



Standard 5: Assessment is Integrated into Instruction

Assessment has two fundamental functions. The first is to provide information on students' current levels of achievement. Such assessments serve a summative function; they sum up what students have learned after a more or less extended sequence of teaching and learning, for example, at the end of a unit which may last several weeks, at the end of a quarter, or annually. The second purpose of assessment is to inform what students and teachers do day-by-day to ensure that students make progress toward desired outcomes. Assessment for this purpose serves a formative function and occurs when teachers engage in a continual "taking stock" of learning by paying close, first-hand attention to specific aspects of students' developing understanding and skills as teaching and learning is taking place in real time [1]. Standard 5 addresses how teachers effectively integrate gathering and using evidence of learning into on-going instruction.

In what ways does your current classroom practice reflect the two fundamental functions of assessment?

Assessment Integrated into Instruction

In 1969, Benjamin Bloom wrote: "Evaluation which is directly related to the teaching-learning process as it unfolds can have highly beneficial effects on the learning of students, the instructional process of teachers, and the use of instructional materials by teachers and learners" [2] (p. 50). Since then, several studies have investigated the effects of integrating assessment with instruction as Bloom proposed. For example, in the Cognitively-Guided Instruction (CGI) project, teachers were trained to use evidence they collected during instruction to meet their students' learning needs. Students taught by CGI teachers had higher mathematics achievement than those students not taught by CGI teachers [3]. More recently, in a project designed to improve teachers' use of formative assessment (integrating assessment into instruction), Black, Harrison, Lee, Marshall, & Wiliam (2003) found beneficial effects on student achievement [4].

Several research syntheses have documented the positive impact of assessment integrated into instruction on student learning. A review by Fuchs and Fuchs synthesized findings from 21 different research studies on the use of assessment to inform the instruction of students with special needs [5]. They found that regular assessment (two to five times per week), with follow-up action, produced a substantial increase in student learning.

In their landmark review, updating reviews by Crooks [6] and Natriello [7], Black and Wiliam [8] examined 250 studies addressing aspects of formative assessment and concluded that formative assessment yielded improvements in student achievement. They suggested that formative assessment, when effectively implemented, could impact student achievement as much or more than any other instructional interventions. Research has supported Black and Wiliam's conclusion, and although

In one sentence, summarize the importance of formative assessment. What are the benefits for student learning?



RESOURCE FOR YOU

methodologies and the range of reported effect sizes vary widely from study to study, collective results indicate that when teachers engage in the practices of formative assessment student achievement is improved in positive, significant ways (cf. [9-15]).

In their report, the authors of *How People Learn* [16] stressed formative assessment as an essential factor in supporting learning. A further NRC report, *Knowing What Students Know* (KSWK) [17], synthesizing decades of research on measurement, psychometrics, and cognition, emphasized that assessment “should focus on making students’ thinking visible to both their teachers and themselves so that instructional strategies can be selected to support an appropriate course for future learning” (p. 4). NRC’s KSWK [17] also stated that “good formative assessment requires radical changes in the way students are encouraged to express their ideas” (p. 227). Teachers must purposefully structure opportunities to generate evidence of learning during the lesson.

Feedback

Feedback is a central component of formative assessment practices. Feedback is both the information imparted from monitoring learners’ progress toward attaining a desired goal and the responses that foster student learning [11, 14, 18-20]. Ample evidence has shown feedback to be one of the most powerful methods that influence student learning; in particular, many meta-analyses produced effect sizes above 0.4 (cf. [10, 13]). A key finding in Hattie’s synthesis of over 800 meta-analysis studies, which accounted for over 50,000 studies, was that the most powerful single influence enhancing achievement is quality feedback [10]. It is important to note that not all feedback is equally effective. Giving feedback that is descriptive and evaluative and engages students in mindful activity – in contrast to feedback that gives current achievement – had the greatest benefits in student achievement ([13, 15, 21]).

In summary, formative assessment, a set of assessment practices that are integrated into instruction, has been shown as a powerful tool in increasing student achievement. Drawing from learning theories and research from classroom practices, assessment that is integrated into instruction is a critical aspect in teaching and student learning.

Name one way you currently provide feedback to students. What makes it “quality feedback”?



REFERENCES

1. Erickson, F., Some thoughts on “proximal” formative assessment of student learning. *Yearbook of the National Society for the Study of Education*, 2007. 106(1): p. 186-216.
2. Bloom, B.S., Some theoretical issues relating to educational evaluation, in *Educational evaluation: New roles, new means: The 63rd yearbook of the National Society for the Study of Education Part II*, R.W. Tyler, Editor. 1969, University of Chicago Press: Chicago Il. p. 26-50.
3. Carpenter, T.P., et al., Using knowledge of children’s mathematics thinking in classroom teaching: An experimental study. *American Educational Research Journal*, 1989. 26(4): p. 499-531.
4. Black, P., et al., *Assessment for learning: Putting it into practice*. 2003, New York, NY: Open University Press.
5. Fuchs, L.S. and D. Fuchs, Effects of systematic formative evaluation: A meta-analysis. *Exceptional Children*, 1986. 53(3): p. 199-208.
6. Crooks, T.J., The impact of classroom evaluation practices on students. *Review of Educational Research*, 1988. 58(4): p. 438-481.
7. Natriello, G., The impact of evaluation processes on students. *Educational Psychologist*, 1987. 22(2): p. 155-175.
8. Black, P. and D. Wiliam, Assessment and classroom learning. *Assessment in Education: Principles Policy and Practice*, 1998. 5(1): p. 7-74.
9. Hattie, J. Influences on student learning. Inaugural lecture, Univeristy of Auckland. 1999; Available from: <http://www.education.auckland.ac.nz/webdav/site/education/shared/hattie/docs/influences-on-student-learning.pdf>.
10. Hattie, J., *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. 2009, New York, NY: Routledge.
11. Hattie, J. and H. Timperley, The power of feedback. *Review of Educational Research*, 2007. 77: p. 81-112.
12. Kingston, N. and B. Nash, Formative assessment: A meta-analysis and a call for research. *Educational Measurement: Issues and Practice*, 2011. 30(4): p. 28-37.
13. Kluger, A.N. and A. DeNisi, The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 1996. 119(254-284).
14. Ruiz-Primo, M.A. and M. Li, Examining formative feedback in the classroom context: New research perspectives, in *Sage handbook of research on classroom assessment*, J.H. McMillian, Editor. 2013, Sage: Thousand Oaks, CA. p. 215-232.
15. Shute, V.J., Focus on formative feedback. *Review of Educational Research*, 2008. 78(1): p. 153-189.
16. National Research Council, *How people learn: Brain, mind, experience, and school*. 2000, Washington, DC: National Academy Press.
17. National Research Council, *Knowing what students know: The science of design and educational assessment*. 2001, Washington, DC: National Academy Press.
18. Allal, L., Assessment and the regulation of learning, in *International encyclopedia of education*, P. Peterson, E. Baker, and B. McGaw, Editors. 2010, Elsevier: Oxford, UK. p. 348-352.
19. Brookhart, S.M., Educational assessment knowledge and skills for teachers. *Educational Measurement: Issues and Practice*, 2011. 30(1): p. 3-12.
20. Sadler, D.R., Formative assessment and the design of instructional systems. *Instructional Science*, 1989. 18: p. 119-144.
21. Unstall, P. and C. Gipps, Teacher feedback to young children in formative assessment: A typology. *British Educational Research Journal*, 1996. 22(4): p. 389-404.

STANDARD 5

MODULE