Assessing Student Learning

Writing Student Learning Outcomes

Student Learning Outcomes

In the previous section, on the background for assessment, we learned about the history and external pressures for assessment, such as the ACCJC 2002 accreditation standards. However, the real benefit of writing and assessing outcomes lays in the metamorphosis from a teaching-centered to a learning-centered mentality.

This has created a shift in perspective.......

When planning for our courses and programs, the primary question is no longer "What will I teach (or what content will I cover) in this class or program ?"

The primary question becomes "What will the students learn?"

Writing SLOs and then measuring (or assessing) if students have mastered them forces us to look at what the students will be *able to do* at the end of the course (or program, or counseling appointment, or student government activity) that they *could not do at the beginning*.

There are two more important questions, "How will I know what they can do?" and "How will students know what they can do?"

The heart and core of the answers to these questions are the statements that define what the students should be able to do - the student learning outcomes (SLOs).
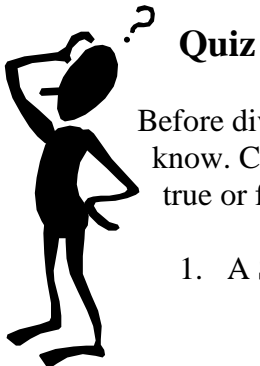
Quiz

Before diving into the nuts and bolts of writing SLOs, take a little quiz to see what you already know. Choose the best answer for the multiple choice questions and answer the others as either true or false:

1. A Student Learning Outcomes refers to student demonstration of:

   a) Knowledge
   b) Skills
   c) Abilities
   d) Attitudes
   e) All of the above

2. The 2002 ACCJC Accreditation Standards require that SLOs are written and assessed in:

    a) Courses
    b) Programs
    c) Degrees and Certificates
    d) Student Services and the Library
    e) All of the above

3. Course level SLOs should cover:

    a) Discipline knowledge
    b) Discipline skills
    c) Discipline values and beliefs
    d) Answers a & b only
    e) All of the above

4. An SLO is really the same thing as an objective in our course outlines.

5. According to both the Academic Senate for California Community Colleges and the ACCJC, writing SLOs and designing assessment processes is a faculty responsibility.

6. Faculty members can write different SLOs for the same course.

7. The college community must be involved in helping to define Institutional Outcomes since it affects the entire campus.

8. At what level of the ACCJC rubric on Student Learning Outcomes must colleges be by 2012?

    a) Awareness
    b) Development
    c) Proficiency
    d) Continuous Quality Improvement

The answers to these questions are in the Appendix A

Outcomes for Section 3

After completing this section, you will be able to:

- Define an SLO.
- Compare and contrast an SLO and a course objective.
- Analyze and revise a series of SLOs.
- Create a set of SLOs for a course or program.
- Teach someone else how to write an SLO and evaluate the results of that instruction.
- Appraise the training that has occurred at your college about writing SLOs for Instruction, Student Services and the library, and recommend next steps.

Key Principles:

Here are the key concepts to remember about student learning outcomes.

1. An SLO is an over arching goal, 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.

2. The ACCJC Accreditation standards required that SLOs be written for all courses, programs, degrees and certificates, Student Services and the Library. This has proven so helpful that some colleges are also writing them for Administrative Services.

3. SLOs should be agreed upon by the group that is responsible for delivering the learning experience; for example, all the instructors who teach the same course should agree and teach to the SLOs for that course; all members of a program or department should agree to the program or departmental SLOs; the entire college should be involved in defining and writing institutional SLOs.

Who, What, When, Where and Why?

Student Learning Outcomes have proven to be such a monumental shift in the way we approach education that it is important to get a good grasp of the fundamentals before diving into the actual writing of them. Like a good journalist, we'll look at the five key questions -- "who, what, when, where and why" -- to describe this change. It will make more sense if we take them a bit out of order.
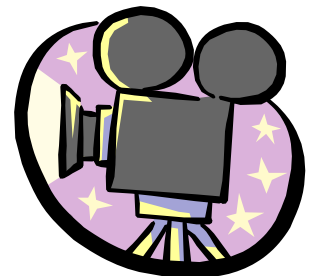
What?

Let's start with a definition of student learning outcomes, written by one of the primary authors of this unit and posted in the SLO Workbooks on the Cabrillo College SLO website (any of the materials in these workbooks may be downloaded and copied, if you find them useful) "Student learning outcomes (SLOs) describe the:

- ☐ knowledge
- ☐ skills
- ☐ abilities
- ☐ attitudes
- ☐ beliefs
- ☐ opinions
- ☐ 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." As we said earlier, the stress is on what students can **DO** with what they have learned.

Student Learning Outcomes capture the big picture. SLOs:
- ☐ Describe the broadest goals for the activity, ones that require **higher-level** thinking abilities.
- ☐ Require students to **synthesize** many discreet skills or areas of content.

In addition, SLOs:
- ☐ Ask students to then **produce** something - papers, projects, portfolios, demonstrations, performances, art works, exams, educational plan 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.

The 2002 ACCJC Accreditation standards state that SLOs must be written and assessed for each:

- Course
- Program, including General Education and Vocational
- Degree and Certificate

In addition, Standard IIB and Standard IIC state that both the library and Student Services must use student learning outcomes to assess the effectiveness of their services.

Finally, writing SLOs is not enough. Those student learning outcomes must also be assessed or measured and the results used to improve teaching and learning. See Section 6 for a detailed explanation for how to assess SLOs. But for now, in order to understand what an SLO is, you must also understand the assessment cycle.   The graphic below illustrates what is known as the Assessment Loop, a process that departments, programs and institutions go through as they write SLOs, create a method to assess them, detail the criteria that measures that assessment and most importantly, dialog about the results so that improvements are made.

