

3 Taxonomy of Educational Objectives

Following the 1948 Convention of the American Psychological Association, a group of college examiners considered the need for a system of classifying educational goals for the evaluation of student performance. Years later and as a result of this effort, Benjamin Bloom formulated a classification of "the goals of the educational process". Eventually, Bloom established a hierarchy of educational objectives for categorizing level of abstraction of questions that commonly occur in educational settings (Bloom, 1965). This classification is generally referred to as Bloom's Taxonomy. Taxonomy means 'a set of classification principles', or 'structure'. The followings are six levels in this taxonomy: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The detail is given below:

Cognitive domain: The cognitive domain (Bloom, 1956) involves the development of intellectual skills. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. There are six levels of this domain starting from the simplest cognitive behaviour to the most complex. The levels can be thought of as degrees of difficulties. That is, the first ones must normally be mastered before the next ones can take place.

Affective domain: The affective domain is related to the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes. The five levels of this domain include: receiving, responding, valuing, organization, and characterizing by value.

Psychomotor domain: Focus is on physical and kinesthetic skills. The psychomotor domain includes physical movement, coordination, and use of the motor-skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution. There are seven levels of this domain from the simplest behaviour to the most complex. Domain levels include: Perception, set, guided response, mechanism, complex or overt response, adaptation.

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| <ul style="list-style-type: none">• http://www.nwlink.com/~donclark/hrd/bloom.html• http://www.learningandteaching.info/learning/bloomtax.htm |
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Over all Bloom's taxonomy is related to the three Hs of education process that are Head, Heart and Hand.

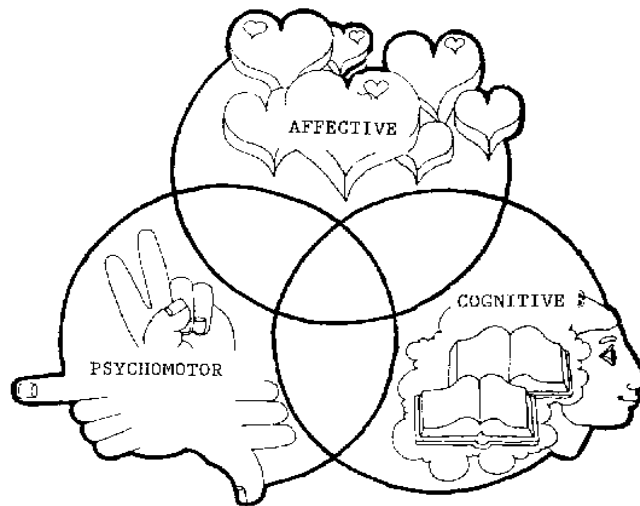


Figure -2.2 Taxonomy of Educational Objectives

Note: In each of the three domains Bloom's Taxonomy is based on the premise that the categories are ordered in degree of difficulty. **An important premise of Bloom's Taxonomy is that each 'level' must be mastered before progressing to the next.** As such the levels within each domain are levels of learning development, and these levels increase in difficulty.

2.3 Writing Cognitive Domain Objectives

In teaching learning process, cognitive domain of Blooms taxonomy is of prime focus. So let's discuss this domain in detail and learn to write objectives of this domain.

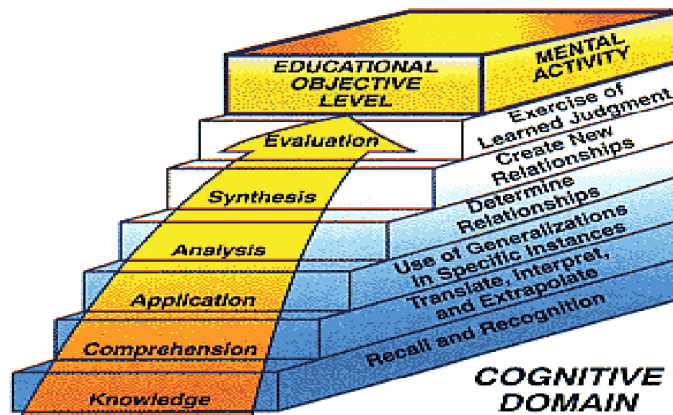


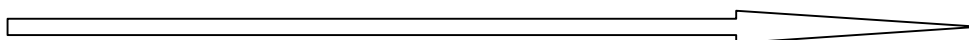
Figure 1-4. Dr. Bloom's hierarchical taxonomy for the cognitive domain (knowledge) includes six educational objective levels.

