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# Classifying and Sequencing Instructional Objectives: Behavioral Taxonomies (A Revision of Bloom's Taxonomy) and Task Analysis

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**Abstract**: This working paper will discuss on the significants of procedures for classifying, sequencing instructional objectives and Using Bloom's Revised Taxonomy in Assessment. Content analysis method was utilized in this study for gathering of data using citations and literatures from the Internet, speeches and books. It was suggested that a behavioral taxonomy is often useful as a classiflcation scheme to organize instructional objectives. Taxonomies for the cognitive, affective, and psychomotor domains were presented. Suggestions were then offered for employing the taxonomies for classifying objectives. Task analysis was examined as a procedure for sequencing objectives in a hierarchal arrangement. As such, task analysis is a procedure used to complement objective classification. Task analysis used in conjunction with taxonomic classification provides necessary information for sequencing instructional objectives.
**Keywords**: Instructional objectives Definition, kinds of Instructional Objectives

## 1. Introduction

Mager (1997) state that an instructional objective is "a collection of words and/or pictures and diagrams intended to let others know what you intend for your students to achieve" (p. 3). The term learning outcome refers to the observable behavior that is de. sired of the learner (see Gagné, 197 4; Gagné, 1977; Gagné and Briggs, 1974). Clearly, the writer of instructional objectives must have in mind what learners are expected to demonstrate as an outcome of instruction before objectives can be written. This point may seem so obvious that it hardly requires attention. However, anyone who is even vaguely familiar with the instructional process knows that there are an infinite variety of learning outcomes that may be sought by educators, parents, and students. Given the vast amount and diversity of potentially desirable learning outcomes, it is necessary for educators to specify those outcomes that are most relevant to given units of instruction. By specifying these learning outcomes educators can more effectively communicate their intentions to each other, to parents, and to students.

The requirement to specify learning outcomes places an additional, but necesary, burden on teachers, curriculum planners, and other individuals involved in the design and/or implementation of instruction. Educators seek ways to maxi. mize efficiency and effectiveness in specifying desired learning outcomes at all levels of instructional planning. One such approach has been to seek ways of classifying varied learning outcomes into more clearly defined clusters, or groupings, to make the task of specification more orderly and manageable. Probably the most familiar scheme used by educators for this purpose is the one representing the three domains of behavior with which education typically has dealt-cognitive, affective, and psychomotor. These behavioral domains still represent only broad classifications of human behavior and educational objectives. Within each of these behavioral areas it is possible to classify objectives into progressive levels of development.

Bloom and others (1956), Krathwohl and others (1964), and Simpson (1972) have conducted systematic surveys of educational objectives in the cognitive, affective, and psychomotor domains and have prepared taxonomies for these three classes of behavior. These taxonomies are included in this chapter. For the moment, it is important to emphasize that by using the three-category scheme or others like it (see Gagné and Briggs, 1974; Harrow, 1972; Merrill, 1971; Walbesser, 1965), educators are able to classify various kinds of learning outcomes into groupings of human behavior that share common dimensions.

This classification allows for greater ease and clarity in identifying a wide variety of specific and general learning outcomes that may be relevant to educational planning and development.

Classification schemes do not solve all of the problems facing educators who are trying to specify learning outcomes. Research results conflict when evaluating the classification of hierarchal structures (Seddon, 1978). Bloom’s classification of test items has been criticized because of its category placement difficulties.

However, no taxonomy is universally perfect and Bloom's seems more useful than other available taxonomies. No matter how useful a classification scheme may be, there is always the potential for ambiguity when attempting to make discrete classifications of complex human behavior. There are instances of phenomena that should or could be classified into more than one category. For example, consider an instructional objective such as "to be able to present an original five-minute speech in front of the class without exhibiting stage fright." This objective includes as many as three different types of learning outcomes related to various domains of human behavior. Psychomotor skills are involved in meaningful sound production, while certain attitudes about speaking before others are also implied (i.e., affective domain). In addition, comprehending and repeating information contained in the speech suggests the inclusion of relevant cognitive behaviors. Although classification schemes do not always allow educators to specify learning outcomes in discrete categories, the overall pragmatic values of such schemes generally 0 tweigh the drawbacks. This chapter will discuss methods of classification schemes that may be used to prepare and sequence objectives for implementing instructional strategies.