Assessment Loop

1. SLO –

2. Means of Assessment –

3. Criteria for Assessment –

4. Summary of Evidence –

5. Use of Results –
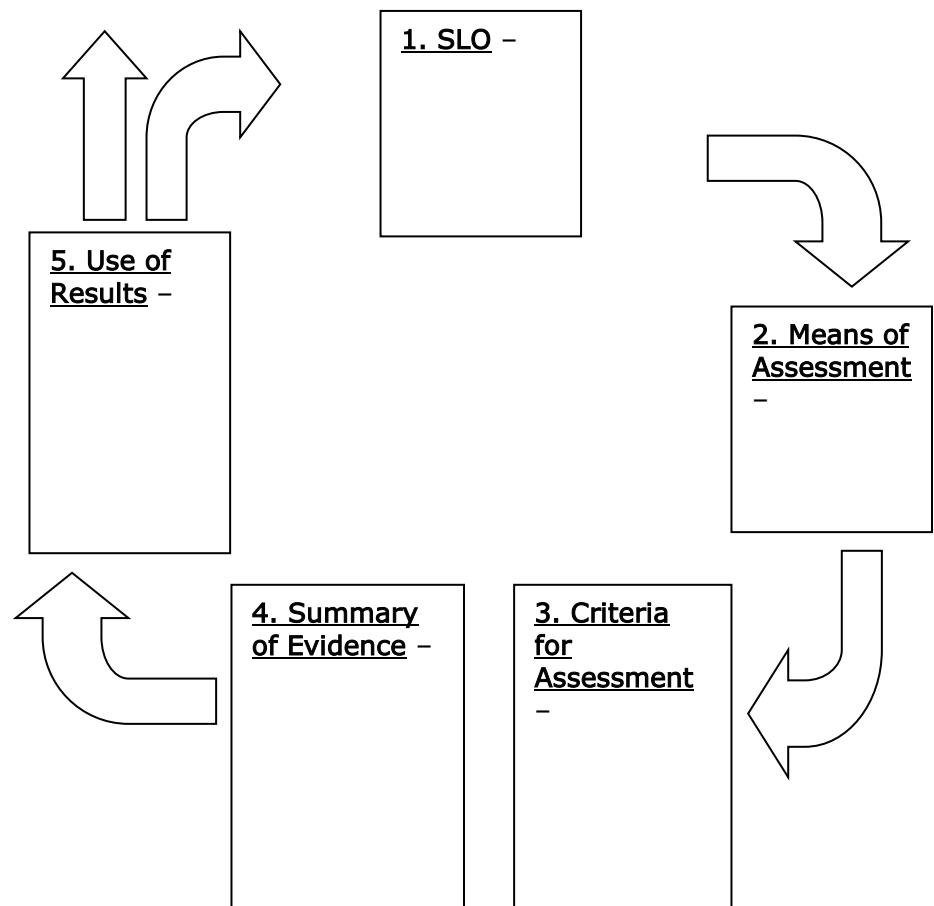
The Assessment Loop is actually making explicit a process that faculty undertake on a regular basis. How many times after a teaching a class or holding a counseling session or even attending a campus-wide meeting, have you internally evaluated the interaction and thought, "Well, that went well" or "Gee, next time I'll change this or that…" The Assessment Cycle simply formalizes that process and records the results in some way. The good news is that are many ways to do this. It is the task of each college to define this cycle, designing assessment processes and ways to record them in a way that fits their individual culture. The first step is to write Student Learning Outcomes.

Who?

So, who should be writing these student learning outcomes? The Accreditation Standards and Title V both give faculty primary responsibility for writing and assessing student learning outcomes. Most community colleges across California have designated a Student Learning Outcomes coordinator -- usually a faculty member or a committee of faculty -- to assist with this work. *Agents of Change: Examining the Role of Student Learning Outcomes Coordinators in California Community Colleges,* a 2007 paper written by the Academic Senate of the California Community Colleges, details the different ways that coordinators are hard at work on various campuses. They are often responsible for faculty training, and for helping library, student services and instructional faculty to write and design assessment for SLOs.

Whether or not a school has an SLO coordinator, it falls to faculty to roll up their sleeves and write SLOs. Because student learning outcomes describe the higher level skills that students will take away from a course, program or degree, writing them is not an individual act. Departmental members must discuss the SLOs and all agree on their wording. This is no different from the way departments have traditionally agreed upon the wording for a course objectives in the Course Outline of Record. Campus-wide outcomes for degrees or general education required a broader discussion with representatives from the campus at large. At many colleges, this has occurred through the local Academic Senates or other campus-wide governance committees.

Why?

Section Two details the history, theory and research that led to the rise of student learning outcomes in education. Here's a summary that may help the faculty on your campus who are struggling to understand this change understand how it affects them in the classroom. It is taken from a presentation by Janet Fulks and Marcy Alancraig titled "What the *!#? Is an SLO?" given at the 2007 ASCCC Accreditation Institute.

"This approach to teaching believes that "covering" material during a course does not necessarily **guarantee** that students learn it. The instructor has delivered the course, but how do we know if the students have truly absorbed the material, or better yet, can apply it? The new Accreditation Standards state that success and retention are no longer considered an accurate way of answering that question. Success is determined by

students emerging from courses with integrated, higher learning skills that they can **demonstrate** to others. Those demonstrations are the proof 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. This concept of **transparency** is key to using SLO's successfully in the classroom.

The final key concept is **practice.** Before being evaluated on an SLO, students should have the opportunity to practice the skill or tasks that compose it."
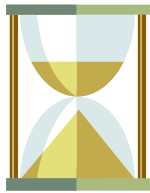
When?

When do SLOs need to written? Because half of the colleges in California have chosen to put SLOs on the official course outline of record (see "where" below), the timing of the writing may depend on that college's curriculum schedule. Many colleges have also linked the writing and assessing of student learning outcomes to their on-going program review cycle. However the college chooses to organize it, what they have done must be reported each spring to the ACCJC in their regular Annual Report. This report asks the college to cite the percentage of SLOs written and assessed in courses, programs, general education, student services and the library.

In addition, the ACCJC has created the rubric shown below to define how campuses will be judged in regards to student learning outcomes. All ACCJC colleges are expected to be at the proficiency level of the rubric by 2012. Where is your college on this scale? Will you be at the proficiency level by 2012?

