
Selecting Measures for Student-Learning Program Objectives

Stacey Street
Office of Institutional Research
Eastern Kentucky University

What is assessment as it pertains to us and our roles?

- Marchese: “Assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development.”
 - A way of determining if students are achieving what we say they will in our mission and objectives
 - A means of making sure we’re doing what we say we will
 - Proving to ourselves and important others that we are accomplishing our purposes
 - A way to improve teaching and learning
-

What are the key questions assessment should answer?

- What should college graduates know, be able to do, and value?
 - Have the graduates of our institution acquired this learning?
 - What are the contributions of the institution and its programs to student growth?
 - How can student learning be improved?
-

Assessment asks you to think about the following questions as well:

- What should students be learning and in what ways should they be growing?
 - What are students actually learning and in what ways are they actually growing?
 - What should you be doing to facilitate student learning and growth?
 - How would you measure student learning and growth?
-

What are student learning objectives?

- Nichols on learning objectives: “...descriptions of what academic departments intend for students to know (cognitive), think (attitudinal) or do (behavioral) when they have completed their degree programs, as well as their general education or ‘core’ curricula.”
 - Objectives should describe, using action verbs, intended student learning or behavior rather than merely subject matter coverage
 - Each learning objective is assessed as to the degree students are exhibiting knowledge or abilities related to it
 - Each academic program is to have a set of intended student learning objectives that is reviewed periodically and updated as appropriate
-

Developing Program Objectives: Ask 3 Questions

- What are the specific student behaviors, skills, or abilities that would tell you this learning is taking place?
 - Ideally and briefly, what would a skeptic need (evidence, behavior, etc.), in order to see that your students are achieving the student learning you have set out for them?
 - In your experience, what evidence tells you when students have met these objectives - how do you know when they're "getting" it?
-

What are some sample objectives from other programs?

- M.B.A. -- critical thinking: Given a business situation, students can diagnose the underlying causes of the situation, evaluate possible solutions in relation to underlying business theory, and determine and defend appropriate course of action
- B.A. Psychology -- foundations: Students can recognize the major concepts, theoretical perspectives, empirical findings, applications, and historical trends in psychology
- M.A.Ed. -- information literacy: Students can access information from a variety of credible sources and apply that information to the solution of educational problems

Assessment Methods and Strategies:

- By what measure(s) will you know that students are meeting program learning objectives?
 - From whom, and at what points, will you gather data?
 - How will the information be collected, analyzed, and used to improve the program?
 - What are the criteria for success?
-

Set Your Criteria For Success

Criteria for success:

tell you at what point you will be “happy” with your results for this objective.

- ❑ Level of accomplishment for which you are aiming
 - Nichols: “...identif(y) a reasonable level of service improvement to expect given the resources and personnel the unit has available.”
-

Example

- Objective: Graduates will be able to make an effective sales presentation
 - Measure: Senior Project
 - Criterion:
 - ❑ The average grade on the senior project will be no less than 3.5 or 70%
 - ❑ On no individual objective area will the average be less than 3.5.
-

Criteria for Success: Win or Lose?

- 2 ways to WIN:
 - ❑ Meet your criteria for success
 - ❑ You do not meet your criteria for success, but implement procedures for further improvements to try to meet your criteria
 - 2 ways to LOSE:
 - ❑ Fail to carry through with assessment activities
 - ❑ Accomplish assessment activities, but fail to use assessment information as a basis for improvement.
-

Assessment Methods and Strategies:

Make sure your assessment methods:

- answer questions that are important to you
 - are manageable, given available resources (including time and money)
 - result in useful feedback that highlights accomplishments and identifies areas requiring attention.
-

Characteristics of an Effective Assessment Measure

- **Measurable**-We can observe it, count it, weigh it.
 - **Actionable**-If a concern is identified we can do something to address it.
 - **Unambiguous**-It is specific enough that we'd all agree on it if we saw it.
 - **Meaningful**-It captures enough of the essential components of the objective to represent it adequately. If we saw it, we'd agree that the objective has been achieved.
 - **Timely**-It is likely to occur within the designated time frame and/or to occur often enough to be useful.
 - **Unbiased**-It does not work to the advantage or disadvantage of this client group or this situation.
 - **Acceptable**-The key stakeholders accept this as a description of what the objective looks like when it occurs.
 - **Manageable**-It can be measured without excessive cost or effort.
-

