Back to the Basics: Course SLO ASSESSMENT

Assessing Course Student Learning Outcomes (SLOs)

Table of Contents

The Purpose of Student Learning Outcomes (SLO) Assessment ................................. 3
Assessment Methods ........................................................................................................ 4
  Embedded Assessment ................................................................................................. 4
  Portfolios ..................................................................................................................... 5
  Pre-tests and Post-tests ............................................................................................... 6
Rubrics ............................................................................................................................ 7
  What is a rubric? .......................................................................................................... 7
  What should be included in a rubric? ........................................................................ 7
  Rubrics are useful because ....................................................................................... 7
  Steps for Creating a Rubric ....................................................................................... 8
Conducting Assessment ................................................................................................ 9
  Evaluate and Analyze Assessment Results ............................................................... 9
Course SLO Assessment Tool ....................................................................................... 10
Criterion Level ............................................................................................................. 12
Faculty Dialogue ......................................................................................................... 13
Closing the Loop ........................................................................................................... 14
SLO Assessment Glossary ............................................................................................. 15
The Purpose of Student Learning Outcomes (SLO) Assessment

The purpose of the SLO assessment process is to improve teaching, learning and institutional effectiveness through an ongoing, systematic, documented procedure. The assessments are used to stimulate discussion about student needs and issues and ways to improve the teaching/learning process.

There is a cycle of assessment, revision and implementation of changes in place to drive this improvement. Even though assessment has been ongoing for many years at West, the assessment tool that documents the process simply formalizes it. Through the Assessment Cycle and the SLO Assessment Process, West develops better outcomes and better courses over time in a sustained continuous program.

Defining (and Re-assessing) Assessment: A Second Try

"Assessment is an ongoing process aimed at understanding and improving student learning.

It involves

• Making our expectations explicit and public
• Setting appropriate criteria and high standards for learning quality
• Systematically gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards
• Using the resulting information to document, explain, and improve performance

When embedded effectively within larger institutional systems, assessment can help us

• Focus our collective attention
• Examine our assumptions
• Create a shared academic culture dedicated to assuring and improving the quality of higher education
Assessment Methods

There are dozens of techniques for assessing SLOs. A partial list of the most commonly used assessment techniques are listed and briefly described below. Remember to view what assessment method to use for your class; refer to the Course Outline of Record SLO Addendum.

Direct assessment techniques:

- Student Portfolios and Projects
- Pre and Post Tests
- Exit Exams
- Embedded Techniques

Indirect assessment techniques:

- Surveys of students, alumni, employers, transfer institutions
- Evaluation and Self-Evaluation Reports
- Interviews
- Focus Groups

The three most common assessment techniques for instructional SLOs are the embedded assessments, portfolios and pre-post exams.

Embedded Assessment

Embedded assessment techniques use the results of assignments that are already in place and used for determining grades. Any assignment or portion of an assignment can be used to measure SLOs as appropriate.

When using embedded assignments to measure SLOs two sets of records are usually required. One set of records is used for determining each student’s grade and the other is used to determine the SLO results. (This dual record keeping might also be required for other types of assessment techniques.)

1. Record keeping for grades. The grade on each assignment during the semester is recorded for each student. The final grade for the course is determined by averaging the student’s grades across all assignments or adding up all the points the student earned for the semester.

2. Record keeping for SLOs from embedded exam questions, for example. In this case, the number of points earned on each embedded question needs to
be recorded for each student. To evaluate the results, count the number of students who scored at or above the minimum acceptable points. For example, if 7 points out of 10 points is considered the minimum acceptable score, count the number of students who scored 7 or more points. If 30 out of 40 students earned at least 7 points, then 75% earned an acceptable grade. For SLOs, you do need to determine the number (or percent) of students who received an acceptable score on the assignment. Using the average score for the assignment can be misleading and may not accurately measure student outcomes.

**Portfolios**

Portfolios contain a selection of student work and are useful at both the course level and the program level.

For a course or a sequence of courses, the portfolio contains a collection of the student’s work over the semester or series of semesters. The work is used to assess the process of learning by showing advancements and improvements over time. These are especially useful when the purpose of the course or sequence of courses is to improve student skills as in writing, critical analysis or the arts.