Rubric for Evaluating Institutional Effectiveness – Part III: Student Learning Outcomes

Levels of Implementation	Characteristics of Institutional Effectiveness in Student Learning Outcomes *(Sample institutional behaviors)*
Awareness	• There is preliminary, investigative dialogue about student learning outcomes. • There is recognition of existing practices such as course objectives and how they relate to student learning outcomes. • There is exploration of models, definitions, and issues taking place by a few people. • Pilot projects and efforts may be in progress. • The college has discussed whether to define student learning outcomes at the level of some courses or programs or degrees; where to begin.

|	
Development	• College has established an institutional framework for definition of student learning outcomes (where to start), how to extend, and timeline. • College has established authentic assessment strategies for assessing student learning outcomes as appropriate to intended course, program, and degree learning outcomes. • Existing organizational structures (e.g. Senate, Curriculum Committee) are supporting strategies for student learning outcomes definition and assessment. • Leadership groups (e.g. Academic Senate and administration), have accepted responsibility for student learning outcomes implementation. • Appropriate resources are being allocated to support student learning outcomes and assessment. • Faculty and staff are fully engaged in student learning outcomes development.
Proficiency	• Student learning outcomes and authentic assessment are in place for courses, programs and degrees. • Results of assessment are being used for improvement and further alignment of institution-wide practices. • There is widespread institutional dialogue about the results. • Decision-making includes dialogue on the results of assessment and is purposefully directed toward improving student learning. • Appropriate resources continue to be allocated and fine-tuned. • Comprehensive assessment reports exist and are completed on a regular basis. • Course student learning outcomes are aligned with degree student learning outcomes. • Students demonstrate awareness of goals and purposes of courses and programs in which they are enrolled.
Sustainable Continuous Quality Improvement	• Student learning outcomes and assessment are ongoing, systematic and used for continuous quality improvement. • Dialogue about student learning is ongoing, pervasive and robust. • Evaluation and fine-tuning of organizational structures to support student learning is ongoing. • Student learning improvement is a visible priority in all practices and structures across the college. • Learning outcomes are specifically linked to program reviews.

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Where?

Once SLOs are written, where should they live? Since the advent of the 2002 ACCJC Accreditation Standards, a discussion regarding the proper public space for SLOs has arisen. Some have argued that the SLOs should be on the Course Outline of Record. The Course Outline of Record is an official document required in California to use for articulation agreements between community colleges and transfer institutions. Some colleges have said that they cannot get agreements if their SLOs do not match the SLOs of nearby transfer institutions. In addition, since SLOs should be continually reexamined and not static or fixed, some colleges are reluctant to attach them to their official Course Outlines of Record. Others feel that, like course objectives, the regular curriculum process is sufficient for making needed changes. Why go to the trouble of creating another place to officially list SLOs, they argue, when the Course Outline of Record is already available. In 2007, the authors of *Agents of Change: Examining the Role of Student Learning Outcomes Coordinators in California Community Colleges* conducted a survey. It revealed the state is evenly split in half, with 50% of

colleges keeping their SLOs as addenda to the official Course Outlines of Record or in a separate place, while the other 50% insert them directly into the document.

A discussion has also arisen about SLOs being in the syllabi for all courses. In the 2002 ACCJC Accreditation Standards, Standard IIA6a, it states that "in every class section, students receive a course syllabus that specifies learning objectives consistent with those in the institutional officially approved course outline." Since the official Course Outlines of Record have course objectives which all faculty teaching a particular course need to meet, it makes sense to provide students with those objectives. However, since students and the public should be apprised of what the expected outcomes for a course should be, then it is also reasonable to put the SLOs that have been agreed upon by the faculty in a discipline into course syllabi.
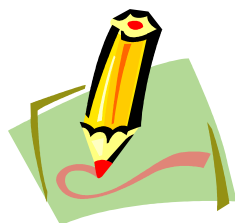
Back to Basics: Writing Student Learning Outcomes

Now that you understand the "who, what, when, where and why," let's get back to basics. Remember that Student Learning Outcomes describe the knowledge, skills, abilities or attitudes that a student can **demonstrate** by the end of your course, program, degree or student service. They describe the big picture, and include four major components. SLOs:
1. Require the use of **higher-level** thinking abilities.
2. Ask students to **synthesize** discreet skills or areas of content.
3. Result in the **production** of educational plans, papers, projects, portfolios, performances, exams etc. that require students to **apply** what they've learned.
4. Require faculty to **evaluate** or **assess** the product to measure a student's achievement or mastery of the outcomes.

SLOs versus Course Objectives

How is that different from course objectives? Course objectives are on smaller scale, describing small, discreet 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. See the table below for a more detailed contrast between outcomes and objectives.

	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 (5-9) to facilitate modification and improvement of teaching and learning.

"Outcomes demonstrate an understanding and application of a subject beyond the nuts and bolts which hold it together; objectives represent the nuts and bolts." (Bakersfield College Chemistry Professor).

SLO or Objective?

The statements below were written for programs and courses. Analyze the statements to determine whether they are objectives, or student outcomes. Write OB for objectives and SLO for student learning outcome in front of each statement. Hint: Some of the statements listed below may be neither an SLO nor objective, but something broader, such as a goal.

	(Engineering course) This course introduces senior engineering students to design of concrete components of structure and foundation and integrate them into overall design structures.
	(History course) Identify key dates in American History to 1865.
	(Engineering course) Functioning as a member of a team, the student will design and present a concrete structure which complies with engineering standards.
	(English course) Write a thesis statement that introduces the paper's argument
	(Epidemiology course) Define and assess an epidemic for a given population and recommend factors influencing the use of health services.
	(Ecology course) Critically review and synthesize the findings in scientific literature and make appropriate ecological recommendations based on current knowledge.
	(Sociology course) Understand that individuals (and their families) must be regarded uniquely as individuals with many contributing variables such as multicultural issues.
	(Nutrition course) List the elements of the food pyramid.
	(Immunology course) This course will provide students with a medically relevant foundation of knowledge regarding the components and basic principles of the immune system and the vocabulary and language of immunology.
	(Math course) Given data students will analyze information and create a graph that is correctly titled and labeled, appropriately designed, and accurately emphasizes the most important data content.

