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Using Formative Assessment to Increase Learning

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Ready-made benchmark tests cannot substitute for day-to-day formative assessment conducted by assessment-literate teachers.

Stephen and Jan Chappuis (2007)

ABSTRACT

Educators can improve achievement for all students through the appropriate use of formative assessment. Formative assessment is a process—not a test—and involves a number of specific components that allow teachers to plan effective instruction and provide students with opportunities to perceive and reach learning goals. This updated version of an earlier report by the same author includes information on formative assessment from the seminal work of Black and Wiliam (1998) and from literature that is more recent. The reference list includes links to numerous sources on formative assessment.

WHAT IS FORMATIVE ASSESSMENT?

Although most educators understand the meaning of formative assessment and summative assessment, this was not always the case. Initially, the emphasis on these two assessment types was timing—formative assessment took place during an instructional unit while summative assessment occurred at the end of a unit. At the beginning of the 21st century, many teachers did not fully understand formative assessment or its practical application in the classroom (Dixon & Williams, 2001). During the *No Child Left Behind* (NCLB) era, formative assessment was often seen as frequent testing (Chappuis, 2005), and many educators thought formative assessment was a kind of test. Telling teachers formative assessments are tests "is akin to telling a would-be surfer that a surfboard is the same as surfing" (Popham, 2011, p. 35).

The determining factor as to whether an assessment is formative or summative is how the results are used (Chappuis & Chappuis, 2007). Results from summative assessments are used to make summary judgments. Two kinds of tests used for summative purposes are final exams and the state-mandated tests brought about by NCLB. In contrast, formative assessment results are used to "adjust—that is form—ongoing instruction and learning" (Popham, 2006, p. 86). Benchmark tests and pop quizzes are two kinds of tests used for formative purposes, but only if they

Table 1: Characteristics of Formative and Summative Classroom Assessment

Characteristic	Formative Assessment	Summative Assessment
Purpose	Provide ongoing feedback to improve learning	Record learning at end of an instructional segment
Student Involvement	Encouraged	Discouraged
Student Motivation	Intrinsic, mastery-oriented	Extrinsic, performance-oriented
Teacher Role	Provide immediate, specific feedback and instructional correctives	Measure student learning and give grades
Assessment Techniques	Informal	Formal
Effect on Learning	Strong, positive, and long-lasting	Weak and fleeting

Adapted from McMillan, 2007.

provide immediate information for teachers, who in turn give feedback to students and use the results to guide further instruction. Table 1 on the previous page compares the main characteristics of formative and summative assessments.

Educators who understand formative assessment realize it is not strictly a formal process. One expert indicated three different types of formative assessment, which he referred to as "(a) 'on-the-fly,' (b) planned-for-interaction, and (c) formal and embedded in curriculum" (Shavelson, 2006, p. 3). When teachable moments arise in the classroom, skilled teachers jump at the opportunity to correct students' misconceptions or dig deeper into their understanding and provide them with feedback. This is on-the-fly formative assessment. Planned-for-interaction formative assessment involves the deliberate use of probing questions and other activities to elicit meaningful information from students. Formal and embedded formative assessment is intentionally included as part of the curriculum and can occur as planned teachable moments. These formal assessments are "embedded at critical junctures, and crafted so feedback on performance to students is immediate and pedagogical actions are immediately taken to close the learning gap" (Shavelson, p. 7).

INSIDE THE BLACK BOX: OBSTACLES TO LEARNING

In 1998, Black and Wiliam published an analysis of research considered by many to be the seminal work on formative assessment in teaching. The authors maintained that education policymakers view the classroom as a "black box," where inputs such as students, teachers, resources, standards, and policies go in and specific outputs, such as capable students and higher test scores, are expected to come out. With little or no control over what goes into the black box, the responsibility for producing the expected outcomes—what goes on *inside* the black box—rests firmly on the shoulders of teachers. While this is not a new concept for experienced educators, it can be an overwhelming challenge for some teachers to produce the expected outcomes.

How can teachers use formative assessment to benefit their students? First, they must be willing to confront a number of obstacles if they want to change to a system of true formative assessment. Educators may have to alter their beliefs about learning and the potential of their students. They must be willing to reject the transmission model, which asserts that student understanding will follow after knowledge is delivered to them. Plenty of evidence indicates this is not a viable teaching model. Most educators realize effective instruction involves interaction, which is fundamental to formative assessment. Another obstruction to learning occurs when teachers assume that their students have a predetermined capability, rather than an untapped potential for learning. Teachers are more likely to successfully implement formative assessment if they are able to "clear away, by sensitive handling, the obstacles to learning, be they cognitive failures never diagnosed or damage to personal confidence or a combination of the two" (Black & Wiliam, 1998, p. 144).

