

Reflective Assessment: Including Students in the Assessment Process

John B. Bond, Assistant Superintendent, Northshore School District

Abstract

Over the last decade alternative assessment strategies have become an important part of the debate regarding the reform and restructuring of American education. The purpose of assessment should be to improve student learning, which means it should be integral to the teaching and learning process. For this to occur, a seamlessness needs to exist between teaching, learning, and assessment through which students are empowered to take increased responsibility for their learning.

Reflective assessment grows out of strong theoretical roots including ancient Greek thought, the philosophy of John Dewey, and cognitive constructivist learning theories. Reflective assessment is a formative process through which students can experience assessment as a part of learning, rather than as a separate evaluative process.

Reflective Assessment: Including Students in the Assessment Process

Over the last decade alternative assessment strategies have become an important part of the debate regarding the reform and restructuring of American education. In contrast to the more familiar focus upon standardized testing, this discussion and inquiry has expanded to include the informal, ongoing, formative assessments that occur within the walls of the classroom. According to Wiliam and Thompson (2008, 59) three functions are served by educational assessments-- supporting learning (formative), certifying the achievements or potential of individuals (summative), and evaluating the quality of educational institutions or programs (evaluative). It is the first function, supporting learning or formative assessment, that deserves heightened attention by the educational community. Particularly, it is how such formative assessment is seamlessly integrated into the teaching and learning experience that has sparked increased attention to this area (Ellis 2001; Wragg 1997). The aim of this paper is to examine the role of student reflection in a seamless teaching, learning, and assessment process.

The purpose of assessment has become confused with the overemphasis that is placed on standardized tests (Stiggins 1997). Rather than integral to teaching and learning, assessment is often viewed as a separate process (Herman, Aschbacher, and Winters 1992). Such significant matters as problem solving and complex thinking are often neglected in favor of specific and routine skills that are learned out of context (Wiggins 1993). A narrowing of the curriculum becomes a risk when teachers feel increased pressure to raise test scores (Wiliam and Thompson 2008, 59). Increased criticism of summative assessment points to negative impacts on student self-esteem and reduced self-assessment, both of which are linked to how students learn (Black and Wiliam 1998; Povey and Angier 2007). Wiliam (2007) emphasizes that assessment

information helps learning when used by teachers and students to modify teaching and learning activities. In their recent writing on integrating assessment practices, Wiliam and Thompson (2008, 64) further articulate this view:

The “big idea” is that evidence about student learning is used to adjust instruction to better meet student needs— in other words, that teaching is *adaptive* to the student's learning needs.

Unfortunately, such seamlessness between teaching, learning, and assessment that should occur naturally in the classroom (Ellis 2001; Perrone 1994, 11-13; Simmons 1994, 22-23; Wragg 1997) is not at the center of the learning process.

Michael Scriven is credited with first using the term “formative” (Scriven 1967) to describe evaluation that is intended to assess the effectiveness of new curricula (Bloom, Hastings, and Maudaus 1971; Brookhart 2001, 153-169). Still writing in the field twenty-five years later, Scriven (1991) expanded his definition of formative assessment to include “... evaluation designed, done, and delivered to someone who can make improvements.” It is the “someone who can make improvements” Scriven refers to that is at the crux of the assessment dilemma. When the student is included, along with the teacher, as someone who can make such improvements, the potential exists to transform the classroom experience. Students need to become the ultimate users of classroom assessment information that is elicited to improve learning (Black and Wiliam 1998, 139-148; Stiggins 1997). Of the three reasons offered by Ellis (2001, 38) for assessing teaching and learning—to classify students, to diagnose students, and to encourage and support student learning—it is the last one that captures the rationale for involving students in the assessment process. Effective assessment practices offer students an opportunity to reflect upon what they are learning (Earl and LeMahieu 1997). It is through this reflection that students experience assessment as a part of learning, rather than as a separate evaluative process (Wiggins 1993; Earl and LeMahieu 1997, 149-167). Rather than assessing a final product, it is “...supporting progress toward that product...” that is most important (Guskey 2005, 32). Assessment should begin to answer two fundamental questions: “How are we doing?” and “How can we do it better?” (Herman et al. 1992). The “we” that Herman and colleagues refer to should be a partnership that includes the learner. Definitions—reflection, metacognition, thinking about thinking