Answers are in appendix C

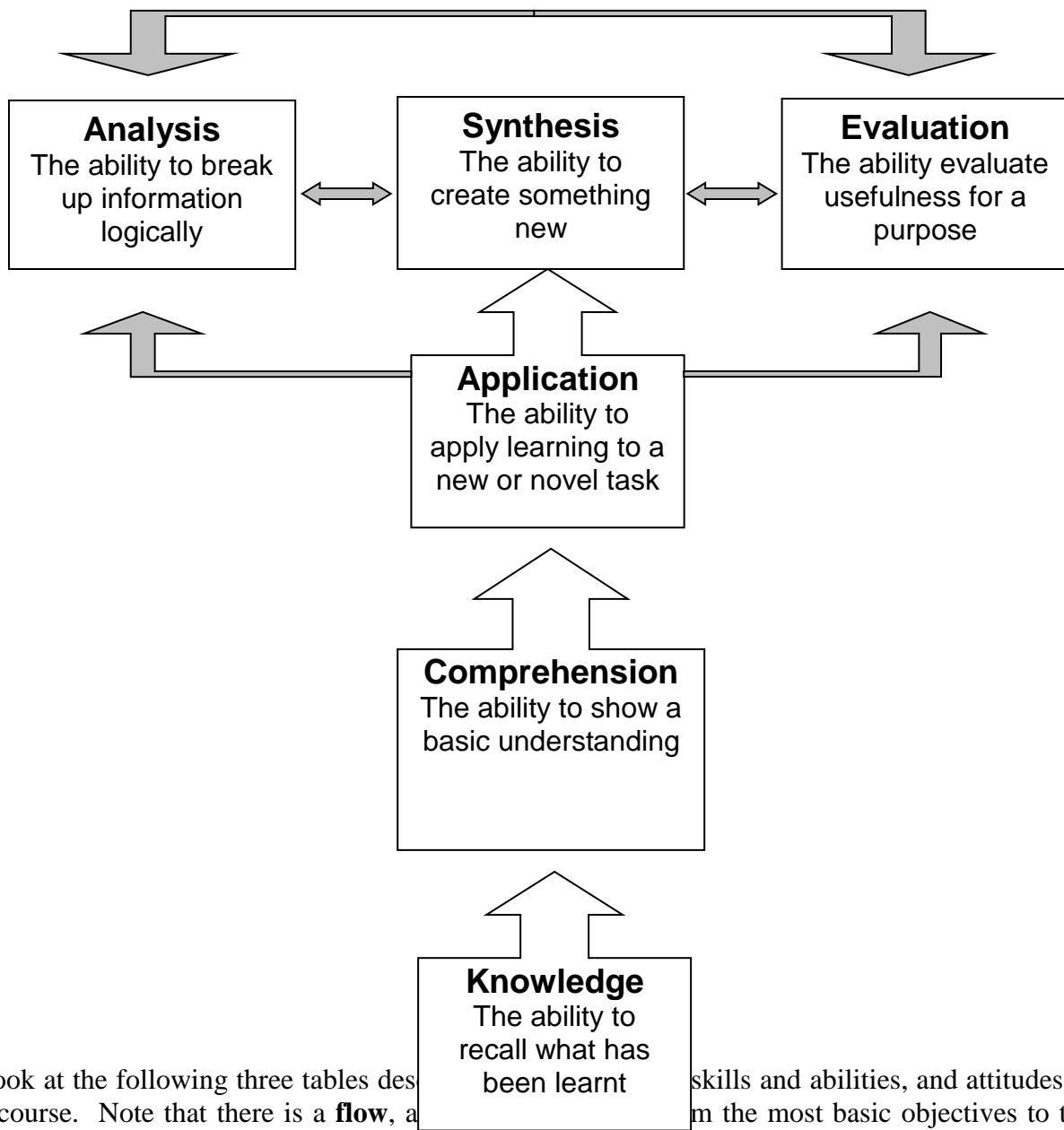## SLOs, Bloom's Taxonomy, Cognitive, Psychomotor, and Affective Domains

Now that you have a handle on the difference between an SLO and an objective, let's add some complexity to the discussion. Bloom (1948) developed classifications of intellectual behavior and learning in order to identify and measure progressively sophisticated learning. Since college faculty are hired because of their discipline expertise, they are sometimes unfamiliar with important pedagogical theories that contribute to effective learning. Bloom's taxonomy is especially vital in higher education where outcomes need to address the student ability to **apply** information, not just recall and regurgitate concepts. Lower levels of learning, the kind that make up objectives, are easier to assess but do not adequately display what the student can DO with the knowledge. Refer to the next page for a diagram of Bloom's increasing levels of complex learning.

However, learning is not a purely cognitive function; learning occurs differently when it entails performing a skill or re-evaluating behavior. Three domains of learning are recognized:

- Cognitive domain defining knowledge classification. See the following page for a table describing increasing complexity in cognitive learning. Each level has examples of verbs that could be used in writing an SLO at this level. These verbs are not magic or mandatory, our faculty found them helpful, so we used a variety of models and created our own.

- Psychomotor domain (Gronlund, 1970; Harrow, 1972; Simpson, 1972) defining physical skills or tasks classification. Check out the psychomotor table on the following page.

- Affective domain (Krathwhol, Bloom, and Masia, 1964) defining behaviors that correspond to attitudes and values. Please refer to the affective table. Affective outcomes tend to be the hardest to articulate initially and often appear difficult to assess at first glance. However, cognitive outcomes often represent the outcomes most closely related to deeper thinking and life-long learning, as well as the outcomes we value most.

NOTE: Student learning outcomes should address relevant outcomes for each of these domains but must be appropriate to the course.

Interrelationships Between Bloom's Cognitive Levels

Analysis	Synthesis	Evaluation
Analysis The ability to break up information logically	**Synthesis** The ability to create something new	**Evaluation** The ability evaluate usefulness for a purpose

Application
The ability to apply learning to a new or novel task

Comprehension
The ability to show a basic understanding

Knowledge
The ability to recall what has been learnt

Look at the following three tables des[...]skills and abilities, and attitudes in a course. Note that there is a **flow**, a[...]m 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.

ohnson, A. (1994) Module A5: Planning a Test or Examination. In B. Imrie & C. Hall, [...]of Student Performance. Wellington, New Zealand: University Teaching Development Centre, [...]toria University of Wellington.
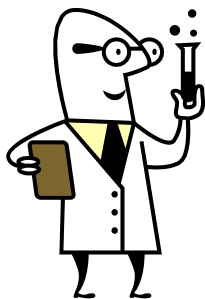
Objectives
Basic
Knowledge

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

Objectives   **Outcomes**

Basic Knowledge   More Sophisticated Skills
Basic Skills   Higher Level Abilities
Level   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

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

Sample Student Learning Outcomes

Here are sample outcomes developed by community college faculty. Note the verbs used and how they reflect higher level thinking skills, thus making them SLOs rather than objectives. Some of these sample outcomes are the only ones for the course, while others are one of several.

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

Biology
-**Utilize** the scientific method and **evaluate** the scientific validity of information presented by the media and other sources.

Chemistry 1A
- **Solve** quantitative chemistry problems and demonstrate reasoning clearly and completely. **Integrate** multiple ideas in the problem solving process. Check results to make sure they are physically reasonable.

- **Analyze** the results of laboratory experiments, evaluate sources of error, synthesize this information, and express it clearly in written laboratory reports.

Child Development
-Given a description of an infant with a particular disability, **analyze** ways to provide support and education to parents including; on-site, in-home, and community services available.

Construction Fundamentals: Principles and Practices (lab)
-**Construct** a building applying the skills and knowledge obtained in this class.

