

Academic Technology Center

Bloom's Taxonomy of Critical Thinking and Writing Effective Learning Objectives/Outcomes

In 1956 Benjamin S. Bloom and his colleagues outlined six levels of critical thinking into which any cognitive learning experience may be categorized. Beginning with basic knowledge of the subject, this taxonomy progresses toward more complex or higher levels of critical thought, culminating with sophisticated thinking processes using concepts under study. The six levels of Bloom's taxonomy are as follows:

1. Knowledge: Basic recall of facts and data: times, dates, names, formulas, etc.
2. Comprehension: Not just knowing the salient data associated with a concept, but also articulating relationships among data – to grasp the chief meaning of a concept.
3. Application: Taking a concept under study and using it in a new or hypothetical situation to arrive at a correct answer.
4. Analysis: Breaking something into component parts – looking at individual items for trends or evidence for generalization.
5. Synthesis: Presenting items or thoughts together in new ways, based on a presented criteria.
6. Evaluation: Arguing for the validity or relative worth of a viewpoint or process, based on established criteria.

Using these six categories, instructors can proceed to develop focused learning objectives, as detailed below.

Effective Learning Objectives/Outcomes

Simply put, a learning objective is a written statement of what a student should get out of a given learning experience. If the experience is general to the entire course (e.g. to be able to describe the fundamental principles of quantum mechanics), it is termed a course goal; if, on the other hand, the experience is specific to a given week, chapter, or other discrete unit of learning, it is called a unit learning objective. Apart from the scope of learning to which they each refer, course goals and unit learning objectives are constructed and used in an identical fashion.

Good design begins and ends with solidly written learning objectives. These objectives serve as guideposts, both for students taking the course and the instructor(s) facilitating the online course. To write an effective objective, an instructor must keep in mind the following:

- Unlike instructional or teaching goals, objectives or outcomes focus on what the learner needs to know, not the instructor. They are learner-centric.

- Objectives should always be stated in terms of what the learner will be able to think, do, or feel as a result of the instruction.
- Objectives are measurable. The conditions of “performance” and the minimum degree of acceptable performance should also be included whenever possible in a well-written learning objective.
- Objectives usually appear in bullet-list form, and are preceded by a stem sentence that communicates the end point by which the objectives will be achieved. It could be the end of the course, or the end of the module or unit, depending on whether it was a course goal or a unit learning objective. A typical stem sentence might be: “By the end of this unit, students will be able to:”. The bullet list of objectives immediately follows.
- Objectives are phrased in succinct, simple (not compound) sentences, each of which begins with a specific action verb. This verb should suggest the form of assessment to be used to determine whether the objective has been met. Avoid using vague words like “understand,” “know,” or “appreciate,” as they invariably denote a range of meanings so broad as to be useless in communicating expectations to students. Deciding where the objective fits into Bloom’s taxonomy of critical thinking often can help. A useful chart has been provided at the end of this document with a categorized selection of strong action verbs.
- Outcomes guide all subsequent teaching activities, including choosing what is to be learned (content), how it can best be learned (teaching strategies and tools), and whether or not it was learned (evaluation of outcomes).

Example of course goal:

“At the completion of this course, students will be able to:

- Compare various methods of industrial lighting in detail.”
- Argue for the adoption of one form of industrial lighting over others, based on provided criteria, in a written proposal.”

Example of learning objective:

“By the end of this module, students will be able to:

- Describe the fundamental elements of a halogen light bulb.”

Learning objective/outcome verbs are important and helpful

The verbs used in learning objectives and outcomes often indicate the level of thought at which students are functioning. Unfortunately, many verbs often utilized in learning objectives are open to misinterpretation. The following verbs should be avoided because it is difficult to measure whether they have been achieved.

Know

Appreciate

Believe

Learn

Enjoy

Have faith

Understand

Grasp significance

Realize

The following lists are provided to help recognize levels of thought and to write objectives that address the various levels of skill your student should attain. Some verbs may be found in more than one list. When determining the learning outcomes or objectives for your course, consider using a verb from the appropriate cognitive domain below.

Knowledge – Learning objective/outcome verb examples for this cognitive domain are:

Count	Point	Relate
Define	Provide	Repeat
Distinguish	Quote	Review
Draw	Read	State
Indicate	Recall	Tabulate
List	Recite	Trace
Name	Recognize	Underline
Observe	Record	Write

Comprehension – Learning objective/outcome verb examples for this cognitive domain are:

Associate	Distinguish	Locate
Classify	Edit	Predict
Compare	Estimate	Rephrase
Compute	Extrapolate	Restate
Conclude	Rewrite	Give in own terms
Contrast	Infer	Summarize
Describe	Interpret	Translate
Differentiate		

Application – Learning objective/outcome verb examples for this cognitive domain are:

Apply	Illustrate	Produce
Calculate	Implement	Purchase
Choose	Increase	Relate
Complete	Install	Repair
Conduct	Modify	Show
Demonstrate	Order	Solve
Discover	Practice	Transfer
Employ	Prepare	Utilize

Analysis – Learning objective/outcome verb examples for this cognitive domain are:

Analyze	Distinguish	Investigate
Classify	Divide	Outline
Compare	Examine	Point out
Construct	Explain	Reduce
Deduce	Group	Relate
Detect	Identify	Separate
Diagram	Illustrate	Summarize
Differentiate	Infer	Transform

Synthesis – Learning objective/outcome verb examples for this cognitive domain are:

Arrange	Develop	Plan
Assemble	Formulate	Prepare
Build	Generalize	Prescribe
Combine	Integrate	Produce
Construct	Originate	Put together
Create	Organize	Synthesize

Evaluation – Learning objective/outcome verb examples for this cognitive domain are:

Appraise	Determine	Rate
Argue	Estimate	Recommend
Assess	Evaluate	Regulate
Compare	Grade	Select
Contrast	Judge	Test