Metacognition, or reflective practice, is a concept of cognitive psychology which “focuses on the active participation of the individual in his or her thinking process” (Stewart and Landine 1995, 16-20). It involves thinking about thinking and emphasizes the individual’s self-awareness of his or her thinking patterns, learning characteristics and techniques which aid both memory and comprehension (Schneider, Borkowski, Kurtz, and Kerwin 1986, 315-336). Costa (2001) uses the terms “metacognition” and “thinking about thinking” interchangeably to mean the ability to know what we know and what we don’t know. Metacognition refers to self-knowledge about cognitive states and processes (Flavell 1971, 272-278). Others define reflection in similar terms as “an important human activity in which people recapture their experience, think about it, mull it over, and evaluate it” (Boud, Keogh, and Walker 1985). Costa and Kallick (2000, 27) provide further definition of terms in the following statement:

Intelligent people plan for, reflect upon, and evaluate the quality of their own thinking skills and strategies. Metacognition means becoming increasingly aware of one’s actions and the effect of those actions on others and on the environment. . . .

Content vs. Thinking

Conversation and debate continue among curriculum experts regarding the respective roles of content and reflection, but there appears to be agreement that both are essential ingredients in a student’s education (Stiggins 1995, 238-245). Some educators feel that teaching content is overemphasized to the detriment of considering thinking as the core of the curriculum (Costa 2001). Costa (2001, 246) states that “content, when judiciously selected for its rich contributions to thinking and learning, becomes the vehicle to carry the learning processes. The focus is on the learning from the objectives instead of learning of the objectives.” Students need to know their learning targets in order to answer the fundamental question—“Where am I going?”—on which all learners should reflect (Chappuis 2005, 40).

Student Reflection vs. Teacher Feedback

Sadler (1989, 119-144) distinguishes between “feedback” information that is provided by the teacher to the student and “self monitoring” information about performance from a student’s own appraisal of their work. These contrasting uses of information about learning unveil the critical issue of who owns the information, the teacher or the student. Wilson (1986, 199) states that the purpose of informal reflective activity is to both encourage student reflection and to provide feedback to the teacher about their teaching . Diagnostic information can inform both

students' studying and teachers' teaching (Brookhart 2001, 153-169). This view is also held by Orsmond, Merry, and Reiling (2000, 24), who state that tutor feedback and student learning should be inseparable and "if they become uncoupled, the formative aspect of assessment is lost." According to Taras (2001, 608), "Assessment is not owned by tutors or anyone else." While it is unlikely that students will become competent judges of quality on their own, effective assessment practices empower students to become expert assessors (Earl and LeMahieu 1997, 149-167).

The timeliness of feedback to students about their ongoing learning is of critical importance if students are to be engaged in reflective assessment processes. Among several assessment practices that McTighe and O'Connor (2005) outline is that feedback must be provided early and often. For a learner to reflect on their learning, "...feedback on strengths and weaknesses needs to be prompt..." (McTighe and O'Connor 2005, 14). Students need to know learning targets and receive regular feedback on their progress toward them (Chappuis 2005, 39). They need to be empowered to "...use feedback from each assessment to discover where they are now in relation to where they want to be..." (Stiggins 2008). To be meaningful to students, feedback must be integrated throughout learning activities and not "...merely a one-time event stuck at the end of an instructional unit..." (Stiggins 2008) or waiting until the end of a grading period (McTighe and O'Connor 2005, 10). The power of reflective assessment comes from realizing "...how much learning is taking place in the common tasks of the school day (McNamee and Chen 2005, 76).

When students are involved with the assessment of their learning they are empowered to take ownership of their learning. In addition to measuring and reporting learning, assessment can also promote it (McTighe and O'Connor 2005, 10). According to Stiggins:

To tap the full potential of the bond between classroom assessment and the effectiveness of schools, we must expand our collective vision to include students as assessment users, too. Yet we never think of students in this way. We see them as the examinees. We assess them and then we use the assessment results to decide how to treat them. Our definitions of the roles of assessment in school effectiveness virtually always cast students in a passive role (1996, 2).

It is this passive role that Stiggins refers to that is avoided when informal assessment opportunities are integrated into the classroom experience. "It is the goal of empowerment of all

learners for which educators should strive” (Ellis and Worthington 1994). Ellis and Worthington (1994, 9-10) outline the following motivational characteristics for the empowered student:

- Empowered students have an internal locus of control.
- Empowered students expect to be successful.
- Empowered students are goal oriented.
- Empowered students are invested in the learning process.

The crucial role that intrinsic and extrinsic motivation play in the empowerment of students is further discussed by Yancey (1998, 13-18), who argues that in our culture we are obsessed with external evaluation and because of this teachers need to consciously encourage students to reflect upon their learning. Yancey further states that if teachers do not ask students to assess their own work—a process based on internal factors and criteria—students are likely to be dependent on external rewards, not knowing where to begin to consider their own performances (1998). In other words, if teachers do not ask students to reflect and self-assess, those processes are not likely to occur due to long established practices of external assessment and extrinsic rewards.

