Educational Assessment Knowledge and Skills for Teachers

Susan M. Brookhart, Brookhart Enterprises LLC

The 1990 Standards for Teacher Competence in Educational Assessment of Students (AFT, NCME, & NEA, 1990) made a documentable contribution to the field. However, the Standards have become a bit dated, most notably in two ways: (1) the Standards do not consider current conceptions of formative assessment knowledge and skills, and (2) the Standards do not consider teacher knowledge and skills required to successfully work in the current accountability and “standards-based reform” context. This article briefly reviews the 1990 Standards and their influence, describes some other lists of assessment knowledge and skills that might be considered in updating them, and then proposes educational assessment knowledge and skills for teachers that reflect current teacher assessment needs. This set of competencies should help focus the work of teachers, teacher supervisors, professional developers, teacher educators, and others responsible for teachers’ assessment knowledge and skills.

Keywords: educational assessment, teacher competency, classroom assessment

It has been 20 years since the publication of the 1990 Standards for Teacher Competence in Educational Assessment of Students by the American Federation of Teachers, National Council on Measurement in Education, and National Education Association. In that time, the Standards have influenced teaching and research in teacher assessment competence. However, the Standards have become a bit dated, most notably in two ways. (1) The Standards do not consider current conceptions of formative assessment (or assessment for learning). Knowledge and skills required for this essential assessment function are considerably different from the corpus described by the Standards. (2) The Standards do not consider the issues involved in standards-based assessment, in the way that term has come to be used in the “standards movement” (Porter, 1993) or the “standards-based reform movement” (Carnoy & Loeb, 2002, p. 192).

The purpose of this article is to suggest an updated list of knowledge and skills teachers need to perform the assessment-related aspects of their work in a competent and professional manner. To that end, the article has three main sections. First, I describe the 1990 Standards and their influence. Second, I review some other lists of assessment knowledge and skills that various authors and organizations have offered. All of these are useful, but none completely serves the purpose intended for the 1990 Standards. Third, I propose a set of educational assessment knowledge and skills for teachers that reflects current teacher assessment needs. In this section, I list these knowledge and skills and offer literature to support them. In a conclusion, I invite others whose work involves supporting teachers in their development of assessment knowledge and skills to use this list if they find it helpful and to discuss these issues further as needed.

The 1990 Standards for Teacher Competence in Educational Assessment of Students

The American Federation of Teachers, National Council on Measurement in Education, and National Education Association developed the Standards for Teacher Competence in Educational Assessment of Students. There are seven standards (AFT, NCME, & NEA, 1990): 1. Teachers should be skilled in choosing assessment methods appropriate for instructional decisions. 2. Teachers should be skilled in developing assessment methods appropriate for instructional decisions. 3. Teachers should be skilled in administering, scoring, and interpreting the results of both externally produced and teacher-produced assessment methods. 4. Teachers should be skilled in using assessment results when making decisions about individual students, planning teaching, developing curriculum, and school improvement. 5. Teachers should be skilled in developing valid pupil grading procedures that use pupil assessments. 6. Teachers should be skilled in communicating assessment results to students, parents, other lay audiences, and other educators. 7. Teachers should be skilled in recognizing unethical, illegal, and otherwise inappropriate assessment methods and uses of assessment information.


The stated intention was that the Standards would be a guide for teacher educators in their work with teacher education programs, a self-assessment guide for teachers, a guide for workshop instructors, and an impetus for educational measurement instructors to conceptualize student assessment more broadly than had been done in the past (AFT et al., 1990). In the 20 years since these standards were...
Developed, they did in fact serve at least most the purposes for which they were intended.

In teacher education, the Standards were reproduced in, and supported the contents of, major assessment textbooks for teachers (Airasian & Russell, 2007; Mertler, 2003; Miller, Linn, & Gronlund, 2009; Nitko & Brookhart, 2007; and previous editions of these textbooks). A course was developed based on the Standards (O’Sullivan & Johnson 1993), including performance assessments and self-assessment questions. In the research field of educational measurement, the Standards served as the basis for studies of teacher competence (Mertler & Campbell, 2005; Plake, Impara & Fager, 1993) and administrator competence (Impara & Plake, 1995).

Thus it is fair to say the Standards were well used, and as of yet no other set of standards has taken their place in the field. Two developments in educational assessment were on the horizon during the 1987–1990 period of committee work on the Standards. At the time, it was not evident that these would turn out to be such major developments, and they did not end up influencing the contents of the Standards. The first is formative assessment, and the second is assessment in the context of standards-based reform and accountability. These developments are important enough to warrant updating the Standards.