Dance: Street Dance and Hip Hop
1. **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.

Labor Studies - Collective Bargaining
-**Apply** collective bargaining theories from both management and labor perspectives.
-**Analyze** and apply the principles of collective bargaining and labor law during negotiations.
-**Utilize** negotiation skills in labor and employer relations.

Nutrition
-**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

Theatre Art (a series of courses)
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.

Beginning Acting
> **-Select, analyze, and perform** selections from dramatic texts **demonstrating increasing contro**l over the skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

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.

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 series
Basic Writing (2 levels below transfer)
> **-Write** paragraphs and short essays **demonstrating** basic sentence-level competency and culminating in a portfolio.
> -**Comment** on ideas and writing strategies in reading assignments.

Elements of Writing (1 level below transfer)
> -**Write essays demonstrating** sustained clarity of intention, awareness of audience, and various writing techniques.
> -**Articulate** responses to readings in various genres.

1A – College Composition (transfer level)
> - **Write essay**s, including research-based writing, **demonstrating** academic rhetorical strategies and documentation.
> **-Analyze** and evaluate assigned and researched texts.

1B – Composition and Literature (transfer level)
> -**Write literary analysis**, interpretation, and research-based essays.
> -**Demonstrate** close readings of literary texts for analysis and interpretation.

2 – Critical Thinking (transfer level)
> - **Write evidence-based essays demonstrating** logical reasoning and argumentative skills.
> - **Evaluate** logical reasoning and argument in assigned and researched texts.
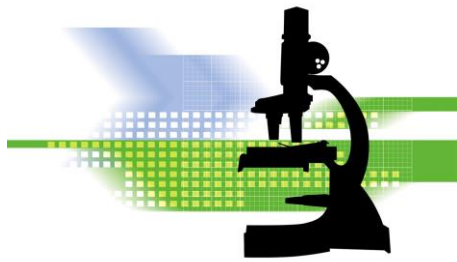
Research Assignment

1. Go on-line and find 6 to 10 SLOs in any discipline from any institution of higher education in the United States.

2. Examine these SLOs. Circle their use of verbs. Which ones utilize higher level thinking skills and Bloom's domains. Using the criteria presented so far, which ones meet them and why? Which ones do not, and why?

Exercise: Analyze and Revise SLOs

Assume that a faculty member has been drafting SLOs and asked you for feedback. Print off the SLO checklist on the next page and use it to analyze the SLOs below.

- Select two DRAFT SLOs from below.
- Think of questions you could ask the faculty member that might clarify the SLO.
- Suggest some modifications to the language.

Upon completing this course or program students will:

1. Improve their ability to read, listen to, and/or follow directions.

2. Design experiments and interpret data according to the scientific method in order to evaluate a hypothesis.

3. Write papers that

- develop a thesis
- present coherent and logical claims
- are organized with clear links between claims and support
- are well developed with sufficient and relevant evidence
- use standard American English correctly
- make stylistic choices in persona, syntax, and diction
- gauge the needs of and address a specific audience

4. Faculty and staff will demonstrate knowledge of disabilities and accommodations and services available for students in the DSP&S program.

5. Demonstrate Social responsibility.

6. Apply graphing capabilities of the spreadsheet software to visually enhance the presentation of results obtained from analytical tasks.

Student Learning Outcome Checklist	Yes	No
Do the SLOs include active verbs?		
Do the SLOs suggest or identify an assessment?		
Do the SLOs address the expected level of learning for the course using Bloom's Taxonomy as a guideline?		
Do the SLOs address more than one domain (cognitive, psychomotor, and affective)?		
Are the SLOs written as outcomes rather than as objectives? 1. Language indicates an important overarching concept versus small lesson or chapter objectives. 2. Outcomes address what a student will be able to **do** at the completion of the course. 3. SLOs address student competency rather than content coverage.		
Are the SLOs appropriate for the course? • Consistent with the curriculum document of record • Represents a fundamental result of the course • Aligns with other courses in a sequence, if applicable • Represents collegiate level work		
Will students understand the SLOs?		
Comments or suggestions:		

As you talk to others about SLOs keep these things in mind:

- Each course and classroom has unique factors.
- Disciplines have unique language and culture.
- Cross disciplinary conversations are invaluable.
- Ultimately discipline-specific conversations best define competencies for students.
- Everyone is a learner when it comes to assessment.
- As professionals, we are guided by the principles of academic freedom.

Exercise: Writing SLOs

So far, you have analyzed the SLOs written by others. But now it is time to get your hands dirty and write some yourself. Beginning is often the most difficult step. Remember that you have been doing this all along. Now is your chance to put what you know intuitively as a professional into words.

Use the Worksheet below and:

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, student service or program. Describe what students will **do --** not content, activities or hours.

2) Use action verbs. See the previous pages for examples.

3) Write it in language that a student will understand.

4) Make sure that the outcome is something that can be assessed or tested.

Hint: Sometimes it's easier to start backwards by thinking about the major assessments you use in the 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. Remember that the essence of student learning outcomes lies in focusing on the results you want from your course, rather than on what you will cover in the course. Ask yourself how you will know when you have accomplished those outcomes.

5) A word of warning: Be careful when describing attitudes in a learning outcome. They are hard to assess. Ask yourself if the attitude is crucial to success in your course. If a student doesn't have a certain attitude, but possesses the knowledge and skills being taught, is that satisfactory?

Some Dos and Don'ts:
1. Don't use the words "understand" - go for higher level thinking skills.
2. Don't use the phrase "students will." Avoid any pronouns like "them" or "their."
3. Do distinguish the difference between an A and B courses of the same number.
4. Keep the number of outcomes short if possible. 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.
5. Share the outcomes with faculty from other disciplines and within your own discipline**.** This helps focus the meaning of the statements.
6. Share the outcomes 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.

Writing Student Learning Outcomes Worksheet

Course, Program or Service Name and Number: _____

Outcome **1 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**

Outcome **1 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**

Case Study: Looking at SLO training at Your College

        Here is a chance to analyze the type of SLO training that has occurred at your college, keeping in mind the **WHEN** dictated by the ACCJC rubric. Where is your college on the rubric?. What needs to occur to bring you to the proficiency level by 2012? For this case study, focus specifically on SLO training. Answer the following questions:

1. What kind of SLO training have the faculty received so far at your college? Would you change or augment that training in any way? How?
2. Find a copy of last year's ACCJC annual report. How many SLOs have been written for instructional programs, student services, and the library? Where do you need to go? How do you propose getting there?
3. What process has your college established for reviewing SLOs? (eg., is it part of Curriculum committee?). Analyze its effectiveness and if it needs any changes.
4. Write a plan on what you think will need to be done to further the development of SLOs at your college for the next academic year. The following year? To reach proficiency level in 2012?