Theoretical Underpinnings

The roots of metacognition, and for the purposes of this paper, reflective assessment, are found in the constructivist theories of John Dewey (1933) and Jean Piaget (Gredler 2001). Thinking about thinking is firmly based in the cognitive theories of learning that have been developed over the last fifty years, as opposed to a behaviorist view that is often seen in the school setting (Shepard 1991, 2-16). Metacognition is also rooted in ancient Greek thought, as seen in Plato’s *Theatetus*, where Socrates described thinking as “a discourse the mind carries on with itself” and judgement as “a statement pronounced...silently to oneself” (Plato 1956).

Contemporary cognitive psychology holds that learning is an ongoing process during which learners are continually receiving information, interpreting it, and connecting it to what they already know (Herman, et al. 1992). Within a constructivist view of learning, knowledge is assumed to be personally and socially mediated (Vygotsky 1978), rather than accumulated in a linear, bit-by-bit fashion (Soodak and Martin-Kniep 1994, 183-202). As Piaget theorized, learners’ interactions lead to structural changes in how they think about something as they assimilate and accommodate new information (Gredler 2001). Knowledge is organized in mental models, knowledge structures, or schema (Herman, et al. 1992). Consistent with this

cognitive, constructivist perspective, Tittle (1994, 151) supports the view of teachers and students both using assessment information:

A cognitive constructivist perspective ... suggests that teachers and learners construct schemas or integrate representations from assessments into existing views of the self, of teaching and learning, and of the curriculum, broadly construed. These interpretations include knowledge and beliefs and may also result in intents to use and actual use of assessments.

Cognitive learning theory and its constructivist approach to knowledge acquisition support the need to integrate assessment methodologies with instructional outcomes and curriculum content (Herman, et al. 1992). The notion that assessment is part of learning is deeply rooted in a constructivist theory that learning is a process of taking in information, interpreting it, connecting it to existing knowledge or beliefs, and, if necessary, reorganizing understanding to accommodate that information (Shepard 1991, 2-16).

Albert Bandura (1997) has theorized that reflective processes mediate the information about perceived efficacy that learners acquire from different sources of their learning experience. Self-efficacy refers to beliefs about one's capabilities and these beliefs also motivate learners in particular ways (Gredler 2001, 327). While an in depth analysis of self-efficacy theory is beyond the scope of this paper, the relationship between reflection, self-efficacy, and achievement are related to the topic of reflective assessment and need to be acknowledged.

John Dewey considered reflection central to all learning experiences, enabling "... us to act in a deliberate and intentional fashion... (Dewey 1933, 212)." In discussing why reflective thinking must be an educational aim, Dewey stated that the act of reflecting upon the consequences of actions ahead of time, "...enables us to know what we are about when we act. It converts action that is merely appetitive, blind, and impulsive into intelligent action" (1933, 17). Dewey outlined five phases of pre-reflective to post-reflective thought that closely resemble the scientific method:

- Suggestion, in which the mind leaps forward to a possible solution;
- Intellectualization, in which a problem is converted from an emotional quality to an intellectual process;
- Hypothesis, in which ideas that "pop into the mind" are used to guide observation and other operations in collection of factual material;

- Reasoning, in which ideas are mentally elaborated upon, pondered, and synthesized;
- Testing the hypothesis, in which an idea is tested and the consequences of action are evaluated (1933, 106-115).

Dewey emphasized that in practice the five phases of reflection might happen in a different order and that some might be passed over, while others might be expanded upon (1933, 116).

“Assessment reform, for those who hold this view, is not connected to compliance with mandates but is rooted in the constructivist view that learning depends on self-monitoring and reflection” (Earl and LeMahieu, 1997, 158-159). It is ironic that the word *assessment* is derived from the Latin word *assidere*, which means to sit with (Wiggins 1993). In contrast to images of bubble-in standardized tests and percentile ranks, the phrase “to sit with” conjures up images of teachers observing, discussing, and working with students. Earl and LeMahieu (1997, 158-159) state that assessment is not only part of learning, but that it is the critical component that allows learners and their teachers to check their understanding against the views of others and the collective wisdom of the culture. John Dewey advocated placing the learner at the center of experiences, and defined the teacher as the learner’s “co-partner and guide in a common enterprise—the child’s education as an independent learner and thinker” (Dewey 1964, 10).

