Federation for Self-financing Tertiary Education (FSTE)

Project on Teacher Competency Framework

Module 5: Induction to assessing student learning

Brief Notes and Suggested Reading

This brief note intends to give participants the blueprints of the contents covered in the module. Suggested readings are listed to facilitate participants in accessing the sources and to obtain more detail information.

This module intends to provide answers to the following four key questions in the context of post secondary education:

1. Why assessment?
2. What is assessment?
3. How to match learning outcomes with assessment?
4. How can the quality of assessment be assured?

In this module, participants will have a taste on how to assess student learning, including the theories and hands on experiences. It is anticipated that extended modules and workshops will be provided in the second year implementation.

I. Why Assessment? Establish the needs and clarify the purpose.

1. "Assessment is essential not only to guide the development of individual students but also to monitor and continuously improve the quality of programs, inform prospective students and their parents, and provide evidence of accountability to those who pay our way."

   -- Redesigning Higher Education: Producing Dramatic Gains in Student Learning by Lion F. Gardiner; ASHE-ERIC Higher Education Report Volume 23, No. 7, p. 109

2. Universities, for example Loyola University Chicago (LUC), view assessment as a natural concern of the scholar as teacher. They want to know what their students have learned, the means by which they learned, and the effectiveness of the learning process. As teacher-scholars, we must ask: "What evidence

might we gather that our students, taken as a group, are in fact acceptably achieving the learning outcomes that we, the faculty of a given program, intend?" The pursuit of this question is how we learn what our students know and what they are able to do as the result of their course of study.

Aside from the overarching necessity for assessment as a means of meeting both institutional and programmatic accreditation requirements, there are two main reasons that assessment is important in higher education:

a. Accountability

- ✧ To students and their families
- ✧ To government

b. Program Improvement

Evidence-based program improvement soundly answers questions such as:

- ✧ How well are student learning outcomes being met?
- ✧ Which outcomes need to be revised?
- ✧ Which programs/services/courses need to be revised to better fit the outcomes?
- ✧ Which programs/services/courses are no longer congruent with the mission and goals of the department?

http://assessment.uconn.edu/why/index.html
http://sites.google.com/site/luctwtguide/why-assessment-is-important

II. What is assessment? Assessment for learning or assessment of learning?

3. It is essential to clarify the differences between assessment, test and measurement:

- ➢ Assessment is the collection of data for educational decision making. It includes a full range of procedures (or tools) to gain information about student learning (observations, rating of performances or projects, skill tests, paper and pencil tests etc) and the formation of value judgments concerning learning process.

- Test is a particular type of assessment that typically consists of a set of questions administered during a fixed period of time under reasonable comparable conditions for all students.

- Measurement is the assigning of numbers, or grades, to the results of a test or other type of assessment according to a specific rule (e.g. counting correct answers or awarding points or grades for particular aspects of an essay).

4. The following guidelines were developed by a group of assessment practitioners under the auspices of the American Association for Higher Education (AAHE) Assessment Forum as "Principles Of Good Practice For Assessing Student Learning":

   a. The assessment of student learning begins with educational values.

   b. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and performance over time.

   c. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.

   d. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.

   e. Assessment works best when it is ongoing, not episodic.

   f. Assessment fosters wider improvement when representatives from across the educational community are involved.

   g. Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.

   h. Assessment most likely leads to improvement when it is part of a larger set of conditions that promote change.

   i. Through assessment, educators meet responsibilities to students and to the public.

http://www.mcli.dist.maricopa.edu/LF/Spr99/assidere1.html

5. The Holmes Group[i] also has the following expectation: "Professional teachers" are described as "skilled diagnosticians of children's learning needs." They are expected to interpret the understandings students bring to and develop during lessons … and to identify students' misconceptions and question their surface responses that mask true learning.

http://www.eric.ed.gov/PDFS/ED270454.pdf
http://www.personal.psu.edu/rsw136/blogs/rebecca_west_burns/2010/06/the-holmes-group-1986-tomorrows-teachers-a-report-of-the-holmes-group-michigan-the-holmes-group.html

6. National Board of Professional Teacher Standards (NBPTS)[ii] in US indicates that: Teachers are responsible for managing and monitoring student learning. The teachers we intend to recognize know how to create, enrich, maintain, and later instructional settings to capture and sustain student interests. They use many methods to measure student growth and understanding.

http://www.nbpts.org/about_us

III. How to match the learning outcomes with assessment? Whether the results of assessment reflect reliably the intended learning outcomes?

