Taxonomies of Educational Objectives

Cognitive Domain[1] (intellectual outcomes including knowledge, understanding, thinking skills)

- *Remembering*—Retrieving, recognizing, and recalling relevant knowledge from long-term memory
- *Understanding*—Constructing meaning from oral, written and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing and explaining
- *Applying*—Carrying out or using a procedure through executing or implementing
- *Analyzing*—Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing and attributing
- *Evaluating*—Making judgments based on criteria and standards through checking and critiquing
- *Creating*—Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning or producing

Affective Domain[2] (emotional outcomes including interests, attitudes, appreciation)

- *Receiving*—attend to a stimulus [read a handout, listen attentively to a lecture]
- *Responding*—react to a stimulus [carry out an assignment, participate in a discussion, show interest in a subject]
- *Valuing*—attach value to an object, phenomenon, or behavior [demonstrate a positive attitude, appreciation, belief, or commitment through expression or action]
- *Organization*—organize (compare, relate, and synthesize) different values into the beginning of an internally consistent value system [recognize a need to balance freedom and responsibility, formulate a career plan, adopt a systematic approach to problem solving]
- *Characterization by a value or value complex*—internalize a value system and behave accordingly in a pervasive, consistent, and predictable manner [work independently and diligently, practice cooperation in group activities, act ethically]

Psychomotor Domain[3] (motor skill outcomes including operating equipment, sports)

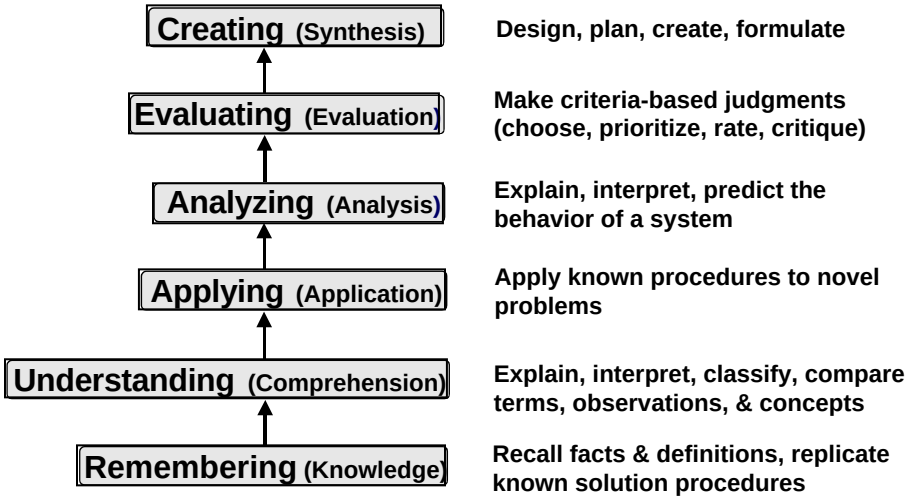
- *Perception*—use sense organs to obtain cues about motor activity [relate labels to need for special handling of dangerous materials]
- *Set*—readiness to take a particular action [explain the series of steps required to operate a piece of lab equipment]
- *Guided response*—early stage of learning a performance skill including imitation and trial and error [consciously follow a prescribed instrument calibration procedure]
- *Mechanism*—later stage of learning a performance skill when it can be performed with proficiency [follow the same procedure smoothly and effortlessly]
- *Complex overt response*—skillful performance of a complex movement pattern [repair electronic equipment quickly and accurately]
- *Adaptation*—skills that are so well-developed that the individual can modify them to fit the situation [alter a routine procedure to adapt to a novel situation]
- *Origination*—creating new movement patterns based on highly developed skills [develop a procedure for building an experimental prototype]

[1] Anderson, L. W. & Krathwohl, D. R. (Eds.). (2001) *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives: Complete edition.* New York: Longman, pp. 67-68. Original reference: Bloom, B. S., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals by a committee of college and university examiners. Handbook 1. Cognitive domain.* New York: Addison-Wesley.

[2] Krathwohl, D.R., Bloom, B.S., Massia, B.B. (1984). *Taxonomy of educational objectives. Handbook 2. Affective domain.* New York: Addison-Wesley.

[3] Simpson, E. J. (1972). *The psychomotor domain. Vol. 3.* Washington: Gryphon House.

Bloom's Taxonomy of Educational Objectives: Cognitive Domain



- Analyzing, Evaluating, and Creating are the *higher level* or *higher order thinking skills*
- Usually, undergraduate education deals almost exclusively with Remembering, Understanding and Applying.
- Ideally, all levels should be addressed in every course (need not be sequential).

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* See reference 1 on the previous page.