Empirical Research

Over the last decade there has been increased interest in research on alternative assessment in the classroom. The lack of consistent structure and language used in this research, however, makes challenging any easy gleaning of findings. To alleviate this problem, Weston, McAlpine, and Bordonaro (1995, 29-48) suggest that research on classroom assessment needs to provide clear definitions regarding the level of participation for teachers and learners, their roles in the learning activity, and the knowledge domain of the learning activity. While there is not yet such clarity in either definitions or methodology, the body of research on alternative classroom assessment is growing and is beginning to offer guidance for classroom application. The ability of students to reflect upon their own learning, while acknowledged in the research literature, is usually found as a component of studies focusing on self-assessment, feedback strategies, or transfer of learning. Few studies focus specifically on the effects of reflective practice on achievement.

Among the most prominent studies identifying what improves student learning is a meta-analysis conducted by the Mid-Atlantic Regional Educational Laboratory of more than 11,000

statistical findings correlating school factors with achievement (Wang, Haertel, and Walberg 1993, 249-294). Wang et al. combined results from 179 handbook chapters and reviews, compiled 91 research syntheses, and surveyed 61 educational researchers to estimate the effect of a given method or condition on student achievement. According to this study, students' metacognitive processes had an influence on learning second only to teachers' ability to maintain active student participation.

Students' ability to reflect on their learning and make adjustments accordingly has been identified as one of the most significant determinants of student success (Conzemius and O'Neill 2001). Schunk (1983, 89-93) found that systematic observation of one's own learning progress resulted in significantly higher measures of self-efficacy, content skill, and task persistence during posttesting, than did a control group that did not self observe. In this experimental design, eight and nine year olds were randomly assigned to one of three treatment conditions—self-monitoring, external monitoring, or no monitoring. Preliminary analyses of variance revealed no differences due to tester, school, or gender on any pre- or posttest measure nor any significant interactions. Schunk found that the two monitoring conditions did not differ significantly from one another on measures of math subtraction skill and self-efficacy, but that both were found to be significantly different than the no-monitoring condition. Schunk concluded that as children observe their progress during training a heightened sense of efficacy is developed, which is validated as they continue to monitor their own work. He states that self-monitoring allows students to gain capability information on their own (Schunk 1983, 92).

In a cross-cultural study on metamemory and motivation Schneider et al. (1986, 315-336) found significant difference on post-treatment tasks between the experimental and control groups. In this study of 102 German and 91 American fourth graders, students were randomly assigned to treatment and control groups. While the primary purpose of this research was cross-cultural comparison, embedded within it were findings that have practical significance regarding the value of teaching reflective strategies to students. Students from both cultures who received training on reflective strategies performed significantly higher than did their non-trained counterparts on tests of metamemory and recall. Metamemory was defined by Schneider et al. (1986) as knowledge about memory states and processes.

In another experimental study of sixty first and third grade students, Kurtz and Borkowski (1984, 335-354) found that, contrary to expectations, children who received both

strategy training and metamemory training were not at an advantage in terms of strategy use when compared with students who received only strategy training. In this study students were randomly assigned into three treatment groups— metamemory and strategy training, metamemory-only training, or strategy-only training. General metacognitive instructions did not appear to alter reflective knowledge about memory processes. In their discussion the authors suggest that changes in metamemory take place over long periods of time and that

“... metacognitive training in their study was insufficient in focus and/or duration to produce these permanent changes” (Kurtz and Borkowski 1984, 350). Similarly, Andrade (1999) found no significant difference between the treatment and control groups in terms of metacognitive processing in a study of the effects of self-assessment on metacognitive engagement. In this study of 47 seventh graders from a rural Massachusetts public school, think aloud protocols were collected and coded to provide insight into spontaneous self-assessment, the classification of self-assessment, and the influence of self-assessment on metacognitive engagement and learning. While the author found that treatment students tended to outperform the control group on periodic posttest measures, the results were not statistically significant. Andrade found that approximately three-quarters of the students across both experimental and control groups assessed themselves spontaneously as measured by think aloud protocols. Control group students, however, were not specifically asked to assess their own progress, as were students in the treatment group.

Naglieri and Johnson (2000, 591-598), in a quantitative study of students with learning disabilities, reported that students with cognitive weakness in planning improve significantly as the result of group instruction on self-reflection and verbalization of arithmetic strategies. This study involved a sample of 19 students who received special education instruction for math from two public middle schools in rural and suburban southern California. The authors divided the sample into one experimental and four comparison groups for purpose of data analyses. While the results of this study suggest that cognitive strategy instruction that teaches students to better use planning processes is useful for those who need it the most, the external validity is limited due to the small sample size and its inclusion of only special education students. In fairness, the authors recommend that further research needs to be conducted with larger samples of children.

