

Assessment Methods: Assessment Mapping, Measurement Statements and Achievement Targets

All undergraduate programs should identify two measures for each PLO, and at least one of those measures should be direct. All graduate programs should identify one measure for each PLO, and it must be direct. An achievement target should be given within each measure. An assessment map for your program is also required. You can simply add the assessment information to your curriculum map to create an assessment map.

Some examples are provided below. Details are provided in the rest of this document.

EXAMPLE 1: BA/BS in Criminal Justice

PLO: Criminal Justice students should be able to recognize and articulate the foundational assumptions, central ideas, and dominant criticisms of crime and criminal justice theories.

Direct Measure with Achievement Target: On an annual basis, a sample of majors enrolled in Crime in America (CCJ 3014), a course required of all Criminal Justice program majors, will be administered a set of questions from a bank developed by a faculty committee concerning the basic theories of crime and justice. 100% of students sampled will score 70% or higher on questions embedded in a module on the basic theories of crime and criminal justice.

Indirect Measure with Achievement Target: At the end of each semester, the department will sample graduating majors with a survey. One question on this survey will state: "The criminal justice program at UCF has enabled me to identify and describe basic theories of crime and criminal justice." Respondents will be able to respond with strongly agree, agree, neutral, disagree, strongly disagree. At least 80% of students will respond that they agree or strongly agree with the statement.

EXAMPLE 2: BA in Humanities

PLO: Be able to critically analyze political and social systems (including systems of identity construction, including religious identity).

Direct Measure with Achievement Target: Embedded question in the midterm or final exam of Critical Theory. 100% of the students will achieve at least a B on this question.

Direct Measure with Achievement Target: Analysis of major paper OR

discussion postings in a web course OR quizzes and exams for this outcome in one of the following courses: Feminist Theories (PHM 3123), Freedom and Justice (PHM 3100), or Philosophy in the News (PHI 4931). 100% of the students will achieve at least a B on their ability to analyze political and social systems. This is not the paper grade, but the grade on this specific aspect of the paper or in some specific aspect of other graded work.

EXAMPLE 3: Ph.D. in Chemistry

PLO (with Achievement Target): Students receiving the Ph.D. degree in Chemistry will be able to (a) critically read the chemical literature, grasp and outline the pertinent information, and (b) present it orally to an audience of peers and faculty members, and present it electronically in a manner suitable for professional publication. Eighty percent of the presentations will receive an overall evaluation of a 4 or 5 on a 5-point scale.

Measure: (a) All students will perform a thorough review of a scientific topic and prepare a seminar and/or an electronic presentation following established guidelines that address the use of current scientific literature and appropriate presentation aids as determined by the departmental seminar committee. A faculty panel will evaluate all presentations and assign a score of 1 through 5.

Measure: (b) Students will present a second seminar to peers and faculty on their research in their final year. Evaluation of the quality of preparation and presentation, as well as the scientific quality of the seminar, will be determined by a faculty panel.

The University Assessment Committee provides the following definitions for Assessment Mapping, Measurement Statements, and Achievement Targets.

Assessment Mapping: matching your measurement statement for a PLO to a specific course in a degree program. This map tells you where and when you will be assessing a particular PLO. Usually a PLO will be assessed in a course where the PLO is emphasized or mastered. The Curriculum Map includes such courses hence the Assessment Map is a subset of the Curriculum Map.

Measurement (or Measure) statements: Statements that indicate the type of measure or tool used for assessing PLOs and the achievement targets for that measure. There are two types of measures.

Direct measures: measures used to analyze student behaviors or products in which they demonstrate how well they have mastered PLOs. The products can be exams (both published and locally-developed), embedded assignments, course activities, portfolios, research papers, comprehensive exams, etc.

Indirect measures: measures used to analyze reported perceptions about student mastery of PLOs. Examples can include surveys, interviews, and focus groups.

Achievement Targets: Result, target, benchmark, or value that will represent success at achieving a given outcome.

I. Assessment Map

The Assessment Map is a subset of the Curriculum Map that shows where each PLO will be assessed. We recommend you add this information to your Curriculum map as in the example below, if appropriate. If you are assessing students outside of any course in the program curriculum, provide brief written details about it on the Curriculum Map. For example, some graduate programs may choose to use comprehensive exams as assessment tools; however, these may not be aligned with any specific course.

