# Bloom’s Taxonomy – Levels of Learning



Bloom’s Taxonomy (revised in 2001) is a model for classifying knowledge by level of complexity. Most commonly cited in the knowledge-based or cognitive domain, there are also affective (emotion-based) domain and psychomotor (action-based) domain hierarchies.

### Bloom’s Revised Taxonomy

The interlocking of cognitive processes

As one encounters new content, the ability to move among the cognitive levels as needed is important to the acquisition of knowledge. The creating process involves aspects of all of the levels.

# /Users/aguent02/Desktop/kathy-schrocks-revised-blooms-taxonomy.jpg

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# Verbs for Writing Learning Objectives

## Classification of Learner Cognitive Processes, examining the levels of thinking & learning

### Cognitive Low Level: Novice

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| **Levels of thinking and learning** | **Responds to the Question** | **Verbs for measurable objectives** | **Examples of questions or activities you might anticipate or products you may have to generate** |
| REMEMBERING | Can the learner explain an idea/concept? | Write, list, label, name, state, define, describe, identify, recognize, recall, draw, select, locate, recite, quote, order, state, reproduce, match, extract, tell, and the five standards, who, what, when, where, and how. | What is…, When did…, Why did…, Who were…, Describe the…, Which of the following…, Define the…, Describe what happened after…  SAMPLE: What are the six levels of learning in Bloom’s Taxonomy? |
| UNDERSTANDING | Can the learner use the knowledge in a familiar context? | Summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend, convert, explain, generalize, give examples, rewrite, restate, classify, translate, paraphrase, illustrate, visualize, retell. | How would you contrast…, Explain why the…, Summarize the main…, Restate the story in your own words…, Prepare a flow chart to illustrate…  SAMPLE: Explain why Bloom’s Taxonomy is being used in Cornerstone and describe its importance. |

### Cognitive Middle Level: Some experience

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| **Levels of thinking and learning** | **Responds to the Question** | **Verbs for measurable objectives** | **Examples of questions or activities you might anticipate or products you may have to generate** |
| APPLYING | Can the learner use knowledge in an unfamiliar context? | Apply, demonstrate, discover, modify, operate, predict, solve, draw, dramatize, model, sketch, paint, practice, produce, prepare, make, calculate, record, compute, manipulate, modify, use, employ. | How could you use…, How could you solve…, What approach would you take…, Write an essay to explain why…, Prepare a timeline of…, Predict what would happen if…  SAMPLE: Prepare a plan to show how you could use Bloom’s Taxonomy to get a better grade in your history class. |
| ANALYZING | Can the learner identify the essential/important points? | Break down, distinguish, infer, arrange, prioritize, order, divide, categorize, appraise, test, examine, separate, deduce, choose, compare/contrast, detect, group, sequence, scrutinize, connect, outlines, research, point out. | How is \_\_\_ related to \_\_\_?, What conclusions can be drawn…, What is the relationship between…, categorize the main…, Based on X why is Y…, What were the motives behind…, What was the turning point…, Write a survey to find out if…  SAMPLE: What assumptions can be made about the rest of the term if your history teacher’s first two exams included 20 questions, all from level six? |

**Provided by CELT@Tufts:** Adapted from: Sherfield and Moody, 2011, *Cornerstone: Creating Success Through Positive Change*, New Boston: Pearson. An application of: Anderson, L.W. & Krathwohl, D.R. (Eds.) (2001). *A taxonomy for Learning, teaching, and assessing: A revision of Bloom’s taxonomy of educational objectives*.