Black and Wiliam (1998) mentioned other obstacles to learning related to assessment; some of these are standard practice in many American schools:

- Despite the claim that schools are developing higher-order thinking skills, most tests administered in schools encourage rote and superficial learning.
- Grades are overemphasized, while efforts to recognize student problems and provide useful advice to students are not emphasized enough.
- The appearance and quantity of student work is stressed over its quality relative to learning.
- Accumulating grades and student work samples are higher priorities than analyzing the work to determine students' learning needs.
- Feedback on assessments often results in students being compared with each other, which sends them the message that school is a type of competition.

Students can acquire bad habits and self-defeating attitudes as a result of the practices listed above. Davidson (2011) pointed out that NCLB, through its accountability requirements, has promoted "a type of thinking … well-suited to the

industrial worker—a role that increasingly few of our kids will ever fill" (p. 57). Black and Wiliam (1998) described the unfortunate consequences of overemphasizing grades:

> When the classroom culture focuses on rewards, "gold stars," grades, or class ranking, then pupils look for ways to obtain the best marks rather than to improve their learning. One reported consequence is that, when they have any choice, pupils avoid difficult tasks…. many become reluctant to ask questions out of a fear of failure. Pupils who encounter difficulties are led to believe that they lack ability, and this belief leads them to attribute their difficulties to a defect in themselves…. they avoid investing effort in learning that can only lead to disappointment, and they try to build up their self-esteem in other ways. (p. 142)

BEST PRACTICES IN FORMATIVE ASSESSMENT

A prerequisite for educators to implement formative assessment effectively is the belief that all students are capable of achieving. Equally important is the creation and maintenance of a classroom atmosphere that breeds success instead of competition. In such a class, information gleaned from a discussion, homework, or a quiz—any type of assignment or activity used for formative purposes—can make a difference to students if it is conveyed appropriately to them (Black & Wiliam, 1998). In addition to having the right belief system and classroom culture, teachers must utilize certain practices inherent to formative assessment for the process to be effective.

Hattie and Timperly (2007) indicated student learning could be enhanced by attending to three questions: "Where am I going? How am I going? and Where to Next?" (p. 88). These questions are addressed in the subsections below and on the following page.

Communicating Purposes and Learning Targets

Students cannot reach a specific learning goal unless they are able to identify the goal and understand what they need to do in order to achieve it. Educators should not assume every student has this capability. Many students "have become accustomed to receiving classroom teaching as an arbitrary sequence of exercises with no overarching rationale" (Black & Wiliam, 1998, p. 143). Teachers need to comprehend fully the learning targets, objectives, or goals they are teaching to students, and they must communicate this information in the right vernacular so that students "get it." In other words, students have to realize why they are participating in an activity and what they are supposed to be learning. To ensure understanding, students should share back their interpretation of the why and what of the learning activity. Like other practices in formative assessment, facilitating the progression of students from passive observers to active participants in their own learning involves time and effort, especially when dealing with low achievers.

Implementing Proper Questioning Techniques

In a follow-up to their original black box article, Black, Wiliam, and their colleagues stated, "many teachers do not plan and conduct classroom dialogue in ways that might help students to learn" (Black, Harrison, Lee, Marshall, & Wiliam, 2004, p. 11). Two common problems pertaining to teachers' questioning techniques are (a) not allowing enough wait time for students to think of an answer, and (b) asking questions that necessitate nothing more than recall of memorized facts. When teachers fall into these patterns, students do not attempt to respond because the answer will be coming along in about a second or two. Unfortunately, it is often difficult for many educators to break established habits.

In contrast, teachers who have the desire and capacity to develop their practice will formulate questions that require students to use critical-thinking skills. They also tell their class in advance that there will be ample time to consider possible answers and not to raise hands because students will be randomly selected to respond to the questions. An alternate questioning method is creating groups of two to three students for brainstorming ideas before answers are requested. By implementing these kinds of questioning techniques, teachers can "learn more about the students' prior knowledge and about any gaps and misconceptions in that knowledge, so that teachers' next moves can better address the learners' real needs" (Black et al., 2004, p. 12).

