



Program Learning Outcome Development Guide: Steps and Resources

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What is a Student Learning Outcome?

Student learning outcomes (SLOs) can be categorized in terms of...

*What students should know,
and/or
should be able to do*

*...when they have completed a course, PROGRAM,
student service intervention, certificate, or degree.*



Why engage in assessment of Program Learning Outcomes (ProLOs)?

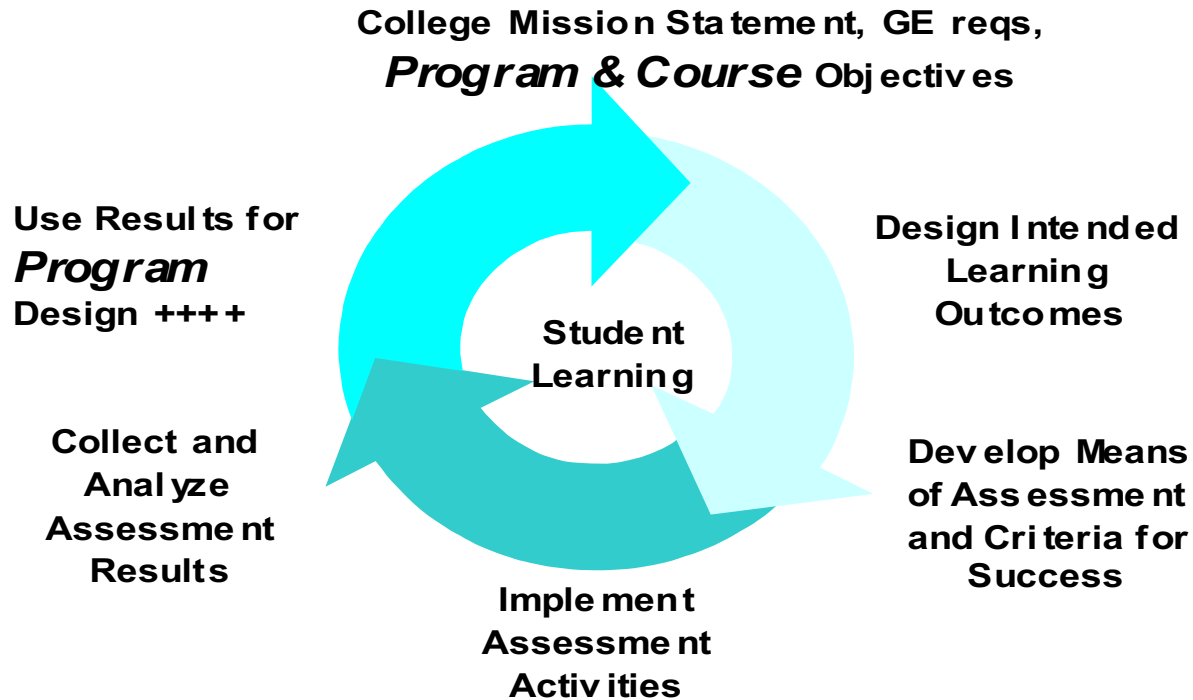
TO...

- Clarify program learning objectives/outcomes for students & faculty
- Provide specific insight on student achievement in the cognitive, affective & skill domains
- Enhance alignment of program design & learning outcomes
- Facilitate collaboration that improves teaching & learning
- Inform curricular development at course & program level



“Plan – Do – Review”

Model of SLO Assessment





ProLO Development Process:

Step 1: Engagement

- Engage departmental faculty in discussion of program goals and models of ProLO development
 - Program definition
 - Overall goals and expectations for students in program
 - Articulation of program requirements with the GE pattern, transfer institution expectations, industry needs, accreditation standards, +++
 - Role of ProLO efforts in clarification and assessment of program goals



ProLO Development Process:

Step 1: Engagement - Resources

- *SCC SLO Statement of Philosophy*

<http://web.scc.losrios.edu/files/slo/SLOphilosophystatementfinal.doc>

- *Guidelines for Program Assessment – St. Cloud University*

<http://www.stcloudstate.edu/assessment/guidelines.asp>

- *Bakersfield Community College Program Assessment Guide*

<http://cai.cc.ca.us/Summer2005Institute/ProgramLearningOutcomes/Writing%20Program%20SLOs.doc>



ProLO Development Process:

Step 2: External Sources of Input

- Identify *external* sources for ProLO development:
 - Transfer institutions
 - Other CCs
 - Industry
 - Professional organizations & advisory groups
 - Accrediting agencies (Regional, State, Federal)



Example of External Sources: Learning Themes in Chemistry - CSU San Marcos

Common Learning Themes

Communication: express a coherent purpose and point of view in written and other formats.

- Communicate the results of your research orally and in writing using appropriate scientific formats and language.