Qualitative Research

Several qualitative studies have been conducted related to metacognition and student learning. Even though the emphasis in this paper is on quantitative, empirical results, it is important to acknowledge that a growing body of qualitative literature exists on the topic of metacognition and student learning. This points to what Snow, Burns, and Griffin (1998, 35) refer to as a “convergence of evidence” in which qualitative methods can play a complementary role in describing in greater detail the contextual and interpersonal variables not easily captured in tightly controlled empirical investigations. A brief review of qualitative studies related to reflective assessment follows.

In a study on self-assessment, Brookhart (2001, 153-169) found through interview data that successful high school students constructed what their learning ought to mean to them in terms of both mastery and emergent understandings. The researcher observed one class of 10th grade English students, two sections of 11th grade honors English students, and three sections of 12th grade anatomy elective class. A total of 52 interviews were conducted, involving 50 different students, including 28 in English classes and 24 in anatomy classes. The interview questions were designed to elicit information about the perceived task characteristics, perceived self-efficacy to meet the challenge posed by the task, amount of effort expended and the reasons for that effort, and expected grade and how students felt about the grade. The findings showed that this sample of high achieving students talked in terms of using assessment information both formatively and summatively. Brookhart (2001) referred to these subjects as having learned the art of “studenting,” of figuring out what their teachers expect of them and doing it well. Buehl (1996, 227-244) found in another study that incorporating self-reflectiveness into a reading curriculum led to increased self-evaluative thinking among high school students. Using a convenience sample of 23 students in a semester-long college-preparatory class, the effectiveness of learning logs as a reflective strategy was focused upon. Students were required to make reflective entries once or twice each week, which the teacher commented on, but did not grade.

In another study Powell and Makin (1994, 579-594) investigated the effect of teacher intervention in the process of reflection upon gains in pupils’ abilities as learners. The authors designed their study around the three phases of reflection described by Boud et al. (1985). In this investigation of a small group of 12 and 13 year-old students with moderate learning disabilities, the researchers found that students were able to take increasing control of their own learning through reflection on their thinking and reading. The researchers also found that the

effectiveness of particular teaching and learning episodes in promoting student reflection was affected by the social and emotional context of the classroom. In their conclusion, however, the authors state that the increase in performance might have been due to students learning the language of reflective thinking, rather than an actual increase in reflective ability. Powell and Makin called for further research in this area, including evaluative methodology that accommodates the assessment of problem-solving abilities.

Teaching Metacognition

Can metacognitive skills be taught? While there is strong support in the literature for emphasizing metacognitive or reflective behavior among students (Black and Wiliam 1998; Buehl 1996; Dewey 1933; Ellis 2001; Ellis and Worthington 1994; Ellison 2001; Loughran 1996; O'Neill 1998; Starnes and Paris 2000; Yancey 1998), there is also strong support for teacher guidance of such reflection (Andrade 1999; Burchell and Westmoreland 1999; Earl and LeMahieu 1997; Kirkwood 2000; Loughran 1996; Powell and Makin 1994; Taras 2001; Wilson 1986). If learning strategies are to transfer, they must first be consciously articulated and then practiced, so that eventually they become part of a habitual and unconscious approach to learning (Kirkwood 2000, 509-535). Students should not be abandoned to discover reflective practices on their own. It is this portion of the teaching and learning partnership that teachers need to own. The actual reflective assessment, however, must belong solely to the learner.

If we want students to take responsibility, then we have to allow them to do so (Taras 2001, 605-614). If we exclude them from assessment, we are excluding them from any real responsibility and we need to examine our own position and our own motives (Boud 1995, 180). Shepard (2008, 279) observes that formative assessment has been overshadowed by pressure to raise test scores. While this reality in American classrooms may not indicate the presence of an underlying motive, Shepard (2008, 279) does shine another light on the negative impact of the No Child Left Behind Act (NCLB). Historically, the primary purpose of assessment has been evaluative (Earl and LeMahieu 1997), yet it is increasingly clear that assessment is not a single entity, nor does it have a singular purpose or audience (Haney 1991). "No longer is learning thought to be a one-way transmission from teacher to students with the teacher as lecturer and students as passive receptacles" (Herman et al. 1992, 12). As Conzemius & O'Neill (2001, 15)

summarize, "... reflection is as much a mindset as it is a process, or a set of tools or methods. Reflection is a way of thinking about the world and one's relationship to it."