This paper used content analysis by reviewing literatures from different studies and from the analysis of various experts in the field of instructional objectives. The data collected were all secondary which were clipped from books, magazines, newsletters and Internet websites. This paper gives concise discussion on how to classify and sequence instructional objectives

## 2. Instructional objectives Definition

Instructional objectives (also known as behavioral objectives or learning objectives ) are basically statements which clearly describe an anticipated learning outcome. When objectives were first coming into their own in education, they almost always began with the phrase: "Upon completion of this lesson, the student should be able to…." This phrase focused on the outcome of learning rather than on the learning process. In fact, one of the criteria for a well-written objective is that it describe the outcome of learning, that is, what the learners can do after learning has occurred that they might not have been able to do before the teaching and learning process began. An instructional objective is a statement that will describe what the learner will be able to do after completing the instruction. (Kibler, Kegla, Barker, Miles, 1974).

According to Dick and Carey (1990), a performance objective is a detailed description of what students will be able to do when they complete a unit of instruction. It is also referred to as a behavioral objective or an instructional objective.

Robert Mager (1984), in his book Preparing Instructional Objectives ,describes an objective as "a collection of words and/or pictures and diagrams intended to let others know what you intend for your students to achieve" (pg. 3). An objective does not describe what the instructor will be doing, but instead the skills, knowledge, and attitudes that the instructor will be attempting to produce in learners.

Instructional objectives are specific, measurable, short-term, observable student behaviors. They indicate the desirable knowledge, skills, or attitudes to be gained.

An instructional objective is the focal point of a lesson plan.

Objectives are the foundation upon which you can build lessons and assessments and instruction that you can prove meet your overall course or lesson goals.

## 3. An Aid to the Preparation of Instructional Objectives

Our belief that most of our readers are teachers who are concerned about preparing objectives that contain highly specific instructional intentions. Most instructional objective writers do not begin their work at this highly specific level, especially if they are preparing objectives for relatively large units of instruction (e.g., one week, one semester). Instead, most individuals begin instructional planning by stating general objectives that are desired for a given unit of instruction, and gradually become more specific as the unit takes shape.

Regardless of the initial level of desired specificity, a key question on which the instructional objective writer must focus is: what type of learning outcome do I want? If the traditional three-category scheme is used, then the type of learning outcome is classified primarily as cognitive, affective, or psychomotor. An alternative scheme would suggest that the learning outcome be labeled as an intellectual skill, information acquisition, cognitive strategy, motor skill, or attitude (see Gagné and Briggs, 1974; Gagné, 1977). The particular classification scheme used is probably less important than that some scheme be employed. Why? We have already suggested that a classification scheme (i.e., taxonomy) allows the instructional objective writer to

categorize a wide range of learning outcomes into more manageable clusters that share some common dimensions. This is important for several reasons.

According to Gagné (1977), classification of objectives is necessary for planning and sequencing of instruction. He convincingly argues that different internal and external conditions of learning are associated with various types of learning outcomes and, therefore, it is necessary to specify those various learning outcomes in order to plan instruction effectively. (We will examine this aspect of classifying objectives later in this chapter.)

As indicated in previous chapters, instructional objectives require teachers to specify learner performance in terms of observable, measurable behaviors. It is, of course, easier to meet this requirement for some learner behaviors than it is for others. For example, it probably would not be difficult to specify and measure the observable behaviors necessary to adjust a carburetor correctly, but it would be difficult to specify and measure the observable behaviors associated with an appreciation for classical music. Part of the ease or difficulty in specifying observable, measurable behaviors is related to the nature of the behavior with which you are concerned; that is, the kind of learning outcome desired (e.g., cognitive, affective, psychomotor). We already have suggested that behaviors in the cognitive and psychomotor domains often are more easily specified in observable, measurable terms than behaviors in the affective domain.