Learning outcomes	Course 1234	Course 2345	Course 3456	Capstone Course
Apply specific theory	Introduced	Reinforced	Emphasized	Assessed
Acquire necessary skills and knowledge		Introduced	Emphasized	Assessed
Proficiency in written communication skills		Introduced	Assessed	Emphasized & Assessed

II. Measurement Statements and Achievement Targets

For every direct and/or indirect measure for a PLO, you will need one measurement statement with an achievement target.

Included below is information that may be useful in selecting assessment tools, writing measurement statements, and determining achievement targets.

(Information in this portion of the document was taken directly from Chapter 5 Assessment Methods in the UCF Academic Program Assessment Handbook February 2008, which is available on the UCF Web site for public use. For the full document, go to http://oeas.ucf.edu/doc/acad_assess_handbook.pdf.)

Helpful hints for selecting assessment tools (or methods)

Choose assessment tools that will provide useful information. The intended outcome that is being assessed should allow one to make inferences about student progress.

Example of assessment that will not provide useful, useable information:

PLO: Students completing the Hypothetical Engineering program will demonstrate competence in conducting research.

Measurement Statement with Achievement Target: 90% of all graduates will successfully complete the Senior Design project.

Note: A requirement of Senior Design is that students complete a research project. Therefore, using the Senior Design project as an assessment of a student's ability to conduct research does not provide any new information. It would be more effective to develop a scoring rubric for the design project and, with the data from the rubric; one would be equipped to analyze components of the design project. The data could then be analyzed and areas of weakness may be identified. These weak areas would then become the focus for improvement.

Example of an assessment method that does not match the learning outcome:

PLO: Students completing the Hypothetical Engineering program will demonstrate competence in engineering principles comparable to graduates of other similar national programs.

Measurement Statement with Achievement Target: In a locally-developed test, 95% students will achieve a score of 90.

Note: When comparing graduates of a program to other graduates nationally, using locally developed test as the assessment method is not recommended.

Example of an assessment method that matches the learning outcome:

PLO: Students completing the Hypothetical Engineering program will demonstrate competence in engineering principles comparable to graduates of other similar national programs.

Measurement Statement with Achievement Target: All students will equal or exceed the national average on the FE examination, administered twice a year.

Note: This statement includes an appropriate assessment tool, i.e. the FE exam, which is designed to test competence in engineering principles. The statement also includes an achievement target, i.e. all students meeting or exceeding the national average. A more appropriate assessment method

to compare the achievements of your graduates to the national average is to use a national instrument.

Before you start developing the assessment plan

Before investing time and resources devising and developing new assessment instruments or methods, identify assessment processes already in place and assessment-related data that you are already collecting.

A useful tool that will help you link your current assessment efforts to program mission, goals and student learning outcomes (PLOs) is an assessment matrix (such as **course** and **curriculum maps**).

Assessment matrices can be used to link what you are doing with PLOs that you have identified as being important with your planned assessments. As an example, the matrix can link PLOs to specific courses and specific types of assessment, or it can link SLOs to PLOs. Two examples of assessment matrices are presented.

In the first matrix example, each assessment tool is categorized as being either direct or indirect depending upon whether the instruments are used to evaluate a student's abilities, skills, and knowledge (direct methods) or to reflect on student learning or perception of academic activities (indirect methods). And did I hear that we cannot have just an indirect assessment measure of a PLO, we would also need a direct measure?

Example Generic Outcomes	Graduating Senior Survey	Capstone Course	Portfolio	Focus Group
Satisfaction with advising	Direct			Indirect
Acquire necessary skills and knowledge	Direct	Direct	Direct	Indirect
Proficiency in written communication skills	Direct	Direct	Direct	Indirect

Another configuration that can be used in the assessment matrix is to link intended PLOs with the curriculum (i.e. Curriculum Map). Additionally, the matrix can be used to provide more detail such as the degree it was addressed in a particular course. For

example, specify if the outcome was introduced, reinforced, emphasized or assessed during each course.