It is becoming accepted among educational researchers and theorists that academic achievement is enhanced when students become involved and feel ownership for their learning (Black and Wiliam 1998; Sadler 1989; Shepard 2008; Stiggins 2008). Unfortunately, this synthesis of understanding has coincided with a powerful external assessment movement currently led by NCLB mandates. As Shepard (2008, 279) states, "...the arrival of formative assessment in America was ill timed." As a consequence it is common to see an increasing reliance upon superficial strategies designed to prepare students to take standardized tests (Shepard 2008) and other "early warning summatives" (Wiliam and Thompson 2008, 60). Rather than harnessing the power of innovative, reflective assessment strategies, further obstacles to empowering student ownership of their learning now are firmly in place. This does not devalue the worth of teaching reflective strategies to students, for that is now clear. It does, however, make more challenging the nurturance of a broad acceptance of such practices inside the classroom where day-to-day learning takes place.

Conclusion

In American education we are currently involved in a reform effort that has placed assessment practices at the center of the conversation. The emphasis, however, has been often misplaced on standardized testing and other summative measures, rather than appropriately focused upon formative assessments that occur within the school classroom (Guskey 2005; McTighe and O'Connor, 2005; Popham 2008; Povey and Angier 2007; Shepard 2008; Stiggins 1997; Wiliam and Thompson 2008). The purpose of assessment should be to improve student learning, which means it should be integral to the teaching and learning process (Chappuis 2005; Herman et al. 1992; McNamee and Chen 2005). A seamlessness needs to exist between teaching, learning, and assessment through which students are empowered to take ownership and responsibility for their learning. Reflective assessment, as I have argued in this paper, is a formative approach that places students at the center of assessment practice.

Reflective assessment grows out of strong theoretical roots including ancient Greek thought, the philosophy of John Dewey, and cognitive constructivist learning theories. If assessment is accepted as a part of the learning experience that is deeply rooted in constructivist theory, it can be viewed appropriately as an essential component as learners construct new

schema and integrate them into their thinking. Learning occurs when students reflect upon what they have experienced, which means that the locus of control for learning rests with the learner.

If one accepts a constructivist view of knowledge acquisition, it follows logically that learners have always owned their learning, for it is a natural cognitive experience. If this is the case, and I have argued that it is, then full acknowledgement that students are empowered learners is long overdue. The obstacles presented by an overwhelming legislated assessment system do not detract from the potential power of assessment *for* learning. However, it will be imperative that educational professionals— researchers, curriculum leaders, higher education professors, school administrators, and especially, classroom practitioners— become increasingly engaged in this crucial conversation. The expertise of educational professionals is essential as the appropriate places and uses of both assessment *of* learning and assessment *for* learning are being gradually clarified. A greater good will be served, I believe, when teachers and students are energized through the practice of reflective strategies. Not only does accepting this belief enhance the role of the learner, it also transforms the role of the teacher into the “co-partner and guide” about whom Dewey wrote (Dewey 1964, 10).

While there has been a great amount written on such topics as alternative and formative assessments, reflective practice, metacognition, learning strategies, and constructivism, there are surprisingly few empirical studies dealing specifically with the effects of reflective practice on achievement. There appears to be growing interest in such research, however, as is evident in the recent publication of *The Future of Assessment: Shaping Teaching and Learning* edited by Carol Anne Dwyer (2008). I found no studies evaluating program implementations. Typically, I have found and reported on empirical studies that relate tangentially to the topic of reflective assessment. Similarly, there is also a rapidly growing body of qualitative research related to reflective assessment, which as stated earlier, points to a convergence of evidence from different approaches. It is a research area, however, that lacks clear focus, and thus, is integrated into a wide range of seemingly unrelated topics in the fields of education, business administration, medicine, and philosophy.

For full implementation of reflective assessment practices to occur in American classrooms, it will be essential that a specific body of empirical research be conducted. The theoretical construct is defined and a broad base of related research exists. It is time, though, for

the research spotlight to focus tightly on the effects of reflective assessment on student achievement.

The continued pressures on students and teachers to improve test scores, while usually well intended, are misguided for they fail to acknowledge the central role of the student. It is time to fully embrace student participation and ownership in the assessment process, for in reality they have always owned it. Reflective assessment is an innovation whose time has come.

