and Stiles (1998) write, "More learning occurs when teachers confront real problems—ones that they face in their classrooms on a daily basis. Such is the case with student work and

assessments, which teachers use to judge the quality of learning and, in some cases, teaching" (p. 121).

The authors provide a rationale and practical tools for weaving continuous assessment and reflective instruction into the fabric of learning. Teachers who use the methods in the book will know what and how students are learning every day and will gain insights into how best to facilitate learning in their classrooms. Professional developers who model these practices now have a new resource for helping teachers to promote continuous classroom assessment.

—Susan Mundry