Formative Assessment

Although formative uses of assessment data are not new, and are, indeed, described in the 1990 Standards, there are several advances in thinking about formative assessment based on more contemporary theories about how students learn and self-regulate their learning (Moss, Girard, & Haniford, 2006; Shepard, 2006). What’s new in formative assessment is the importance of students as formative decision-makers who need information of a certain type (descriptive) at a certain time (to make productive decisions about their own learning. The 1990 Standards speak to teachers’ formative use of assessment information (e.g., using information to support instructional decisions).

Interest in the effects of assessment practices on students was already increasing during the time of the Standards deliberations (Crooks, 1988; Natriello, 1987). A major upswing in formative assessment practice would come a decade later, after the British Educational Research Association commissioned Black and Wiliam (1998) to update Crooks’s (1988) review.

Understandings of formative assessment have developed over time (Brookhart, 2007). Two current working definitions of formative assessment both stress involving students in generating and using assessment information as a key formative assessment function. Wiliam prefers the following definition of formative assessment because it is comprehensive: [Assessment is formative] 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 to which are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.

Recently, the Third International Conference on Classroom Assessment defined formative assessment similarly (TICCA, 2009):

Assessment for Learning is part of everyday practice by students, teachers and peers that seeks, reflects upon and responds to information from dialogue, demonstration and observation in ways that enhance ongoing learning.

Student involvement represents a major enlargement of teacher assessment knowledge and skills since the 1990 Standards. Student involvement enhances the value of classroom assessment and, ultimately, student achievement (Stiggins, 2008, p. 23). Student involvement in assessment flows from students’ understanding of classroom learning intentions, and thus one of the main strategies teachers must employ is clarifying and sharing learning intentions and criteria for success (Wiliam, 2010).

Formative assessment methods are different from summative assessment, as well. Assessments designed for formative use are narrower in scope, covering fewer learning targets in more detail, and more frequent than summative assessments (Perie, Marion, & Gong, 2009). Providing effective feedback is also a key formative assessment function (Hattie & Timperley, 2007). Interpreting students’ work for what it suggests about next steps in learning is integral to formative assessment.

The Standards are silent on these points; indeed, some of these would have been considered “instructional” skills, not “assessment” skills, in 1990. In 1990, teacher knowledge and skills were about understandings and actions taken by the teacher. The assessment knowledge and skills required to do formative assessment well include providing meaningful opportunities for students to take action about their own learning based on assessment information.

While the Standards do not use the term “summative assessment,” the knowledge and skills described therein are more germane to summative than to formative assessment. Of course some assessment knowledge and skills apply to both, but the distinction is not made, and there are enough differences between the two that knowledge and skills should be specified for both.

The fact that a lot is done under the banner of “formative assessment” in classrooms these days, and not all of it is helpful, testifies to a need for improved formative assessment knowledge and skills. For example, some districts use interim/benchmark assessments for teacher instructional decision making, with no student involvement (except to take the tests), and call it “formative assessment” (Perie et al., 2009). Or, for example, some teachers use supposedly formative strategies in classrooms (e.g., student response systems, whiteboards, traffic lights) without informing or accomplishing any next steps in learning. Teachers need knowledge and skills about formative assessment, and a set of assessment competencies for teachers should reflect that. The omission of current conceptions of formative assessment is a major reason for updating the 1990 Standards.

Standards-Based Reform

Standards-based reform and accountability were also on the horizon during the 1987–1990 period in which the Standards committee did its work. Unfortunately for readers of this article, the term “standards” in this sense means standards for student achievement, and we have been using the term “Standards” to mean the Standards for Teacher Competence in Educational Assessment of Students. Since the term “standards” is so closely associated with both, I really have no choice but to use it in both contexts, but I will try to be clear.

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When I mean the document *Standards for Teacher Competence in Educational Assessment of Students*, I will italicize *Standards*.

At any rate, until fairly recently, educational accountability in the states involved reporting not educational outcomes like test scores but educational inputs. For example, schools would be judged on the basis of library and other physical resources, teacher qualifications and other human resources, and so on. In the late 1980s and through the 1990s, a clear shift to reporting educational outcomes—most notably student achievement—had begun, and with it a concurrent interest in developing state standards for that achievement. This has come to be called the “standards movement” (Porter, 1993) or the “standards-based reform movement” (Carnoy & Loeb, 2002, p. 192). During the 1990s, there was much state variation in approaches to developing outcomes-based accountability policies, and states began to work on indicator systems and other ways of measuring and reporting progress on their outcomes, especially student achievement. This changed in 2002 with the advent of *No Child Left Behind*, when the measures and reporting mechanisms were specified for states.