To assess the SLO, portfolios are evaluated based on a set of previously defined standards designed to measure evidence of learning, development, progress and/or improvement. All faculty members teaching the same course should agree on the standards. A scoring rubric is essential for evaluating “progress” consistently across all sections and should be developed jointly by instructors of the same course. (See the section on rubrics). If the rubrics are the same, it may not be necessary for the assignments to be the same in different sections as long as they are equivalent. The following would not be equivalent assignments - An instructor assigns a single paragraph analysis and another instructor assigns an essay term paper. Some faculty members (and students) find it useful to have students also score themselves with either the same rubric or one developed specifically for student use.
Pre-tests and Post-tests

Pre-tests are assessments administered prior to the interaction with students, usually for the purpose of identifying existing skills, knowledge, and/or perceptions. The results of the pre-test are then compared with the results from a post-test of the same or similar content. The post-tests are assessments administered after the interaction with students, usually for the purpose of documenting attainment of or changes in skills, knowledge, and/or perceptions. Pre/post tests measure the actual learning that took place during the semester and may be useful in courses where it is expected that students enter the course with previous knowledge and/or skills related to the subject.

To assess the SLO, determine what percent of students showed a previously determined acceptable level of improvement from the pre-test to the post-test scores.

Portfolios and pre/post tests are similar in that they are both designed to show improvement over the semester. Portfolios can be designed to measure incremental or intermediate steps in improvement throughout the semester whereas pre/post tests compare just two points.

When deciding on assessment techniques consider the following:

1. Validity—Does the assessment technique measure what you want and will it measure your stated SLO?
2. Reliability and Consistency—Are assessments and scoring consistent across sections and semesters?
3. Fairness—Are the assessment techniques unbiased, value-neutral and reflective of student progress?
4. Usefulness—Will assessment results provide enough information for analysis and evidence to support recommendations?
Rubrics

Many of the SLO assessment techniques require the use of a rubric. A rubric ensures consistency in scoring. This is especially important when the same assignments are assessed by different people across different sections and semesters. In addition, most instructors find it helpful to share rubrics with their students.

What is a rubric?

• A tool used to evaluate student performance based on specific defined criteria.
• Reflects the major traits or characteristics expected in student work.
• Assignment/activity specific.
• Given to students when assignment is announced.
• Assigns points or values for meeting performance criteria.

What should be included in a rubric?

• Major traits or characteristics expected in student work. (Primary Trait Analysis)
• A range of values that reflect student performance – can include descriptions or examples of what each value represents.
• Clear criteria for each trait and value – e.g. what warrants a “4” vs. a “3”.
• Rubrics need to be easy for students to understand.

Rubrics are useful because . . .

• They focus instruction on the most important outcomes.
• They provide formative feedback to students.
• They communicate explicit expectations.
• They connect assessment to activity, increasing validity.
• They articulate how scoring/grading is determined.
• They provide more consistent/reliable grading.
Steps for Creating a Rubric

1. Identify what you are assessing.

2. Identify the key characteristics of what you are assessing.

3. Describe the best work you expect for each of these characteristics. This describes the top category earning the highest number of points.

4. Describe the worst work possible for each of these characteristics. This describes the lowest category earning zero or the lowest number of points.

5. Develop descriptions of intermediate level results and an intermediate range of points. You might decide to develop a scale with five levels (e.g., unacceptable, marginal, acceptable, competent, outstanding), three levels (e.g., novice, competent, exemplary), or any other set that is meaningful.

6. If certain characteristics are more important than others, weights can be assigned to those characteristics.

Many faculty members share the rubrics with their students before the assignment so students have a better sense of what is expected of them. They often return the assignment with the points filled in on the rubric. This helps students better understand the determinants of their final score (grade).

A suggestion for SLO record keeping: make a duplicate of the scored rubric; hand one back to the student and keep the other for SLO tabulations. To save time have students fill in their name, section, assignment details, etc. on two (un-scored) rubric forms that that they turn in with their assignment. When you have time enter the rubric scores into a spreadsheet like Excel, entering the points earned for each student on each element of the rubric. Once in a spreadsheet format, percent of students scoring at or above the minimum acceptable score as stated in the criterion can be easily calculated for each element or characteristic of the rubric.
Conducting Assessment

At West, we use an assessment tool to assess our course SLOs. All courses and services are assessed using the course SLOs developed for the instructional and service areas in a 4-year time frame. This process is a continuous one; we use assessment calendars to keep track of what has been assessed and what is up for assessment. Please ask your division chair if you are wondering about your course being assessed. At your division meetings, this should be a routine discussion topic and where much of the dialogue about SLO assessment takes place.

