

## **Preparing Teacher Candidates to Understand the Assessment of Teaching and Learning in the 21<sup>st</sup> Century**

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### **Abstract**

Systematic reviews of research in school assessment over the past 60 years have decried the quality of classroom assessments from all sources (McMillan, 2000). Critically important instructional decisions that bear directly on student well-being are made on the basis of evidence gathered day to day via classroom assessment; yet, little investment has been made in assuring either their quality or effective use in the service of student success (Stiggins, 2002). Preservice programs continue to neglect classroom assessment in the professional preparation of teachers, and in-service professional development opportunities remain very rare, for both teachers and principals (Stiggins, 2008). This article focuses on one college of education's attempts to prepare its teacher candidates for the realities of assessing learning in this age of accountability while emphasizing the importance of formative models. Descriptions of two comprehensive assignments that guide teacher candidates in designing meaningful classroom assessments and analyzing student learning in a P-12 environment are included.

Typical teachers spend a quarter to a third of their professional time engaged in assessment-related activities (Stiggins, 2008). Each day, teachers use classroom assessments to make critically important decisions that directly affect student success. To ensure that "the potential educational benefits of student assessments be fully realized" the American Federation of Teachers, the National Council on Measurement in Education, and the National Education Association (1990) developed *Standards for Teacher Competence in Educational Assessment of Students*. These associations subscribe to the view that "student assessment is an essential part of teaching and that good teaching cannot exist without good student assessment" (p.30). The seven standards suggest that teachers should be skilled in selecting and developing appropriate assessment methods; administering, scoring and interpreting results; using assessment data to make decisions about student learning, teaching, and school improvement; and creating valid grading procedures that can be communicated to various stakeholders (AFT, NCME, NEA, 1990, pp. 30-32). Similarly, the National Middle School Association has acknowledged the importance of assessment to middle level

teachers and teacher candidates by including its Initial Level Teacher Preparation Standards a specific standard related to Middle Level Curriculum and Assessment (Standard 3, National Middle School Association, 2005). This standard emphasizes the significance of teacher candidates' understanding and ability to use multiple assessment strategies that effectively measure standard mastery of the curriculum. Furthermore, the expectation is that middle level teacher candidates understand the key concepts within the critical knowledge base of their disciplines and know how to design assessments that target them. In addition to this important knowledge about assessment, the standards promote the idea that middle level teachers should have a disposition that values the importance of ongoing curriculum assessment and revision and realize the importance of connecting curriculum and assessment to the needs, interests, and experiences of all young adolescents.

Despite both the important role of assessment promulgated by many national educational organizations and the nature of the high stakes testing environment in which teachers teach and students learn, preservice programs continue to neglect classroom assessment in the professional preparation of teachers, and in-service professional development opportunities remain very rare, for both teachers and principals (Guskey, 2003; Stiggins, 2008). A survey of state licensing and teacher certification requirements revealed that only 15 states required teacher competence in assessment as a condition of certification, only 10 required an assessment course during preservice teacher training, and half of the states held no expectation at all for competence in assessment as a prerequisite for licensure (Stiggins, 1999). Stiggins elaborates on this issue:

Few teachers are prepared to face the challenges of classroom assessment because they have not been given the opportunity to learn to do so. It is currently the case that only about a dozen states explicitly require competence in assessment as a condition to be licensed to teach. Moreover, there is no licensing examination in place at the state or federal level in the U. S. that verifies competence in assessment. Thus teacher preparation programs have taken little note of competence in assessment, and the vast majority of programs fail to provide the assessment literacy required to enable teachers to engage in assessment for learning. It has been so for decades (2002, p.761).

While preparing teachers to assess student learning is of great importance to the educational community, it is the students in our schools who benefit the most when teachers are competent in using assessments to evaluate teaching and learning. Stiggins (2008) helps us to understand the importance of this competency and the consequences that result when it is lacking:

If it [assessment] is done well, the evidence is compelling: all students prosper, but especially struggling learners. If it is done poorly, all students suffer. The vast majority of teachers and school leaders carry out their assessment practices with neither the confidence nor competence needed to do so productively to support student learning. We either provide practitioners with the opportunity to learn, or, regardless of whatever else we do, the gap between those who meet and don't meet our standards will remain stubbornly wide. (p. 6)

## A New Direction and Directive in North Carolina

While educational organizations and scholars have long advocated for a greater emphasis on preparing preservice and practicing teachers in the area of assessment (AFT, NCME, NEA, 1990; Stiggins, 2002), educational assessment is a fairly new area of emphasis in teacher education programs. New state standards requiring teachers to be proficient in assessing and analyzing student learning warrant changes in the public schools and universities that provide teacher education and professional development. The newly adopted North Carolina Professional Teaching Standards (NCPTS), for example, have provided an impetus for change in the educational community: a change that reflects a much greater focus on assessment.