Although the 1990 *Standards* mention the need to clarify and articulate the performance outcomes expected of students when planning instruction, the current standards-based reform movement requires additional competencies regarding learning intentions. Teachers need to understand their state’s content and performance standards. Teachers also need knowledge and skills about how to unpack state content and performance standards into learning intentions for use in classroom instruction and assessment, so that their daily instruction does contribute to standards-based accountability and achievement. Teachers need to understand, and be able to explain to students and parents, the measures and methods their states use to indicate and report student achievement and the uses and limitations of the information reported for students, schools, and districts. In addition, in a high-stakes environment, teachers need to know how to navigate between accountability needs and pressures—for example, the pressure to have one’s students do well on a test so the district will look good (or not be embarrassed) in media coverage, and students’ learning needs.

### Other Teacher Assessment Competency Lists

It would be useful if a more current list of knowledge and skills for teachers could be developed. Some individuals and organizations have summarized desired teacher assessment knowledge and skills. This section reviews some of their work.

Stiggins and his colleagues use a list of four (Stiggins, 2008, p.20) or five (Stiggins, 2009; Stiggins, Arter, Chappuis, & Chappuis, 2004, p. 12) keys to quality assessment, depending on how student involvement is counted. These represent the key assessment knowledge and skills for teachers, according to the Assessment Training Institute. Stiggins (2009) lists them this way:

1. Why assess? Assessment processes and results serve clear and appropriate purposes.
3. Assess how? Learning targets are translated into assessments that yield accurate results.
4. Communicate how? Assessment results are managed well and communicated effectively.

5. Involve students how? Students are involved in their own assessment.

These five key competencies, with the underlying explanations, are a good formulation of classroom assessment competencies for teachers. They overcome the lack of formative assessment and student involvement in assessment evident in the *Standards*. Of all the other competency lists located for this review, this one is perhaps the most useful. However, the five summary statements without the expansion in the accompanying text remain at a fairly large grain size for the purposes of the 1990 *Standards* and their potential replacement. For example, without reading the accompanying text, links to standards-based reform in the statements about purposes and learning targets (number 1 and number 2) are not explicit.

Stiggins and Duke (2008, p. 287) present “Ten Leadership Competencies in Assessment” for building principals that explicitly encompass standardized testing and accountability, as well as formative and summative classroom assessment, interpretation, communication, and reporting. However, because these competencies are aimed at building leaders, they include competencies at developing and implementing policy and securing appropriate professional development in assessment. Thus they are more inclusive than a list of essential assessment knowledge and skills for teachers should be.

McMillan (2000) summarized what he called the “big ideas” in assessment that are fundamental assessment principles for teachers and school administrators. This list of 11 principles is a good summary of the knowledge teachers need to do assessment well:

- Assessment is inherently a process of professional judgment.
- Assessment is based on separate but related principles of measurement evidence and evaluation.
- Assessment decision making is influenced by a series of tensions.
- Assessment influences student motivation and learning.
- Assessment contains error.
- Good assessment enhances instruction.
- Good assessment is valid.
- Good assessment is fair and ethical.
- Good assessments use multiple methods.
- Good assessment is efficient and feasible.
- Good assessment appropriately incorporates technology.

Understanding these big ideas, and the specifics under them, in depth would be a great foundation for being able to do assessment well. These principles were not intended to include skills, and as such do not update the *Standards* with regard to what teachers need to be able to do.

The National Board for Professional Teaching Standards (NBPTS) includes assessment standards in each of its certification area standards. For example, Standard IX: Assessment in the Mathematics Adolescence and Young Adulthood Standards (NBPTS, 2001) reads:

Accomplished mathematics teachers employ a range of formal and informal assessment methods that are ongoing and embedded to evaluate student learning in light of well-defined goals. They employ multiple methods of assessment—including teacher-designed and external assessments, where appropriate—to diagnose learning; plan instruction; and provide opportunities for students to reflect on their strengths and weaknesses in order to revise, support, and extend learning.
Assessment standards in various NBPTS certification areas differ from one another. Each certification area provides a different summary statement of assessment skills. Although assessment standards in all NBPTS certification areas emphasize formative uses of assessment information, they differ widely on terminology, specific competencies, and depth of description.

Standard I of the National Council for the Accreditation of Teacher Education (NCATE) Standards for the Accreditation of Teacher Preparation Institutions is titled, “Candidate Knowledge, Skills, and Professional Dispositions.” The target performance for Standard I reads (NCATE, 2008):

Teacher candidates focus on student learning and study the effects of their work. They assess and analyze student learning, make appropriate adjustments to instruction, monitor student learning, and have a positive effect on learning for all students. Candidates in advanced programs for teachers have a thorough understanding of assessment. They analyze student, classroom, and school performance data and make data-driven decisions about strategies for teaching and learning so that all students learn. They collaborate with other professionals to identify and design strategies and interventions that support student learning.