At least one section of each course will be assessed at the end of this semester. It’s important for you to remember that in many instances, we offer only one section of certain courses. In future semesters, we will strive for more than one section to assess so that we have more data to compare.

A few words here about the Course Assessment Cycle. The SLO course assessment and revision process is an ongoing cycle that continuously improves course content and delivery methodologies and is a part of the larger accreditation cycle that the college is engaged in.

SEMESTER 1: Courses are administered and assessed.

SEMESTER 2: Dialogue and course revision.

SEMESTER 3: Implementation of changes.

Evaluate and Analyze Assessment Results

The goal in evaluating assessment results is to gain an insight or understanding on how to improve the teaching and learning experience. The Course SLO Assessment tool is designed to report and record SLO assessment results.
Course SLO Assessment Tool

Below is West’s Course SLO Assessment Tool, which is used to document assessment. Your Division Chair will be receiving a flash drive with these assessment tools, and you will notice that much of the tool will be pre-populated for you based on the SLO Addenda. Assessment needs to occur at the end of this semester so that changes identified and implemented for Spring 2013.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Faculty Name or Team Names</th>
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<tbody>
<tr>
<td>Course Name and Number</td>
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<tr>
<td>Check Box Below</td>
<td>Please list all course SLO(s), and mark the one that was assessed.</td>
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<tr>
<td>Course SLO</td>
<td>Criterion Level</td>
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<td>Mapping Course SLOs to Program SLOs</td>
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<td>Course SLO</td>
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<td>Mapping Course SLOs to Institutional SLOs</td>
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<td>Assessment Instrument</td>
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<td>Written exam</td>
<td>Presentation</td>
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<td>Multiple choice exam</td>
<td>Portfolio</td>
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<td>Essay/Research Paper</td>
<td>Department exam</td>
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<td>Case scenarios</td>
<td>Skill evaluation</td>
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<td>Other</td>
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<td>Rating/Rubric Scale</td>
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<td>Criteria description:</td>
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<tr>
<td>Report of Data</td>
<td>Report the number of students assessed and the scores they obtained. E.g. Of the 28 students who completed the assessment instrument, the breakdown of the scores was: 5 (4.5), 13 (3.5), 6 (2.5), and 3 (1.5).</td>
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<tr>
<td>Interpretation of Data</td>
<td>What is your interpretation of these results? Include your conclusion about whether the students achieved the criterion level.</td>
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SLO Course Assessment Tool Updated Dec 2012
<table>
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<tr>
<th>Actions Planned</th>
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<tr>
<td>Based on this assessment, what will you change (related to pedagogy, instructional methods, or materials) the next time the course is offered?</td>
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<tr>
<th>Actions Taken (if applicable)</th>
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<tr>
<td>What changes have been implemented based on the previous course assessment?</td>
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<th>Faculty Dialogue</th>
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<tr>
<td>What information would you like to share (e.g., assessment methods, rubrics used) with other faculty?</td>
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<td>How will this information be shared? (e.g. Divisional Council or Division Meetings)</td>
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<th>Faculty Reflection</th>
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<tr>
<td>What changes would you suggest (if any) to the outcomes process? Please share any general comments on the process and/or results of assessment that you would like the SLO Committee to know.</td>
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<th>Sample of Student Projects</th>
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<tr>
<td>Submit sample student projects—essays, research projects, skill evaluation forms, department exams, papers, or written exams—to illustrate scores according to the rubric (if available) to Todd Matosic, WLAC SLO Coordinator. Submit one sample for each value on the rating/rubric scale. Please remove student names from the samples. Attach to this form or email as attachments to: <a href="mailto:matosit@wac.edu">matosit@wac.edu</a></td>
</tr>
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For additional SLO information, visit [http://www.wiac.edu/slo](http://www.wiac.edu/slo)

For additional information, contact: Todd Matosic (310)287-4213 | CE-213 | matosit@wac.edu

SLO Course Assessment Tool Updated Dec 2012
**Criterion Level**

The criterion level reflects, in the faculty’s judgment, satisfactory performance on the SLO. The criterion level is included as a benchmark on its first go around. Criterion levels are meant to be adjusted over time.

