

Assessment Basics – SLOs 101:

Writing Student Learning Outcomes

SLO Institute

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San Diego

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Outcome for the Workshop: Participants will be able to write a robust SLO, dialogue about SLOs and help others to do the same.

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The Learning Paradigm and Learning Institutions

Subtly but profoundly we are shifting to a new paradigm: A college is an institution that exists to produce learning. This shift changes everything. It is both needed and wanted.

We call the traditional, dominant paradigm the Instruction Paradigm. Under this paradigm colleges have created complex structures to provide for the activity of teaching conceived primarily as delivering 50-minute lectures-the mission of a college is to deliver instruction. Now, however, we are beginning to recognize that our dominant paradigm mistakes a means for an end.

It takes the means or method – called “instruction” or “teaching” – and makes it the college’s end or purpose. To say that the purpose of colleges is to provide instruction is like saying that General Motors’ business is to operate assembly lines or that the purpose of medical care is to fill hospital beds.

We now see that our mission is not instruction but rather that of producing learning with every student by whatever means work best. The shift to a “Learning Paradigm” liberates institutions from a set of difficult constraints. (Barr & Tagg, p 13)

Barr, R. B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27(6), 12-25.

Question:*What is an Assessment Cycle?***Answer:***The larger context for SLOs.*

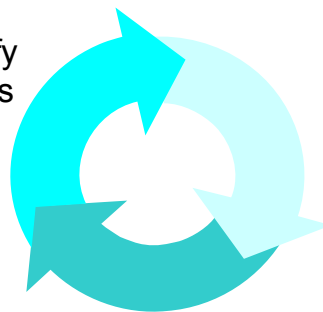
While our focus is writing Student Learning Outcomes (SLOs), it is important to see how these statements fit into the larger context of evaluating our courses, programs and student services through the direct assessment (wherever possible) of actual student learning. Simply put, an assessment cycle has three stages: to **identify** what we want students to learn and to **plan** a way of assessing that learning; have the students **do** something that will allow us to **assess** their learning; and, finally, to **reflect** on the results and use our conclusions to **review** and to **revise** our instruction, our use of resources, and even our goals.

The Assessment Cycle

Plan / Identify – Do / Assess – Reflect / Review / Revise
(Repeat)

Review / Reflect / Revise:

5. Evaluate assessment results
6. Use results to refine instruction (close the feedback loop) and modify course and program goals and outcomes.

**Plan / Identify:**

1. Establish goals for courses and programs
- 2. Write intended Student Learning Outcomes (SLOs)**

Do / Assess:

3. Develop means of assessment and criteria for success for evaluating SLOs (a rubric)
4. Incorporate SLOs and assessment tasks into instruction

As you create SLO statements, don't forget that they must fit into a complete assessment cycle. Can they be assessed? Will the results help improve teaching?

Question:*What is an SLO?***Answer:***It depends on whom you ask.*

If you ask the ASCCC:

Answer: Student Learning Outcomes refer to overarching specific observable characteristics developed by local faculty that allow them to determine or demonstrate evidence that learning has occurred as a result of a specific course, program, activity, or process.

If you ask the ACCJC-WASC:

Answer: A Student Learning Outcome (SLO) describes the knowledge, skills, abilities, attitudes, beliefs, opinions, and values that students have attained by the end of any set of college experiences – classes, occupational programs, degrees and certificates and even encounters with Student Services or the Library. The emphasis is on what students can **DO** with what they have learned, resulting in some sort of product that can be evaluated.

If you ask the administration (for example, the ALO) at your college:

Answer: In order to comply with accreditation standards, faculty and staff must articulate student learning outcomes for each **course**, each **occupational program** and each **degree** and **certificate** that the school offers, as well as for all **student services**. Then, they must design assessments or evaluations that provide students with an opportunity to demonstrate what they have learned. Evaluating those assessments gives information to both the student and to the faculty member about how successful the learning experience has been.

Finally, if you ask an experienced, learner-centered instructor, you might get an answer like this one:

Answer: Instructors have always defined what students should learn and have always assessed how well students are learning. Instructors have always made changes in their courses and in their instruction based on evidence of student learning. The words “student learning outcome” is an English phrase with an apparent meaning. Defining SLOs and assessing them may become a more formal and transparent process, but is an evolution of best teaching practices, not a revolution.

Question:

*How do SLOs fit
into the larger picture?*

Answer:

It depends on how you ask.

If you ask what the theory is behind SLOs and Assessment Cycles:

Answer: Using SLOs and Assessment cycles is an approach to teaching with three cornerstone beliefs. The first is that “covering” material during a course does not necessarily **guarantee** that students learn it. Simple success and retention rates are no longer acceptable ways of measuring how successful our students are. Success is determined by students emerging from our courses and programs with integrated, higher learning skills that they can **demonstrate** to others. These demonstrations constitute evidence that they have truly learned. Another keystone of the theory is the belief that students perform better when they know exactly what is expected of them, including what they will be required to do and how it will be evaluated. What defines an A, B or C paper or project should be public knowledge. **Transparency** is the key to using SLOs successfully in the classroom. The final concept is **practice**. Before being evaluated on an SLO, students should have the opportunity to practice the skill or tasks that compose it.

If you ask how SLOs differ from Goals and Objectives:

Answer: SLOs build upon, but are different from, course objectives and course goals because they represent a different perspective. Student Learning Outcomes for the classroom describe the knowledge, skills, abilities or attitudes that a student can **demonstrate** by the end of your course.

- ❑ Don't think about content or coverage - consider what students should be able to DO with what they've learned by the end of the semester.
- ❑ How will students demonstrate this?
- ❑ What can they produce to show faculty that they have learned to apply their new knowledge?