Following a legislative mandate (NC G. S. 115-295.1), these standards were developed by the NC Professional Teaching Standards Commission (NCPTSC) (2007) with the purpose of establishing high expectations for North Carolina teachers and the teaching profession. The NCPTS identify the skills and knowledge needed for 21<sup>st</sup> Century teaching and learning and serve “as the basis for teacher preparation, teacher evaluation, and professional development” (2007, p.1). Specifically, Standard IV *Teachers facilitate learning for their students*, and Standard V *Teachers reflect on their practice*, represent a change from previous standards which primarily emphasized on a teacher’s ability to teach rather than a teacher’s ability to facilitate and assess student learning. The Commission has explained this change in direction: “Previously, the standard stated that *Teachers know how to teach*. This clearly focused on teacher behavior, but disregarded whether or not students learned

or were even engaged” (NCPTSC, 2010). In its *Report to the Joint Legislative Education Oversight Committee*, the Commission elaborately articulated the knowledge and skills required of 21<sup>st</sup> Century teachers in the area of assessment (NCPTSC, 2006).

As a result, school districts and colleges of education across the state are examining their efforts to prepare veteran and novice teachers for a new era of assessment and accountability. In the Reich College of Education at Appalachian State University, like many other colleges of education across the state, the past two years have been devoted to examining courses, methods, and field experiences for preparing teachers. Many changes are currently being implemented based on this effort. One change is in the teacher education professional core – the set of courses taken by all teacher education majors. A new set of courses were developed in an effort to prepare teachers for the changing educational environment.

One of the new professional core courses, *Policies and Practices in Educational Assessment*, is intended to provide teacher candidates opportunities to understand conceptual and technical assessment concepts, methods, and procedures for both large-scale and classroom assessments and how to apply these understandings to their teaching. Including this course in the professional core will provide teacher candidates exposure and understanding of assessment principles and concepts early in their programs that they can apply in later courses and field experiences, including student teaching. Middle Grades majors, for example, will take this course either before or concurrently with their first of three middle grades field experiences. Having specialized knowledge in assessment will allow middle grades majors to apply their understanding in small-group and tutoring sessions in their first

middle grades field experience as well as in large-group instruction in their two longer field experiences.

Candidates in all 24 teacher education programs will take the new assessment course, but it is particularly relevant and timely for candidates in the middle grades program. In *This We Believe: Keys to Educating Young Adolescents*, the National Middle School Association affirms that educational programs for young adolescents be developmentally responsive, challenging, empowering, and equitable. Among the sixteen characteristics of successful middle schools is a commitment to varied and ongoing assessments that advance learning as well as measure it. The assessment course will provide middle grades as well as all teacher candidates multiple frameworks and strategies for applying varied and ongoing assessments that advance their students' learning.

### The Course

In the *Policies and Practices in Educational Assessment* course, prospective teachers will critically examine factors that influence assessment practices and policies in districts, schools, and classrooms. They will learn how formative and summative data are and can be used to evaluate student learning and improve teacher instruction and will gain an understanding of the effects of accountability systems, standardized testing, and high-stakes decision making. In addition, this course will provide prospective teachers opportunities to design a variety of assessments for student learning.

Objectives for the course are the *Standards for Teacher Competence in the Educational Assessment of Students* (AFT, NCME, NEA, 1990; pp. 30-32). The course begins with explorations of mastery learning and the role of assessment in standards-based systems. A major focus of the course

is alignment of curriculum, assessment, and instruction. Prospective teachers will examine taxonomies for learning (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich, et al. (Eds.), 2001; Biggs and Collis, 1982; Marzano, 2001); learn a process for unpacking the content of the curriculum (Guskey, 2005); and apply their knowledge about the purposes of assessment to determine how to use assessments appropriately in the K-12 classroom. In addition, they will learn about selected response assessments, constructed response assessments, performance/alternative assessments, and informal assessments. For each type of assessment, teacher candidates will learn basic concepts, examine models, analyze student learning, and practice designing their own assessments. To develop background knowledge about the purposes of assessment and to help them conceptualize how various types of assessments are used in real classrooms, teacher candidates will read articles, observe and analyze practice from real classrooms, and apply what they have learned in activities and assignments.