Learning outcomes	Course 1234	Course 2345	Course 3456	Capstone Course
Apply specific theory	Introduced	Reinforced	Emphasized	Assessed
Acquire necessary skills and knowledge		Introduced	Emphasized	Assessed
Proficiency in written communication skills		Introduced	Assessed	Emphasized & Assessed

Criteria for selecting assessment methods

Establishing and discussing criteria and characteristics of assessment methods can be very productive and valuable to the assessment process. Engage faculty in the discussion to ensure that the qualities they consider to be essential, as well as concerns they may have regarding the reliability and validity of the assessment methods, are considered. Palomba and Banta (1999) present a discussion of criteria significant for assessment in *Assessment Essentials*. These are summarized in this section.

1. Relationship to assessment

According to the Department of Education (1998), you should consider the ability of an assessment method to address specific assessment questions, as well as its relevance and utility. Make certain that the selected assessment method satisfy the objectives of the assessment questions. That is, the methods you choose should be able to provide you with information about what you are trying to assess. As an example, while surveys can be a great tool to assess students' perception of a certain process, they are not useful in determining students' knowledge or understanding of a subject.

2. Reliability

A reliable assessment method is one that yields consistent responses over time. The three sources of measurement error described by Cherry and Meyer (1993) include 1) the respondents, 2) the instrument (assessment method) and 3) the administration of the instrument. The method selected should be one that provides dependable, consistent results time after time. The instrument should be unambiguous and should be clearly worded. The time available to complete the instrument should be consistent with its length. The instructions and time allocated for completion should be consistent across programs or departments.

3. **Validity**

Validity refers to determining whether the selected assessment method is appropriate for measuring what you want to measure. It is often a time-consuming and challenging task to provide evidence supporting the validity of the selected method. According to the Joint Committee on Standards for Educational Evaluation (1993), it is necessary to gather evidence to support the interpretation and appropriateness of a survey or test for a specific purpose. It is also recommended to use multiple data sources. Achieving high-quality assessment requires addressing issues identified by Linn and Baker (1996) and Herman, Aschbacher, and Winters (1992) such as:

- Does the selected method cover the curriculum objectives?
- Does it match the desired level of complexity?
- Can the results be generalized, and to what extent?
- Will we gain information that will be useful in improving programs?

***Of Note:** Measurement standards indicate that there is a trade-off between reliability and validity. The complexity of a task may increase validity but at the same time will decrease reliability due to a lack of standardization. The key is to select methods that effectively balance the two issues (Wiggins, 1993).*

4. **Timeliness and cost**

The time and costs involved in assessing programs may be a concern for faculty and administrators. It is necessary to estimate the time required to develop, administer and evaluate various assessment methods. Angelo and Cross (1993) utilize a rating system of low, medium or high to help faculty select classroom assessment methods. Each method is evaluated on preparation time, students' response time, and analysis time. Each of these factors is given a rating. A similar approach can be used for program assessment methods. Also, evaluating the costs associated with administering assessment methods is imperative. Costs can range from opportunity costs (e.g., faculty working on assessment and not on teaching-related activities or research) to the tangible costs associated with the method (e.g., the financial cost of using and analyzing a nationally developed instrument).

5. **Motivation**

Assessment methods should be selected with a focus on whether or not they provide value to students and encourage their participation in the assessment effort. Course-embedded assessment methods are highly valuable because they take advantage of current classroom activities. When alumni and employers are the focus of assessment methods, one should select instruments that would elicit their participation without requiring them to come to campus (surveys, phone interviews).

6. **Other**

There are other considerations that are pertinent to selecting the appropriate assessment method. The following is a list of questions to consider:

- Will the instrument or method provide results that are easy to understand and interpret?
- Are the fluctuations in the results representative of changes in the program or something else?

(Adapted from Palomba and Banta, 1999).

Most importantly, select methods that provide information that can be directly controlled by the department or program. An assessment method that is influenced by external factors beyond the control of the program will yield results that may be meaningless because you may not be able to separate the impact of the department from the effects of those factors.

Course grades are global evaluations that represent overall proficiency. They do not provide enough specific information to link student performance to specific program objectives and, ultimately, to improvement opportunities. Because grades don't tell you about student performance on individual (or specific) learning goals or outcomes, they provide little information on the overall success of the program in helping students attain specific and distinct learning objectives of interest.