

Writing learning objectives

This material was excerpted and adapted from the following web site:
<http://www.utexas.edu/academic/diia/assessment/iar/students/plan/objectives/>

What is a learning objective?

- A learning objective **answers the question:** *What is it that your students should be able to do at the end of the class session and course that they could not do before?*
- A learning objective **makes clear the intended learning outcome** rather than what form the instruction will take.
- Learning objectives **focus on student performance**. Action verbs that are specific, such as *list, describe, report, compare, demonstrate, and analyze*, should state the behaviors students will be expected to perform.

Well-written learning objectives can give students precise statements of what is expected of them and provide guidelines for assessing student progress. Our goal for students is learning and if students don't know what they should be able to do at the end of class then it will be difficult for them to reach that goal.

Clearly defined objectives form the foundation for selecting appropriate content, learning activities, and assessment measures. If objectives of the course are not clearly understood by both instructor and students, if your learning activities do not relate to the objectives and the content that you think is important, then your methods of assessment, which are supposed to indicate to both learner and instructor how effective the learning and teaching process has been, will be at best misleading, and, at worst, irrelevant or unfair.

Think about the lesson you will be teaching. What would you like for each student to know and be able to *do* when he/she has completed the lesson?

Learning objectives

Specific statements describing what you and your students intend to achieve as a result of learning that occurs both in class and outside of class. They can be categorized in the following way:

1. **Cognitive objectives** emphasize knowing, conceptualizing, comprehending, applying, synthesizing, and evaluating. These objectives deal with students' knowledge of the subject matter, and how students demonstrate this knowledge.

2. **Psychomotor objectives** involve the physical skills and dexterity related to the instruction. Successful instruction involves teaching new skills or coordination of old ones (e.g., physical coordination involved in playing tennis or a musical instrument).

Attitudinal objectives

Specific statements about attitudes, values and emotions that students will have as a result of taking part in class activities.

What learning objectives emphasize

1. Learning objectives emphasize observed activity

The only way you can determine whether or not a student has learned something is to observe some kind of behavior that indicates learning has taken place. This behavior may range from correctly answering multiple-choice questions to requiring that the student actually demonstrate a skill.

EXAMPLE

Given a thesis statement in class, **the student will** write 3 topic sentences for paragraph development of the given statement.

Instead of...

The student will be able to write appropriate topic sentences for paragraph development of a thesis statement.

EXAMPLE

Given 4 theorems that he/she has never seen, **the student will** formulate a proof for each theorem by drawing on elements from previous sources and will rate them together to form a pattern proof—with 80% accuracy.

Instead of...

The student will understand the concept of the Derivative.

2. Learning objectives emphasize student activity

Instructors sometimes state objectives in terms of their activities. However, learning objectives focus exclusively on student behaviors, not on the behaviors of the instructor.

EXAMPLE

Given the necessary materials, **the student will** glue a black and white photo clipping from a magazine onto a 6x9" paper. The student will extend the black, white, and gray design of the photo to cover the area of the paper with a relevant design—in class.

Instead of...

The student will be able to demonstrate understanding of color theory.

EXAMPLE

The student will listen to several letters read from the editorial page of a newspaper or magazine. He/she will participate in a discussion about the type of logic employed, the effectiveness of the evidence, and the validity of the argument.

Instead of...

The student will understand the processes of inductive and deductive reasoning.

3. Learning objectives emphasize student outcomes

Instructors often state objectives in terms of process or procedure while learning objectives refer to the end results of instruction. A good learning objective states what a student will know or be able to do at the end of instruction.

EXAMPLE

Given a list of chemical compounds, the student will select 1 that is found at each step in the process of respiration and 1 that is found at each step in the process of photosynthesis.

Instead of...

The student will understand the fundamentals of respiration.

EXAMPLE

In class, the student will assign to each of 10 given statements 1 of the following terms: business ethics, ethics and the law, professional standards in business, and conflicts of interest; 70% accuracy.

Instead of...

The student will examine the ethical conduct of American business.

Advantages of using learning objectives

The writing of learning objectives focuses attention away from content and onto the students. This re-focusing often produces revisions in teaching methods.