The Quiz Revisted

Take the quiz again and see if you know more.

1. A Student Learning Outcomes refers to student demonstration of:
    a. Knowledge
    b. Skills
    c. Abilities
    d. Attitudes
    e. All of the above

2. The 2002 ACCJC Accreditation Standards require that SLOs are written and assessed in:
    a. Courses
    b. Programs
    c. Degrees and Certificates
    d. Student Services and the Library
    e. All of the above

3. Course level SLOs should cover:

    a) Discipline knowledge
    b) Discipline skills
    c) Discipline values and beliefs
    d) Answers a & b only
    e) All of the above
    f) An SLO is really the same thing as an objective in our course outlines.

4. According to both the Academic Senate for California Community Colleges and the ACCJC, writing SLOs and designing assessment processes is a faculty responsibility.

5. Faculty members can write different SLOs for the same course.

6. The college community must be involved in helping to define Institutional Outcomes since it affects the entire campus.

7. At what level of the ACCJC rubric on Student Learning Outcomes must colleges be by 2012?
    a. Awareness
    b. Development
    c. Proficiency
    d. Continuous Quality Improvement

The answers to these questions are in the Appendix A

Surveying Progress Thus Far

1) Which of the following criteria are important when writing SLOs? (Check all that apply.)

☐ The depth or complexity of learning

☐ Complexity of discipline language

☐ Domains represented by the outcomes

☐ Evidence of adequate memorization

☐ Assessibility (Can you qualitatively or quantitatively measure this outcome?)

☐ Availability of a standardized assessment

☐ Consistency with external requirements

☐ Alignment with any existing standards

☐ Student's ability to thoroughly understand SLOs on the first day of class

☐ Ease in generating statistical yet irrelevant data

☐ The ability for all students to adequately perform the outcome

☐ Alignment with program and institutional outcomes and goals

☐ Importance of topics to overall course

2) Which of the following components of the training were helpful?
(Check any that apply.)

☐ History of Assessment

☐ WASC standards

☐ Diagram of Bloom' Taxonomy

☐ Charts of the Domains

☐ Comments from other faculty

☐ Sample SLOs

☐ Quizzes and Surveys

☐ Hands-on Practice

☐ Differentiation of SLOs and Objectives

☐ Step by step instructions for Writing SLOs

☐ SLO Checklist

☐ Definitions and Terminology

☐ References

3) Evaluate your own competence at doing the following:

	4 Expert	3 Experienced	2 Beginner	1 Novice
Writing Course SLOs	☐	☐	☐	☐
Writing Program SLOs	☐	☐	☐	☐
Discussing SLOs with other faculty	☐	☐	☐	☐
Mentoring a faculty member to write SLOs	☐	☐	☐	☐
Assessing SLOs	☐	☐	☐	☐

4) Do you have any suggestions that would improve the training?

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Appendix A

Answer to Quiz

1. A Student Learning Outcomes refers to student demonstration of:
    a. Knowledge
    b. Skills
    c. Abilities
    d. Attitudes
    e. All of the above
    f.
2. The 2002 ACCJC Accreditation Standards require that SLOs are written and assessed in:
    a. Courses
    b. Programs
    c. Degrees and Certificates
    d. Student Services and the Library
    e. All of the above
    f.
3. Course level SLOs should cover:
    a. Discipline knowledge
    b. Discipline skills
    c. Discipline values and beliefs
    d. Answers a & b only
    e. All of the above

4. An SLO is really the same thing as an objective in our course outlines. **False**

5. According to both the Academic Senate for California Community Colleges and the ACCJC, writing SLOs and designing assessment processes is a faculty responsibility. **True**

6. Faculty members can write different SLOs for the same course. **False**

7. The college community must be involved in helping to define Institutional Outcomes since it affects the entire campus. **True**

9. At what level of the ACCJC rubric on Student Learning Outcomes must colleges be by 2012?

   a) Awareness
   b) Development
   c) Proficiency
   d) Continuous Quality Improvement

Appendix B

SLO's – What's the Benefit?

When I was hired as a microbiology instructor at Bakersfield College I never considered the fact that the public would demand evidence that learning goes on inside my classroom; but they have. I am required to develop and assess Student Learning Outcomes (SLOs) by the new WASC accreditation standards. Do I develop and use SLOs because I am obliged by accreditation? Do I identify SLOs in the courses I teach because they represent the latest educational panacea or state-of-the-art edu-babble? Hardly! My perspective on SLOs has been molded by distinct advantages I have seen as a result of using them in my classes and the benefits from campus-wide discussions about learning outcomes. SLOs have worked for me and my students, and provided a nucleus for dynamic and valuable dialogue with colleagues.

SLO's help focus on the relevant and contemporary content to use in my course. I teach microbiology, a field exploding with new information on a daily basis. It is nearly impossible for me to stay current with all the new data and I have to admit that I struggle with displacing the old and comfortable aspects of my discipline, that I know so well, and selecting appropriate new material to incorporate. Why not just add more; there is not enough time!

- SLOs help define the content.

SLOs help define what I cover in a dynamic way. As the factoids of science change and new information slowly reforms our understanding of essential biology content, my SLOs keep me honestly abreast of the information I need to cover as it relates to the overall picture.

Material that does not contribute to my student's ability to reach the learning outcome, while interesting, really has no role in my course and must be eliminated.

SLOs are written with an overarching perspective of the course and represent an integration of the content. In this way SLOs provide a boundary or definition for the material I include, and more useful for me, the material I exclude.

- SLOs can alter classroom interactions.

I have seen significant advantage in the classroom interactions with my students and what appears to be significant learning achievement as a result of a clearer focus on what the outcomes should be.

Students have shared that they more clearly understand what I expect them to do rather than what the course will cover. As a result students have more clearly identified areas of difficulty for themselves rather than depending upon me to guess the areas in which they are lacking.

SLOs define what my students should be able to do at the end of the course thereby guiding and enabling the students to selectively pick and choose methods to study, digest, and synthesize a large volume of new information. Student visits to my office have been invested in discussing studying strategies more often than answering "Will this be on the test?