Academic Assessment Methods and Strategies:

Relevant Existing Information

- existing exams, assignments, or projects common to a group of student in the major
 - writing samples completed for UWR
 - senior assignments accomplished as a part of a capstone experience
 - faculty teaching evaluations
 - graduating senior surveys
-

Academic Assessment Methods and Strategies:

Relevant New Information

- student internships or performance
 - capstone courses for graduating seniors (summary course for major)
 - portfolio analysis (collection of student work)
 - standardized tests (nationally-constructed or department-based)
 - surveys, interviews, or focus groups of students at entrance and exit, alumni, faculty, employers or related to course content
-

Academic Assessment Methods and Strategies:

- Use multiple methods
 - Use multiple raters (where possible)
 - Include direct and indirect measures
 - Assess strengths and weaknesses
 - Include qualitative as well as quantitative measures
-

What are direct measures of student learning?

- Direct measures require students to display their knowledge and skills as they respond to the instrument itself and include capstone courses, theses, dissertations, portfolio assessments, pre- and post-testing, standardized exams – where there is a one-to-one relationship to specific student learning objectives
-

What are indirect measures of student learning?

- Indirect measures ask students to reflect on their learning rather than to demonstrate it (Palomba and Banta, 1999, pp. 11-12) and include surveys of alumni, students, and employers, as well as retention studies, course performance analysis, end-of-course evaluations, and job placement data
-

What should course-level measures accomplish?

- At this level, you may design procedures and instruments that serve any or all of four distinct purposes:
 1. Identifying students for remediation and exemption
 2. Determining whether the objectives are being met by measuring student performance
 3. Determining whether and how student attitudes toward the course and field have changed
 4. Determining whether the overall course design and materials/procedures are efficient and effective
- (Diamond, 1998)*
-

What's wrong with relying *solely* on tests for course assessment?

- Most tests now in use ask only for factual recognition or recall
 - Although faculty desire students to develop higher-order cognitive skills, the tests that are used rarely measure these competencies
 - When essays are used, faculty tend to emphasize knowledge of facts
 - Less than 20% of faculty report using “problem solving” items on essay tests
 - Grades are used primarily for external reporting and not to give feedback to students
 - Lack of attention to validity/reliability call into question test results and grades given based on those tests
 - Publisher-provided test items tend to focus primarily on recall items
 - Nearly 50% of students report never or rarely having to write an essay examination or test (*Gardiner, 1996*)
-

What are some alternatives to testing for course assessment?

- When used well, portfolios, journals, and simulations combine quality instructional techniques with an assessment element
 - Walker's CAT helps faculty monitor group work and detect problems early, including a group assessment form
 - Angelo and Cross' classroom assessment movement uses things like short essays, "what did you learn today?" exercises, and the like to "provide information and insight needed to adjust and improve teaching and learning as they occur."
(Diamond, 1998)
-

Specific Examples

- Capstone/Senior Project
 - Comprehensive Exam
 - Portfolio/Juried Performance
-

Why use capstone courses for program-level assessment?

- Assessment experts like Nichols and Banta suggest capstone courses (including theses and dissertations) as especially rich sources of information for outcomes measurement
 - Alternatives such as portfolios and standardized pre- and post-testing can be extremely resource-intensive and cumbersome, as well as time-consuming while waiting for longitudinal information to emerge
 - In short, capstones provide the most useful information for the smallest investment of resources
-

How Do I Use a Capstone/Senior Project as Program Assessment?

■ **Capstone/Senior Project:**

Prepare a marketing and print campaign for a client with written prospectus and oral presentation

- **Objective 1:** Graduates will be able to write clearly and appropriately for the task
 - **Objective 2:** Graduates will be able to make an effective sales presentation
 - **Objective 3:** Graduates will be able to think critically
 - **Objective 4:** Graduates will be able to design an effective print advertisement
 - **Objective 5:** Graduates will be able to develop appropriate marketing strategies
-

How Do I Use a Capstone/Senior Project as Program Assessment?

- Link project components to specific objectives
 - Written portion assesses Objective 1
 - Oral Presentation assesses Objective 2
 - Written portion and Oral Presentation assess Objective 3
 - Specific components of both written and oral portions assess Objectives 4 and 5.

