Domains of Learning

Beginning in 1948, a group of educators began the task of classifying a taxonomy of education goals and objectives. Their intention was to develop a classification system for educators to assist them in specifying learning objectives and, therefore, enhance the planning of learning experiences and the creation of evaluative tools. Bloom's group identified the three domains of education as the cognitive, affective, and psychomotor domains. Each of the three domains identifies general areas of learning acquisition and demonstration arranged in a hierarchy of simple to complex. Using the taxonomy, the learner can demonstrate learning on a variety of levels. The higher the level of taxonomy used during the educational process, the more likely it is that the learner will retain the information or skill.

The Cognitive Domain

The cognitive domain deals with the student's recall or recognition of knowledge, in other words, the intellectual development of the learner.

1. **Knowledge.** The recall of previously learned specifics, methods, patterns, processes, or universals, e.g., terminology, categories, and criteria. Knowledge attainment is verified using who, what, when, and where questions. Verbs associated with learning at this level include: arrange, cite, define, describe, duplicate, identify, know, label, list, match, memorize, name, order, outline, pronounce, quote, recall, recite, recognize, relate, repeat, reproduce, select, state, and write.

2. **Comprehension.** The ability to grasp the meaning of material or to deal with materials and problems as in organizing or reorganizing information, e.g., translation, interpretation, extrapolation. Verbs associated with learning at this level include: alter, change, classify, comprehend, convert, defend, depict, describe, discover, discuss, distinguish, estimate, explain, express, extend, generalize, give examples, give the main idea, identify, illustrate, indicate, infer, interpret, locate, manage, paraphrase, predict, recognize, relate, rephrase, represent, report, restate, review, rewrite, reword, select, substitute, summarize, translate and vary.

3. **Application.** The ability to use learned material in a new and concrete situation, e.g., applying knowledge from one situation to a different but similar situation. Knowledge attainment is verified using how many, which, what is, and write an example questions. Verbs associated with learning at this level include: apply, change, choose, classify, compute, construct, demonstrate, direct, discover, dramatize, employ, evidence, illustrate, interpret, manifest, manipulate, modify, operate, practice, predict, prepare, present, produce, relate, schedule, show, sketch, solve, use, utilize, and write.

4. **Analysis.** The ability to break material into its elements or parts, e.g., analysis of elements, relationships, organizational principles. Knowledge attainment is verified using why questions. Verbs associated with learning at this level include: analyze, appraise, ascertain, associate, break down, calculate, categorize, compare, conclude, contrast, criticize, designate, determine, diagnose, diagram, differentiate, discriminate, dissect, distinguish, divide, examine, experiment, find, identify, illustrate, infer, outline, point out, question, reduce, relate, select, separate, and test.

5. **Synthesis.** The ability to put elements together into a new whole as in a pattern or structure not present before, e.g., produce a new plan or operation or derive a new set of abstract relations. Knowledge attainment is verified using how can we improve, what would happen if....., and how can we solve.... questions. Verbs associated with learning at this level include: arrange, assemble, categorize, collect, combine, compile, compose, conceive, construct, create, design, develop, devise, expand, explain, extend, formulate, generalize, generate, hypothesize, integrate, invent, manage, modify, organize, originate, plan, prepare, pose, project, propose, rearrange, reconstruct, relate, reorganize, revise, rewrite, set up, summarize, synthesize, tell, theorize, and write.

6. **Evaluation.** The ability to make judgments about the value of materials and methods, e.g., to make quantitative and qualitative judgments using either an external or one's own standard. . Verbs associated with learning at this level include: appraise, argue, assess, attach, choose compare, conclude, contrast, criticize, critique, deduce, defend, describe, discriminate, estimate, evaluate, explain, interpret, judge, justify, predict, rate, recommend, relate, select, summarize, support, use, value, and weigh.

The Psychomotor Domain

The psychomotor domain deals with the manipulation of materials and equipment, in other words, motor skills. The advancing levels of performance of a technique or procedure are reached by meeting objectives in this area. Two organizational outlines are currently in use. They include the work of Dave and Simpson.