Students realize the final course products are behaviors and skills rather than a stack of notes and a collection of course assignments. They are less likely to see the grade as something they earn by work (regardless of the relevancy, accuracy, or quality of the work) but as a clearly defined expectation that must be met.

Students have commented that they are without excuse because they clearly understand the expectations throughout the course and for the final. This is a wonderful turn of events compared to the often heard complaint that they studied for hours and got a poor grade, intimating I, as the instructor, am to blame

Students feel they know the whole picture at the beginning of the semester and can use their studying more efficiently by focusing on items of value that contribute to the SLOs.

- SLOs direct and guide the types of assessments needed.

SLO's have provided the foundation for my exams, particularly the final exam. Thus, while SLOs take time on the front side, they have actually saved me time and work later in the semester.

Because I want the students to be able to DO something when they leave, I no longer ask essay or multiple choice questions about a skill they should develop, I have them perform the task and evaluate them. For example, no more questions on how to focus a microscope, they must make a slide, focus it, and show me the result.

SLOs have helped me focus on higher order thinking skills as I assessment student competencies, because I am aware that ultimately they must not only know the material, but be able to use it.

- SLOs and assessment produce constructive data to modify pedagogy.

Previously I determined class activities by gut level instincts (which aren't that bad, but are hard to explain to others) and student responses concerning how they liked an activity. These are good information, but do not provide data that students have actually learned something.

SLOs represent an ultimate measurable goal therefore I am able to analyze feedback from students concerning their mastery of material and their ability to integrate information at a higher level of thinking e.g. evaluation and analysis of material versus memorization.

Assessment methods have provided me with skilled diagnostic techniques to determine changes in my approach to material. I found that some activities, while fun, required too much energy in comparison to the actual benefit as measured by the outcomes. In some cases I was able to tweak activities maximize learning and involvement from the students.

Dynamic learning based on outcomes has sometimes required that I take unexpected detours, spend more time on a subject, turn a lecture into a discussion, or create another assignment. Because I am focused on learning outcomes this may mean I have to skip some content or reduce the time spent on some material. With the learning outcomes as my guide I find this task easy because I can prioritize what material is most beneficial to achieving the outcomes.

- SLOs and assessment have stimulated valuable professional dialogue with colleagues.

Conversation with colleagues less often focus on complaining about the poor level of students, instead SLOs have contributed to a focus on diagnostic tools and constructive strategies to reach outcomes.

Because the *intuitive* course framework I historically operated on has been fleshed out, my colleagues know the most vital goals and outcomes for the course and how I prioritize them. As a result they have provided more specific and detailed help when I have questions or problems.

Discussions with faculty from courses that feed into mine, or courses that my material support, now have data to adjust how we integrate and build on the content to produce better learning.

Within my discipline area, to our delight and surprise, we discovered that to a large extent we agree and operate on the same outcomes but use widely varying vehicles and methods to get there. This has allowed us to share strategies and expand out repertoire.

A common theme on campus is that faculty have seen the importance of incorporating General Education outcomes in their courses even when approaching their own particular field of study.

Amongst the Bakersfield College faculty a campus survey revealed that SLOs are most valued due to personal benefit in the classroom and the opportunities they produce to dialogue with other faculty.

Appendix B

SLO's and Active Learning Strategies

Student Learning Outcomes define what a student is supposed to be able to do when they complete a course. A new revelation for me was that especially when active learning activities are employed, it is essential to be able to come back to what the student is supposed to be able to do when they leave the class that they could not do before they came in to the class. Active learning generates many varied, original, and dynamic new tidbits of information. Student discussion and contribution are never predictable. This can be wonderful adding to the experience of your students, contributing to life long learning, and producing experiences that develop deeper learning. However, in the context of active learning and interactive techniques it is vitally essential to communicate the large overarching learning goal for the activity and how it fits into the skills, knowledge, and ability that should be attained when the class is over. Otherwise the experience or the interaction can become the end result, unrelated to the overarching course student learning outcome.

Now that I have included my student learning outcomes in my syllabus. I have clearly explained to my students how, when, and where I will assess their ability to display their knowledge, skills, and abilities with regards to these specifically stated desired learning outcomes. This is fundamentally different from the old syllabus that I provided which described **what I was going to cover**. It was a detailed picture of the vast content from lecture, the text, and the lab activities which were directed at accomplishing the objectives. In contrast SLOs describe **the student's final learning outcome**. They help direct the student concerning where they can best invest their studying time and what they can do after they have completed the course work versus what I will do to them, or make available to them through guided experiences in the class.

My course outcomes detail specific Microbiology and General Education outcomes developed within the course. Appendix D has the Microbiology Student Learning Outcomes I am working on and methods I will use for assessing them. The outcomes are based on the core content areas identified by the American Society of Microbiology Educators and through dialogue with other faculty.

SLO or Objective Answers

The statements below were written for programs and courses. Analyze the statements to determine whether they are goals, objectives, or student outcomes. Write G for goals, OB for objectives and SLO for student learning outcome.

G	(Engineering course) This course introduces senior engineering students to design of concrete components of structure and foundation and integrate them into overall design structures.
Obj	(History course) Identify key dates in American History to 1865.
SLO	(Engineering course) Functioning as a member of a team, the student will design and present a concrete structure which complies with engineering standards.
Obj	(English course) Write a thesis statement introduces the paper's argument
SLO	(Epidemiology course) Define and assess an epidemic for a given population and recommend factors influencing the use of health services.
SLO	(Ecology course) Critically review and synthesize the findings in scientific literature and make appropriate ecological recommendations based on current knowledge.
Obj	(Sociology course) Understand that individuals (and their families) must be regarded uniquely as individuals with many contributing variables such as multicultural issues.
Obj	(Nutrition course) List the elements of the food pyramid.
G	(Immunology course) This course will provide students with a medically relevant foundation of knowledge regarding the components and basic principles of the immune system and the vocabulary and language of immunology.
SLO	(Math course) Given data, students will analyze information and create a graph that is correctly titled and labeled, appropriately designed, and accurately emphasizes the most important data content.

Appendix D
Draft Student Learning Outcomes for Bakersfield College

Course ART 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.