References

- Andrade, H. G. 1999. Student self-assessment: At the intersection of authentic assessment. Paper presented at the annual meeting of the American Educational Research Association, April 19-23, Montreal, Quebec, Canada.
- Bandura, A. 1997. *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Black, P. and D. Wiliam. 1998. Inside the black box. *Phi Delta Kappan* 80 (2): 139-148.
- Bloom, B. S., J. T. Hastings, and G. F. Madaus. 1971. *Handbook on formative and summative evaluation of student learning*. New York: McGraw-Hill.
- Boud, D., R. Keogh, and D. Walker. 1985. *Reflection: Turning experience into learning*. London: Kogan Page.
- Boud, D. J. 1995. *Enhancing learning through self-assessment*. London: Kogan Page.
- Brookhart, S. M. 2001. Successful students' formative and summative uses of assessment information. *Assessment in Education* 8 (2): 153-169.
- Buehl, D. 1996. Improving students' learning strategies through self-reflection. *Teaching & Change* 3 (3): 227-244.
- Chappuis, J. 2005. Helping students understand assessment. *Educational Leadership* 63 (3): 39-43.
- Conzemius, A. and J. O'Neill. 2001. *Building shared responsibility for student learning*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Costa, A. L. 2001. *Developing minds: A resource book for teaching thinking*. 3rd ed. Alexandria, VA: Association for Supervision and Curriculum Development.
- Costa, A. L. and B. Kallick. 2000. *Developing and exploring habits of mind*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Dewey, J. 1933. *How we think: A restatement of the relation of reflective thinking to the educative process*. New York: D. C. Heath.
- Dewey, J. 1964. "The need for a philosophy of education." In *John Dewey on education: Selected writings*, ed. R. D. Archambault. Chicago: University of Chicago Press.
- Dwyer, C. A. 2008. *The future of assessment: Shaping teaching and learning*. New York: Lawrence Erlbaum Associates.

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- Earl, L. M. and P. G. LeMahieu. 1997. "Rethinking assessment and accountability." In *Rethinking educational change with heart and mind: 1997 ASCD yearbook*, ed. A. Hargreaves. 149-167. Alexandria, VA: Association for Supervision and Curriculum Development.
- Ellis, A. K. 2001. *Teaching, learning, & assessment together*. Larchmont, NY: Eye on Education, Inc.
- Ellis, E. S. and L. A. Worthington. 1994. *Research synthesis on effective teaching principles and the design of quality tools for educators*. Technical report no. 5 for the National Center to Improve the Tools of Educators. Eugene, Oregon: University of Oregon.
- Ellison, L. 2001. *The personal intelligences: Promoting social and emotional learning*. Thousand Oaks, CA: Corwin Press.
- Flavell, J. H. 1971. First discussant's comments: What is memory development the development of? *Human Development* 14 (4): 272-278.
- Gredler, M. E. 2001. *Learning and instruction: Theory into practice*. 4th ed. Upper Saddle River, NJ: Merrill Prentice-Hall.
- Guskey, T. R. 2005. Mapping the road to proficiency. *Educational Leadership* 63 (3): 32-38.
- Haney, W. 1991. "We must take care": Fitting assessments to functions. In *Expanding student assessment*, ed. V. C. Perrone, 142-163. Alexandria, VA: Association for Supervision and Curriculum Development.
- Herman, J. L., P. R. Aschbacher, and L. Winters. 1992. *A practical guide to alternative assessment*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Kirkwood, M. 2000. Infusing higher-order thinking and learning to learn into content instruction: A case study of secondary computing in Scotland. *Journal of Curriculum Studies* 32 (4): 509-535.
- Kurtz, B. E. and J. G. Borkowski. 1984. Children's metacognition: Exploring relations among knowledge, process, and motivational variables. *Journal of Experimental Child Psychology* 37 (2): 335-354.
- Loughran, J. J. 1996. *Developing reflective practice: Learning about teaching and learning through modelling*. New York: Falmer Press.
- McNamee, G. D. and Jie-Qi Chen. 2005. Dissolving the line between assessment and teaching. *Educational Leadership* 63 (3): 72-76.
- McTighe, J. and K. O'Connor. 2005. Seven practices for effective teaching. *Educational Leadership* 63 (3): 10-17.
- Naglieri, J. A. and D. Johnson. 2000. Effectiveness of a cognitive strategy intervention in improving arithmetic computation based on the PASS theory. *Journal of Learning Disabilities* 33 (6): 591-598.
- O'Neill, P. 1998. From the writing process to the responding sequence: Incorporating self-assessment and reflection in the classroom. *Teaching English in the Two-Year College* 26 (1): 61-70.
- Orsmond, P., S. Merry, and K. Reiling. 2000. The use of student derived marking criteria in peer and self-assessment. *Assessment & Evaluation in Higher Education* 25 (1): 21-38.
- Perrone, V. C. 1994. How to engage students in learning. *Educational Leadership* 51 (5): 11-13.
- Plato. 1956. Theatetus. *The collected dialogues of Plato*. Eds. E. Hamilton and H. Cairns. Princeton, NJ: Princeton University Press.