As candidates begin to understand the role of summative assessments in the evaluation of student learning, emphasis is placed on learning about state and national accountability systems that focus on high-stakes testing. Prospective teachers will learn the terminology associated with high-stakes testing, the benefits and negative effects of high-stakes testing, and ways to interpret and report test scores. In addition, candidates consider principles related to fairness, validity, reliability, and appropriateness, as well as the ethical and legal ramifications of testing individuals and groups of students.

Throughout the course, prospective teachers will build an understanding of effective assessment concepts and principles. Themes that are recursive during

the semester include aligning the purpose and the method when assessing students; providing students with constructive feedback; selecting appropriate corrective strategies based on assessment results; using data from assessments to improve student learning and instruction; using data from a variety of assessments to construct profiles of student performance; and evaluating and grading students fairly and equitably.

### Course Assignments

Faculty for the course have developed two major assignments that will be completed in all sections of the course. The first “common” assignment that all teacher education majors will complete is the *Analysis of Student Learning* (See Appendix A for the teacher candidate instructions.). The primary goal of this assignment is for prospective teachers to analyze a set of student responses to a classroom assessment. Student responses may include tests, performance assessments, essays, observation protocols, and other types of assessments.

Candidates will begin by evaluating whether the assessment is aligned with the intended purpose, standard course of study goals and objectives, and the content. Candidates will analyze student responses to determine what students have learned. Finally, candidates will be asked to hypothesize how the results can be used to improve teaching and learning.

Faculty are working with public school teachers to gather examples of assessments and student responses to those assessments. Examples are being collected from a variety of disciplines and content areas so that candidates have opportunities to examine assessments and the resultant student learning in their own fields. Faculty for the course understand that, while *principles* of assessment may be similar across

disciplines, *applications* may look very different at various developmental levels (e.g., preschool, elementary, middle grades, high school) and with various disciplines (e.g., art, music, science, drama, mathematics, writing).

The second common assignment, in the new assessment course, is the *Curriculum-Based Assessment* (see Appendix B for teacher candidate instructions.) The primary goal for this assignment is for teacher candidates to use curriculum goals and objectives to create classroom assessments. Candidates will select relevant curriculum objectives, analyze the content, and develop two types of assessments that can be used in the classroom to evaluate student performance on the designated goals and objectives.

Prerequisite skills and knowledge are essential to complete this assignment. First, candidates must learn how to identify the taxonomic level of curriculum goals and objectives (Anderson, et al., 2001; Biggs and Collis, 1982; Marzano, 2001) so they can later create test questions and performance tasks aligned with the taxonomic level of a specific goal or objective. Second, candidates must learn how to “unpack” the relevant content using a framework similar to a Table of Specifications (Guskey, 2005). Candidates will use resources such as curriculum documents and textbooks to identify and then classify information based on the following headings: terms; facts; rules and principles; processes and procedures; translation; application; and, analysis and synthesis. Third, candidates will develop two assessments, a test and a performance assessment. For the content test, candidates will learn to write questions appropriate for specific content. They will learn the purposes, strengths, and weaknesses of a variety of test question formats such as multiple choice, alternative choice, essay,

and short answer (Oosterhof, 2001). In addition, candidates will design a performance assessment using the components of Wiggins' model (1998): outcomes; performance task; prerequisite knowledge; criteria for scoring; and teacher and student directions. This assignment helps teacher candidates develop skills that will enable them to create assessments aligned to the curriculum in their own classrooms.

While the *Policies and Practices in Educational Assessment* course has not yet been offered as a required core course for all teacher education majors, various programs have been enacting courses and assignments that focus on the assessment of student learning. For example, the middle grades and elementary programs have long provided opportunities for majors to collect and analyze student work in their internships and field experiences. Our experiences with these earlier assignments guided the development of the *Analysis of Student Learning* project for the new course. The *Curriculum-Based Assessment* was similarly chosen based on its prior success with preservice teachers in a methods course. Although this assignment has proven to be challenging in the past for both faculty and candidates, much has been learned that will help faculty teaching the new assessment course scaffold candidates as they proceed through this assignment. For example teacher candidates analyzing relevant content have struggled considerably with developing the Table of Specifications (Guskey, 2005), they learn the importance of analyzing content before creating assessments. To scaffold teacher candidates in their process of "unpacking the content," examples have been created by classes and feedback has been provided on candidates' first attempt to apply this method. Generally, it takes a few drafts for teacher candidates to begin to analyze content in a sophisticated

manner appropriate for developing assessments. Upon the completion of the Table of Specifications, preservice teachers identify the content that will be evaluated in the two types of assessments and begin to create their assessments. For both the content-based test and the performance assessment, preservice teachers use frameworks presented in class, to the best of their ability, as a guide for their work. They begin to understand the complexity of assessing students and gain a respect for the difficulty that choosing and developing appropriate assessment activities entails. They learn that assessment decisions are difficult, even for practicing teachers. Working through these types of decisions with preservice teachers has proved challenging, but rewarding. A comment from one prospective teacher who developed a Curriculum-Based Assessment in a program course described the difficulty of this project: "The most beneficial assignment was our *Curriculum-Based Assessment*. This project was extremely difficult to put together but very helpful for our future careers."