This summary statement is a very concise description of teacher candidates who understand both classroom and large-scale assessment information and know how to use both types of information at the student, class, and school level. It implies (positive effect on learning) but does not explicitly include formative assessment.

Both the NBPTS and NCATE summaries are on target but too brief to update the more detailed 1990 Standards. This is simply because of the nature of their purpose as the assessment pieces within broader standards (for professional teacher certification and teacher education program certification, respectively).

The Student Evaluation Standards (JCSEE, 2003), on the other hand, is a book-length compendium of guidelines, common errors, and illustrative cases. The Student Evaluation Standards are intended for the whole enterprise of student evaluation, for teachers and others. They are categorized under the headings Propriety, Utility, Feasibility, and Accuracy, and are intended to inform both evaluations of individual students and evaluation studies that include student data. They are comprehensive and contain information about assessment practices that teachers need to know. Thus they are on target but have the opposite problem from the NBPTS and NCATE standards; they are too detailed to use as an update to the 1990 Standards. The Student Evaluation Standards would work better as a resource for teachers and teacher candidates to study than as a statement of the knowledge and skills they should be able to demonstrate.

In summary, there are other lists (e.g., JCSEE, 2003; McMillan, 2000; NBPTS, 2001; NCATE, 2008; Stiggins, 2008), produced since the 1990 Standards, which might be considered candidates for updating or replacing them. None of them describe teachers’ assessment knowledge and skills at the same grain size as the 1990 Standards. Most are either incomplete or lack the detail necessary to provide the kind of guidance the Standards intended for teacher educators, teachers, professional developers, and researchers.

Educational Assessment Knowledge and Skills for Teachers

In pursuit of the same purposes as the 1990 Standards, most notably informing those who teach assessment courses or write assessment textbooks and those who do research in the field of assessment knowledge for teachers (many professionals in both of these categories are NCME members), the next section presents an updated list of educational assessment knowledge and skills for teachers. Table 1 presents a summary of this list.

The outline in Table 1 is intended as a general overview, and, like the 1990 Standards, the summary Statements in Table 1 are not complete without the supporting text. For example, readers will notice that there are not specific statements about “formative assessment” or “standards-based accountability.” Knowledge and skills in several of the statements apply to these areas, but are not limited to them. The text in this section expands and explains the summary outline and should be considered an essential part of these statements.

This list of knowledge and skills is intended to be at about the same grain size as the 1990 Standards. In this section, I explain how this list of statements is similar to the Standards and how it has updated them, especially to include knowledge and skills in reference to formative assessment and standards-based reform. References to the Standards identify areas of carryover from the 1990 list. References to relevant literature are included to support updates and changes. In the discussion, connections are made among the statements. As for the 1990 Standards, this set of statements forms a whole, and the parts are related.

I. Teachers should understand learning in the content area they teach.

Content knowledge and pedagogical content knowledge were present in the 1990 Standards only by implication (e.g., making instructional decisions presumes instruction in something). All assessment starts with specifying exactly what is to be assessed. Formative assessment starts with conceptualizing and communicating clear learning intentions (Hattie & Timperley, 2007; Sadler, 1989; Stiggins, 2008; Williams, 2010) so they become “targets” that students aim for. The importance of content knowledge and knowledge for teaching can hardly be overstated (Shulman, 1986), differs by content area, and includes knowledge of how the content is taught and learned as well as the disciplinary content itself, e.g., in mathematics (see Ball, Thames, & Phelps [2008]).

In order to be able to assess students well and to make sound decisions based on the results, teachers must understand general principles about how students learn, and they must understand deeply the content area(s) they teach. Selecting and communicating clear learning intentions (II and III below), designing or selecting formative and summative assessments that evaluate them (IV and V below), and plotting a course between a domain of learning and the assignments and assessments selected to embody it in the classroom depends on these understandings. Interpreting student work directly and interpreting scores derived from student performance on assessments (VI, VII, and VIII below) require a solid understanding of both the content area and how learning in that content area typically proceeds. Decisions about what to do in light of a teacher’s (IX below) or students’ (X below) interpretations of assessment results similarly depend on...
I. Teachers should understand learning in the content area they teach.

II. Teachers should be able to articulate clear learning intentions that are congruent with both the content and depth of thinking implied by standards and curriculum goals, in such a way that they are attainable and assessable.

III. Teachers should have a repertoire of strategies for communicating to students what achievement of a learning intention looks like.

IV. Teachers should understand the purposes and uses of the range of available assessment options and be skilled in using them.

V. Teachers should have the skills to analyze classroom questions, test items and performance assessment tasks to ascertain the specific knowledge and thinking skills required for students to do them.