 - Establish criteria for success for the *program*
 - The average grade on the senior project will be no less than a 3.5 or 70%
 - On no individual objective area will the average be less than 3.5 points
-

Sample Assessment Rating Template

Assessment Data Entry/Reporting Template Sample						
Student	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5	Mean
Smith	4	5	2	5	3	3.80
Jones	3	5	2	5	2	3.40
Brown	4	5	1	5	2	3.40
O'Brien	4	4	3	5	3	3.80
Griffin	3	5	4	4	3	3.80
Finnerty	2	5	2	5	3	3.40
O'Hara	4	4	2	4	2	3.20
Mean	3.43	4.71	2.29	4.71	2.57	3.54
Outcome 1: Graduates will be able to write clearly and appropriately for the task						
Outcome 2: Graduates will be able to make an effective sales presentation						
Outcome 3: Graduates will be able to think critically						
Outcome 4: Graduates will be able to design an effective print advertisement						
Outcome 5: Graduates will be able to develop appropriate marketing strategies						

How Do I Use Comprehensive Exam as Program Assessment?

- Link exam questions to program student learning objectives
 - Questions 1-17 assess Objective 1
 - Questions 18-34 assess Objective 2
 - Questions 35-50 assess Objective 3
 - Establish criteria for success for the *program*
 - The average grade on the senior exam will be no less than 70%
 - On no individual objective area will the average be less than 24 points
-

How Do I Use Portfolio/Juried Performance as Program Assessment?

- Programs such as those in music and art frequently require senior recital or exhibition
 - Programs such as teacher education, psychology, and creative writing frequently require a portfolio
 - Program Outcome:
 - Program graduates will be able to deliver a polished and technically correct performance.
 - Program graduates will demonstrate through a portfolio an in depth understanding of and use of skills particular to the discipline
 - Means of assessment
 - Rubric scored by jury
-

How Do I Use Portfolio/Juried Performance as Program Assessment?

- Means of assessment
 - Rubric scored by jury rating on a scale of 1 to 5 proficiency in tone, intonation, accuracy, rhythm, technique, and interpretation or phrasing
 - Criteria for program success
 - Average ratings will be at least 3.0 across all elements on the rubric
 - On no element will the average be less than 2.5
-

How do you measure whether students are achieving the objectives?

- You develop a measurement (or scoring) rubric that associates very clear and specific performance in a given area with a specific score or named level of achievement in that area
 - The rubric provides you with a predetermined and specific way to gauge student performance against a consistent standard that applies to all students equally
 - Benchmarks (samples of student work representing specific levels of achievement vis-à-vis the scoring rubric) can be provided for future reference and for outside reviewers or faculty teaching a course for the first time
-

Example of scoring rubric:

- Doctoral program in ELPS at Iowa State University – objective for “*collecting data*”:
 - Exemplary: Collects reliable and valid data in accord with professional standards using sophisticated data collection procedures
 - Proficient: Collects reliable and valid data in accord with professional standards
 - Marginal: Possesses some understanding of data collection theory and procedures but is not able to consistently apply the knowledge in practice
 - Unacceptable: Exhibits little or no understanding of how to collect reliable and valid data

(Source: <http://www.educ.iastate.edu/elps/rubricevalass.htm>)

EKU Critical Thinking Rubric

EKU General Education Scoring Guide for Critical Thinking

	4-Accomplished	3-Competent	2-Developing	1-Beginning	N/A
Comprehension	Clearly identifies the main issues/concepts/problems as well as subsidiary and implicit aspects.	Identifies the main issues/concepts/ problems but does not fully address subsidiary or implicit aspects	Identifies some of the main issues/concepts/problems but misses nuances	Fails to identify main issues/concepts/problems	
Identification of Evidence	Retrieves organizes and assesses relevant and timely information or evidence	Retrieves and organizes relevant information or evidence, but insufficiently assesses its quality	Retrieves some relevant data/ evidence	Fails to retrieve relevant data/ evidence	
Recognition of Perspectives	Clearly articulates a point of view, and develops it in conversation with alternative perspectives	Articulates a point of view and acknowledges other possible positions, but does not engage with them	Recognizes the possibility of multiple perspectives in a limited fashion	Recognizes the single perspective	
Application and Analysis	Uses relevant concepts/theories insightfully in different contexts	Uses relevant concepts theories in different context	Uses relevant concepts/theories in different contexts, but in an incomplete or superficial manner	Does not use relevant concepts/theories in different contexts	
Interpretation and Evaluation	Establishes a conclusive position or interpretation through the development of a cogent line of reasoning. Discusses implications and consequences.	Establishes a conclusive position with some justification. Identifies implications and consequences.	Asserts a position or interpretation, but fails to provide adequate justification. Limited identification of implications and consequences.	Fails to establish any recognizable conclusion.	