When trying to define Student Learning Outcomes for a course, think of the big picture. SLOs:

- ❑ Concretely describe the broadest goals for the class, ones that require **higher-level** thinking abilities.
- ❑ Require students to **synthesize** many discrete skills or areas of content.
- ❑ Ask them to then **produce** something - papers, projects, portfolios, demonstrations, performances, art works, exams etc. – that **applies** what they have learned.
- ❑ Require faculty to **evaluate** or **assess** the product to measure a student's achievement or mastery of the outcomes.

Course objectives are on a smaller scale and describe small, discrete skills or “nuts and bolts” that require basic thinking skills. They are subsets of outcomes. Think of objectives as the building blocks used to produce whatever is used to

demonstrate mastery of an outcome. Objectives can be practiced and assessed individually, but are usually only a portion of an overall project or application.

	Objectives	Outcomes
Scope	Skills, tools, or content to engage and explain a particular subject	Overarching results - subsequent learning
Target	Details of content coverage and activities which make up a course curriculum.	Higher level thinking skills that integrate the content and activities.
Major Influence	Input – nuts and bolts	Output – Observable evidence (behavior, skill, or discrete useable knowledge) of learning.
Number	Objectives can be numerous, specific, and detailed to direct the daily activities and material.	SLOs are limited in number (1-7) to facilitate modification and improvement of teaching and learning.

In contrast, goals express the ideal vision of how students will be transformed by a course or program. Goals are often impossible to assess directly.

Goals	Objectives	Outcomes
A goal is a statement of intent or vision that is not necessarily measurable. Goals are usually found in the catalog description of a course or program.	Behaviorally measurable objectives are small steps (content knowledge, skills or attitudes) that lead toward a goal. Taken alone, assessments of each objective do not serve evidence that stated goals have been achieved. Objectives (or competencies) are listed in course outlines of record.	Student learning outcomes state the characteristics a student-created product should possess in order to demonstrate that learning has occurred. Students are asked to utilize the content knowledge, skills and attitudes listed in the course objectives. Assessments of student learning outcomes may be used as evidence that the goals of a course or program have been met.

Are you still confused? Look at Appendixes A and E for examples of the difference between objectives and outcomes in describing the knowledge, skills and abilities, and attitudes in a course. Note that there is a **flow**, a line of progression from the most basic objectives to the most sophisticated outcomes. The charts are adapted from the work of Janet Fulks and Kate Pluta from Bakersfield College. To help you write a course outline, they have noted the words from Bloom’s Taxonomy that can be used to describe either an objective or outcome.

If you ask how SLOs fit into curriculum review and program review:

Answer: In the classroom, the new Accreditation Standards require that SLOs become an integral part of every syllabus. SLOs should also act as a guide for classroom activities and direct classroom assessments or evaluations. However, how SLOs are incorporated into curriculum review, curriculum documents and program review is a decision each college must make.

In the last 30 years, the design and documentation of curriculum and programs have changed tremendously. For many years, a course or program was described in terms of the major subject matter topics covered. During the late 70s and running through the late 90s, the focus shifted. Faculty began describing a course or program in terms of the competencies or behaviorally measurable objectives a student should attain. Student learning outcomes, which describe what a student should be able to do after participating in the course or program, is simply a next logical step in our evolving understanding of how courses and programs should be developed and reviewed.

About 50% of the CCC's include SLOs in their Curriculum Document of Record (COR). This provides a place to house the course SLOs, but does not adequately address closing the loop within a course. Program review provides an opportunity to document the entire loop.

Many campuses are beginning to use program review as a means to discuss SLOs and assessment. The rigorous self study created during program review provides excellent opportunities to document evidence of program outcomes and an occasion to review the totality of the curriculum and resources that create a program. This also usually provides a pre-existing committee and process to document and house the data and the result of any modifications.

Question: <i>How does one write an SLO statement?</i>	Answer: <i>There is no standard way, but there are guidelines. The best advice is to get your hands dirty, make a first attempt, and revise as you go.</i>
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We know there are many ways of describing what a course-level SLO statement should contain, so we need a **WORKING DEFINITION:**

A student learning outcome statement describes what students can do at the end of instruction with the knowledge and skills they have gained.

Student learning outcomes may involve knowledge (cognitive), skills (behavioral), or attitudes (affective behavior), which display evidence that learning has occurred, at a specified level of competency, as a result of a course or program. Learning outcomes provide a focus and a standard for the classroom or the student services program.

Drafting an SLO statement:

- **Focus on what the student will do.** Don't address what was taught or presented, but address the observable outcome you expect to see in the student. If necessary, place what students will be expected to do in an appropriate context, but be careful not to be too prescriptive.
- **Include assessable expectations or primary traits.** It helps if you describe clearly defined expectations you have for the student product. It helps to think of these as primary traits or characteristics that can be easily evaluated.
- **Active verbs.** Active verbs suggest measurable assessments. For instance, you want students to *understand* how to use a microscope correctly – but the word *understand* is not problematic. How can one directly measure understanding? Instead, try to imagine the outcome: Students will *focus* and *display* an image on the microscope. One can easily imagine how to measure how focused and how well displayed an image is.
- **Share the draft SLO statement with faculty from other disciplines and within your own discipline.** This helps focus the meaning of the statements. For instance in the above criteria the faculty may ask for clarification of “appropriate magnification.”
- **Share the draft SLO statement with your students.** Students need to clearly understand what is expected, they are unfamiliar with the discipline specific language. This helps focus the clarity of the statements.
- **Modify as you learn from experience.** Leave the word “DRAFT” at the top of your SLOs to remind yourself and communicate to others that you are actively improving them.
- **Beginning is often the most difficult step.** Remember that you have been doing this all along. Here are some suggestions for first steps:
 - 1) In one sentence, describe one **major** piece of knowledge, skill, ability or attitude that a student will have gained by the end of your class.

Describe what students will **do** -- not content, activities or hours. If the course is part of a sequence of courses, ask yourself what students will be expected to be able to **do** in the subsequent course?