7. The process of preparing, administering and using assessment to improved learning and instruction can be broadly summarized in the following 8 steps:

    8. Interpreting and using the results
    7. Appraising the assessment
    6. Administering the assessment
    5. Assembling the assessment
    4. Preparing relevant assessment tasks
    3. Selecting appropriate assessment tasks
    2. Developing specifications
    1. Determining the purpose of assessment

8. Item types of assessment can be broadly classified into two categories:

   A. Objective test items

      a. Objective test items have a common feature: they present students with a highly structured task that limits the type of response they can make. To obtain correct answer, students must demonstrate the specific knowledge, understanding, or skill called for in the item; they are not free to redefine the problem or to organize and present the answer in their own words.

      b. The positive side of this item type is that it contributes to objective scoring that is quick, easy, and accurate.

      c. The negative side is that it is inappropriate for measuring the ability to select, organize, and integrate ideas.

      d. Examples of objective test items

         Supply types: Short answers
         Fill in blank

         Selection types: True-false or alternative responses
         Matching
         Multiple-choice

   B. Performance assessment tasks

      a. Performance assessment tasks allow students to decide which facts they think are most pertinent, to select their own method of organization, and to write as much as seems necessary for a comprehensive answer.

      b. The positive side is that such tasks tend to reveal the ability to evaluate ideas, to relate them coherently, and to express them succinctly. They also reflect individual differences in attitudes, values and creativity.

c. The negative side is that (1) they are inefficient in measuring knowledge of factual material; and (2) scoring is difficult and apt to be less reliable.

d. Examples of performance assessment tasks

- Extended-response essay questions
- Restricted-response essay questions
- Oral presentations
- Project assessment
- Use of equipment or scientific instruments
- Playing a musical instrument

Alignment of Assessment with Learning objective

9. Different learning objectives (or learning outcomes) will need different assessment tools to identify the evidences of achieving. As such, it is essential to align assessment with learning objective (or learning outcome)

- ✧ **Learning objectives:** What do I want students to know how to do when they leave this course?
- ✧ **Assessments:** What kinds of tasks will reveal whether students have achieved the learning objectives I have identified?

Type of learning objective	**Examples of appropriate assessments**
Recall **Recognize** **Identify**	Objective test items such as fill-in-the-blank, matching, labeling, or multiple-choice questions that require students to: • recall or recognize terms, facts, and concepts
Interpret **Exemplify** **Classify** **Summarize** **Infer** **Compare** **Explain**	Activities such as papers, exams, problem sets, class discussions, or concept maps that require students to: • summarize readings, films, or speeches • compare and contrast two or more theories, events, or processes • classify or categorize cases, elements, or events using established criteria

	• paraphrase documents or speeches • find or identify examples or illustrations of a concept or principle
Apply **Execute** **Implement**	Activities such as problem sets, performances, labs, prototyping, or simulations that require students to: • use procedures to solve or complete familiar or unfamiliar tasks • determine which procedure(s) are most appropriate for a given task
Analyze **Differentiate** **Organize** **Attribute**	Activities such as case studies, critiques, labs, papers, projects, debates, or concept maps that require students to: • discriminate or select relevant and irrelevant parts • determine how elements function together • determine bias, values, or underlying intent in presented material
Evaluate **Check** **Critique** **Assess**	Activities such as journals, diaries, critiques, problem sets, product reviews, or studies that require students to: • test, monitor, judge, or critique readings, performances, or products against established criteria or standards
Create **Generate** **Plan** **Produce** **Design**	Activities such as research projects, musical compositions, performances, essays, business plans, website designs, or set designs that require students to: • make, build, design or generate something new

IV. How can the Quality of Assessment be assured? Reliability and Validity

10. The two factors governing the quality of assessment are: (a) Reliability and (b) Validity. Both reliability and validity refer to the results obtained with an assessment instrument and NOT to the instrument itself.

a. Reliability refers to the consistency of measurement; that is, how consistent test scores or other assessment results are from one measurement to another.

   - Reliability is primarily statistical

   - Examples of estimating reliability:

     i. Test-retest method (measure of stability)
     ii. Split-half method (measure of internal consistency)
     iii. Kuder-Richardson method and coefficient Alpha (measure of internal consistency)
     iv. Inter-rater method (measure of consistency of rating)

b. Validity refers to whether the assessment measures what intended to measure, i.e. the adequacy and appropriateness of the interpretations made from assessments, with regard to a particular use.

   - Major considerations:

     i. Content validity – How well the sample of assessment tasks represents the domain of tasks to be measured
     ii. Construct validity – How well performance on the assessment can be interpreted as a meaningful measure of some characteristic or quality
     iii. Test-Criterion Relationship – How well performance on the assessment predicts future performances or estimates current performance on some valued measures other than the test itself.

Robert L. Linn, Norman E. Gronlund "Measurement and Assessment in Teaching"7th ed Prentice-Hall Inc. 1995.
http://www.eric.ed.gov/PDFS/ED270454.pdf
http://en.wikipedia.org/wiki/Educational_assessment
http://en.wikipedia.org/wiki/Classical_test_theory

Annex: Classical test theory

Classical test theory assumes that each person has a *true score*, *T*, that would be obtained if there were no errors in measurement. A person's true score is defined as the expected number-correct score over an infinite number of independent administrations of the test. Unfortunately, test users never observe a person's true score, only an *observed score*, *X*. It is assumed that *observed score* = *true score* plus some *error*:

X	=	T	+	E
observed score		true score		error

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[i] The Holmes Group(1986), a consortium of deans and a number of chief academic officers from research institutions in each of the 50 states in US, is organized around the twin goals of the reform of teacher education and the reform of the teaching profession.

[ii] NBPTS is an independent, nonprofit, nonpartisan and nongovernmental organization. It was formed in 1987 to advance the quality of teaching and learning by developing professional standards for accomplished teaching, creating a voluntary system to certify teachers who meet those standards and integrating certified teachers into educational reform efforts.