When you are assessing your course SLO, be sure to include (on your assessment tool) data that suggests that the criterion level is too low or too high or if the level is not met. *If the criterion level has not been met, be sure to include what changes you propose to improve student learning in the “Actions Planned” section of the Course SLO Assessment Tool.*

For example:
- At least X percent of students achieve this course SLO.
- All students achieve at least the Y level on this SLO.
- At least X percent of students achieve the Y level on this course SLO.

Not reaching the criterion level suggests that faculty should consider whether changes in class characteristics (e.g. content coverage or sequencing, pedagogical methods), the SLO itself, and/or assessment method(s) are necessary.

For example, a level of 50% of students achieving an outcome may not be a desired amount and 90% percent would probably be too lofty of a goal. The 70 to 75% percent range of achievement is more ideal. The achievement level should be ambitious, but attainable.
Faculty Dialogue
Ideally, to garner the most data for improvements, all sections of a course would assess when the course is ready (according to the SLO course calendar) to be assessed. As this is not always practical, and because some courses only have one instructor to assess them, we assess sections of courses as to what is practical and reasonable according to department chairpersons.

At your next division meeting, your division chair may inform you that the course you teach is indeed up for assessment. However, there may also be 5 other sections that are being offered and of these, only 3 faculty members may be asked to assess. Communication with your division chair regarding which sections need to be assessed will be important for you to know. You will most likely hear about the SLO calendar and these types of details in your division meetings when the SLO agenda item is being discussed.

Questions for Generating Faculty Discussion on SLOs
Semester start

• Which courses are ready to be assessed in my division?
• Which outcome(s) am I assessing?
• Where do I find the program SLOs that exist for my discipline?
• Where do I find the course specific SLOs that I need to place into my syllabus?

The Assessment Process

• What assessment instrument will I use to assess the SLO I am going to assess?
• How many sections of my course will be assessed?
• What kind of rubric can I use?
• Do I have to use a specific assessment instrument for assessing my outcome?

The Revision Process

• What assessment instrument did I use to assess the SLO?
• How can I improve the abilities of my students to learn this particular outcome?
• How can I improve this course for the next semester?
• Do I want to recommend any pre-requisites or advisories to my course?
• Is the SLO still effective?
• Is the SLO still measurable?
• Is the SLO in need of re-wording?

Implementation Process

• What changes have been made as a result of assessment?
• What was the impact of these changes?
• Are the proposed changes going to be temporary or made permanent?
• Are there resources required for implementing this change?
• Is this included in my division’s Program Review?
Closing the Loop

The final step in the assessment of student learning outcomes is often called “Closing the Loop.” The term refers to taking the time to look carefully at the data you have collected and analyzing what they suggest you can do to improve teaching and learning.

Writing SLOs and assessing them is no good if the final reflective step isn’t completed. The good news is that it can be both the most rewarding and most enjoyable part of the assessment process, especially if it results in dialogue with other colleagues about what is going on in your classrooms or department. Some community colleges, ones that have embarked on assessment processes that ask colleagues to share results, report that meetings have become more meaningful. They are actually talking about teaching instead of budget cuts, college business or even parking!

The chart below outlines the process. Note how circular it is. It keeps going, each step feeding into the next. Assessment never really does end, it simply continues in the same way that you informally evaluate what happens in your classes.

We evaluate assessment results and then plan how to improve teaching and learning based on those results. As a result of assessment, goals and action plans are identified and resource requests are made in the Program Review process.
SLO Assessment Glossary

**Abilities/Core Competencies/GE Outcomes/Institutional Learning Outcomes.** This level of accomplishment relates to the integration of knowledge, skills, and attitudes in complex ways that require multiple elements of learning which are acquired during a student’s course of study at an institution. Statements of intended results of student learning experiences across courses, programs, and degrees. Core competencies describe critical, measurable life abilities and provide unifying, overarching purpose for broad spectrum of individual learning experiences.