- 2) Sometimes it is easier to work backwards by thinking about the major assessments you already use in your course. These would be the products or demonstrations of your outcomes. Make a list of your major assignments for this course. Then try to describe in one sentence what the students are being asked to demonstrate in those assignments. There is an Assessment Audit Form in the appendix on page 30 that may help you organize this work.

Some Dos and Don'ts:

1. **Do** use active verbs and **don't** use the word "understand" or similarly inactive verbs – go for higher level thinking skills.
2. **Do** make sure the outcome is assessable (this is especially true for affective outcomes) and **don't** move forward with an SLO statement if you cannot think of an assessment.
3. **Do** describe the outcome in a way that suggests an assessment, but **don't** allow the SLO statement to become too prescriptive.
4. **Do** write the SLO statement in language that a student will understand by the time the course is finished, but **don't** compromise the quality of the outcome for the sake of using simple language.
5. **Do** include the criteria by which the outcome will be assessed, but **don't** become too detailed too soon. (Once you are at the assessment stage, you will need to develop a detailed rubric.)
6. **Do** think about the course as a whole, but **don't** try to produce a complete or exhaustive list of outcomes for any course in one sitting. Focus on one outcome at a time. [In general, keep the number of outcomes for a course short – no more than four or five at most (except if the outcomes of your courses are dictated by the requirements of outside accrediting bodies, like in nursing or dental hygiene). Some courses may only need one SLO. Use the outcomes to describe the **major** skills or knowledge students will take away from the course and what they will **produce** to show you that they have mastered those skills.]
7. **Do** eventually distinguish the difference between levels in a repeatable course, but **don't** worry about doing so in your initial attempt.

Forms to assist you in the drafting process:

There are several forms that might assist you in drafting an SLO statement. The complete forms are found in the appendix, but they are excerpted here in order to highlight how they are similar and how they are different:

In example 1, note that the table is quite simple. Once you have filled in one row, you may want to combine the two into one statement (or not). Then use the checklist on the next page to see if your SLO statement is robust:

Example 1:

Writing Student Learning Outcomes Worksheet

Course Name and Number _____

Outcome One sentence that describes a major piece of knowledge, skill, ability or attitude that students can demonstrate by the end of the course	Assessment Major assignment, project or test used to demonstrate or apply outcome

SLO Statement:

Is this SLO Statement robust? Now that you've written your SLO statement, it's best to show them to other faculty in both your discipline and outside it to see if what you've written is understandable and concise. Use the following checklist:

1. Have you used action verbs in describing your SLOs?

2. Will it fit into the assessment cycle?
 - Is it assessable with the resources available?
 - Are the results likely to help improve instruction or student success?

3. Is it written as an outcome rather than objective?
 - Language indicates the BIG PICTURE rather than nuts and bolts
 - Describes what students can DO

- Asks students to apply what they've learned by producing something
 - Addresses student competency rather than content coverage
4. Is the SLO appropriate for the course?
- Represents a fundamental result of the course
 - Aligns with other courses in a sequence, if applicable
 - Represents collegiate level work

Contrast Example 1 with Example 2 below, which breaks down the drafting process even more, but is still fairly straightforward. After reviewing the example (welding), follow the same pattern for your course.

Example 2:

Activity: Writing Student Learning Outcomes

Review the first example. Then for the second course objective, complete the Performance Context, Measurable Objective, and Primary Traits. Finally, select an objective from a course in your discipline and construct the three-part SLO statement. (From: B. Scroggins, November 2004, "The Teaching-Learning Cycle: Using Student Learning Outcome Results to Improve Teaching and Learning")

Course Objective(s)	Performance Context	Measurable Objective	Grading Criteria / Primary Traits
EXAMPLE: Match the various types of sheet metal welding methods to the appropriate application.	Given specifications and materials requiring a weld,	evaluate the performance needs, match the welding method to the required application, and perform the weld.	Welds should have a quality edge joint, meet design specifications, have an evenly positioned weld bead with good penetration, and have the minimum heat-affected zone to maximize strength of the weld.
Course	Performance	Measurable	Grading Criteria /

Objective(s)	Context	Objective	Primary Traits
YOUR COURSE:			

After completing the row, you may need to do some editing in order to finish your SLO statement draft.

SLO Statement:

In the appendix, you will find good examples of robust SLOs from the schools represented by the leaders of this workshop.

<p>Question:</p> <p><i>How does one start creating SLOs campus-wide?</i></p>	<p>Answer:</p> <p><i>Each institution will be different. The best we can offer each other are our stories and advice.</i></p>
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Advice:

- **Georgie Monahan Academic Senate President Orange Coast College**

Because of accreditation (a big motivator on our campus) the VPI used the Instructional Planning Council (IPC) to create and vet Institutional Outcomes. I moved to create course outcomes immediately following that and it included training representatives from all divisions so they could spearhead the process in their respective departments. We also decided to include the SLOs on the CORs because it gave us an established system for faculty to fall into (dates and deadlines, more likely to include on syllabus, etc) and to take the process more seriously. We finished about 25-30% and created an improved plan to complete all courses over the next 2 years. Since the accreditation visit, college-wide planning and specifically program review (which will lead the creation of program outcomes during next year) and the other wings are more immersed in the process. I created a new committee called Outcomes and Assessment Council (OAC) that has representation from all divisions and other wings. This expands the responsibility for managing and wending our way through the entire process. The district is purchasing eLumen to help facilitate the documentation of assessment and OAC is piloting a team using eLumen during this summer and fall to better plan getting everyone on board for the process.

- **Jenny Simmons SLO Co-Coordinator El Camino College**

El Camino College started the SLO and assessment process in the 2006-2007 academic year with the idea that we would start small. We encouraged each division to identify one or two programs that would start the SLO process. Then, those programs identified one course-level or program-level SLO, assessed it, and reflected on the results. Thus, each program went through/will be going through a whole assessment cycle before they start identifying SLOs for each and every course, and a whole set of SLOs for their program. We are finding that this is a very good way to go about doing things. Faculty are learning what a good SLO is, they are learning about the value of the process, and once they start identifying more SLOs, they will be better and more meaningful ones than they could have produced without first going through a whole cycle.

