Formative Assessment

From *Principles to Action*:
"An excellent mathematics program ensures that assessment is an integral part of instruction, provides evidence of proficiency with important mathematics content and practices, includes a variety of strategies and data sources, and informs feedback to students, instructional decisions, and program improvement.

When asked for a definition of assessment, many educators think of quizzes and tests as well as district, state or provincial, and national measures of student achievement. However, assessment needs to be viewed much more broadly. In *Assessment Standards for School Mathematics* (1995), NCTM defined assessment as the "process if 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" (p. 3). At the same time, NCTM posited that assessment should serve four distinct functions in school mathematics:

- Monitoring students' progress to promote student learning
- Making instructional decisions to modify instruction to facilitate student learning
- Evaluating students' achievement to summarize and report students' demonstrated understanding at a particular moment in time
- Evaluating programs to make decisions about instructional programs

Furthermore, in (2000), NCTM asserted that assessment should "support the learning of important mathematics and furnish useful information to both teachers and students" (p. 22). According to Wiliam (2011, p. 43), "An assessment functions formatively to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners or their peers to make decisions about the next steps in instruction that are likely to be better than decisions they would have made in the absence of that evidence." Assessment, then, in the context of effective mathematics instruction, is a process whose primary purpose is to gather data that support the teaching and learning of mathematics." *Principles to Action: Ensuring Mathematical Success for All*. (2013). National Council of Teachers of Mathematics, p. 89.

Wiliam, Dylan:
"In this chapter, we learned that the regular use of minute-by-minute and day-by-day classroom formative assessment can substantially improve student achievement. Although many different definitions of formative assessment have been proposed, the essential idea is simple. Teaching is a contingent activity. We cannot predict what students will learn as a result of any particular sequence of instruction. Formative assessment involves getting the best possible evidence about what students have learned and then using this information to decide what to do next." (p. 50)

"However, if the formative assessments are designed without any clear decision in mind, then there is a good chance that the information from the assessment will be useless. For example, many vendors now offer schools regular student testing (typically every four to ten weeks), and the results are fed back to the teachers. Sometimes these results are reported simply in terms of which students are on target to reach proficiency on the state tests, but even when the results are more detailed, they are often of little use to the teachers for two reasons. First, the results are usually at the level of state standards, which are generally too coarse to guide teachers' instructional decision making. Second, the results usually arrive weeks after the teacher has moved on. Caroline Wylie and I describe this kind of formative assessment as "data-push" (Wylie & Wiliam, 2006). Data are pushed at teachers, and although those designing the assessments aren't really clear about what the teacher should do with the information, the teacher is expected to be able to make some use of the data. The alternative is to design the assessments backward from the decisions. When the focus is on the decision that needs to be made, the teacher can then look at relevant sources of evidence that would contribute to making that decision in a smarter way. With such a "decision-pull" approach, the teacher always knows what to do with the data once they are collected because that has been thought through before the data were collected." (p. 45)

Wiliam, Dylan (2011). Embedded formative assessment (Kindle Locations 1002-1013). Ingram Distribution. Kindle Edition.

Wylie, C., & Wiliam, D. (2006). Diagnostic questions: Is there value in just one? Paper presented at the annual meeting of the American Educational Research Association (AERA) and the National Council on Measurement in Education (NCME) held between April 6 to 12, 2006, in San Francisco, CA.