Unique Learning Themes

Atomic, Molecular, and Quantum Theory

- Comprehend that the combination and recombination of atoms forms the basis of modern chemical science.
- Understand the unique physical rules governing the behavior of subatomic particles and the role of spectroscopy in establishing these rules.
- Explain how atoms and ions combine and interact in three-dimensional covalent molecules, coordination complexes, and ionic solids.

Experimental Work in the Laboratory

- Use laboratory skills to make careful measurements and identify the uncertainties associated with them.
- Organize and interpret the data laboratory experiments yield.
- Possess a mental library of common chemical substances, their physical and reactive properties, and the personal and environmental hazards associated with each.
- Use knowledge of the rates and products of chemical reactions prepare compounds from common starting materials and identify the elements and compounds in complex mixtures.



ProLO Development Process:

Step 2: External Input - Resources

- ***Cal State, San Bernardino: Assessment Plans by department.***

<http://gradstudies.csusb.edu/outcome/bycollege.html>

- ***CSU Assessment resources:*** Links to CSU SLO assessment sites

http://www.calstate.edu/AcadAff/SLOA/links/csu_assess_sites.shtml#sac

- **Mission College Program Outcomes**

<http://cai.cc.ca.us/Summer2005Institute/ProgramLearningOutcomes/Program%20SLOs.doc>

- **Various 4-year and professional organization sources**

<http://web.scc.losrios.edu/files/slo/Examplesfrom4yearinstitution.htm>

ProLO Development Process:

Step 3: Internal Sources of Input

- Identify *internal* sources for ProLO development:
 - Program faculty
 - Interdepartmental collaborators
 - Student Services
 - Other LRCCD programs
 - Curriculum committee (GE outcomes, Articulation)
 - Institutional Research (college & district)
 - Students!



ProLO Development Process:

Step 3: Internal Input - Resources

- **SCC programs with ProLOs specified in Socrates**
<http://web.scc.losrios.edu/files/slo/ProgramswithProLO20052006noh.htm>



ProLO Development Process:

Step 4: Degree course outcomes

- Identify degree course requirements
- Clarify core vs. elective options
- Determine how to treat choices:
 - “Choose 9 units from the following”
 - “Course 310 OR Course 322”
- **Discuss, review, & refine course outcomes, if needed**

ProLO Development Matrix:

Step 4. Use course outcomes to derive ProLOs

<http://web.scc.losrios.edu/files/slo/ProLodevelopmentmatrixDegree.xls>

Program Learning Outcomes	Courses in Degree/Certificate Enter designator and number for each course. To include more courses, insert columns as needed.				
	Course 300	Course 310	Course 335	Course 368 or Course 372	Any Elective
The student will be able to:					
	comprehend the complexity of the American democratic system.	analyze, synthesize, and explain the differences and similarities of world governments as to their composition, function, and policies.	comprehend the complexity of the global nation-state system	comprehend the diversity of thought surrounding the field of political science	
	define key terms used in the study of the American system.	develop an understanding of cultures through politics, political culture, popular civic participation.	define key terms used in the study of International Relations	define key terms used in the study of political theory	
	explain the conditions and values necessary for political democracy to exist.	compare specific countries by identifying common denominators and symbiotic relationships	compare and contrast regional, cultural, and ideological perceptions of global politics	recognize the life and times of various political thinkers	
	illustrate the relationship between national, state, and local governments and evaluate the effectiveness of the federal system.		explain the conditions and values necessary for resolving conflicts in the global nation-state system	understanding questions concerning people and their relationships to the political environment	



ProLO Development Matrix:

Step 4: Instructions

- Examine course outcomes for common objectives of program: Major areas of knowledge, skills or abilities
- Some ProLOs may be the result of completing a series of courses and do not present themselves clearly from Step 1.
- Some course outcomes may be unique and not contribute neatly to a ProLO



ProLo Development Process:

Step 5: Writing ProLO statements

Aim for creating 5 - 10 ProLOs

- Focus on the major areas of knowledge and abilities that your students should have upon completing your program
- Write ProLOs in specific terms to differentiate the objectives identified, but be broad enough to encompass the variety of paths possible to achieve that outcome.
- Utilize Bloom's taxonomy (3 domains) to clarify the level of the outcome and aid in future assessment
- Utilize external sources to confirm & refine outcomes



Bloom's Taxonomy: Cognitive domain

Cognitive Domain
Learning Outcomes Related To Knowledge

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

Basic
Knowledge
Level

More Sophisticated
Higher Level Thinking
Critical Thinking



Bloom's Taxonomy: Psychomotor domain

Psychomotor Domain Learning Outcomes Related To Skills

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

Basic
Knowledge
Level

More Sophisticated
Higher Level Thinking
Critical Thinking



Bloom's Taxonomy:

Affective domain

Affective Domain

Learning Outcomes Related To Attitudes, Behaviors, and Values

Receiving	Responding	Valuing	Organization	Characterization
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.
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

**Basic
Knowledge
Level**

**More Sophisticated
Higher Level Thinking
Critical Thinking**

ProLO Development Process:

Step 5: ProLO Course Alignment Matrix

<http://web.scc.losrios.edu/files/slo/ProLOtemplaterevised2.28.06.xls>

	Course 1	Course 2	Course 3	Course 4a or Course 4b	Any elective
ProLO 1					
ProLO 2					
ProLO 3					

ProLO Development Process:

Step 5: ProLO Course Alignment Matrix - Instructions

- Enter ProLOs in column A, starting with row 4
- Enter courses for degree, certificate, OR program in next series of columns (columns b,c,d...) in row 3
- Determine alignment of individual courses with each ProLO (e.g. assess degree to which the individual courses contribute to the achievement of each ProLO)



ProLO Development Process:

Step 5: Possible Alignment Procedures

For each outcome and course, utilize one of the following options to illustrate course alignment with the ProLOs:

- Simply place an "X" in the courses that address each ProLO OR...
- Enter an "M" if ProLO is a major component of course or an "L" if it is a lesser component OR...
- Enter an "I" if the ProLO is introduced in this course or an "E" if it is expanded on or emphasized or an "R" if it is reinforced at a more advanced level OR...
- Utilize another procedure that you feel is appropriate to indicate the alignment of courses with ProLOs

Example of ProLOs and Course Alignment Matrix: SCC Psychology Dept.

Summary Grids of Psychology General Student Learning Outcomes

OUTCOMES <i>Students will be able to:</i>	300 General	312 Biology	320 Social	330 Stats	335 Research	Psych Elective	District Psychology Survey
1. Differentiate between scientifically derived knowledge and myth and conjecture about the topics of psychology and demonstrate understanding of psychological theory and the scientific method.	M	M	M	M	M	M	
2. Compare and contrast the major theoretical orientations in psychology, demonstrate knowledge of basic psychological terminology regarding behavior, cognition, and emotion, and be able to express this clearly when writing or speaking about psychology.	M	M	M	M	M	M	
3. Integrate content knowledge and cognitive skills when completing exams, term papers and other class assignments. These cognitive skills include: learning, memory, logical thinking, problem-solving, decision-making, and critical thinking.	M	M	M	M	M	M	
4. Evaluate psychological data, draw reasonable conclusions, recognize the ethical implications of these conclusions, and apply these conclusions to personal, community, and scientific problems.	L	L	L	M	M	L	
5. Apply psychological principles to the development of interpersonal, occupational, and social skills and life-long personal growth.	M	M	M	L	L	M	
6. Recognize the complexity of socio-cultural and international diversity and increase their use of principles of equity, justice, and inclusion in their lives.	M	M	M	L	L	M	

M = Major component of course

L = Lesser component of course

Example of ProLOs and Course Alignment Matrix: SCC Political Science Dept.

Political Science (AA Degree) Program Learning Outcomes					(First 11 outcomes)				
Major Learning Outcomes	Courses in Degree/Certificate Enter designator and number for each course.								
	1	2	3	4	5	6	7	8	9
	POLS 301	POLS 302	POLS 310	POLS 320	POLS 322	POLS 340	POLS 480	POLS 481	POLS 494
The student w ill be able to:									
demonstrate the understanding of fundamental basics in Political Science and	IER	I	I	I	I	I	IER	I	I
examine and apply theories, concepts, and practices in political theory.	I	E	E	IER	E	I	IER	I	I
demonstrate a know ledge of contemporary comparative sysyems and governments.	I	IER	E	I	E	I	IER	IE	I
demonstrate a know ledge of contemporary comparative sysyems and governments.	I	E	IER	I	E	I	IER	IE	I
analyze, investigate, and compare ideological approaches to governmental systems	I	E	E	ER	IER	I	IER	IER	I
demonstrate know ledge of practical applications and evaluations of policy outcomes	I	I	I	I	I	IE	IE	IE	I
analyze political theory and concepts using critical thinking	I	I	ER	IER	ER	I	IE	IE	I
research specific topics of discussion in local, state, national, and international	I	I	E	I	I	IER	IE	IER	ER



Close the Loop

- Use ProLO development experience to inform curriculum and program design
- Make it formative and focused on improvement
- Share insights and collaborate



Beyond ProLO development: Key Considerations for ProLO Assessment

Whenever possible...

- Identify and/or create **direct** measures of assessment whenever possible.
- Encourage use of **multiple** measures of assessment (exams, papers, projects, peer-assessment.)
- Design **course/program-embedded** measures.
- Determine how outcomes will be **integrated** with course/program assessment.
- Examine other factors that may influence student's achievement of stated objective and assess the impact that these may have on your measures.