• **Robert Turner SLO Coordinator MiraCosta College**

I. The goals of our process:

Make significant progress toward ACCJC's requirement to have SLO's and assessment at the course, program, and institutional level.

Engage as many faculty and students as possible in the first attempts in the process.

Give the faculty a picture of how things fit together to create a coherent end product.

Invest the faculty with as much control as possible.

Keep the focus on education, not politics.

II. Process

We began the process focused on the GE/transfer program. Doing so engaged the majority of the faculty and students in a coordinated approach.

GE faculty wrote a GE mission statement and set of GE outcomes.

Next we wrote mission statements for each of the six GE areas (aligning to the GE mission statement).

These mission statements gave the disciplines some long-range vision to which they could align while drafting their course level SLO's and assessments. They also provided a set of common goals and values which lent further cohesiveness to the process and products.

Next faculty wrote discipline specific mission statements for each GE area in which it offered classes, aligning up through the area mission statement to the GE mission statement.

Additionally, the faculty completed a matrix that indicated which of the six GE outcomes were most central to each of their courses (on a 1-5 scale, 5=high). We used the matrix to determine the emphasis of GE outcomes across the program. We noted, for example, that although the faculty selected "responsible citizenship" as one of six outcomes, no discipline rated it a 5. Information from the matrix such as this will help us identify topics to be addressed as we move forward.

Sample Matrix for English 100

Six GE Outcomes	Effective Communication	Critical Thinking, Reasoning, Problem Solving	Responsible Citizenship	Information Competence	Aesthetic Literacy	Productive Work Habits
English 100	5	4	2	2	3	2

Next, discipline faculty selected one course they offer in the GE package. They wrote 3-5 SLO's for that course. They selected one of the SLO's to incorporate into instruction in fall '07 and developed an assessment tool for it. They will assess the outcome in the fall and evaluate the data during spring '08, thereby closing the feedback loop on one outcome. (English 100, for example, chose to assess in the GE outcome Effective Communication, its only 5).

At the beginning of fall '07, we will plot on the matrix the outcomes being assessed. This information will be used to determine what courses and outcomes should be incorporated into instruction in the second round, thus enhancing the breadth of coverage across the GE program.

The full set of mission statements and matrices can be found at
http://www.miracosta.edu/Governance/Outcomes/GEProgramOutcomesAssessment_000.htm

• **Janet Fulks –The Genesis of Assessment at Bakersfield College**

- March 2001 **KH Report – Impetus to Become a Learning College** and to be Accountable - KH Taskforce Rewrites their task from becoming a learning college to developing an Assessment Vision 2001-2002
- Fall 01/ Spring 02 - Program and Budget Review (BPR) transformed into Institutional Effectiveness Committee (IEC) and College Council – College-wide inventory of existing assessment practices.
- Faculty sent for training to workshops (AAHE, IUPUI, RP)
- July 02 New Accreditation Standards
- Dec 02/ Jan 03 Faculty roundtable discussion for those who have been to assessment workshops on Assessment “thoughts” and CATs
- **Jan – March 03 Campus-wide audit** – Each department (instructional, support, and administrative) developed a Mission statement and described how it IMPROVES student learning
- March 03 RP workshops at BC
- May – Aug 03 IEC task force on changing Program Review and Curriculum Review processes
√
- **Aug 03 Opening Day described the SLO concept (each faculty does SLOs for one class) with \$\$\$ incentive and Unit Plans for Annual Report card**
- Sept 03 Outside assessment speaker Dr. Ginnie Anderson on *Effective Grading*
- **Sept – Oct 03 BC campus-wide cross disciplinary workshops on writing SLOs (10 workshops with 119 faculty)**
- Sept 03 Faculty member starts BC SLO listserv √
- Sept – Oct 03 Noel-Levitz Survey used to assess student satisfaction
- Oct 03 Assessment adopted as one of Senate's 3 goals for 03-04
- Critical thinking committee begins writing SLOs √
- Nov 03 adoption of Senate Assessment Philosophy statement and Assessment adopted as a senate goal
- Jan 04 Faculty and Administrative team attended AAHE conference and created draft assessment plan
- Jan – Feb 04 – 41 individual interviews of faculty who have voiced concerns over assessment
- Jan 04 Gen Ed committee began to work on Gen Ed SLOs √
- **SLO submissions by 192 of 225 faculty (85%),** 20 of 24 departments participated, 10 departments had complete faculty participation.

- Fall 04 Workshops continue in Science and Student Services on program assessment; assessment data available in English 2, Science, and Student Services
- Faculty and Administrators attended other conferences and fine tuned the assessment plan
- Fall 04 Assessment coordinator (.4 reassigned time) and accreditation chair (.4) are selected.