### **Accomplishments and Possibilities for the ASU Teacher Education Assessment Strand**

Now that assessment has become a collective focus of the ASU teacher education community, more faculty and staff have become involved in the effort. A small group of faculty secured grant funds to develop materials and resources for instructors who will teach this course. The intent of the grant project is to support faculty and teacher candidates by developing a course structure with resources, assessments, and instructional experiences aligned to course goals and state standards. As a result of grant funds, this group attended an intensive assessment

training institute. During this institute, they learned about the state of the art in formative assessment, made connections with national authorities in classroom assessment, obtained resources for use in the assessment course, and began making plans for providing professional development and leadership for the larger teacher education community. The resources developed will provide a means of articulating the goals, objectives, and learning outcomes of this course to the faculty who teach it, the teacher candidates who take it, and the teacher education programs who depend on this course as a foundation for their candidates' understanding of assessment. A critical mass of faculty are beginning to work together to develop the assessment "strand" that will now be present throughout our teacher education programs.

As the development and revision of this course continue, the faculty leaders plan to collect data about teacher candidates' understanding of the essential concepts developed in this course. We will not only use data from the formative and summative assessments in the course, but also we will collaborate with program faculty in the various teacher education programs represented by the prospective teachers taking the course. In addition, we plan to collect data about candidates' success in subsequent courses where assessment is further discussed and applied, including evaluations from candidates themselves, internship and student teaching supervisors,

cooperating teachers, and graduates who have entered the profession.

At Appalachian State we have taken a step toward preparing preservice teachers who are competent in evaluating teaching and learning. By requiring an assessment course for all teacher education majors that will not only provide them with foundational concepts about assessment, but also will give candidates hands-on experiences with analyzing student performance, we too are subscribing to the view that, "good teaching cannot exist without good student assessment" (AFT, NCME, NEA, 1990, pp. 30-32). As Stiggins (1999) states:

If teachers do not understand how to produce quality assessments and use them well, their students are placed directly in harm's way. Because the academic well-being of the student hangs in the balance, excellence in classroom assessment is a must. So we must ask: Are we, the teacher education faculty in our institution, contributing to excellence in classroom assessment?  
 (p.27)

We hope to answer this question with a resounding "yes" in the near future. While our work has just begun, in the end, our goal is to prepare teacher education graduates who have gained the knowledge and confidence they will need to be not only "doers" of assessment but also thinkers and leaders who influence the policies and practices of educational assessment in their schools and districts.

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Appendix A  
 Course Assignment 1  
 Analysis of Student Learning

Alignment to Course Objectives and NCPTS

Course Objective Teachers should be able to...	Level	Alignment to NCPTS
Administer, score, and interpret results of both externally produced and teacher-produced assessment methods.	E	
	D	
	P	
Use assessment results when making decisions about individual students, planning teaching, developing curriculum, and planning for school improvement.	E	4b.1 Recognizes data sources important to planning instruction.
	D	4h.2 Interprets data on student progress accurately and can draw appropriate conclusions. 5a.1 Recognizes multiple sources of information on students' learning and performance. 5a.2 Identifies data sources to improve students' learning.
	P	5a.3 Uses data to provide ideas about what can be done to improve students' learning.
Develop valid pupil grading procedures which use pupil assessments.	E	
	D	
	P	

Assignment Guidelines

*Purpose:* The purpose of this assignment is to have you practice using assessments to inform and improve student learning.

For this assignment, you will be given a set of student responses to a content-specific task. Student directions for the task and the evaluation tool (e.g., rubric, answer key, etc.) will be included with the set of responses. Before you write your analysis of the student work, the instructor will guide you in a discussion about the context and intended outcomes of the task.

*Components:* Teacher candidates will write an analysis of student learning based on the set of responses. The analysis should include the following components:

1. Definition of the task and intended outcomes.  
 Prompt: For this assignment/assessment, students were to...
2. Evaluation of the student work. Apply the evaluation tool to make observations about the student work. These observations might be recorded as grades, scores, anecdotal records, etc. Make notes about the use of this evaluation tool for making judgments about student performance.
3. A graph or chart representing the aggregated data. For this part of the task, you might group student performance by question, evaluation criteria, etc.