1. **Planning instruction:** Once you have developed learning objectives for a course you can more rationally sequence instruction, allot time to topics, assemble materials, prepare outlines and booklists, etc. Learning objectives can also be used as a guide to teaching, as when you plan different instructional methods for presenting various types of content based on the desired learning outcomes (e.g., small-group editing of reports to give students experience in evaluating content logic and correct usage).

2. **Facilitating evaluation:** Learning objectives can facilitate various evaluation activities, evaluating students, evaluating instruction, evaluating the curriculum. They can form the basis for grading or for determining levels of competence in a mastery learning system. They can also be used to demonstrate effective teaching by matching student learning, as measured by exams, etc., to the desired outcomes.
3. **Aiding in communication with others:** There is a need to communicate learning objectives to others: between instructor and student, with other instructors. For example, exchanging learning objectives within departments is the most specific way to communicate to one's colleagues what you really cover in your course.
4. **Improving instruction:** If you intend to improve instruction in a particular lesson or course, you usually begin with the learning objectives for that lesson or course.
5. **Producing new insights:** The process of clarifying objectives may produce major changes in those who engage in the effort. For example, instructors who spend time developing learning objectives are said to acquire increased understanding about what is a feasible goal. When more general goals are explicitly identified, many specific sub-goals emerge. Since it may not be possible to reach all the sub-goals, a hierarchy or "trade-off system" of goals must be produced.

Writing learning objectives using Bloom's Taxonomy

Bloom's Taxonomy of the cognitive domain, or thinking skills, can be helpful in constructing course learning objectives. Bloom and colleagues found that over 95% of exam questions required students to activate low-level thinking skills such as recall (1956). In addition, research has shown that students remember more content *when* they have learned a topic through higher thinking skills such as application or evaluation.

Bloom's Taxonomy is a hierarchy of six cognitive skills arranged from less to more complex.

Higher-level cognitive skills



Lower-level cognitive skills

Knowledge

Recognizes students' ability to use rote memorization and recall certain facts.

Action verbs to help write objectives or exam questions for this domain:
cite, define, identify, label, list, match, name, recognize, reproduce, select, state.

EXAMPLE

Learning objectives	Exam questions
The students will <i>recall</i> the four major food groups without error.	Name the four major food groups.
The students will <i>list</i> at least three characteristics peculiar to the Cubist movement.	<i>List</i> three characteristics that are unique to the Cubist movement.
The students will be able to <i>define</i> gram-positive bacteria.	<i>Define</i> gram-positive bacteria.

Comprehension

Involves students' ability to read course content, understand and interpret important information and put other's ideas into their own words.

Action verbs to help write objectives or exam questions for this domain: classify, convert, describe, distinguish between, explain, extend, give examples, illustrate, interpret, paraphrase, summarize, translate.

EXAMPLE

Learning objectives	Exam questions
The students will <i>summarize</i> the main events of a story in grammatically correct English.	Using grammatically correct English, please <i>summarize</i> the main events – in three or four sentences - from the news story given below.
The students will <i>describe</i> in prose what is shown in graph form.	Given a graph of production trends in automobiles, <i>describe</i> what the graph represents in a memo to your boss.
From a “story-problem” description, students will convert the story to a mathematical manipulation needed to solve the problem.	A researcher wonders whether attending a private high school leads to higher or lower performance on an exam of social skills. A random sample of 100 students from a private school produces a mean score of 71.30 on the exam, and the national mean score for students from public schools is 75.62 ($s_x = 29.0$). <i>Convert</i> the information in this word problem into a mathematical representation that will enable you to solve the problem.

Application

Students take new concepts and apply them to another situation.

Action verbs to help write objectives or exam questions for this domain: apply, arrange, compute, construct, demonstrate, discover, modify, operate, predict, prepare, produce, relate, show, solve, use.

EXAMPLE

Learning objectives	Exam questions
The students will <i>multiply</i> fractions in class with 90 percent accuracy.	Solve for the ten following fraction multiplication problems. Please make sure to show all your work.
The students will <i>apply</i> previously learned	According to our definition of socialism,

Learning objectives	Exam questions
information about socialism to reach an answer.	which of the following nations would be considered to be socialist?
The students will <i>demonstrate</i> the principle of reinforcement to classroom interactions.	In a teaching simulation with your peers role-playing 6th grade students, <i>demonstrate</i> the principle of reinforcement in classroom interactions and <i>prepare</i> a 1/2 page description of what happened during the simulation that validated the principle.