- **Marcy Alanraig SLO Coordinator Cabrillo College**

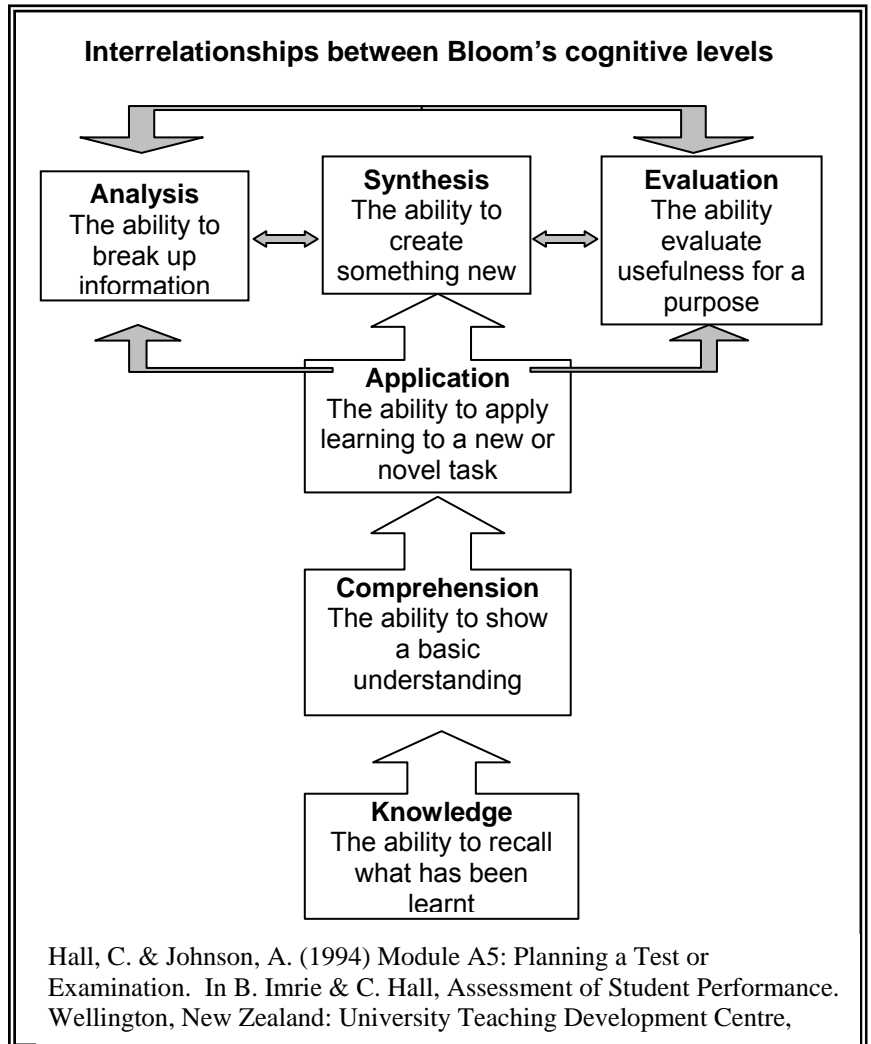
Part I: Cabrillo College uses a course-embedded assessment method to assess each of its four core competencies (our GE SLOs); this assessment has become part of the Program Planning process. At specific times during the five year program planning cycle, faculty choose one major assignment in one class that addresses a particular competency. They create a rubric to assess the assignment. After giving the assignment, faculty analyze student performance, particularly looking for any student needs and issues that emerge. They then make individual plans to improve the teaching and learning of this competency. The assignment, rubric, the needs and issues, and improvement plans are presented in a department meeting. After each instructor in the department has shared their individual assessment results, the department analyzes the results across the department and makes a plan for addressing the student needs and issues that have emerged along with a time line for implementation. This is recorded on a short form and is included as part of the department's Program Plan, justifying any requests for funds.

Part II: The new campus-wide Assessment Review Committee looks at the forms from individual departments along with assessment results from Student Services, the Library and Administrative Services to get a big picture view of assessment across the entire campus. The yearly report of its analysis goes to all campus decision-making bodies and the Master Planning Committee. If any striking issues emerge from the assessment results, this committee initiates a proscribed campus-wide dialogue process to brainstorm solutions and create a plan of action to address them.

Appendix A – Bloom’s Taxonomy, Objectives and Outcomes

Expanding the Definition of SLOs Cognitive, Psychomotor, Affective Domains

- ❖ Bloom (1948) developed classifications of intellectual behavior and learning in order to identify and measure progressively sophisticated learning.
- ❖ Three domains of learning are recognized:
 - the **cognitive domain** (Bloom’s Taxonomy, 1956) defining knowledge classification
 - the **psychomotor domain** (Gronlund, 1970; Harrow, 1972; Simpson, 1972) defining physical skills or tasks classification



- the **affective domain** (Krathwhol, Bloom, and Masia, 1964) defining behaviors that correspond to attitudes and values
- ❖ Student learning outcomes should address relevant outcomes for each of these domains but must be appropriate to the course.
- ❖ Affective outcomes tend to be the hardest to articulate initially but often represent the outcomes most closely related to deeper thinking and life-long learning.



Knowledge – Cognitive Domain

ctives

ledge

Outcomes
More Sophisticated
Higher Level Thinking



Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Student remembers or recognizes information or specifics as communicated with little personal assimilation.	Student grasps the meaning behind the information and interprets, translates, or comprehends the information.	Student uses information to relate and apply it to a new situation with minimal instructor input.	Student discriminates, organizes, and scrutinizes assumptions in an attempt to identify evidence for a conclusion.	Student creatively applies knowledge and analysis to integrate concepts or construct an overall theory.	Student judges or evaluates information based upon standards and criteria, values and opinions.
Cite Label List Enumerate Identify Imitate Match Name Quote Recall Reproduce State Write	Convert Define Describe Discuss Estimate Explain Generalize Identify Illustrate Locate Paraphrase Restate Summarize	Apply Chart Compute Demonstrate Determine Dramatize Establish Make Manipulate Prepare Project Solve Use	Analyze Compare Contrast Correlate Diagram Dissect Differentiate Distinguish Infer Investigate Limit Outline Separate	Assemble Create Construct Design Develop Formulate Generate Hypothesize Initiate Invent Modify Reframe Synthesize	Access Appraise Conclude Critique Decide Defend Diagnose Evaluate Judge Justify Rank Recommend Support

Skills and Abilities – Psychomotor Domain



Objectives
 Basic Knowledge
 Basic Skills
 Level

Outcomes
 More Sophisticated Skills
 Higher Level Abilities
 Critical Understanding of Performance