4. A written analysis of the pattern of student performance for the entire group, including the following:
  - a. Misconceptions
  - b. Patterns of error
  - c. Patterns of accuracy
  - d. Comments about breadth and depth of student learning
  - e. Other

Be sure to discuss how the data helped you draw these conclusions.

5. An analysis of the assessment results for two groups of students: high performing and low performing.
6. An analysis of the assessment results of an individual student in comparison to the overall class performance.
7. A discussion of the implications for instruction, including the following:
  - a. Recommendations for revising the task/test to improve student learning.
  - b. Recommendations for revising the evaluation tool to provide more valid or reliable judgments about student performance or to provide more meaningful feedback to improve student learning.
  - c. Corrective strategies for particular items, errors, or students.
  - d. Next instructional steps for the group of students.

Appendix B

Course Assignment 2  
Curriculum-Based Assessment (CBA)

Alignment of Course Objectives and NCPTS

Course Objective Teachers should be able to...	Level	Alignment to NCPTS
Teachers should be skilled at setting performance objectives toward which assessment can be aimed.	E	Demonstrates an understanding of the importance of developing students' critical-thinking and problem-solving skills.
	D	Demonstrates knowledge of processes needed to support students in acquiring critical-thinking and problem-solving skills.
	P	
Teachers should be skilled in choosing assessment methods appropriate for instructional decisions.	E	Demonstrates awareness of multiple indicators or measures of student progress.
	D	
	P	
Teachers should be skilled in developing assessment methods appropriate for instructional decisions.	E	Acknowledges the importance of using research-verified approaches to teaching and learning. [Acknowledges the importance of using verified approaches when creating assessments.]
	D	Demonstrates knowledge of current research verified approaches to teaching and learning. [Demonstrates the ability to use verified approaches when creating assessments.]
	P	

Assignment Guidelines

*Purpose:* The purpose of this assignment is to develop the skills necessary for translating North Carolina Standard Course of Study goals and objectives into appropriate assessment activities for evaluating student learning.

*Components:* For this assignment you will develop two assessments based on the North Carolina Standard Course of Study for your content area/level. Your project will include the following components:

- A list of the
- North Carolina Standard Course of Study goals and objectives to be assessed.
- An outline or summary of the essential content. This should include the vocabulary, facts, relationships among facts and concepts, as well as principles and generalizations related to this subject matter (e.g., Guskey's Table of Specifications; Marzano framework).
- Two assessments written according to the directions provided below.

Content-Based Test (focused on what students know)

Create a test based on goals/objectives drawn from the North Carolina Standard Course of Study. This test should measure content knowledge and include the following:

1. A stated purpose for what the test is intended to measure and the rationale for choosing a specific format (written, auditory, visual). The assessment should be based on goals/objectives from the North Carolina Standard Course of Study in any content area.
2. A test plan that outlines specific goals/objectives and the format for which they will be tested. The test plan is to be submitted for approval before going ahead with the development of test items.
3. A test that includes (a) the directions to students, (b) test items appropriate for the state purpose being measured, and (c) a scoring key. Provide the level (based upon Bloom's revised taxonomy) of each question. You must include questions at a variety of levels of Bloom's taxonomy.
4. A bibliography of books and other source materials used in completing the project.

Performance Assessment (focused on what students can do)

Create a performance assessment that challenges students to demonstrate performance in an authentic, meaningful way similar to an activity one might experience in the real world. This type of assessment is designed to inform and improve student learning.

Your performance assessment should include the following components:

1. Significant student outcomes: *What do you want students to achieve?*  
Identify the North Carolina Standard Course of Study goals and indicators and/or other outcomes as appropriate to the task and intended outcomes
2. Performance task: *What do you want students to do?*  
Develop the task that students will complete to demonstrate whether or not they have met the outcome(s)
3. Scoring rubric: *How will students be evaluated?*  
Develop a set of guidelines for assigning scores to student work. Typically this includes two parts:
  - Levels of Performance - the levels at which students perform this task
    - Examples
      - Developing → Meets Standard → Goal
      - Work in Progress → Meets Standard → Quality
  - Criteria- the specific behaviors, products, or qualities we look for in judging student work at each level. What specific things determine excellence? What specific things not present determine poor quality?)
4. Instructions: *How will students and teachers know what is expected?*
  1. Identify the prerequisite skills (the knowledge and/or skills students need prior to undertaking the task to be successful)
  2. Directions (Student/Teacher)

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