Providing Effective Feedback

According to Black et al. (2004), "the giving of numerical scores or grades has a negative effect [on student learning], in that students ignore comments when marks are also given…. A numerical score or a grade does not tell students how to improve their work, so an opportunity to enhance their learning is lost" (p. 13). As shown in Table 1 on the first page of this brief, grading is a teacher function associated with summative assessment. Chappuis and Chappuis (2007) asserted formative assessment in its purest form involves "no final mark on the paper and no summative grade in the grade book" (p. 17). Although students and parents may need to adapt to the absence of traditional grades, over time they will see the logic in focusing more on learning issues than on grading.

Effective feedback—whether communicated to a student orally or in writing—should always concentrate on a student's work and what can be done to make it better. Counter to the classroom culture described at the top of the previous page, messages should be more about improvement and less about evaluation (Black & Wiliam, 1998). Writing constructive comments on students' work might require extra time and effort on the part of teachers, but the return in terms of improved student achievement is worth the investment. Teachers who feel overwhelmed should concentrate more on select assignments and not attempt to grade every single piece of student work. Educators become more skilled at writing useful comments as they gain experience and share examples of helpful feedback with each other. It is important to note teachers must keep in mind that "to be effective, feedback should cause thinking to take place" (Black et al., 2004, p. 14). Interestingly, many teachers in the Black et al. study discovered that the process of composing comments caused them to think as well. They began reassessing and modifying their assignments to eliminate tasks which did not involve higher-order thinking.

Employing Self-Assessment and Peer Assessment

Black and Wiliam (1998) referred to self-assessment as "an essential component of formative assessment" and explained "when anyone is trying to learn, feedback about the effort has three elements: recognition of the desired goal, evidence about present position, and some understanding of a way to close the gap between the two" (p. 143). Students are generally honest in assessing themselves and their work; however, the most difficult task teachers face when developing students' self-assessment skills is getting them to think of learning as working to accomplish a given set of goals. For students who have grasped the concept of how these three elements operate in their learning, peer assessment provides an added dimension to formative assessment in the classroom as students are evaluated by an equal and not a teacher (Black et al., 2004).

Using Summative Tests Formatively

Some educators prefer to keep the formative and summative assessment processes separate because of their different purposes and the "harmful influence that narrow, high-stakes summative tests can have on teaching" (Black et al, 2004, p. 15). Conversely, in a supportive environment where students are able to move beyond the stigma of bad grades, summative assessment results can provide a formative learning opportunity. The activities described below can be used to ensure students have mastered objectives, are prepared for future tests, or both.

- After examining and reflecting on their answers to summative test questions, students can "traffic light" key content, skills, or vocabulary to indicate areas in which their understanding is high (green), partial (yellow), or low (red), and then plan for review or revision.

- Once a thorough self-assessment of test results has been completed, students can divide into discussion groups that concentrate on one or more specific areas of concern.

- As an alternative to conventional study methods, students can generate their own test questions and answers to revisit topics where previous tests reveal a lack of understanding.

CONCLUSION AND IMPLICATIONS FOR EDUCATORS

In the last paragraph of "Inside the Black Box: Raising Standards Through Classroom Assessment," the authors wrote, "There is a body of firm evidence that formative assessment is an essential component of classroom work and that its development can raise standards of achievement. We know of no other way of raising standards for which such a strong prima facie case can be made" (Black & Wiliam, 1998, p. 148). Subsequently, many other researchers—including Cizek (2010), Hattie (2009), McMillan (2007), and Popham (2011)—have conducted studies, performed meta-analyses, and published articles and books indicating that formative assessment, when done correctly by assessment-literate teachers, does indeed have a great impact on student learning.

In 2013, several prominent educational organizations—the International Literacy Association (formerly the International Reading Association), the National Council of Teachers of English, the Association of Mathematics Teacher Educators, and the National Council of Supervisors of Mathematics—released position statements on formative assessment that have endorsed the process. At the state level, a number of departments of education have created policies calling for ongoing formative assessment (Gallagher & Worth, 2008).

Consistent with the concept of formative assessment, School Board Policy 6-72 of the City of Virginia Beach (2016) has asserted, "the most important assessment of student learning is conducted by teachers as they observe and evaluate students in the context of ongoing classroom activities" (para. 1). Educators should incorporate formative assessment into daily lesson plans. They should also employ the practice at any time an unplanned opportunity to gauge student understanding arises. With the extensive evidence in support of formative assessment as a means to enhance the educational experience of every student, it would be professional negligence not to.

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