Observe	Model	Recognize Standards	Correct	Apply	Coach
Students translate sensory input into physical tasks or activities.	Students are able to replicate a fundamental skill or task.	Students recognize standards or criteria important to perform a skill or task correctly.	Students use standards to evaluate their own performances and make corrections.	Students apply this skill to real life situations.	Students are able to instruct or train others to perform this skill in other situations.
Hear Identify Observe See Smell Taste Touch Watch *Usually no outcomes or objectives written at this level.	Attempt Copy Follow Imitate Mimic Model Reenact Repeat Reproduce Show Try	Check Detect Discriminate Differentiate Distinguish Notice Perceive Recognize Select	Adapt Adjust Alter Change Correct Customize Develop Improve Manipulate Modify Practice Revise	Build Compose Construct Create Design Originate Produce	Demonstrate Exhibit Illustrate Instruct Teach Train

Attitudes – Affective Domain



Objectives

Elementary Values and Behaviors
 Inherited Value System
 Egocentric View

Outcomes

More Highly Developed Attitudes
 Well Thought-out Value System
 Higher Level Abilities to Identify and
 Articulate Others' Values

Receiving	Responding	Valuing	Organizing	Characterizing
Students become aware of an attitude, behavior, or value.	Students exhibit a reaction or change as a result of exposure to an attitude, behavior, or value.	Students recognize value and display this through involvement or commitment.	Students determine a new value or behavior as important or a priority.	Students integrate consistent behavior as a naturalized value in spite of discomfort or cost. The value is recognized as a part of the person's character.
Accept Attend Describe Explain Locate Observe Realize Receive Recognize	Behave Comply Cooperate Discuss Examine Follow Model Present Respond Show Studies	Accept Adapt Balance Choose Differentiate Defend Influence Prefer Recognize Seek Value	Adapt Adjust Alter Change Customize Develop Improve Manipulate Modify Practice Revise	Authenticate Characterize Defend Display Embody Habituate Internalize Produce Represent Validate Verify

Appendix B – Examples of SLOs

From Bakersfield: Sets of complete SLOs for Courses

ART Course BEGINNING FIGURE DRAWING

Upon successful completion of FIGURE DRAWING, the student will be able to:

1. Construct drawings through stages of development from the gesture to the final contour.
 2. Record the human figure through objective adherence to proportional relationships, notice of negative spaces, value relationships, and line-sighting as methods essential to building the image.
 3. Create figure drawings that demonstrate awareness of human anatomy and structure as revealed through the form's surface.
 4. Produce sustained, investigative drawings that make accurate visual statements of the figure's form in space.
 5. Orchestrate the visual elements to produce expressive figure drawings rooted in consideration of strong design principles, and conveying subjective meaning beyond objective fact.
 6. Select appropriate graphic materials to influence the expressive content of the figurative form.
 7. Articulate a formal analysis of a drawing and its interpretation based on that analysis.
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X-Ray program RADT B 3a – Radiographic Principles 1

Student Learning Outcomes

1. Solve mathematical problems that require identifying key data (i.e. word problems, lists, tables, experiments or graphs) and utilizing formulas for conversions, ratios, determination of exposure factors and equipment performance. Apply scientific notation, standard and metric system units to radiation exposure and safety calculations.
2. Identify and demonstrate proper radiation safety procedures for imaging personnel within the x-ray laboratory environment.
3. Identify proper operating procedures for x-ray laboratory equipment and

supplies and manipulate them correctly within the radiation laboratory environment.

4. Accurately use radiographic and medical terminology both verbally and in writing.

5. Perform, record and analyze laboratory experiments conducted with radiographic and processing equipment and supplies. Evaluate outcomes and determine suitability of performance in order to produce a quality radiographic exposure and image.

6. Discuss radiographic supplies and equipment (x-ray tube, beam restriction, grids, filters, image receptors, and processing equipment) in terms of purpose, function, components, types, applications and safety practices.

7. Define, calculate and analyze the relationships of the prime exposure factors that control and affect image quality and discuss their effect on radiation dose.

Bakersfield College sample -Student Services Program Outcomes

Supportive Services (Disabled Student Programs and Services) SLOs

As a result of participating in the Supportive Services Program, and within their individual range of abilities, students with disabilities will be able to:

1. Locate appropriate services on and off campus.
2. Identify educational limitations resulting from their verified disabilities.
3. Communicate their approved accommodations to faculty or staff, and follow designated procedures to implement them. Furthermore, they will be able to make appropriate accommodation requests in other educational and vocational settings.
4. Create, and modify as needed, a Student Education Plan, considering their academic and vocational goals, their strengths and limitations, and available resources.
5. Develop appropriate disability management strategies, and identify college and community resources to maximize their independence.
6. Determine their legal rights and responsibilities, and how to file an appeal or grievance if access is denied or hindered on or off campus.

From Cabrillo: Cabrillo College offers us a whole host of sample outcomes developed by Cabrillo faculty for course outlines. Note the verbs used and how they reflect higher level thinking skills, thus making them SLOs rather than objectives.

CEM 151 (Construction Fundamentals: Principles and Practices)

Construct a building applying the skills and knowledge obtained in this class.

ANTHRO 13 (Forensic Anthropology)

Using the basic principles of forensic anthropology, **analyze** skeletonized human remains to determine sex, age at death, height and genetic ancestry.

ATH 15HH (Preseason Intercollegiate Water Polo – Men)

Analyze and customize principles of cardiovascular fitness, muscular strength, endurance, and flexibility to water polo, and **apply** them to prevent injury.

DANCE 58 (Street Dance and Hip Hop)

Perform, with an increasing degree of proficiency, simple Hip Hop movements, **demonstrating** increasing control of skills pertaining to memorization, physical safety, body awareness, alignment, and aesthetic valuing.

CIS 103 (Technical Support and Trouble Shooting)

1. **Analyze** symptoms of host configuration errors.
2. **Solve** novel hardware and software problems.
3. **Create** technical documentation for user training.

CABT 131 (Microsoft Word)

Analyze communication requirements and **produce** professional-quality business documents, including letters, memoranda, and multi-page reports, using intermediate and advanced features of Microsoft Word.