VI. Teachers should have the skills to provide effective, useful feedback on student work.

VII. Teachers should be able to construct scoring schemes that quantify student performance on classroom assessments into useful information for decisions about students, classrooms, schools, and districts. These decisions should lead to improved student learning, growth, or development.

VIII. Teachers should be able to administer external assessments and interpret their results for decisions about students, classrooms, schools, and districts.

IX. Teachers should be able to articulate their interpretations of assessment results and their reasoning about the educational decisions based on assessment results to the educational populations they serve (student and his/her family, class, school, community).

X. Teachers should be able to help students use assessment information to make sound educational decisions.

XI. Teachers should understand and carry out their legal and ethical responsibilities in assessment as they conduct their work.

TABLE 1. Educational assessment knowledge and skills for teachers.

understanding of typical learning progressions in the content area.

Recently, too, researchers have emphasized the importance of teachers' understanding learning progressions in the various content areas they teach (Gong, 2008; Heritage, 2008; Rowe & Hill, 1997). Learning progressions are variable, and they are affected by student background and experiences. Sometimes typical learning progressions are well articulated and supported by research, but often learning progressions are understood on the basis of teachers' prior experience teaching similar content and observations of typical and atypical student understanding. Understanding specific learning progressions within a content area allows teachers to identify where a student is located in reference to a learning intention. Understanding learning progressions helps teachers interpret student work, focus feedback, and plan next steps in instruction and assessment, while moving the student toward the goal.

II. Teachers should be able to articulate clear learning intentions that are congruent with both the content and depth of thinking implied by standards and curriculum goals, in such a way that they are attainable and assessable.

III. Teachers should have a repertoire of strategies for communicating to students what achievement of a learning intention looks like.

The skill of articulating learning intentions was mentioned in the introduction to the 1990 Standards, but not treated in the main body of the document. One of the first principles of good formative assessment is clarifying and sharing learning intentions and criteria for success (Stiggins, 2008; William, 2010). The first question in the formative assessment cycle is “Where am I going?” (Hattie & Timperley, 2007; Sadler, 1989). Thus these elements, like the previous one, represent a needed update to the Standards. Statement II says teachers can write the unit goals and instructional objectives that form the basis of their instruction and assessment. Statement III says teachers can communicate these learning intentions to students. These are two separate skills.

Once articulated, learning intentions need to be shared and communicated with students, and often parents and colleagues as well. Teachers should have a repertoire of strategies for communicating to students what achievement of a learning intention looks like.

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The basis for instruction and assessment is the competence to define and describe the knowledge and skills students need to learn in clear, attainable, and assessable ways. These “know and be able to do” statements focus teachers’ instructional planning and students’ intentions for learning. To support effective learning, learning intentions must be sound, coherent with standards and curriculum goals, and clearly communicated to students. They must be targets that the students can envision for themselves and achieve. They must be assessable so that both students and teacher will know whether and to what degree they have been achieved (Stiggins, 2008; Taylor & Nolen, 2005).

Once articulated, learning intentions need to be shared and communicated with students, and often parents and colleagues as well. Teachers should have a repertoire of several strategies in each of several different communication modes—telling, showing, and having students discover—for communicating learning intentions in the content areas they teach (Moss & Brookhart, 2009). Writing an instructional objective on the board, in teacher language (the student...
will...), for example, only succeeds in communicating with students who already know what the objective means.

The skills of articulating and communicating clear learning intentions are also salient in light of standards-based reform. Teachers need to know how to develop learning intentions in a content area that are soundly based in disciplinary knowledge, derived in meaningful ways from state content standards and local curriculum, and appropriately matched to students’ pre-existing knowledge and skills. Then teachers need to understand how to create and use activities, assignments, and assessments that embody the learning intentions at different levels of student understanding (Ruiz-Primo, Furtak, Ayala, Yin, & Shavelson, 2010) without confusing the activities with the learning intentions themselves.

IV. Teachers should understand the purposes and uses of the range of available assessment options and be skilled in using them.


Assessments can be meant for formative or summative purposes. A formative purpose means teachers should plan assessments from which both teachers and students can use results. Typically, a formative assessment will be constructed primarily as a way to get feedback for students on a narrow range of performance. A summative purpose means teachers should plan assessment that they can use for valid grading and reporting, accountability, or placement decisions. Typically, a summative assessment will be constructed over several learning intentions, sometimes a whole strand or reporting standard.

Assessments can also be meant to yield information on a variety of types of learning intentions. Teachers must know what kind of test items and performance assessments will draw out the knowledge and skills they intend to measure. Stiggins (2008) calls this the “target-method match.” Teachers should have knowledge about and skill in using the range of assessment options available and the appropriate uses of each. Stiggins (2008) categorizes assessment methods into four kinds: selected response, essay, performance assessment, and personal communication. Teachers should understand how to write or select appropriate, high-quality assessments for any of these methods.