Can't we just use course grades as indicators?

- Course grades are seldom directly linked one-to-one to specific end-of-program learning objectives
 - Astin: “Grades tell us little of what the student has actually learned in the course...(and) very little about what a student actually knows or what the student’s competencies or talents really are.”
 - Grades are global evaluations that represent the overall proficiency of students in a particular course.
 - They provide little information on the overall success of the program in helping students attain specific and distinct learning objectives of interest.
 - The following “grade book” exhibit shows the difference between grades (that measure multiple outcomes within a course) and measures of specific outcomes across many students
-

Column & Row Explanation of Relationship Between Individual Student Grading and Outcomes Assessment

	Intended Educational Objectives (on a 1 to 5 point scale)					
Indiv. Students Graded by Faculty	Criterion a	Criterion b	Criterion c	Criterion d	Total (out of 20 points)	Indiv. Student Grade
Student 1	3	2	4	4	13	C
Student 2	4	5	5	3	17	A
Student 3	1	3	2	4	10	D
Student 4	2	2	3	5	12	C
Student 5	3	5	4	3	15	B
Average for Intended Educational Objective	2.6	3.4	3.6	3.8		

(Total across the rows for individual student grading; total down the columns for assessment of educ. objectives)

How does assessment relate to what takes place in courses?

- Each student learning objective can be “mapped” back to the courses in which it was taught (either introduced or reinforced)
 - Then when certain objectives are identified as needing improvement, we can work back to the courses where that skill or knowledge was introduced or reinforced, and strengthen that activity
-

Sample Course-Outcome Linkage Matrix

	Courses Taken by Student in Major:						
	<u>English 101</u>	<u>Psych 105</u>	<u>Math 150</u>	<u>Engr 120</u>	<u>Engr 121</u>	<u>Engr 220</u>	<u>Engr 221</u>
Outcome #1	Intro						
Outcome #2			Intro		Reinforce	Reinforce	Reinforce
Outcome #3				Intro	Reinforce		
Outcome #4				Intro	Reinforce	Reinforce	Reinforce
Outcome #5				Intro			Reinforce

Developing Assessment Measures

- Questionnaires and Surveys



Developing Questionnaires and Surveys

Purpose

- To gather information about:
 - Knowledge – what people know; how well they understand something
 - Beliefs – attitudes – opinions
 - Behavior – what people do
 - Attributes – what people are; what people have
-

Developing Questionnaires and Surveys

Tips for developing

- Make a list of what you want to know. What do you really want to find out? What do you want to achieve with the questionnaire?
 - Don't ask a question unless it has a use. Eliminate the 'nice to know' items that aren't really essential.
 - As you write questions, view them through your respondents' eyes.
 - Ask only one question in a question.
 - Pilot test the questions
-

English & Theatre Example

- Objective: Students should demonstrate a clear sense of the chronological and thematic development of British and American literature, familiarity with canonical writers and works of the age, and a more specialized knowledge in various genres, periods, authors, and literary trends.
 - Possible Assessment Measures:
-

Psychology Example

- Objective: Students should demonstrate an understanding of and apply basic research methods in psychology, including research design, data analysis, data interpretation, and the ethical treatment of human subjects.
 - Possible Assessment Measures:
-

Child Development & Family Studies

Example

- Objective: Students will be able to utilize and interpret appropriate individual, family and program evaluation measures.
- Possible Assessment Measures:



Assessment Methods and Strategies:

Be selective about what you choose to observe or measure

- comprehensive does not mean assessing everything
 - select a manageable number of methods that do not drain resources
-