NUT 10 (Nutrition)

At the end of this nutrition course, a student will be able to **analyze** a documented nutritional problem, **determine a strategy** to correct the

problem, and **write a draft** nutritional policy addressing the broader scope of the problem

JOUR 53 (Newspaper Production and Copy Editing)

Construct visually attractive and readable newspaper pages by:

1. Using knowledge of effective design to fit graphical and text elements on newspaper pages and resolve problems with space constraints
2. Critiquing newspaper pages for design principles and design quality

Theatre Art (a series of courses)

TA 7 (Intro to Acting)

Select, analyze, and perform selections from dramatic texts **utilizing** the performance skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

TA 10A (Beginning Acting)

Select, analyze, and perform selections from dramatic texts **demonstrating increasing control** over the skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

TA 10B (Intermediate Acting)

Select, analyze, and perform selections from dramatic texts **demonstrating consistent control** and use of the performance consistent skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

TA 10C (Advanced Acting)

Select, analyze, and perform selections from dramatic texts **demonstrating a mastery** of the performance skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

English Composition (another series)

255 – Basic Writing

1. **Write** paragraphs and short essays **demonstrating** basic sentence-level competency and culminating in a portfolio.
2. **Comment** on ideas and writing strategies in reading assignments.

100- Elements of Writing

1. **Write essays demonstrating** sustained clarity of intention, awareness of audience, and various writing techniques.
2. **Articulate** responses to readings in various genres.

1A – College Composition

1. **Write essays**, including research-based writing, **demonstrating** academic rhetorical strategies and documentation.
2. **Analyze** and evaluate assigned and researched texts.

1B – Composition and Literature

1. **Write literary analysis**, interpretation, and research-based essays.
2. **Demonstrate** close readings of literary texts for analysis and interpretation.

2 – Critical Thinking

1. **Write evidence-based essays demonstrating** logical reasoning and argumentative skills.
2. **Evaluate** logical reasoning and argument in assigned and researched texts.

From El Camino College: El Camino College has provided an example of a complete assessment cycle report. This is still a preliminary reporting form which attempts to track the development of the cycle and provides opportunities for the faculty or staff in charge of the assessment cycle to reflect on the process, as well as the results.

From Mira Costa College sample Student Services SLOs: Mira Costa offers this draft of a complete set of SLOs for Counseling 105, with the SLOs tied both to the course objectives and the Counseling Area SLOs (with titles such as Productive Work Habits, Critical Thinking, and Effective Communication).

Counseling 105: *Rough Draft of SLOs*

SLOs	Objectives mapped to this SLO	Assessment for this SLO	Area SLO addresses and ranking	Level

	(listed on WebCMS)			
Formulate and design visuals for academic, monetary, relationship, career, and health goals.	3 and 5	Goals assignment with rubrics	Productive Work Habits	5
			Critical Thinking	4
Research, decide and collaboratively develop an education plan that supports academic and careers goals and interests.	1,2,3,6	Completion of education plan and term by term	Information Literacy	5
			Critical thinking	4
Identify and engage in appropriate services on and off campus that relate to student's goals.	(need to expand WebCMS objectives)	1.scavenger hunt 2.service learning 3. 4.	Effective Communication	3
Students will analyze and apply information gained from self-assessment instruments and career research to complete a career assignment.	4	Career packet with rubrics	Information Literacy	5

From Orange Coast College: Orange Coast College provides an example of how they have incorporated their SLOs directly into their course outlines of record. We have not included the entire outline here, but hopefully we have preserved the essential flavor of the document. Note that there are not nearly as many SLOs as there are course objectives.

ORANGE COAST COLLEGE COURSE OUTLINE OF RECORD

COURSE MASTER DICTIONARY DATA

Title 5 credit status: Associate degree credit course X Nondegree credit course ____
Noncredit course _____

Course name/number: Speech Communication 110 Division: Literature & Languages

Course title: Public Speaking Department: Speech Communication

Units: 3.0 Total course hours: 54 Course length: Semester

COURSE PREREQUISITE/COREQUISITE/ADVISORY:

None

CATALOG DESCRIPTION:

Overcoming stage fright and developing organizational, research, and delivery skills. Students will learn to outline, write, and deliver various types of speeches. An emphasis is placed on speaking, listening, and critical thinking skills. (CAN SPCH 4)

... details omitted for brevity ...

INSTRUCTIONAL OBJECTIVES:

The student will be able to:

1. Identify and choose topic appropriate to occasion or assignment.
2. Recognize speech constraints including type of speech, time limits, audience knowledge and disposition toward topic.
3. Differentiate between statistics, examples, opinions, and visual aides as types of supporting material.
4. Compose and communicate supporting material through oral citations.
5. Indicate source supporting material through written documentation on outline.
6. Construct a bibliography of sources used for speech development.
7. Define speech purpose clearly in terms of audience outcome.
8. Identify the standard speech outline, introduction, body, conclusion.
9. Recognize organizational patterns used to develop informative and persuasive speeches, including chronological, spatial, topical and proposition-to-proof, problem-solution and motivated sequence.
10. Recognize the mechanics of preparation outlining and speaker outlining.
11. Recognize the elements of a developed introduction including an attention step, clarification, and preview.
12. Recognize the elements of a developed conclusion including a review and closing statement.
13. Distinguish between writing for the eye and writing for the ear.
14. Employ previews, transitions, summaries, visual aides to enhance audience interest and understanding.
15. Employ brevity, simplicity and specificity to clarify meaning and audience interest and understanding.
16. Employ figures of speech including vivid descriptions, metaphors, realistic examples, unique quotations to stimulate audience interest and understanding.
17. Manage communication apprehension (public speaking anxiety) through the use of positive coping techniques.
18. Demonstrate speaker confidence through stance, posture, purposeful movement, and use of notes.
19. Employ effective use of vocal rate, pitch, volume, and quality to communicate messages.
20. Distinguish between impromptu, manuscript, extemporaneous, and memorized modes of delivery.
21. Practice speeches out loud at least 5-7 times.
22. Distinguish between supportive and critical listening.
23. Practice giving constructive feedback to other speakers.