The 1990 Standards separated selecting from existing assessments (Standard 1) and developing one’s own assessments (Standard 2). In this list, selecting and developing assessments are combined into one element because similar declarative and procedural knowledge is required for both; only the level of cognitive application is different (evaluate vs. create; Anderson & Krathwohl, 2001).

To select or develop assessments, teachers need to understand the concept that a standard or learning intention is a domain and an assessment samples from that domain. To create a sound assessment of a domain of learning, teachers need to understand the concept of validity (including reliability) as the degree to which assessment information supports its intended purpose and use, and they need the skills to prepare assessments that yield valid results. Teachers should understand issues of fairness and issues of accessibility (including available accommodations and modifications for students with disabilities, and their implications for validity, accessibility, and fairness), as these are related to valid assessment outcomes. Several authors have conceptualized more specifically what teachers need to know about validity and reliability for classroom assessment (Moss, 2003; Nitko & Brookhart, 2011, p. 37–42, 66–68; Smith, 2003; Taylor & Nolen, 2005, p. 17–24; Whittington, 1999), in addition to the more conventional validity and reliability concepts for large-scale assessment, with which readers of this article are probably already familiar.

V. Teachers should have the skills to analyze classroom questions, test items, and performance assessment tasks to ascertain the specific knowledge and thinking skills required for students to do them.

Teachers should understand thinking skills—not just know various taxonomies (e.g., Bloom, Webb), but understand the kinds of cognitions these taxonomies describe. They should know how different test items and performance tasks in their content areas require different thinking skills. Teachers should be able to apply these skills as they
a. ask their own classroom questions or write their own test items and performance tasks;
b. evaluate questions in teachers’ manuals, other curriculum material, and prepared test items and performance tasks (e.g., from textbook materials or from other teachers) for potential use;
c. use assessment results to plan future instruction.

Statement V specifies that teachers will analyze the knowledge and thinking skills students need in order to do various assessment tasks. While this skill figures prominently in creating and using valid classroom assessments (Statement IV), it is listed as a separate skill for several reasons. First, analyzing the kind of knowledge and thinking required for students is important even at the level of classroom questions (Hannel, 2009), an important component of formative assessment, as well as for test items (Haladyna, Rodriguez, & Downing, in press), and performance assessments (Arter, 1999). Second, teachers typically claim their assessments tap higher order thinking (McMillan, Myran, & Workman, 2002, elementary teachers; McMillan, 2001, secondary teachers), when in fact, most do not (Marso & Pigge, 1993).

Third, many content standards span a range of thinking skills. For example, Common Core Mathematics Standard 7.EE.3 (National Governors Association & the Council of Chief State School Officers, 2010, p. 49) reads: “Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.” Students would need to be able to recall some facts, comprehend some concepts, and apply them, in order to meet this standard. In addition, in many classrooms, appropriate instructional practice might include extending this standard, for example, by having students construct their own problems or analyze their own reasoning. Teachers need to know how to analyze standards for the various thinking skills required, produce assessments that match them, and use (and help students use) the resulting information.

Statement V also lists how teachers will use their analysis in dealing with the assessment information they get from...
questions, tests, and performance assessments. Making instructional decisions figures prominently in the 1990 Standards.

VI. Teachers should have the skills to provide effective, useful feedback on student work.

Statements V and VI are related. Both require analyzing the particular knowledge and skills various assessments require of students. In fact, in a previous draft of these statements, feedback was one of the items in Statement V. However, giving effective feedback is a big enough category, requiring unique enough skills, that it seems appropriate for it to have its own entry in the list.

Effective teacher feedback on student work is usually descriptive and comments on the work itself and the process used to do the work (Hattie & Timperley, 2007). It gives students information about their work against the criteria for good work that were articulated as part of their learning intentions and shared with students (see Statement III). Effective formative feedback is elaborated but not too complex, is specific to the work, avoids general praise, and is different for different learners (Shute, 2008). Effective feedback is at an intermediate level of generality (Kluger & DeNisi, 1996) so that students can identify specific improvements that are needed but not so specific that the work is already done for them.

It is a large task for teachers simply to apprehend all the content knowledge required for providing effective feedback. Then there is considerable work required to be able to write (or speak, for oral feedback) feedback well. For many, writing good feedback amounts to communicating in a new genre. Teachers’ intentions for their feedback sometimes are not realized in their actual comments to students (Lee, 2009). As with any complex skill, writing clear and effective feedback requires much practice.

VII. Teachers should be able to construct scoring schemes that quantify student performance on classroom assessments into useful information for decisions about students, classrooms, schools, and districts. These decisions should lead to improved student learning, growth, or development.