Analysis

Students have the ability to take new information and break it down into parts to differentiate between them.

Action verbs to help write objectives or exam questions for this domain: analyze, associate, determine, diagram, differentiate, discriminate, distinguish, estimate, infer, order, outline, point out, separate, subdivide.

EXAMPLE

Learning objectives	Exam questions
The students will read a presidential debate and <i>point out</i> the passages that attack a political opponent personally rather than the opponent's political programs.	From the short presidential debate transcribed below: <i>Differentiate</i> the passages that attacked a political opponent personally, and those that attacked an opponent's political programs.
The students will <i>point out</i> the positive and negative points presented in an argument for the abolition of guns.	From the argument given below, <i>analyze</i> the positive and negative points presented concerning the abolition of guns and write a brief (2-3 page) narrative of your analysis.
Students will <i>discriminate</i> among a list of possible steps to determine which one(s) would lead to increased reliability for a test.	<p><i>Determine</i> which of the following steps would most likely lead to an increase in the reliability estimate for a test:</p> <ul style="list-style-type: none"> • Increasing the number of persons tested from 500 to 1,000. • Selecting items so that half were very difficult and half very easy

Learning objectives	Exam questions
	<ul style="list-style-type: none"> Increasing the length of the test with more of the same kinds of items Increasing the homogeneity of the group of subjects tested.

Synthesis

Students are able to *take* various pieces of information and *form* a whole *creating* a pattern where one did not previously exist.

Action verbs to help write objectives or exam questions for this domain: combine, compile, compose, construct, create, design, develop, devise, formulate, integrate, modify, organize, plan, propose, rearrange, reorganize, revise, rewrite, tell, write.

EXAMPLE

Learning objectives	Exam questions
The students will write a different but plausible ending to a short story.	Develop one plausible ending for all three short stories below.
After studying the current economic policies of the United States, student groups will <i>design</i> their own goals for fiscal and monetary policies.	Working in your groups and considering the current economic policies of the US that we have been studying, <i>develop</i> your goals for employment, price levels, and rate of real economic growth for the next three years. Write these goals on the newsprint and be ready to discuss why your goals are feasible.
The students will <i>design</i> a series of chemical operations to separate quantitatively the elements in a solution.	In the lab, you will be given a solution to analyze to see what elements make up the solution. Then <i>design</i> a series of chemical operations to separate quantitatively the elements in the solution.

Evaluation

Involves students' ability to *look* at someone else's ideas or principles and *see* the worth of the work and the *value* of the conclusions.

Action verbs to help write objectives or exam questions for this domain: appraise, assess, compare, conclude, contrast, criticize, discriminate, evaluate, judge, justify, support, weigh.

EXAMPLE

Learning objectives	Exam questions
<p>The students will use the principles of socialism to <i>evaluate</i> the US economic system.</p>	<p>Using the basic principles of socialism discussed in this course, <i>evaluate</i> the US economic system by providing key arguments to support your judgment.</p>
<p>Given any research study, <i>evaluate</i> the appropriateness of the conclusions reached based on the data presented.</p>	<p>For years, misinformation about negative effects of aspartame has proliferated on the internet. The committee evaluated peer-reviewed research from the scientific literature on this topic and concluded: “Aspartame consumption is not associated with adverse effects in the general population”. -- Given the data we’ve looked at on this topic, <i>evaluate</i> how appropriate this conclusion is and defend your answer.</p>
<p>The students will <i>compare</i> two pieces of sculpture, giving reasons for their positive evaluation of one over the other.</p>	<p>Two pieces of sculpture from different eras and artists are displayed. Study these two pieces, use the <i>compare-contrast</i> method to determine which piece you prefer and write a 2-3 page report that describes your thinking process as you studied these pieces. Utilize the skills you have learned as we have studied various pieces of sculpture over the past two weeks.</p>