STUDENT LEARNING OUTCOMES

The student will be able to:

- 1. Discover, access, analyze, and utilize appropriate statistics, examples, and testimony necessary to develop an effective speech.**
- 2. Utilize organizational patterns appropriate to speech type and purpose.**
- 3. Formulate and express language designed to clarify the speech and to interest the audience.**
- 4. Demonstrate control of communication apprehension and effective use of nonverbal elements in delivery through voice and body.**
- 5. Develop the ability to appraise, critique, and support speakers and speeches.**

-- Further Details Omitted --

Appendix C – Assessment Audit

This is a form available online to help faculty get started creating SLOs and Assessment Cycles.

Course-Level Assessment Audit Form

Please use this form to take an inventory of the assessments that already exist for your courses. After you have filled out the form, please forward it to Jenny Simon and/or Lars Kjeseth (SLO Assessment Coordinators) via email or via campus snail mail.

Division:	
Program/Dept.:	
Course(s)*:	

*(*Note: Please list the course(s) you are focusing on for this questionnaire. You may wish to fill out more than one of these questionnaires, depending on the scope and type of courses offered in your program).*

Below, please fill in the names and contact information for faculty who are involved in this dialogue.

Name(s):	Email / Ext. #

Questions:

Part A: Thinking About Assessments You Already Do—Apart from SLOs

1. What do you and your colleagues do in your course(s) to assess your students' learning? (Please also indicate the courses in which you perform each assessment.)

--

2. Do you ever compile data on your assessment results? If so, when and for what purpose have you compiled this data?

--

3. Do you and your colleagues ever discuss assessments or results of assessments? Is this discussion ever formalized (i.e. do you ever record minutes for these discussions, or include them in program review reports)?

--

4. Do you and your colleagues ever collaborate with other programs on campus to help you achieve your objectives for student learning? If so, how does this collaboration take place?

5. Do you think it is/would be useful to assess student learning in your courses? How do/would you use this data?

Part B: SLOs and Assessments Already in Place

6. Do you have any course-level SLOs in place? (If no, please skip to the end of this questionnaire).

Yes No

If so, please list the courses for which you have SLOs and the SLOs themselves

7. Have you assessed these course-level SLOs?

Yes No

If you answered yes, when did you do so? What assessment instrument did you use? How did you evaluate the results?

If you answered no, when are you planning your first assessment? Do you have an assessment instrument planned? Do you have a rubric developed for the evaluation of the results?

Appendix D – SLO Creation Forms

Writing Student Learning Outcomes Worksheet

Course Name and Number _____

Outcome One sentence that describes a major piece of knowledge, skill, ability or attitude that students can demonstrate by the end of the course	Assessment Major assignment, project or test used to demonstrate or apply outcome

Checklist for Writing Student Learning Outcomes

Is this SLO Statement robust? Now that you've written your SLO statement, it's best to show them to other faculty in both your discipline and outside it to see if what you've written is understandable and concise. Use the following checklist:

1. Have you used action verbs in describing your SLOs?

2. Will it fit into the assessment cycle?
 - Is it assessable with the resources available?
 - Are the results likely to help improve instruction or student success?

3. Is it written as an outcome rather than objective?
 - Language indicates the BIG PICTURE rather than nuts and bolts
 - Describes what students can DO
 - Asks students to apply what they've learned by producing something
 - Addresses student competency rather than content coverage

4. Is the SLO appropriate for the course?
 - Represents a fundamental result of the course
 - Aligns with other courses in a sequence, if applicable
 - Represents collegiate level work

Activity: Writing Student Learning Outcomes

Review the first example. Then for the second course objective, complete the Performance Context, Measurable Objective, and Primary Traits. Finally, select an objective from a course in your discipline and construct the three-part SLO statement. (From: B. Scroggins, November 2004, "The Teaching-Learning Cycle: Using Student Learning Outcome Results to Improve Teaching and Learning")

Course Objective	Performance Context	Measurable Objective	Grading Criteria/ Primary Traits
Match the various types of sheet metal welding methods to the appropriate application.	Given specifications and materials requiring a weld,	evaluate the performance needs, match the welding method to the required application, and perform the weld.	Welds should have a quality edge joint, meet design specifications, have an evenly positioned weld bead with good penetration, and have the minimum heat-affected zone to maximize strength of the weld.

Appendix D – Differentiating Goals, Objectives and Outcomes

“Outcomes demonstrate an understanding and application of a subject beyond the nuts and bolts which hold it together; objectives represent the nuts and bolts.” (BC Chemistry Prof).

Examples of Course Goals – the target for the course, the descriptor in the catalogue

The goal of this general art course is to cultivate a sense of aesthetic significance through analysis of problems and interpretations as they apply to a variety of disciplines

The goal of this general education biology course is to help students acquire and retain relevant biologic knowledge/information, teach them to think/apply this knowledge, and stimulate them to continue learning in the field.

The goal of this nutrition course is to prioritize key nutrition behaviors, identify health and nutrition needs, and integrate these behaviors into health interventions, educational training, and policy.

Examples of a few Course Objectives for the Nutrition Class above – the specific teaching objectives usually detailing course content and activities.

Review nutritional recommendations and components.

Define and describe vitamins, minerals and supplements.

Discuss differences in nutritional requirements associated with sex, age, and activity.

Describe causes and consequences of nutritional problems.

Explain nutritional complications associated with underlying physiologic conditions (e.g. Diabetes, malabsorption).

Identify key factors involved in correcting nutritional behaviors.

Describe resources and strategies to treat nutritional disorders.

Example of a Nutrition Course SLO – At the end of this nutrition course, a student will be able to analyze a documented nutritional problem, determine a strategy to correct the problem, and write a draft nutritional policy addressing the broader scope of the problem.