Teachers need quantitative knowledge and reasoning skills for use with both classroom (Statement VII) and large-scale assessments (Statement VIII). For classroom assessments, teachers should know and be able to use various methods of scoring individual items or tasks (right/wrong for items or checklists and multipoint methods, including rubrics and rating scales) in the classroom. They should know and be able to use accurately various methods of aggregating scores into meaningful composites (whether as points, percents, grades, or proficiency levels). Their understanding should include the basics of simple linear scaling, weighting components, and precision of the results. Sound quantitative reasoning should lead to scores that can serve as dependable evidence about a student’s classroom learning and be used in such a way that improved learning results.

In some ways, Statements VI (feedback) and VII (scoring) complement each other. Feedback is the response to student work most conducive to supporting student learning (Hattie & Timperley, 2007), and it usually involves interpreting a student’s work to him or her in light of the criteria for work that coordinate with intentions for learning. At some point, however, a summative judgment is made (typically with some scoring or grading procedure), and for that, basic quantitative reasoning skills are needed. Some teachers and teacher candidates take issue with this claim. However, lack of basic quantitative reasoning skills very often leads to invalid assessment and grading practices that teachers may not even realize are invalid (Brookhart, 1999). The authors of most introductory assessment textbooks consider these skills essential and present basic quantitative concepts for their readers (Campbell & Collins, 2007).

Statement VII is about scoring and making decisions based on classroom assessments. The issues in this statement are similar to those in Standards 3, 4, and 5 of the 1990 Standards. There is more emphasis here on being able to construct scoring schemes (as opposed to just doing scoring) and understanding how scoring encodes interpretations of student responses to assessment into a quantitative symbol system than in the 1990 Standards. In this list, grading is considered one instance of the larger skill of constructing a scoring scheme and does not have its own separate standard, as was the case for the 1990 Standards. The need for these decisions to result in learning explicitly emphasizes the formative principle.

VIII. Teachers should be able to administer external assessments and interpret their results for decisions about students, classrooms, schools, and districts.

Statement VIII is about scoring and making decisions based on external assessments. This list of knowledge and skills separates administering external assessments and using them for decision making from scoring classroom assessments and using them for decision making (Statement VII). Standard 3 of the 1990 Standards addressed both together. Especially in the context of standards-based accountability, the skills needed for these two functions are different. Statement VIII specifies that teachers will be able to interpret scores from large-scale assessment. Teachers do not need to be able to calculate the various kinds of scores used in large-scale testing, but they should know what the scores mean. Compare this with Statement VII, which specified that for classroom assessments, teachers do need to know how to design and calculate valid scores. It can hardly be otherwise if the teachers create original assessments.

Further, it is known that beliefs about learning influence teaching (McMillan, 2003) and assessment (Shepard, 2006). Teachers’ (Leighton, Gokiert, Cor, & Heffernan, 2010) and administrators’ (Guskey, 2007) beliefs about classroom and large-scale tests are different, as well, which has implications for assessment literacy. One of these implications is to address them in separate statements in this list.

Teachers should know how to administer state- or district-mandated standardized assessments, or school-mandated common assessments such as end-of-course exams or common final exams, according to standardized directions, and understand why such standardization is necessary for interpreting these assessments’ results. While these topics have always been part of introductory assessment knowledge and skills for teachers (Campbell & Collins, 2007), teachers do a lot more test administration since the standards-based reform and accountability movement began.

Teachers should be able to interpret conventional norm- and criterion-referenced scores reported on
external test results, including but not limited to: understanding measurement error and confidence intervals; limiting generalization to the construct assessed and not beyond; understanding the difference between grade-equivalent scores and grade-level instructional objectives; understanding differences between scores for individual students and class- or school-level aggregated scores; and understanding longitudinal and cross-sectional analysis. Teachers should be able to use these understandings about score meaning to improve students’ learning.

Implied in sound decision making about students, classrooms, schools, and districts is an understanding of what un-sound decisions and invalid uses of external test information might be. This understanding should support teachers’ skills in navigating some of the pressures that come with current accountability policies. For example, while it might be sound to make sure students are well prepared for the tests they are to take, it is not sound to decide to focus only on some students, perhaps those near the proficiency cut score, at the expense of others.

**IX. Teachers should be able to articulate their interpretations of assessment results and their reasoning about the educational decisions based on assessment results to the educational populations they serve (student and his/her family, class, school, community).**

Teachers should be able to apply this skill as they
a. Speak understandably with students about the results of their own assessments and what that means for next steps in improving their learning.
b. Speak understandably with parents about the results of their children’s classroom assessments, report card grades, and external standardized assessments, the decisions made or recommended on the basis of these assessments, and the intended consequences and follow-up.
c. Participate productively in discussions with parents and guidance counselors, and sometimes students, regarding decisions about student guidance or placement (including work on Individualized Education Programs or IEPs), and implementation and follow-up of those decisions.
d. Participate productively and in informed ways in committee or school-wide discussions about assessment-related issues, including but not limited to: curriculum materials adoption and/or curriculum reform, report card reform, grading policies, accountability policies and reporting, program or school evaluation, and teacher evaluation.