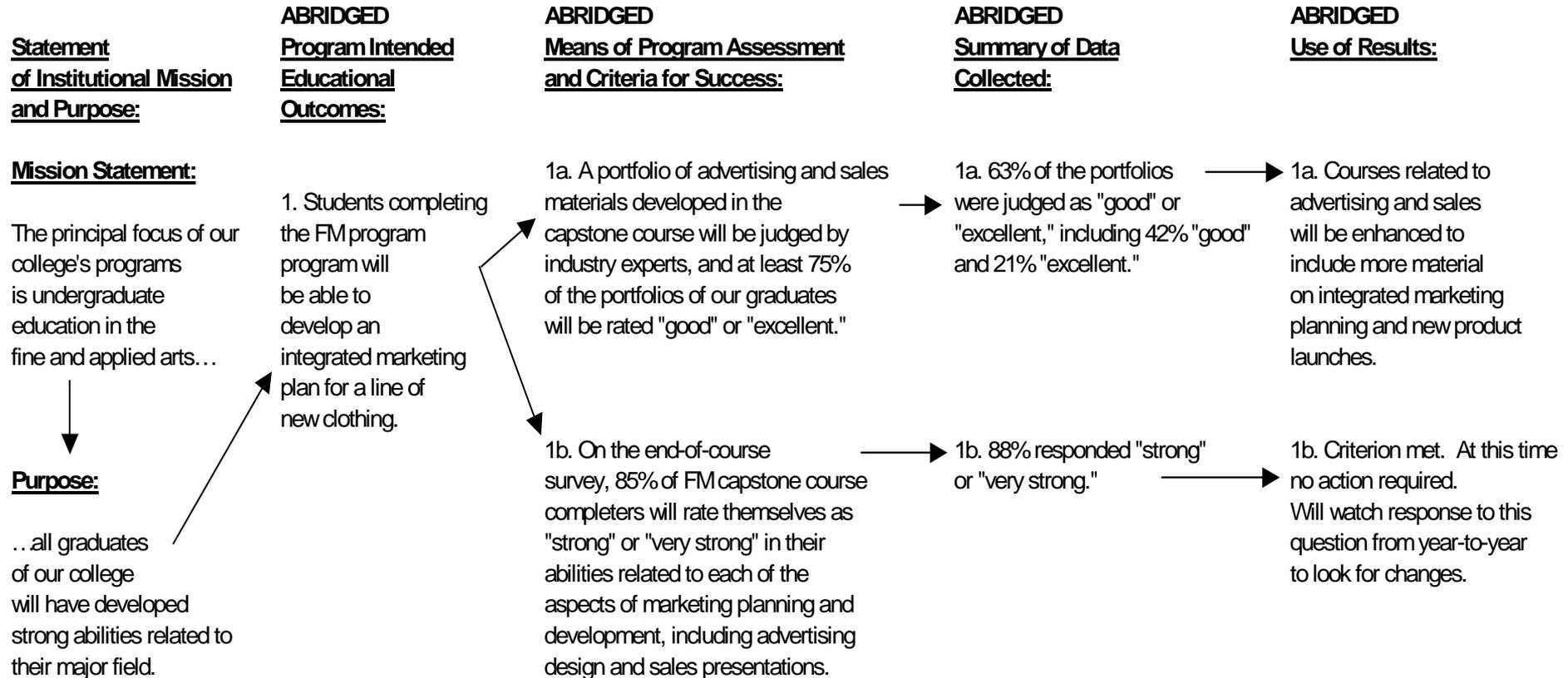
Assessment Methods and Strategies:

- Include direct as well as indirect methods of assessment
 - Use capstone courses or senior assignments, summative test and portfolios to directly assess student learning objectives
 - If none of these exist, adopt one or more of them in the near future. For now, employ a *faculty assessment panel* as a temporary direct measure.
-

What is the five-column model?

- Summarizes each program's assessment process in a one-page, tabular format
 - Flows from mission/purposes to EOP objectives to measures/success criteria to analysis to feedback that closes the loop
 - Provides faculty with simple, widely accepted format that promotes consistency and comparability across programs and terms
 - SACS reviewers are generally familiar and comfortable with this model and its use across a broad range of academic programs (*exhibit that follows from Nichols & Nichols, 2000*)
-

Fashion Merchandising (FM) Program Five-Column Model for Assessment



Undergraduate English Program Five-Column Model

Expanded Statement of Institutional Purpose:

Purpose:

Mission Statement:

The principal focus of our University's curricular program is undergraduate education in the liberal arts and science...



Purpose:

...all graduates of baccalaureate level will have developed a depth of understanding in their major field.

