

## **Develop Program Student Learning Outcomes (SLOs)**

### **What are program student learning outcomes?**

Program student learning outcomes (SLOs) are clear, concise statements that describe how students can demonstrate their mastery of program goals (Allen, M. 2008). These statements identify the knowledge, skills, or attitudes that students will be able to demonstrate, represent, or produce upon successful completion of the program.

### **Why develop and publish program student learning outcomes?**

Student learning outcomes:

- Help Students learn more effectively
- Make clear what students should expect from their educational experience.
- Encourage students to be intentional learners who direct and monitor their own learning.
- Help faculty design courses, curriculum, and programs.

Make graduates' skills and knowledge clear to employers, accrediting agencies, etc.

## Developing program student learning outcomes.

Typically, programs have **4-6 key learning goals/outcomes**. Having too many outcomes can be overwhelming, for both faculty and students.

### Characteristics of effective program-level student learning outcomes

- Are student-focused, rather than program or faculty focused
  - Adopting the structure “At the end of the program students/graduates will be able to... rather than “faculty will provide...”
- Describe outcomes, such as what students will know or be able to do upon completion of the program.
  - Adopting the structure “At the end of the program students/graduates will be able to... can facilitate this focus.
  - This is in contrast to a process-level focus such as “students will be exposed to literature from a variety...”
- Describe a competency that is observable or that can be demonstrated through an observable means (performance, product).
  - For assessment purposes, students must demonstrate their competence to themselves and others.
- Are states so as to be measureable through quantitative or qualitative means.
  - It is possible to measure learning goals through qualitative means.
  - Using action verbs (see below) can be helpful in crafting measurable outcomes
- Are rigorous and focus on higher cognitive levels.
  - Some outcomes can and should focus on lower levels, but when taken in total, the set of outcomes should emphasize the higher levels.
  - Using action verbs at different cognitive levels (see below) can facilitate appropriate goal development.
- Describe a single competency or a set of related competencies that can be assessed at the same time.
  - Putting too much in one outcome makes it difficult to find an appropriate way to determine whether students have attained the outcome.
- Are framed in terms of program, not individual courses.
  - Although assessment measures can be conducted in one course, such as a capstone, the learning outcomes should be framed in terms of the program.
- Include criteria on which the outcome will be examined.
  - This can assist with the development of assignments and other assessments.
  - For instance, rather than stating only that students will be able to evaluate scientific research, it may be useful to include detail such as “by critiquing how well a research study applies the scientific methods.”

**Good outcomes use verbs that describe definite, observable actions.**

Bloom et al.'s taxonomy is a well-known description of levels of educational objectives. It may be useful to consider this taxonomy when defining outcomes

**Bloom et al.'s Taxonomy**

| <b>Level</b>     | <b>Cognitive Behaviors</b>   |
|------------------|--|
| 1. Knowledge     | To know specific facts, terms, concepts, principles, or theories   |
| 2. Comprehension | To understand, interpret, compare and contrast, explain  |
| 3. Application   | To apply knowledge to new situations, to solve problems  |
| 4. Analysis      | To identify the organizational structure of something; to identify parts, relationships and organizing principles            |
| 5. Synthesis     | To create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme |
| 6. Evaluation    | To judge the quality of something based on its adequacy, value, logic, or use  |

Using verbs that specify a type of thinking or behavior can help faculty design activities and develop assignments, exams and projects. Students are clear on what they need to be able to do to demonstrate their learning achievement.

Some examples of verbs frequently used in outcomes are included in the table below.

| Knowledge | Comprehension | Application | Analysis   | Synthesis  | Evaluation |
|-----------|---------------|-------------|------------|------------|------------|
| Cite      | Arrange       | Apply       | Analyze    | Arrange    | Appraise   |
| Define    | Classify      | Change      | Appraise   | Assemble   | Assess     |
| Describe  | Convert       | Compute     | Break Down | Categorize | Choose     |
| Identify  | Describe      | Construct   | Calculate  | Collect    | Compare    |
| Indicate  | Defend        | Demonstrate | Categorize | Combine    | Conclude   |

