

Guidelines for Writing Student Learning Outcomes (SLOs)

Some Basic Principles about Assessment and SLOs

- “The purpose of assessment is to produce feedback to the department, school/college, or administrative unit on the performance of its curriculum, learning process, and/or services, thereby allowing each unit to improve its programs. It is not an evaluation of individual students or of individual faculty or staff” (UW-Madison).
- Well-written learning outcomes clarify the knowledge, skills and attitudes that faculty want students to learn and how the assessment should be conducted or what kind of data you will need to collect. By using active verbs that yield measurable behavior or activity, statements of SLOs focus on how students can demonstrate their learning rather than on what faculty will “cover.” For example:
 - Students can list major events in American History.
 - Students can describe major events and trends in American History.
 - Students can apply their knowledge of American History to examine contemporary American issues.
 - Students can calculate solutions to mathematical problems.
 - Students can interpret information from data represented in charts, graphs, tables and spreadsheets.

Characteristics of Good Student Learning Outcomes (SLOs)

- Good SLOs spring from what faculty most deeply care that students learn.
- Good SLOs are measurable. They usually specify observable behavior or measurable product.
- They are specific, focused, and clear. General outcomes can be hard to measure. Each SLO should address a single measurable outcome.
- Address learning at multiple cognitive levels from factual knowledge through application, analysis, synthesis and evaluation.

Writing Learning Outcomes for the Appropriate Level

- **Course Level:** Students who complete this course can calculate and interpret a variety of descriptive and inferential statistics.
- **Program Level:** Students who complete the program can use statistical tools to analyze and interpret research data.
- **Institutional Level:** Graduates of UNM can apply quantitative reasoning to real-world problems.

Writing student learning outcomes for a degree or service program is a *process* that begins with what faculty/staff believe the ideal graduate would know, understand and be able to do. This is a collegial undertaking that often includes published professional/disciplinary standards, advisory bodies, and ideally alumni and students.

It is an iterative process producing drafts that change over time as a product of the assessment process, currency in the discipline, and the changing needs of students and changing emphasis of programs.

Goals vs. Outcomes

- **Goals:** general statements about knowledge, skills, attitudes, and values expected in graduates.
 - When identifying learning goals, start with the mission of the organization (college, department, or program) and be sure learning goals tie to the mission.
- **Outcomes:** clear, concise statements that describe in behavioral terms how students can demonstrate their mastery of program goals.
 - When identifying student learning outcomes, start with identified end of program attainment goals, break program goals into measurable activity, and develop criteria for rating students' level of attainment/mastery.

Examples of Program Goals

Knowledge

- Students know basic principles and concepts in the physical and natural sciences.
- Students understand the major theoretical approaches used by at least two social science disciplines.

Skill

- Students can use appropriate technology tools.
- Students have effective collaboration skills.

Attitude/Value/Predisposition

- Students respect academic standards concerning plagiarism.
- Students appreciate the importance of considering diverse perspectives.

Examples of Learning Outcomes

- Students can define the basic principles and concepts in the physical and natural sciences.
- Students can describe the major theoretical approaches used by at least two social science disciplines.
- Students can locate sources by searching electronic and traditional databases.
- Students can work collaboratively to achieve project goals.
- Students can analyze the quality of the argumentation provided in support of a position.
- Students can define plagiarism, describe how to avoid it, and explain why it is important.
- Students can describe the importance of considering diverse perspectives.

Helpful Verbs for Describing What Students Will Know, Understand, and Do

Use these verb sets to help you write your outcomes. Here we've used the recognizable verbs from Bloom's Taxonomy.²

1. What will my students know?

- observe and recall information; knowledge of dates, events, places; knowledge of major ideas; mastery of subject matter
 - Question Cues: *list, define, tell, describe, identify, show, label, collect, tabulate, quote, name, who, when, where, etc.*

2. What will my students comprehend/understand?

- understand information; grasp meaning; translate knowledge into new context; interpret facts, compare, contrast; order, group, infer causes; predict consequences
 - Question Cues: *summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend*

3. What will my students be able to do?

- **Application:** use information; use methods, concepts, theories in new situations; solve problems using required skills or knowledge
 - Question Cues: *apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover*
- **Analysis:** seeing patterns; organization of parts; recognition of hidden meanings; identification of components
 - Question Cues: *analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer*
- **Synthesis:** use old ideas to create new ones; generalize from given facts; relate knowledge from several areas; predict, draw conclusions
 - Question Cues: *combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite*
- **Evaluation:** compare and discriminate between ideas; assess value of theories, presentations; make choices based on reasoned argument; verify value of evidence; recognize subjectivity
 - Question Cues: *assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize*

² Benjamin S. Bloom, *Taxonomy of Educational Objectives* (Boston: Allyn & Bacon, 1984).

ASSESSMENT USE OF BLOOM'S TAXONOMY

Bloom's Taxonomy is a well-known description of levels of learning. A taxonomy such as this one may be a useful guide when defining or examining learning objectives for assessment. It is also useful for content analysis of such things as the seemingly simple Minute Paper.

LEVEL	SOME COGNITIVE BEHAVIORS
Evaluation	Appraisal of own or someone else's Analysis or Synthesis Exam question at this level: Evaluate another physical therapist's program to strengthen the rotator cuff.
Synthesis	Assembly of Application Exam question at this level: Design a physical therapy program to strengthen each component of the rotator cuff.
Analysis	Disassembly of Application Exam question at this level: How does the throwing motion stress each component, in turn, of the rotator cuff?
Application	Use of Understanding Exam question at this level: Why does throwing a curve ball cause rotator cuff injury?
Understanding	Management of Knowledge Exam question at this level: How does the rotator cuff help you to raise your arm?
Knowledge	Memorization of facts, language, concepts, principles, theories Exam Question at this level: Name the muscles of the rotator cuff.

Some relevant and useful verbs for assessments at each level appear in the table below. [-after Harding]

Knowledge	Understanding	Application	Analysis	Synthesis	Evaluation
define	arrange	apply	analyze	arrange	appraise
identify	classify	compute	calculate	assemble	assess
indicate	comprehend	construct	categorize	collect	choose
know	describe	demonstrate	compare	compose	compare
label	discuss	dramatize	contrast	construct	contrast
list	explain	employ	criticize	create	decide
memorize	express	give examples	debate	design	estimate
name	identify	illustrate	determine	formulate	evaluate
recall	locate	interpret	diagram	integrate	grade
record	manage	investigate	differentiate	organize	judge
relate	paraphrase	operate	disassemble	perform	measure
repeat	recognize	practice	distinguish	plan	rate
select	report	predict	examine	prepare	revise
underline	restate	schedule	experiment	produce	score
	review	shop	inspect	propose	select
	suggest	sketch	inventory	set up	value
	summarize	translate	question	synthesize	weigh
	tell	use	relate		
	translate		solve		
			test		