Forum on Public Policy

- Popham, W. James. 2008. "Classroom assessment": Staying instructionally afloat in an ocean of accountability. In *The Future of Assessment: Shaping Teaching and Learning*, ed. C. A. Dwyer, 263-278. New York: Lawrence Erlbaum Associates.
- Povey, H. and C. Angier. 2007. The assessment of undergraduate mathematicians: Recrafting assessment of learning to provide opportunities for assessment as learning. *MSOR Connections* 6 (4): 43-45.
- Powell, S. D. and M. Makin. 1994. Enabling pupils with learning difficulties to reflect on their own thinking. *British Educational Research Journal* 20 (5): 579-594.
- Sadler, D. R. 1989. Formative assessment and the design of instructional systems. *Instructional Science* 18 (2): 119-144.
- Schneider, W., J. G. Borkowski, B. Kurtz, and K. Kerwin. 1986. Metamemory and motivation: A comparison of strategy use and performance in German and American children. *Journal of Cross-Cultural Psychology* 17 (3): 315-336.
- Schunk, D. H. 1983. Progress self-monitoring: Effects on children's self-efficacy and achievement. *Journal of Experimental Education* 51 (2): 89-93.
- Scriven, M. 1967. "The methodology of evaluation." In *Perspectives of curriculum evaluation*, eds. R. W. Tyler, R. M. Gagne, and M. Scriven. Chicago: Rand McNally.
- Scriven, M. 1991. *Beyond formative and summative evaluation*. Chicago: University of Chicago Press.
- Shepard, L. 1991. Psychometricians' beliefs about learning. *Educational Researcher* 20 (7): 2-16.
- Shepard, L. 2008. "Formative assessment": Caveat emptor. In *The Future of Assessment: Shaping Teaching and Learning*, ed. C. A. Dwyer, 279-304. New York: Lawrence Erlbaum Associates.
- Simmons, R. 1994. The horse before the cart: Assessing for understanding. *Educational Leadership* 51 (5): 22-23.
- Snow, C. E., M. S. Burns, and P. Griffin. 1998. *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Soodak, L. C. and G. O. Martin-Kniep. 1994. Authentic assessment and curriculum integration: Natural partners in need of thoughtful policy. *Educational Policy* 8 (2): 183-202.
- Starnes, B. A. and C. Paris. 2000. Choosing to learn. *Phi Delta Kappan* 81 (5): 392-398.
- Stewart, J. and J. Landine. 1995. Study skills from a metacognitive perspective. *Guidance & Counseling* 11 (1): 16-20.
- Stiggins, R. J. 1995. Assessment literacy for the 21st century. *Phi Delta Kappan* 77 (3): 238-245.
- Stiggins, R. J. 1996. *Opening doors to excellence in assessment*. Portland, OR: Assessment Training Institute, Inc.
- Stiggins, R. J. 1997. *Student-centered classroom assessment*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Stiggins, R. J. 2008. "Correcting errors of measurement that sabotage student learning." In *The Future of Assessment: Shaping Teaching and Learning*, ed. C. A. Dwyer, 229-244. New York: Lawrence Erlbaum Associates.
- Taras, M. 2001. The use of tutor feedback and student self-assessment in summative assessment tasks: Towards transparency for students and for tutors. *Assessment & Evaluation in Higher Education* 26 (6): 605-614.

Forum on Public Policy

Tittle, C. K. 1994. Toward an educational psychology of assessment for teaching and learning: Theories, contexts, and validation arguments. *Educational Psychologist* 29 (3): 149-162.

Vygotsky, L. 1978. *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wang, M. C., G. D. Haertel, and H. J. Walberg. 1993. Toward a knowledge base for school learning. *Review of Educational Research* 63 (3): 249-294.

Weston, C., L. McAlpine, and T. Bordonaro. 1995. A model for understanding formative evaluation in instructional design. *Educational Technology Research and Development* 43 (3): 29-48.

Wiggins, G. 1993. *Assessing student performance: Exploring the purpose and limits of testing*. San Francisco: Jossey-Bass Publishers.

Wiliam, Dylan. 2007. "What does research say the benefits of formative assessment are?" In *NCTM Assessment Research Brief*, ed. J. Reed, 1-3. Reston, VA: National Council of Teachers of Mathematics.

Wiliam, Dylan and Marnie Thompson. 2008. "Integrating assessment with learning": What will it take to make it work? In *The Future of Assessment: Shaping Teaching and Learning*, ed. C. A. Dwyer, 53-82. New York: Lawrence Erlbaum Associates.

Wilson, R. C. 1986. Improving faculty teaching: Effective use of student evaluations and consultants. *Journal of Higher Education* 57 (2): 197-211.

Wragg, T. 1997. *Assessment & learning: Primary and secondary*. New York: Routledge.

Yancy, K. B. 1998. Reflection, self-assessment, and learning. *Clearing House* 72 (1): 13-18.

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