|           |               |             |               |             |              |
|-----------|---------------|-------------|---------------|-------------|--------------|
| Label     | Diagram       | Discover    | Compare       | Compile     | Contrast     |
| List      | Discuss       | Dramatize   | Contrast      | Compose     | Criticize    |
| Match     | Distinguish   | Employ      | Criticize     | Construct   | Decide       |
| Memorize  | Estimate      | Illustrate  | Debate        | Create      | Discriminate |
| Name      | Explain       | Interpret   | Determine     | Design      | Estimate     |
| Outline   | Extend        | Investigate | Diagram       | Devise      | Evaluate     |
| Recall    | Generalized   | Manipulate  | Differentiate | Explain     | Explain      |
| Recognize | Give Examples | Modify      | Discriminate  | Formulation | Grade        |
| Record    | Infer         | Operate     | Distinguish   | Generate    | Judge        |
| Relate    | Locate        | Organize    | Examine       | Manage      | Justify      |
| Repeat    | Outline       | Practice    | Experiment    | Modify      | Interpret    |
| Reproduce | Paraphrase    | Predict     | Identify      | Organize    | Measure      |
| Select    | Predict       | Prepare     | Illustrate    | Perform     | Rate         |
| State     | Report        | Produce     | Infer         | Plan        | Relate       |
| Underline | Restate       | Schedule    | Inspect       | Prepare     | Revise       |
|           | Review        | Shop        | Inventory     | Produce     | Score        |
|           | Suggest       | Sketch      | Outline       | Propose     | Select       |
|           | Summarize     | Solve       | Question      | Rearrange   | Summarize    |
|           | Translate     | Translate   | Relate        | Reconstruct | Support      |
|           |               | Use         | Select        | Relate      | Value        |
|           |               |             | Solve         | Reorganize  |              |
|           |               |             | Test          | Revise      |              |

[From: Gronlund, N.E. (1991). How to write and use instructional objectives (4<sup>th</sup> ed.). New York: Macmillan Publishing Co.]

**Before developing program student learning outcomes, it might be helpful to consider these questions which focus on outcomes in slightly different ways:**

- For each of the stated program goals, what are the specific knowledge, skills, or attitudes that would tell you the goal is being achieved.
- What would a skeptic need (evidence), behavior etc.) in order to see that your students are achieving the major goals you have set out for them?
- In your experience, what evidence tells you when students have met these goals – how do you know when they’re “getting” it?

**Learning outcome statements may be broken down into 3 main components:**

- A *verb* that identifies the performance to be demonstrated
- A *learning statement* that specifies what learning will be demonstrated in the performance
- A broad statement of the *criterion* or standard for acceptable performance

## **Examples of program student learning outcomes.**

### **History**

- 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

### **Natural Sciences**

- Students can apply the scientific methodology in a research proposal
- Students can evaluate the validity and limitations of theories and scientific claims in experimental results
- Students can assess the relevance and application of science in everyday life

### **Psychology**

- Graduates can write research papers in APA (American Psychological Associations) style
- Graduates can analyze experimental results and draw reasonable conclusions from them
- Graduate can recognize and articulate the foundational assumptions, central ideas, and dominant criticisms of the psychoanalytic, behaviorist, humanist, and cognitive approaches to psychology

## **Good Practices**

- Publicize program outcomes in the catalog, on the web, on syllabi, annual report, brochures, etc.
- Use program outcomes to guide course and curriculum planning so students experience a cohesive curriculum
- Use program outcomes to shape assessment efforts and faculty/staff conversations surrounding student learning
- Collaboratively develop program outcomes; discuss and collectively accept program outcomes

Sources Consulted:

*How to Write Program Objectives/Outcomes.* [PDF] University of Connecticut assessment website

*Program Assessment Handbook: Guidelines for Planning and Implementing Quality Enhancing Efforts of Program and Student Learning Outcomes.* [PDF] University of Central Florida (June 2008 edition).

*Program-Based Review and Assessment: Tool and Techniques for Program Improvement.* [PDF] Office of Academic Planning and Assessment. University of Massachusetts Amherst. (2001).

*Tool & Techniques for Program Improvement: Handbook for Program review & Assessment of Student Learning.* [PDF] Office of Institutional Assessment, research, and Testing. Western Washington University. (2006).