### Cognitive Higher Level: Mastered

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| **Levels of thinking and learning** | **Responds to the Question** | **Verbs for measurable objectives** | **Examples of questions or activities you might anticipate or products you may have to generate** |
| EVALUATING | Can the learner make justified assessment or conclusion | Decide, rank, test, measure, recommend, defend, conclude, appraise, assess, judge, predict, rate, select, critique, justify, estimate, validate, measure, discriminate, probe, award, rank, reject, grade, convince, weigh, support | Defend your position about…, How would you have handled “X”? Why?, What judgment could you make…, Justify your opinion of…, Based on your research convince the reader of your paper or speech that…, What criteria would you use to assess the…  SAMPLE: asses how effective Bloom’s Taxonomy was when used to study for your history exam. Recommend two ways to improve the use of Bloom’s for the next test. |
| CREATING | Can the learner create new ideas, viewpoints or products? | Compose, combine, compile, create, design, generate, construct, revise, write, retell, tell, role play, formulate, invent, develop, modify, arrange, rearrange, prepare, assemble, set up, forecast, imagine, act, improvise, propose, substitute, integrate, incorporate | Design a plan to…, Write a speech or paper that…, Create a marketing plan that…, Generate a list of questions that…, Propose a solution to…, Revise the story of…  SAMPLE: Write two possible test questions from each level of Bloom’s Taxonomy from chapter one of Cornerstone. |

### Verbs Associated with Attitudes and Feelings

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| **LEVEL** | **ILLUSTRATIVE VERBS** | **BEHAVIOR DESCRIPTIONS** |
| Receiving - student’s willingness to attend to particular phenomena or stimuli. | Asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, selects, replies, uses | Paying attention to a lecture, listening to others as they contribute in class discussion, staying open to exploration of controversial issues, respecting the rights of others. |
| Responding - active participation on the part or the student. | Answers, assists, complies discusses, helps, labels, performs, practices, presents, reads, reports, selects, tells, writes. | Ranges from simple acquiescence (reads assigned material) to active response (pursuing and enjoying reading beyond the assignment), doing assignments, participating in discussion and small-group activities, questioning new concepts in order to understand them. |
| Valuing - the worth or value a student attaches to a particular object. Phenomenon or behavior. | Completes, describes, differentiates, explains, follows, forms, initiates, invites, joins, justifies, proposes, shares, studies, and works | Spans simple acceptance of value (desires to improve group skills) to the more complex level of commitment (assumes responsibility for the effective functioning of the group). Instructional objectives that are commonly classified under “attitudes” and appreciation” would fall into this category. |
| Organization - bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. | Adheres, alters, arranges, combines, compares, completes, defends, explains, generalizes, identifies, integrates, modifies, orders, organizes, prepares, relates, synthesizes | Emphasis is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibility of each individual for improving human relations) or with the organization of a value plan that satisfies his or her need for both economic security and social service). |
| Characterization by a value set: the individual has a value system that has controlled his or her behavior for a sufficiently long-term time for him or her to develop a characteristic lifestyle. | Acts, discriminates, displays, influences, modifies, performs, practices, proposes, qualifies, questions, revises, serves, solves, uses, verifies | The student’s behavior is pervasive, consistent, and predictable; thus the major emphasis is on the fact that behavior is typical or characteristic of the student. Instructional objectives that are concerned with the student’s general patterns of adjustment (shows self- reliance when working independently, revises judgments and changes behavior in light of new evidence, and so forth) would be appropriate here. |

Source: “Learning Taxonomy: Krathwohl’s Affective Domain,” *University of Connecticut Assessment Website,* <http://www.assessment.uconn.edu/docs/LearningTaxonomy_Affective.pdf>. As found in Barkley, E., (2010). *Student engagement techniques: a handbook for college faculty.* San Francisco: Jossey-Bass. Learning Taxonomy: Krathwohl’s Affective Domain, Table 11.2, p. 142 – 143.

### Verbs for Psychomotor Skills

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| **LEVEL** | **ILLUSTRATIVE VERBS** | **BEHAVIOR DESCRIPTIONS** |
| Imitation | Copy, follow, replicate, repeat, and adhere | Copy the action of another; observing and replicating a process or activity |
| Manipulation | Re-create, build, perform, execute, implement | Carrying out a task from written or verbal instruction; able to demonstrate to other learners |
| Precision | Demonstrate, complete, show, perfect, calibrate, control | Performing a task or activity reliably with expertise and to high quality without assistance or instruction; able to demonstrate to other learners |
| Articulation | Construct, solve, combine coordinate, integrate, adapt, develop, formulate, and modify, master | Adapting and combining associated activities to develop methods to meet varying, novel requirements |
| Naturalization | Design, specify, manage, invent, project-manage | Automated, unconscious mastery of activity and related skills at strategic level |

Through skill development, also known as a kinesthetic learning, the sense of movement produces new information, and results in learning. This is a physical way for learners to obtain knowledge. For example, writing definitions on note cards, drawing in three dimensions or drawing the human form, and giving an animal medicine through a needle.