**Assessment (Learning).** Learning Assessment refers to a process where methods are used by a faculty member, department, program or institution to generate and collect data for evaluation of processes, courses, and programs with the ultimate purpose of evaluating overall educational quality and improving student learning. This term refers to any method used to gather evidence and evaluate quality and may include both quantitative and qualitative data.

**Assessment (Placement).** Assessment for placement is a standardized test or process by which a student is properly put into the proper class in a sequence, such as math, English, ESL, or reading. In addition, this process also involves the validation of the content of the standardized test by the appropriate faculty content experts.

**Affective Outcomes.** Outcomes related to changes in beliefs or development of certain values.

**Authentic Assessment/Assessment for Improvement.** Assessment that evaluates the student’s ability to use their knowledge and to perform tasks that are approximate to those found in the work place or other venues outside of the classroom setting. “Assessment is authentic when we directly examine student performance on worthy intellectual tasks. Traditional assessment, by contract, relies on indirect or proxy 'items' -efficient, simplistic substitutes from which we think valid inferences can be made about the student's performance at those valued challenges” (Wiggins, 1990, page 1).

**Assessment for Accountability.** Assessment done in which the primary drivers are external, such as legislators or the public.

**Bloom’s Taxonomy.** Six levels arranged in order of increasing complexity or intellectual sophistication:

1. Knowledge: Recalling or remembering information without necessarily understanding it. Includes behaviors such as describing, listing, identifying, and labeling.
2. Comprehension: Understanding learned material and includes behaviors such as explaining, discussing, and interpreting.
3. Application: The ability to put ideas and concepts to work in solving problems. It includes behaviors such as demonstrating, showing, and making use of information.

4. Analysis: Breaking down information into its component parts to see interrelationships and ideas. Related behaviors include differentiating, comparing, and categorizing.

5. Synthesis: The ability to put parts together to form something original. It involves using creativity to compose or design something new.

6. Evaluation: Judging the value of evidence based on definite criteria. Behaviors related to evaluation include: concluding, criticizing, prioritizing, and recommending. (Bloom, 1956)

**Classroom assessment techniques.** Classroom assessment techniques (CATs) are “simple tools for collecting data on student learning in order to improve it” (Angelo & Cross, 1993, p. 26). CATs are short, flexible, classroom techniques that provide rapid, informative feedback to improve classroom dynamics by monitoring learning, from the student’s perspective, throughout the semester. Data from CATs are evaluated and used to facilitate continuous modifications and improvement in the classroom.

**Classroom-based assessment.** Classroom-based assessment is the formative and summative evaluation of student learning within a single classroom.

**Closing the Loop/Feedback Loop.** Using assessment results to improve student learning through collegial dialogue informed by the results of the learning outcome assessment. It’s part of the continuous cycle of collecting assessment results, evaluating those results and using the evaluations to identify actions that will improve student learning, implementing those actions, and then cycling back to collecting assessment results, etc.

**Collegiality.** Mutually respectful discussion that leads to participative decision-making.

**Competencies/Exit Skills/Terminal Measurable Objective/Student Learning Outcomes (SLOs).** Competencies refer to the specific level of performance that students are expected to master, such as in the arts or CTE courses. Objectives refer to the discrete course content that students need to meet in order to pass the class, whereas SLOs are the overarching behavioral, content, and/or critical thinking skills that a student has learned as a result of the course experience.

**Continuous Improvement.** An on-going, cyclical process to identify and implement incremental changes to improve the level of student learning.

**Course Assessment.** This assessment involves evaluating the curriculum as designed, taught, and learned. It involves the collection of data aimed at measuring successful learning in the individual course and improving instruction with a goal to improving learning.
**Criterion-based assessments.** Assessment evaluated or scored using a set of criteria to appraise or evaluate work. Criterion-referenced evaluation is based on proficiency not subjective measures such as improvement.

**Culture of evidence.** The term culture of evidence refers to an institutional culture that supports and integrates research, data analysis, evaluation, and planned change as a result of assessment to inform decision-making (Pacheco, 1999). This culture is marked by the generation and valuing of quantitative and qualitative data providing accountability for institutionally defined outcomes (Wright, 1999).

**Direct data.** Data that measures the exact value. For instance, a math test directly measures a student’s proficiency in math. (Contrast with indirect data below.)