Dave's Taxonomy (1970)

1. **Imitation.** The ability to perform following demonstration, i.e., the ability to copy. Verbs associated with learning at this level include:

2. **Manipulation.** The ability to perform according to instruction rather than observation only, i.e., following oral or written directions or procedures. Verbs associated with learning at this level include:

3. **Precision.** The ability to perform the skill with accuracy and completeness, independent of a model or set of directions, i.e., independent performance efficiency. Verbs associated with learning at this level include:

4. **Articulation.** The ability to perform a skill or procedure with competency within a reasonable time frame and according to procedure. Verbs associated with learning at this level include:

5. **Naturalization.** The ability to perform the skill automatically and efficiently as an integrated part of practice. Verbs associated with learning at this level include: bend, grasp, handle, operate, reach, relax, shorten, stretch, write, differentiate (by touch), express (facially), perform (skillfully).

Simpson's Taxonomy

1. **Perception:** The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation. . Verbs associated with learning at this level include:choose, describe detect, differentiate, distinguishe, identify, isolate, relate, and select.

2. **Set:** The readiness to act. It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person's response to different situations (sometimes called mindsets). These activities include recognizing one's abilities and limitations and showing a desire to learn a new process (motivation). NOTE: This subdivision of Psychomotor is closely related with the "Responding to phenomena" subdivision of the Affective domain. Verbs associated with learning at this level include: begin, display, explain, moves, proceed, react, show, state, and volunteer.

3. **Guided response:** The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing. Verbs associated with learning at this level include: copy, trace, follow, react, reproduce, and respond.

4. **Mechanism:** This is the intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency. Verbs associated with learning at this level include: assemble, calibrate, construct,

dismantle, display, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, and sketch.

5. **Complex Overt Response:** The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance. Verbs associated with learning at this level include: assemble, build, calibrate, construct, dismantle, display, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, and sketch. NOTE: The key words are the same as Mechanism, but will have adverbs or adjectives that indicate that the performance is quicker, better, more accurate, etc.

6. **Adaptation:** Skills are well developed and the individual can modify movement patterns to fit special requirements, such as responding effectively to unexpected experiences. Verbs associated with learning at this level include: adapt, alter, change, rearrange, reorganize, revise, and vary.

7. **Origination:** Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills. Verbs associated with learning at this level include: arrange, build, combine, compose, construct, create, design, initiate, make, and originate.

The Affective Domain

The affective domain deals with the student's feelings, attitudes, and values for the field of study, in other words, the student's degree of acceptance and/or rejection of the information or subject. In developing objectives in this area, the instructor would be attempting to create an atmosphere that will allow the student to develop a desired feeling or attitude. Although objectives in this area are more difficult to identify, teach, and evaluate, it is generally recognized that the affective area is integral to the student's overall education.

This domain relates to emotions, attitudes, appreciations, and values, such as enjoying, conserving, respecting, and supporting. Verbs applicable to the affective domain include accepts, attempts, challenges, defends, disputes, joins, judges, praises, questions, shares, supports, and volunteers.

1. **Receiving (attending).** The awareness and willingness to pay attention,
   e.g., sensory awareness, attention with some discrimination. Verbs associated with learning at this level include: ask, choose, describe,

erect, follow, give, hold, identify, locate, name, point to, select, sit, reply, and use.

2. **Responding.** The willingness or motivation to become involved and respond, e.g., willingness to follow rules, enjoyment in participating, voluntary responses. Verbs associated with learning at this level include: answer, assist, aid, complies, conform, discuss, greet, help, label, perform, practice, present, read, recite, report, select, tell, and write.

3. **Valuing.** The identification of worth and use of values, e.g., acceptance of a value, preference for a value, commitment to a value. Verbs associated with learning at this level include: complete, demonstrate, differentiate, explain, follow, form, initiate, invite, join, justify, propose, read, report, select, share, study, and work.

4. **Organization.** The organizing of values into a system, e.g., the classification and interrelationship of values that establish a value system. Verbs associated with learning at this level include: adhere, alter, arrange, combine, compare, complete, defend, explain, formulate, generalize, identify, integrate, modify, order, organize, prepare, relate, and synthesize.

5. **Characterization.** The consistency of behavior with internalized values and systems, e.g., the integration of beliefs, ideas, and attitudes into a total view that results in behavior that others will identify or "characterize" as being that of a surgical technologist. Verbs associated with learning at this level include: act, discriminate, display, influence, listen, modify, perform, practice, propose, qualify, question, revise, serve, solve, and verify.

Affective domain verb definitions include the following:

APPLY A RULE: To state a rule as it applies to a situation, object or event that is being analyzed. The statement must convey analysis of a problem situation and/or its solution, together with the name or statement of the rule that was applied.