Statement IX is about communicating assessment results. It is very similar to Standard 6 of the 1990 Standards. Stiggins (2008, p. 26–39) speaks directly to how important it is to understand the different information needs of different assessment users. Most other introductory assessment textbooks do, as well. Campbell and Collins (2007) found that understanding how to use assessment for different kinds of decisions was considered an essential assessment skill, according to a consensus of assessment textbook authors.

**X. Teachers should be able to help students use assessment information to make sound educational decisions.**

a. Coach students to analyze their own assessment results.
b. Help students to meaningfully track their own learning.
c. Help students communicate about their own learning.
d. Help students plan next steps in their own learning (what and how to study or practice, for example).

e. Understand relationship between assessment and student motivation, including feelings of control and self-regulation.

As noted previously, one of the major “new” (or at least, newly emphasized) formative assessment notions that was absent from the 1990 Standards was the idea that teachers should help students use assessment information. Of course, it was always assumed that teachers would help students do things, but those “things” were usually construed in the context of instruction. A major contribution of the formative assessment literature is that the effects of assessment on students (Crooks, 1988; Black & Wiliam, 1998) are powerful, and that the primary arena for teacher work in formative assessment is helping students to use assessment for learning (ARG, 2002; TICCA, 2009; Wiliam, 2010). In fact, if teachers do not help students analyze their own assessment results, meaningfully track and communicate about their own learning, and plan next steps, then formative assessment is not effective (Furtak et al., 2008; Torrance & Pryor, 1998).

Teachers need to understand the relationship between assessment and student motivation, because therein lie the principles that make formative assessment effective. When students understand where their learning is intended to go, have information about their own current achievement and progress, and have input into their own next steps, formative assessment information at the same time supports learning and also supports students’ feelings of self-efficacy and control (Bandura, 1997; Ryan & Deci, 2000) and self-regulation (Butler & Winne, 1995). Understanding these connections helps teachers select and use formative assessment strategies and work with students appropriately (Moss & Brookhart, 2009).

**XI. Teachers should understand and carry out their legal and ethical responsibilities in assessment as they conduct their work.**

Finally, Statement XI emphasizes that teachers need to understand the legal and ethical responsibilities associated with the practice of assessment. This statement is very similar to Standard 7 of the 1990 Standards. If anything, this skill is more important now than in 1990, as the pressure of high-stakes assessment has tempted some and led others to unethical assessment practices (Koretz & Hamilton, 2006). Understandings and commitments to legal and ethical responsibilities should be evident in all the work a teacher does, and are a hallmark of professional practice in assessment (NCME, 1995). Areas of understanding include, but are not limited to, test preparation, confidentiality of information, opportunity to learn, and due process. Teachers should make decisions based on results from multiple, appropriate assessments (e.g., in the areas of grading policies or drawing conclusions from external test results).

**Conclusion**

I hope this compendium of knowledge and skills will serve similar purposes to those that the 1990 Standards for Teacher Competence in Educational Assessment of Students served in their day: guiding teacher educators as they plan and implement teacher preparation programs, guiding teacher professional developers as they plan and implement in-service programs; guiding teacher self-assessment; and guiding educational measurement specialists in their conceptualization of student assessment for a range of research and
development purposes. These statements incorporate knowledge and skills from the 1990 Standards, and specifically update them with knowledge and skills required for formative assessment (especially in Statements I, II, III, IV, VI, and VII) and working in the context of changes based on standards-based reform (especially in Statements I, II, III, VIII, and IX).

I have already used this list in my own work and found it helpful. The ideas behind these statements formed the basis for the revisions of the textbook Educational Assessment of Students into its most current edition (Nikko & Brookhart, 2011), and an earlier version of these statements is included in an appendix. I welcome the comments of others in the field about this conceptualization of Educational Assessment Knowledge and Skills for Teachers.

Note

1 In this article, I will use the term “learning intentions” to mean what teachers intend for their students to learn, based on the curriculum and state standards in use in their schools. These intentions include unit goals and instructional objectives for lessons, and are sometimes called achievement targets (Stiggins, 2008, p. 21) or learning targets. I chose “learning intentions” instead of “learning targets” because I follow the convention that teachers’ learning intentions only become targets once they are something students are aiming for (Moss & Brookhart, 2009).

References