# Example Goals & Learning Objective

***Goal***: Students will learn how to consistently and skillfully use critical thinking to comprehend the world and reason about situations, issues, and problems they confront.

***Learning Objectives***: Students will learn how to do the following:

1. Identify the elements of reasoning when thinking about personal, professional, and civic situations, issues, and problems: its purpose(s), the question(s) to be answered or problem(s) to be solved, the requisite information or evidence required, inferences made and assumptions they are based on, concepts and principles being used, implications or consequences of the reasoning, and points of view or frames of reference being used;
2. Skillfully use the universal intellectual standards of clarity, accuracy, relevance, precision, logicality, breadth, depth, completeness, significance, and fairness to assess and evaluate the quality of reasoning used when considering each the elements of reasoning in Objective One
3. Reliably and consistently engage in rational thinking by recognizing and avoiding their own and others' egocentric and sociocentric biases; and
4. Exhibit the intellectual traits or dispositions of intellectual humility, intellectual autonomy, intellectual integrity, intellectual perseverance, intellectual courage, confidence in reason, intellectual empathy, and fair-mindedness.

***Goal*:** Students will learn how to reason and act in a consistently ethical fashion with respect to other people, animals, and the natural environment.

***Learning Objectives***: Students will learn how to do the following:

1. Distinguish among examples of complex reasoning based on ethical principle, religious dogma, legal prescription, and social conditioning, including traditional customs and political propaganda;
2. Identify the elements of reasoning (purpose of the reasoning, question to be answered, information needed, concepts and principles required, assumptions being made, points of view that should be considered, inferences made and conclusions drawn, and implications for self and others of these and other possible conclusions);
3. Analyze reasoning about complex ethical dilemmas, using the above identified elements of reasoning;
4. Analyze reasoning about complex moral dilemmas in terms of their clarity, accuracy, precision, depth, breadth, logic, and significance;
5. Discern moral content and determine a principled ethical course of action;
6. Exhibit respectful behavior toward other people, animals, and the natural environment that is consistently characterized by the traits of humanity, empathy, fair-mindedness, integrity, ethical perseverance, and ethical courage.

***Goal***: Students will learn how to become involved and act responsibly and with informed awareness of contemporary issues in a community and to develop leadership abilities.

***Learning Objectives***: By the end of this course, students should be able to do the following:

1. Assess their own knowledge and skills in thinking about and acting on local issues;
2. Analyze community issues and develop strategies for informed response;
3. Evaluate personal and organizational characteristics, skills, and strategies that facilitate accomplishment of mutual goals; and
4. Apply their developing citizenship skills in a community setting.

***Goal***: Students will learn how to use concepts and principles of ecology, together with plausible evidence, to describe the interactions of organisms with their environments & with each other.

***Learning Objectives***: Students will learn how to do the following:

1. Demonstrate that organisms are both interdependent and dependent on their environments, using specific examples from various major taxa as well as from marine, freshwater, and terrestrial environments;
2. Show how ecosystems consist of populations of organisms, together with abiotic inputs, nutrient cycles, energy cycles, and limiting factors;
3. Explain how species and populations interact in a dynamic fashion in communities;
4. Propose one or more hypotheses that plausibly suggest how different species can occupy the same ecological niche, and support the hypothesis or hypotheses with convincing evidence;
5. Show how the various world biomes reflect global physical and biotic diversity;
6. Use the concept of ecological succession to explain temporal changes in communities and ecosystems; and
7. Demonstrate the range of human impacts on the natural environment, together with their specific causes.

***Goal***: The successful student in this course will be able to argue as a professional historian does.

***Learning Objectives***: The successful student in this course should be able to do the following:

1. Take a position on a debatable historical issue;
2. Use historical data as evidence for the position;
3. Raise and answer counterarguments;
4. Appropriately summarize, synthesize, and cite sources of historical data in making historical arguments.