CLASSIFY: To place objects, words, or situations into categories according to defined criteria for each category. The criteria must be made known to the student.

COMPOSE: To formulate a written composition in written, spoken, musical or artistic form.

CONSTRUCT: To make a drawing, structure, or model that identifies a designated object or set of conditions.

DEFINE: To stipulate the requirements for inclusion of an object, word, or situation in a category or class. Elements of one or both of the following must be included: (1) The characteristics of the words, objects, or situations that are included in the class or category. (2) The

characteristics of the words, objects, or situations that are excluded in the class or category. To define is to set up criteria for classification.

DEMONSTRATE: The student performs the operations necessary for the application of an instrument, model, device, or implement. NOTE: There is a temptation to use demonstrate in objectives such as, "the student will demonstrate his knowledge of vowel sounds." As the verb is defined, this is improper use of it.

DESCRIBE: TO name all of the necessary categories of objects, object properties, or event properties that are relevant to the description of a designated situation. The objective is of the form, "The student will describe this order, object, or event," and does not limit the categories that may be used in mentioning them. Specific or categorical limitations, if any, are to be given in the performance standards of each objective.

DIAGRAM: To construct a drawing with labels and with a specified organization or structure to demonstrate knowledge of that organization or structure. Graphic charting and mapping are types of diagramming, and these terms maybe used where more exact communication of the structure of the situation and response is desired.

DISTINGUISH: To identify under conditions when only two contrasting identifications are involved for each response.

ESTIMATE: To assess the dimension of an object, series of objects, event or condition without applying a standard scale or measuring device. Logical techniques of estimation, such as are involved in mathematical interpolation, may be used. See MEASURE.

EVALUATE: To classify objects, situations, people, conditions, etc., according to defined criteria of quality. Indication of quality must be given in the defined criteria of each class category. Evaluation differs from general classification only in this respect.

IDENTIFY: To indicate the selection of an object of a class in response to its class name, by pointing, picking up, underlining, marking, or other responses.

INTERPRET: To translate information from observation, charts, tables, graphs, and written material in a verifiable manner.

LOCATE: To stipulate the position of an object, place, or event in relation to other specified objects, places, or events. Ideational guides to location such as grids, order arrangements and time may be used to describe location. Note: Locate is not to be confused with IDENTIFY.

MEASURE: To apply a standard scale or measuring device to an object, series of objects, events, or conditions, according to practices accepted by those who are skilled in the use of the device or scale.

NAME: To supply the correct name, in oral or written form for an object, class of objects, persons, places, conditions, or events which are pointed out or described.

ORDER: To arrange two or more objects or events in accordance with stated criteria.

PREDICT: To use a rule or principle to predict an outcome or to infer some consequence. It is not necessary that the rule or principle be stated.

REPRODUCE: To imitate or copy an action, construction, or object that is presented.

SOLVE: To effect a solution to a given problem, in writing or orally. The problem solution must contain all the elements required for the requested solution, and may contain extraneous elements that are not required for solution. The problem must be posed in such a way that the student that the student is able to determine the type of response that is acceptable.

STATE A RULE: To make a statement that conveys the meaning of the rule, theory or principle.

TRANSLATE: To transcribe one symbolic form to another of the same or similar meaning.

Conclusion

While all three domains are reflected in the objectives throughout the *Core Curriculum*, it was not possible to include all levels of learning in all three domains within the parameters of this publication. Individual instructors are expected to build on and further define the objectives that are included, adding their own program's unique objectives addressing each of the domains so that the student's experience will be comprehensive.

Resources:

http://members.spree.com/teach2prime/verbs.htm

http://www.valdosta.peachnet.edu/~whuitt/psy702/cogsys/bloom.html

http://www.valdosta.peachnet.edu/~whuitt/psy702/affsys/affdom.html

http://www.valdosta.peachnet.edu/~whuitt/psy702/plan/behobj.html

http://www.valdosta.peachnet.edu/~whuitt/psy702/plan/behobj.html

http://members.spree.com/teach2prime/verbs.htm

http://www.reach.ucf.edu/~acg4401/Handouts/blooms.htm

http://www.nwlink.com/~donclark/hrd/bloom.html

AST Core Curriculum in Surgical Technology, 4Th ed. , Littleton CO, 2023.