



Assessing Student Learning at the End of the Semester: Bloom's Taxonomy

The semester is winding down and many of you are writing final exams or fine-tuning the instructions for final assignments. What do you most hope your students have learned or are now able to do as a result of taking your course? Articulating answers to this question enables you to construct your final exams and assignments with your expectations for student learning in mind.

As you consider your goals for your students' learning, and how to best measure student performance in these areas, it should be helpful to consider "Bloom's Taxonomy," a hierarchical classification of cognitive skills and capabilities. Ideally, you will articulate goals and design opportunities for students to demonstrate that they've learned skills and tasks from each category, but with an emphasis on the higher order cognitive tasks. Thus, while you might test knowledge (level one) with an identification section of the exam, you might also ascertain whether your students can complete a writing assignment or solve a problem that requires that they synthesize elements they have learned in different parts of the course (level five).

We reproduce here the taxonomy as it is presented by the National Teaching & Learning Forum, with sample verbs and a sample question or assignment for each level. (www.ntlf.com/html/lib/suppmat/84taxonomy.htm)

Bloom's Taxonomy (1956)

I. **Knowledge.** Remembering information

Define, identify, label, state, list, match

- Identify the standard peripheral components of a computer
- Write the equation for the Ideal Gas Law
- Identify the five major prophets of the Old Testament

II. **Comprehension.** Explaining the meaning of information

Describe, generalize, paraphrase, summarize, estimate

- In one sentence explain the main idea of a written passage
- Describe in prose what is shown in graph form
- Translate the following passage from The Iliad into English

III. **Application.** Using abstractions in concrete situations

Determine, chart, implement, prepare, solve, use, develop

- Using principles of operant conditioning, train a rat to press a bar
- Apply shading to produce depth in drawing

- Derive a kinetic model from experimental data

IV. **Analysis.** Breaking down a whole into component parts

Points out, differentiate, distinguish, discriminate, compare

- Compare and contrast the major assumptions underlying psychoanalytic and humanistic approaches to psychology
- Identify supporting evidence to support the interpretation of a literary passage
- Analyze an oscillator circuit and determine the frequency of oscillation

V. **Synthesis.** Putting parts together to form a new and integrated whole

Create, design, plan, organize, generate, write

- Write a logically organized essay in favor of euthanasia
- Develop an individualized nutrition program for a diabetic patient
- Compose a choral work using four-part harmony for men's and women's voices

VI. **Evaluation.** Making judgments about the merits of ideas, materials, or phenomena

Appraise, critique, judge, weigh, evaluate, select

- Assess the appropriateness of an author's conclusions based on the evidence given
- Select the best proposal for a proposed water treatment plant
- Evaluate a work of art using appropriate terminology

Works Cited:

Bloom, B., Englehart, M., Furst, E., Hill, W., & Krathwohl, D. (1956) *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York, Toronto: Longmans, Green.

The National Teaching & Learning Forum, *The Six Major Levels of Bloom's Taxonomy of the Cognitive Domain (with representative behaviors and sample objectives)*.
<http://www.ntlf.com/html/lib/suppmat/84taxonomy.htm>