**Embedd**ed assessment. Embedded assessment occurs within the regular class or curricular activity. Class assignments linked to student learning outcomes through primary trait analysis serve as grading and assessment instruments. Individual questions on exams can be embedded in numerous classes to provide departmental, program, or institutional assessment information. An additional benefit to embedded assessment is immediate feedback on the pedagogy and student needs.

**Evidence.** Artifacts or objects produced that demonstrate and support conclusions, including data, portfolios showing growth, products, as opposed to intuition, belief, or anecdotes. “Good evidence, then, is obviously related to the questions the college has investigated and it can be replicated, making it reliable. Good evidence is representative of what is, not just an isolated case, and it is information upon which an institution can take action to improve. It is, in short, relevant, verifiable, representative, and actionable” (ACCJC, 2008, p. 10).

**Evidence of program and institutional performance.** Quantitative or qualitative, direct or indirect data that provides information concerning the extent to which an institution meets the goals it has established and publicized to its stakeholders.

**Formative assessment.** Formative assessment generates useful feedback for development and improvement. The purpose is to provide an opportunity to perform and receive guidance (such as in class assignments, quizzes, discussion, lab activities, etc.) that will improve or shape a final performance. This stands in contrast to summative assessment where the final result is a verdict and the participant may never receive feedback for improvement such as on a standardized test or licensing exam or a final exam.

**General Education Student Learning Outcomes.** GE SLOs are the knowledge, skills, and abilities a student is expected to be able to demonstrate following a program of courses designed to provide the student with a common core of knowledge consistent with a liberally educated or literate citizen.
**Grades.** Grades are a faculty report of a student’s performance in a class as a whole, but they are not the same as assessment of SLOs in and of themselves. Some colleges have systems in place (e.g., rubrics) so that they can make some assessment of the course. Title 5 states that a student who is able to pass a course with a C or better is able to move onto the next course.

**Indirect data.** Data that measures a variable related to the intended value. For instance a person's math skills may be indirectly measured through an employer’s questionnaire asking about the computational skills of graduating students.

**Information competency.** The ability to access, analyze, and determine the reliability of information on a given topic.

**Institutional Learning Outcomes (ILO/GE Outcomes).** These are the knowledge, skills, and abilities a student is expected to leave an institution with as a result of a student’s total experience. Because GE Outcomes represent a common core of outcomes for the majority of students transferring or receiving degrees, some but not all, institutions equate these with ILO’s. ILOs may differ from GE SLOs in that institutional outcomes may include outcomes relating to institutional effectiveness (degrees, transfers, productivity) in addition to learning outcomes.

**Knowledge.** Particular areas of disciplinary or professional content that students can recall, relate, and appropriately deploy.

**Learning.** Particular levels of knowledge, skills, and abilities that a student has attained at the end of engagement in a particular set of collegiate experiences.

**Learning Outcomes, competencies, abilities.** Learning outcomes are defined in higher education assessment practice as something that happens to an individual student as a result of attendance at a higher education institution. A Learning Outcome is a statement of what a student should understand and be able to do as a result of what he or she has learned in a course or program.

**Likert scale.** The Likert scale assigns a numerical value to responses in order to quantify subjective data. The responses are usually along a continuum such as - responses of strongly disagree, disagree, agree, or strongly agree- and are assigned values of such as 1-4.

**Metacognition.** Metacognition is the act of thinking about one's own thinking and regulating one's own learning. It involves critical analysis of how decisions are made and vital material is consciously learned and acted upon.

**Means of Assessment.** The means of assessment refers to the instrument used to assess student learning as well as when how the instrument will be administered. The following is an illustration: “The Chinese Faculty and the Institutional Research Office collaboratively developed a rubric to assess basic conversation strategies in Chinese.
The rubric will be used by instructors to evaluate students in Elementary Mandarin Chinese during an oral interview in the Spring 2009 semester.”

**Norm-referenced assessment.** In norm-referenced assessment an individual's performance is compared to another individual. Individuals are commonly ranked to determine a median or average. This technique addresses overall mastery, but provides little detail about specific skills. This can also be used to track an individuals own improvement over time in a pre-post assessment.