**Goal:** Students must be able to provide care that is compassionate, appropriate, and effective for treating health problems and promoting health, specifically:

**Learning Objectives:**

1. Obtain an accurate age-appropriate medical history from patients in the ICU or from their family members and/or medical record.
2. Demonstrate focused physical examination of a critically ill patient that is symptom focused.
3. Perform selected advanced procedures under supervision and discuss the indications for and the risks and benefits of the procedure.
4. Apply clinical reasoning and critical thinking skills in developing a differential diagnosis and treatment plan for critically ill patients by integrating information obtained from history and physical, medical record review, diagnostic testing and review of the clinical literature.
5. Apply the principles of pharmacology, therapeutics and therapeutic decision making to the care of a critically ill patient and differentiate between alternative medications for common ICU conditions based on therapeutic effectiveness and cost.
6. Participate in the diagnosis and management of common life-threatening conditions.
7. Sensitively address end-of-life issues with patients and their families including do-not-resuscitate orders and pain management by participating in a patient/family meeting.

**Example: Managing Care of a Diabetic Patient** from The Pharmaceutical Journal, Z. Austin

**Goal**: To be competent and confident in adjusting insulin doses based on blood glucose levels for patients with diabetes.

**Learning Objectives:**

1. After the first four weeks of this rotation, students should be able to list common signs and symptoms of diabetes.
2. At the end of this rotation, students should be able to describe the significance of laboratory test values (including fasting blood glucose and HgA1C) in establishing treatment goals for diabetes management.
3. At the end of this rotation, students will be able to calculate appropriate modified insulin doses for patients without comorbidities, using clinical laboratory findings.
4. After the first week of this rotation, students should be able to appraise primary literature related to diabetes management using a systematic approach.
5. At the end of this rotation, students will be able to predict and justify anticipated clinical outcomes associated with their insulin dose modification recommendations.
6. At the end of this rotation, students will be able to design patient-specific education and monitoring tools to support self-management of insulin dosing.

***Goal***: This course is intended to equip students with skills needed to locate, gather, and use information intellectually and responsibly.

***Learning Objectives***: By the end of this course, students should be able to accomplish the following:

1. Demonstrate the ability to locate and gather information through libraries, the world wide web, and "field" research methods, such as interviews and surveys;
2. Evaluate the sources of information;
3. Analyze, summarize, and synthesize information from diverse sources;
4. Apply information gained through research to a given situation;
5. Communicate to others information, conclusions, and arguments through writing and the use of tables, graphs, and other visual rhetoric; and
6. Appropriately cite sources of information.

***Goal***: By the end of this course, the successful student will understand the scientific method.

***Learning Objectives***: By the end of this course, the successful student will be able to do the following:  
1. Distinguish between a hypothesis, a theory, and a law;  
2. Define each of the above from a scientific experiment;  
3. Outline the steps of the scientific method for each lab experiment;  
4. Generate predictions, based on the outcomes of each lab experiment; and  
5. Maintain the distinction between predicted and observed results, even if the lab experiment fails to produce the expected results.

## Checklist for Revising Learning Objectives

Does each learning objective:

* Target one specific aspect of a student’s expected performance?
* Center on the student’s actions; i.e., describe observable, behavioral outcomes of the student?
* Specify how a student will demonstrate their achievement of the objective? (*what the student will be able to do)*
* Utilize an effective, action verb that targets the desired level of performance
* Match instructional activities and assessments
* Stem from a course goal

Considering the Learning Objectives overall:

* Is the number of objectives and range of learning outcomes realistic in the given time frame of the course?
* Target a variety of levels of learning (e.g., Blooms taxonomy) and educational outcomes

## Checklist for Revising Goals

Does each course goal:

* Use broad language and verbs like “know” or “understand” or “appreciate”?
* Center on a student’s attitude, value or knowledge
* Use language a student would understand?
* Have at least one associated learning objective?

Do your course goals overall:

* Reflect the Enduring Understandings of your course?
* Target a variety of levels of learning (e.g., Blooms taxonomy) and educational outcomes

Are there an appropriate number of goals for your course