Figure -2.3 Bloom's Hierarchical Taxonomy of Educational Objectives

Cognitive abilities in this taxonomy are arranged on continuum ranging from the lower to the higher

Lower

Higher



Knowledge Comprehension Application Analysis Synthesis Evaluation

An analogy depicting the taxonomy of learning objectives can be thought as assembling blocks in building a pyramid. The knowledge level creates the basis for the foundation from which the higher- level skills are built.

When writing educational objectives, a teacher must know that for a good objective it is necessary to **use the clear verb** that clearly indicates the type of observable behaviour. The following table will not only help you to understand the level of cognitive domain but will guide you what action verbs can be used to state objectives of that particular level.

Table 2.1 Learning Objectives and Action Verbs

Learning Objective/ Level	Description	Action Verbs to be used to state objectives
Knowledge	<p>The first level of learning is knowledge.</p> <p>Knowledge can be characterized as awareness of specifics and of the ways and means of dealing with specifics. The knowledge level focuses on memory or recall where the learner recognizes information, ideas, principles in the approximate form in which they were learned.</p>	<p>To arrange, to define, to describe, to identify, to list, to label, to name, to order, to recognize, to recall, to relate, to repeat, to reproduce, to state, to underline.</p>

Comprehension	Comprehension is the next level of learning and encompasses understanding. Has the knowledge been internalized or understood? The student should be able to translate, comprehend, or interpret information based on the knowledge.	To choose, to compare, to classify, to describe, to demonstrate, to determine, to discuss, to discriminate, to explain, to express, to identify, to indicate, to interpret, to label, to locate, to pick, to recognize, to relate, to report, to respond, to restate, to review, to select, to tell, to translate
Application	Application is the use of knowledge. Can the student use the knowledge in a new situation? It can also be the application of theory to solve a real world problem. The student selects, transfers, and uses data and principles to complete solve a problem.	To apply, to classify, to demonstrate, to develop, to dramatize, to employ, to generalize, to illustrate, to interpret, to initiate, to operate, to organize, to practice, to relate, to restructure, to rewrite, to schedule, to sketch, to solve, to use, to utilize, to transfer
Analysis	Analysis involves taking apart a piece of knowledge, the investigation of parts of a concept. It can only occur if the student has obtained knowledge of and comprehends a concept. The student examines, classifies, hypothesizes, collects data, and draws conclusions.	To analyze, to appraise, to calculate, to categorize, compare, conclude, contrast, or criticize; to detect, to debate, to determine, to develop, distinguish, or deduce; to diagram, to diagnose, differentiate, or discriminate; to estimate, to examine, to evaluate, to experiment, to inventory, to inspect, to relate, solve, or test; to question
Synthesis	Synthesis is the creative act. It's the taking of knowledge and the creation of something new. It is an inductive process—one of building rather than one of breaking down. The student originates, integrates, and combines ideas into something that is new to him/her.	To arrange, to assemble, to collect, to compose, to construct, to constitute, to create, to design, to develop, to device, to document, to formulate, to manage, to modify, to originate, to organize, to plan, to prepare, to predict, to produce, to propose, to relate, to reconstruct, to set up, to specify, to synthesize, to systematize, to tell, to transmit

Evaluation	Evaluation is judgment or decision making. The student appraises, assesses or criticizes on a basis of specific standards and criteria.	To appraise, argue, or assess; to attach, to choose, to contrast, to consider, to critique, to decide, to defend, to estimate, to evaluate, to judge, to measure, to predict, to rate, to revise, to score, to select, to support, to standardize, to validate, to value, to test
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Source: Jolly T. Holden: *A Guide To Developing Cognitive Learning Objectives*. Retrieved From

<http://gates.govdl.org/docs/A%20Guide%20to%20Developing%20Cognitive%20Learning%20Objectives.pdf>

Activity-2.2: Develop two objectives of comprehension level for this unit by using appropriate action verbs.

Bloom's Taxonomy underpins the classical '**Knowledge, Attitude, Skills**' structure of learning. It is such a simple, clear and effective model, both for explanation and application of learning objectives, teaching and training methods, and measurement of learning outcomes.

Bloom's Taxonomy provides an excellent structure for planning, designing, assessing and evaluating teaching and learning process. The model also serves as a sort of **checklist**, by which you can ensure that instruction is planned to deliver all the necessary development for students.

Bloom's Revised Taxonomy

Bloom's former students Lorin Anderson and David Krathwohl revised Bloom's Taxonomy in 1990. - Bloom's Revised Taxonomy was published in 2001. Key to this is the use of verbs rather than nouns for each of the categories and a rearrangement of the sequence within the taxonomy. They are arranged below in increasing order, from **Lower Order Thinking Skills (LOTS)** to **Higher Order Thinking Skills (HOTS)**.