**Objectives.** Objectives refer to the specific or discrete course content that students need to meet in order to pass the class. Objectives usually relate to lower level skills in the Bloom’s taxonomy of learning. Objectives are usually more numerous and create a framework for the overarching Student Learning Outcomes which address synthesizing, evaluating and analyzing many of the objectives.

**Pedagogy** - Pedagogy is the art and science of how something is taught and how students learn it. Pedagogy includes how the teaching occurs, the approach to teaching and learning, the way the content is delivered and what the students learn as a result of the process. Pedagogy is commonly used in reference to any aspect of teaching and learning in any classroom.

**Program.** In Title 5, “Program” is defined as a cohesive set of courses that result in a certificate or degree. However, in Program Review, colleges often define programs to include the specific disciplines within the General Education pattern. It can include student services and administrative units, as well. When assessing outcomes, at a minimum, programs that meet the Title 5 definition must be included. However, how colleges strategize about their learning outcomes might include the larger definition of “program.”

**Qualitative data.** Data collected as descriptive information, such as a narrative or portfolio. These data often collected in open-ended questions, feedback surveys, or summary reports, are more difficult to compare, reproduce, and generalize. It is bulky to store and to report, however, it is often extremely valuable and insightful data, often providing potential solutions or modifications in the form of feedback.

**Quantitative data.** Data collected as numerical or statistical values. These data use actual numbers (scores, rates, etc) to express quantities of a variable. Qualitative data, such as opinions, can be displayed as numerical data by using Likert scaled responses which assign a numerical value to each response (e.g. 4 = strongly agree to 1 = strongly disagree). This data is easy to store and manage; it can be generalized and reproduced, but has limited value due to the rigidity of the responses and must be carefully constructed to be valid.

**Reliability.** Reliability refers to the ability to reproduce results over time or a measure of the consistency when an assessment tool is used multiple times. In other words, if the same person took the test five times, the data should be consistent. This refers not only
to reproducible results from the same participant, but also to repeated scoring by the same or multiple evaluators. This does not mean that statistical tests for reliability are necessary in the learning outcomes process, but it indicates that the assessment is a consistent tool for testing the student’s knowledge, skills or ability.

**Rubric.** A rubric is a set of criteria that is used to determine scoring for an assignment, performance, or product. Rubrics may be holistic providing general guidance or analytical assigning specific scoring point values. A rubric often improves the consistency and accuracy of subjective assessments. A rubric can be a set of criteria specifying the characteristics of a learning outcome and the levels of achievement in each characteristic.

**Sampling.** Sampling is a research method that selects units such as certain groups of students from a specific population of students being studied, so that by examining the sample, the results can be generalized to the population from which they were selected when everyone in the population has an equal change of being selected (i.e. random).

**Skills.** The learned capacity to do something.

**Standardized assessment.** Assessments created, tested, validated, and usually sold by an educational testing company e.g. GRE’s, SAT, ACT, ACCUPLACER for broad public usage and data comparison, usually scored normatively.

**Student Learning Outcomes (SLO).** Student learning outcomes are the specific measurable goals and results that are expected subsequent to a learning experience. These outcomes may involve knowledge (cognitive), skills (behavioral), or attitudes (affective) that provide evidence that learning has occurred as a result of a specified course, program activity, or process. A Student Learning Outcome refers to an overarching goal for a course, program, degree or certificate, Student Services area or the library, one that asks students to synthesize many discreet skills using higher level thinking skills and to produce something that asks them to apply what they’ve learned. SLOs usually encompass a gathering together of smaller discrete objectives through analysis, evaluation and synthesis into more sophisticated skills and abilities.

**Summative assessment.** A summative assessment is a final determination of knowledge, skills, and abilities. This is exemplified by exit or licensing exams, senior recitals, or any final evaluation that is not created to provide feedback for improvement, but is used for final judgments. Some midterm exams may fit in this category if it is the last time the student has an opportunity to be evaluated on specific material.

**Validity.** An indication that an assessment method accurately measures what it is designed to measure with limited effect from extraneous data or variables. To some extent, this must also relate to the integrity of inferences made from the data.
**Content Validity.** Validity indicates that the assessment is consistent with the outcome and measures the content we have set out to measure. For instance, you go to take your driver’s license exam, the test does not have questions about validity.

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This packet includes resources adopted from the RP Group, Cabrillo College, and Contra Costa College.
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