Course ACDV B195 ACADEMIC DEVELOPMENT WORD PROCESSING FOR STUDENTS WITH DISABILITIES

 Using Microsoft Word or the current word processing program at Bakersfield College, students will:

1. Write a variety of documents, including a single-source research report on assigned topics or subject areas, and send a word processed file attached to an email message.
2. Use a mouse or adaptive equivalent to demonstrate moving the cursor to specific locations in a document, selecting specific text, and moving text to another location.
3. Change text characteristics, margins, justification, and line spacing within a document.
4. Design a document with specified formatted text, a picture, a table, and two columns.
5. Evaluate documents on a disk, determine which to delete or rename, and choose an effective method to do so.
6. Use experience from this course, including the knowledge of menus, icons, screen tips, and "Help" functions, to perform novel tasks in Word and other computer programs.

English 2: Advanced Composition and Critical Thinking Student Learning Outcomes
Kate Pluta and Sue Granger-Dickson   Revised January 14, 2004

Student outcomes: At the end of this course you should be able to	Assessment

❑ read a variety of materials critically to
  o identify a thesis
  o summarize important points
  o analyze main ideas
	Responsive writing assignments throughout the course

❑ solve problems in a variety of settings by
  o working productively with others
  o contributing constructively to class discussion
  o thinking for yourself in oral presentations or debates
  o displaying openness to other viewpoints
	During class activities, particularly discussions and group projects

❑ write papers that
  o develop a thesis
  o present coherent and logical claims
  o are organized with clear links between claims and support
  o are well developed with sufficient and relevant evidence
  o use standard American English correctly
  o make stylistic choices in persona, syntax, and diction
  o gauge the needs of and address a specific audience
	Papers

❑ prepare an extended research paper that
  o develops a thesis
  o presents coherent and logical claims
  o is well organized with clear links between claims and support
  o is well developed with sufficient and relevant evidence
  o uses standard American English correctly
  o makes stylistic choices in persona, syntax, and diction
  o gauges the needs of and addresses a specific audience
  o shows evidence of ability to evaluate sources for reliability, credibility, and authority
  o credits sources appropriately and correctly
	Research Paper

❑ present ideas and research in organized and engaging oral presentations that
  o express a thesis clearly
  o are well organized and developed
  o conform to time constraints
  o make stylistic choices in persona, syntax, and diction
  o gauge the needs of and addresses a specific audience
  o show evidence of ability to evaluate and incorporate sources for reliability, credibility, and authority
	Debate, group presentations, and culminating oral presentation of research.

❑ display mental habits that show evidence of
  o questioning
  o analysis
  o synthesis
  o beliefs based on evidence
  o and ethical behavior in the academic community
	Discussion, spontaneous in-class writing, papers, and presentations.

❑ assess your growth as a thinker and writer this semester using the criteria above:
  o read a variety of materials critically
  o solve problems in a variety of settings
  o write papers
  o prepare an extended research paper
  o present ideas and research in an organized and engaging oral presentation
  o display specific mental habits
	Final Paper

Microbiology B16

Domain	Specific Outcomes	Summative Assessment Method
Knowledge/ Cognitive	Following Completion of the Microbiology Course (B16) students will be able to:	
Cell Theory	Use examples of infections, treatment, and epidemiologic control to compare and contrast the characteristics of prions, viruses, bacteria, protozoans, and multicellular parasites.	Final exam essay question
Microbial Interactions	Explain the dynamics of commensal and pathological relationships that occur between microbes and humans.	Take home case study question for final exam
Microbial Control	Evaluate methods of microbial control and apply the proper methods necessary when given a scenario.	Multiple choice questions on final exam
Microbial Metabolism	Briefly describe sample metabolic pathways found in microorganisms and their implications for food production and human disease.	Diagram labeled on final exam
Microbial Genetics	Summarize basic bacterial genetic principles and analyze implications for mutation, genetic recombination, and bacterial control.	Table completion on final exam
Immune Response	Articulate and diagram the role of the immune system in maintaining homeostasis, challenging infections, and fighting cancer.	Flow chart created by student on the final exam
Skills/ Psychomotor	Following Completion of the Microbiology Course (B16) students will be able to:	
Scientific Method Application	Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data; and finally proposing new questions about the topic.	Two 50 point labs One team & one individual Senior Picnic & Unknown lab
Lab Safety Skills	Correctly perform microbiologic lab skills and display a habit of good lab practices which extends to relevant situations in the student's homes.	Components of lab assignments above are used to assess these skills
Attitudes and behavior/ Affective	Following Completion of the Microbiology Course (B16) students will be able to:	
Appraisal of microbiologic information	Retrieve, evaluate, and use microbiologic information regarding contemporary issues in the world and relevant to their everyday lives.	Take home essay question on final exam and live patient interview

Eng B34 (Introduction to Library Research)

Upon completing Eng B34 students will be able to

·1. Develop a viable research topic for which information can be successfully located in a variety of college-level resources.

· 2. Construct a research strategy that will lead to an effective and efficient search for the required information using a variety of appropriate print and electronic sources and based on a working knowledge of the topic gathered from preliminary, background research.

· 3. Identify the appropriate Library of Congress Subject Headings, and the essential key words, synonyms, and Boolean search statements that will retrieve relevant information on a topic in the library catalog, online databases, and on the Internet.

· 4. Customize a search in the library catalog, electronic databases, and the Internet using the truncation, limiters, and other advanced searching features that will narrow the results to the most relevant materials.

· 5. Locate the information using in-library methods such as the library catalog, classification system, periodical citations and holdings lists, and online methods such as searching a range of full-text databases, catalogs from other libraries, and conducting appropriate Internet searches.

· 6. Evaluate the credibility of print, online database, and Internet information using established criteria including the author's credentials, published reviews, currency, sources cited, scholarship, etc.

· 7. Demonstrate an understanding of the legal and ethical issues of information use including plagiarism, documentation of sources, and copyright.

Course NURS B6&B6L PEDIATRIC NURSING & LAB

Upon completion of Nursing B6/Nurs B6L, students will be able to:

1. Integrate concepts of growth and development in the delivery of nursing care to pediatric clients.

2. Provide nursing care to pediatric clients/families:
- formulating nursing care plans utilizing the nursing process
- planning interventions based on concepts of normal physiology and pathophysiology and
- evaluating nursing care plans following implementation

3. Manage delivery of care demonstrating critical thinking to problem solve, organize, and prioritize care for pediatric clients/families.

4. Integrate data derived from an understanding of the pathophysiology of the clinical problem, laboratory results, ancillary reports, and assessment of the client and clinical picture.

5. Differentiate between the child and the adult in regard to nursing approach in delivering care, recognizing signs and symptoms of illness, calculation and delivery of medications, and in planning, assessing and evaluating nursing care.

6. Adhere to the legal and ethical standards of nursing practice and principles related to the care of the pediatric client.