Guidelines for
Writing Student Learning Outcomes

What are student learning outcomes?

Student learning outcomes describe the knowledge, skills, and attitudes that students are expected to achieve by the end of an educational program. In higher education that program could be a single event (such as a workshop or a lab exercise), a single course, a set of sequenced courses, an undergraduate major, general education requirements, or the entire undergraduate experience. Student learning outcomes are result from meaningful conversations around the following three questions:

As a result of completing your program ....
1. What do you want your students to know by the time they finish your program?
2. What do you want students to be able to do with what they know?
3. What do you want students to care about?

Why are student learning outcomes important?

Taking the time to state student learning outcomes are important for several reasons. There are sound pedagogical reasons for stating learning outcomes as well as accountability reasons.

- Student learning outcomes clarify faculty expectations for what students should know, understand, be able to do, and value by the time they complete the program.
- When published, student learning outcomes communicate to the public and prospective students and their parents what is unique and valuable about undergraduate education at UCI.
- When students know what is expected of them, they tend to focus their studying time and energy better, thus improving learning.
- They help shift discussions about the curriculum away from "coverage of topics" to improvement of student learning.
- Student learning outcomes at the course level can act as a guide for class activities, assignments, and exams.
- Assessment of student learning outcomes can provide information to students on their strengths and weaknesses in relationship to learning outcomes.
- Assessment of student learning outcomes can provide information for the improvement of educational programs and for demonstrating their effectiveness.

In addition, UCI's accreditation agency, the Western Association of Schools and Colleges, expects that all educational programs (that is, majors and the general education program) will establish their own student learning outcomes and plans for assessing learning outcomes and will use the results for the improvement of student learning.
How are student learning outcomes written?

To describe what students will do, student learning outcomes use active verbs such as *demonstrate*, *apply*, *analyze* and *compare*. Typically, student learning outcomes are written using the following formats:

- **Students who complete this program will** ______.
- **By the end of this program, students will be able to** ______.
- **Graduates of the program will value** ______.

Here are some examples of student learning outcomes:

- Students who complete the lower division sequence in writing will be able to organize complex arguments in writing, using thesis statements, claims and evidence.
- Students completing the biology degree will make appropriate inferences and deductions from biological information.
- Drama majors will demonstrate how to use voice, movement, and understanding of dramatic character to affect an audience.
- Mechanical engineering graduates will apply scientific and engineering principles to analyze, design and synthesize mechanical and other engineering systems of importance to society.
- After completing the science and technology requirement, students will be able to discuss the benefits as well as the limitations of scientific inquiry.
- At the end of the research methods course, students will use a statistical package to analyze experimental results and will draw appropriate conclusions from them.
- Students who complete the multi-cultural requirement will develop an appreciation for the perspective of people from backgrounds different from their own.

The following suggestions from Linda Suskie (*Assessing Student Learning*, 2004) are useful guidelines when writing student learning outcomes:

- Focus on your most important goals.
- Work with colleagues.
- Focus on the ends, not the means; that is what students will do after they have successfully completed the program, not what they do on the way to completing the program.
- Aim for outcomes that are neither too broad nor too specific.
- Use concrete action words that describe what students should be able to do in explicit, observable terms. Table 1 contains examples of action verbs.
- Define fuzzy terms whenever possible. For example, *think critically* could be better defined as *analyze and evaluate arguments*.
Table 1: Examples of Action Verbs

<table>
<thead>
<tr>
<th>analyze</th>
<th>demonstrate</th>
<th>illustrate</th>
<th>participate</th>
<th>specify</th>
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<tbody>
<tr>
<td>apply</td>
<td>describe</td>
<td>interpret</td>
<td>perform</td>
<td>summarize</td>
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<tr>
<td>classify</td>
<td>design</td>
<td>judge</td>
<td>predict</td>
<td>support</td>
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<tr>
<td>communicate</td>
<td>distinguish</td>
<td>justify</td>
<td>produce</td>
<td>translate</td>
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<td>construct</td>
<td>evaluate</td>
<td>modify</td>
<td>recognize</td>
<td>volunteer</td>
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<tr>
<td>create</td>
<td>explain</td>
<td>order</td>
<td>review</td>
<td>write</td>
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<tr>
<td>define</td>
<td>identify</td>
<td>organize</td>
<td>solve</td>
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What types of learning outcomes should be included?

As noted earlier, learning outcomes typically fall into three basic categories: knowledge, skills, and attitudes. Several educators have developed more detailed frameworks that might be useful for identifying learning outcomes. The most widely used framework is Bloom's Taxonomy of Educational Objectives (1956) which describes different levels of cognitive processing. Each level builds on the previous level, which starts at knowledge, followed by comprehension, application, analysis, synthesis and evaluation. The later three categories are sometimes referred to as "higher order thinking skills," or the skills we might expect University studies to be able to demonstrate.

Table 2 is an abbreviated version of Bloom's Taxonomy which includes a short definition, a list of active verbs, and a sample student learning outcome for each level of the Taxonomy.

How do I get started?

Student learning outcomes derive from what faculty think are important learning outcomes for the educational program in question. To get the conversations going, you might want to collect and review course syllabi, written descriptions of the program, mission statements (University, School and/or Department), and other related documents. Another suggestion is to have faculty complete the Teaching Goals Inventory found in Angelo and Cross's (1993) Classroom Assessment Techniques, in which they rate the importance of a variety of goals.

With this information in hand, faculty can discuss questions such as:

- What are the most important things we want our students to accomplish? What do we want them to remember or be able to do once they have completed our program?
- What do we want all of our students to know and be able to do, regardless of the set of courses or track they take through the program?
- What skills and knowledge will our students need after they graduate? What will make them successful (in a job, in graduate school, in life, etc.)?
- To what extent does the program (and/or its individual courses) provide opportunities for students to learn and practice these important outcomes?
Table 2: Bloom’s Taxonomy -- Cognitive Domain

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Definition</th>
<th>Action Verbs</th>
<th>Example Outcome</th>
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<tr>
<td>1. Knowledge</td>
<td>To know specific facts, terms, concepts, principles or theories</td>
<td>recite, list, define, describe, identify, name, outline, select, state</td>
<td>By the end of the chemistry program, students will be able to list all of the elements on the periodic table.</td>
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<td>2. Comprehension</td>
<td>To understand, interpret, compare &amp; contrast, explain</td>
<td>translate, interpret, predict, generalize, defend, distinguish, explain, generalize, give examples, summarize</td>
<td>By the end of the French program, students will be able to translate a paragraph of text from English to French.</td>
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<td>3. Application</td>
<td>To apply knowledge to new situations, to solve problems</td>
<td>apply, demonstrate, modify, prepare, produce, show, solve, use</td>
<td>By the end of the program, student will be able to apply basic Web development skills.</td>
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<td>4. Analysis</td>
<td>To identify the organizational structure of something; to identify parts, relationships, and organizing principles</td>
<td>analyze, diagnose, investigate, differentiate, distinguish, illustrate, select, separate</td>
<td>By the end of the special education program, students will be able to diagnose learning disabilities.</td>
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<td>5. Synthesis</td>
<td>To create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme</td>
<td>create, categorize, devise, design, explain, organize, plan</td>
<td>By the end of the art program, students will be able to create at least 12 original works in their medium.</td>
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<td>6. Evaluation</td>
<td>To judge the quality of something based on its adequacy, value, logic, or use</td>
<td>appraise, compare, contrast, criticize, describe, explain, justify, interpret, support</td>
<td>By the end of the music program, students will be able to judge student performances.</td>
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