Program Intended Educational Outcomes:

1. Students completing the baccalaureate program in English will compare very favorably in their knowledge of literature with those students completing a similar program nationally.

2. Graduates will be able to critique a brief draft essay, pointing out the grammatical, spelling, and punctuation errors.

3. Students completing the baccalaureate program will be capable of writing an acceptable journal article.

Means of Program Assessment and Criteria for Success:

1a. The average score of the graduates of the BA program in English on the MFAT "Literature in English" will be at or near the 50th percentile compared to national results and no subscale score will be below the 30th percentile.

1b. On the Graduating Student Questionnaire, 90% of the English BA program graduates will "agree" or "strongly agree" with the statement "In the field of literature, I feel as well prepared as the majority of individuals nationwide who have completed a similar degree during the past year."

2. As part of a "capstone course" during the final semester students will critique a short draft essay; identifying grammatical, spelling, and punctuation errors. 80% of the program's graduates will identify 90% of the errors in the draft essay. Additionally, none of the 14 rubrics utilized to evaluate the student's critique will appear to be consistently unmet.

3a. A jury of English dept. faculty from an institution comparable to our University will judge 80% of those journal articles submitted acceptable for publication.

3b. 20% of journal articles submitted will be published in student or other publications.

Summary of Data Collected:

1a. MFAT score for year's graduates (18) found to be at the 37th percentile. This was due to a 23rd percentile score on the "American Literature" subscale.

1b. 93% responded "agree" or "strongly agree."

2. 92% of graduates identified 87% of errors. However, grammatical conventions regarding capitalization were not consistently applied.

3a. 55% of articles reviewed were found acceptable for publication.

3b. 10% of articles were published.

Use of Results:

1a. Course offerings in "American Literature" were reviewed to ascertain degree of match with MFAT "American Literature" subscale. Exam will be repeated next year before making substantive changes in curriculum.

1b. Criteria met. At this time no action required. Question is deleted from next questionnaire. Faculty has added question relating to electronic reviews of literature.

2. Faculty use of commonly accepted conventions regarding capitalization in reviewing upper division papers has been emphasized.

3a. English 407 (advanced writing) modified to include journal article exercise.

3b. Additional outlets for student publishing have been identified.



Summary: Framework for Good Assessment Practice

1. Each academic program must have end-of-program learning objectives with the following characteristics:
 - a. Linked to EKU's statement of mission and strategic directions
 - b. Developed by faculty
 - c. Measurable
 - d. Actionable
 - e. Built on existing course-specific outcomes
-

Framework for Good Assessment Practice

2. Each program must employ direct measures of student learning objectives with the following characteristics:
 - a. A one-to-one relationship to each program learning objective
 - b. Developed and used by faculty and other appropriate persons (e.g., internship/practicum supervisor)
 - c. Must relate to one or more of the following: cognitive learning (knowledge acquisition), behavioral learning (skill acquisition), and affective learning (attitudinal development)
 - d. Must make sense vis-à-vis the outcome being measured
 - e. Must include multiple raters/evaluators
-

Framework for Good Assessment Practice

3. Each program must employ multiple measures of student learning objectives with the following characteristics:
 - a. Both direct and indirect measures are used in concert to “triangulate” and corroborate the findings
 - b. Each measure can be related back to program learning objectives and be used to improve teaching and learning
 - c. Multiple raters are used where possible
 - d. New measures are introduced periodically to determine efficacy and relationship to other measures so as to keep assessment program relevant and up-to-date
-

Framework for Good Assessment Practice

4. Each program must analyze the results of its assessment measures, and the analysis must have the following characteristics:
 - a. Faculty-driven and faculty-owned
 - b. Relates results back to specific program learning objectives
 - c. Thoroughly and thoughtfully documented
 - d. Evaluative as well as descriptive
 - e. Criteria for success are developed and used
 - f. Needs to be able to result in corrective actions
-

Framework for Good Assessment Practice

5. Feedback from the assessment process is used to improve the program and the teaching and learning processes within the program. This feedback has the following characteristics:
 - a. Developed by faculty and department head
 - b. Relates back to specific program learning objectives
 - c. Relates both to “what we teach” (curriculum) and “how we teach” (pedagogy)
 - d. Maps feedback on outcomes back to specific courses
 - e. Actions taken based on feedback are reflected in program planning and budgeting processes
-