Another issue pertains to the type of behavior required within a particular domain rather than across the three domains. The issue is concerned with the level of the behaviors (in terms of complexity or difficulty) as classified within each behavioral taxonomy. In general, it is less difficult to specify performance in observable, measurable terms for lower-level behaviors (e.g., knowledge, awareness, physical set) than it is for higher-level behaviors (e.g., synthesis, characterization, complex overt response). Since most units of instruction focus on several learner behaviors ranging from the very simple to the very complex, it is important for teachers to specify instructional objectives for learning outcomes at all levels of difficulty.

There is a tendency for instructional objective writers to overemphasize objectives for the lower-level behaviors because it generally is less difficult to specify objectives for these levels than for higher levels. The oversimplification prompts some critics to argue that the use of instructional objectives results in trivial learner outcomes. However, an overemphasis on lowerlevel behaviors is not a fault of instructional objectives; rather, it is a fault of the person writing the objectives. An objective writer may avoid this pitfall by using a behavioral taxonomy when writing instructional objectives. The taxonomy will serve as a guide in determining 1) what is the appropriate level of behavior associated with a desired learning outcome and 2) the extent to which objectives for a unit of instruction reflect various levels of behavior. In essence, behavioral taxonomies serve to guide the objective writer in specifying the appropriate type (i.e., level) and variety of behaviors desired for given units of instruction.

For your convenience we have included a taxonomy for each of the traditional types of learning outcomes identified in education. At this point a careful examination of the taxonomies may be helpful. Following the taxonomies. suggestlens are given as to how they may be used to prepare and claSSIfy instructional objectives.

## 4. Kinds of Instructional Objectives

Instructional objectives are often classified according to the kind or level of learning that is required in order to reach them. There are numerous taxonomies of instructional objectives; the most common taxonomy was developed by Benjamin Bloom and his colleagues. The first level of the taxonomy divides objectives into three categories: cognitive, affective, and psychomotor.

Simply put, cognitive objectives focus on the mind; affective objectives focus on emotions or affect; and psychomotor objectives focus on the body.

Cognitive objectives call for outcomes of mental activity such as memorizing, reading, problem solving, analyzing, synthesizing, and drawing conclusions. Bloom and others further categorize cognitive objectives into various levels from thesimplest cognitive tasks to the most complex cognitive task. These categories can be helpful when trying to order objectives so they are sequentially appropriate. This helps to insure that prerequisite outcomes are accomplished first.

Affective objectives focus on emotions. Whenever a person seeks to learn to react in an appropriate way emotionally, there is some thinking going on. What distinguishes affective objectives from cognitive objectives is the fact that the goal of affective objectives is some kind of affective behavior or the product of an affect (e.g., an attitude). The goal of cognitive objectives, on the other hand, is some kind of cognitive response or the product of a cognitive response (e.g., a problem solved).

Psychomotor objectives focus on the body and the goal of these objectives is the control or manipulation of the muscular skeletal system or some part of it (e.g., dancing, writing, tumbling, passing a ball, and drawing). All skills requiring fine or gross motor coordination fall into the psychomotor category. To learn a motor skill requires some cognition. However, the ultimate goal is not the cognitive aspects of the skill such as memorizing the steps to take. The ultimate goal is the control of muscles or muscle groups.

Instructional objectives, including behavioral objectives, can be written for any of the domains of instruction:

**A. Cognitive Domain**

When developing the taxonomies, Bloom's committee found that the majority of objectives in the educational literature were related to the cognitive domain. The objectiVes classified as cognitive emphasize intellectual, learning, and problem-solving tasks. Behaviors in this domain range from performing simple recall tasks to placing previously learned material into new contexts and synthesizing bodies of learned information. The following abstract of the taxonomy of educational objectives for the cognitive domain indicates the levels of cognitive behaviors under which objectives may be classified, provides brief definitions for each level, and, in most cases, provides sample objectives for the specific level of behavior. (Additional taxonomies for the cognitiveodomain include: Gagné and Briggs, 1974; Merrill, 1971; Walbesser, 1965.)

In 1956, Benjamin Bloom with collaborators Max Englehart, Edward Furst, Walter Hill, and David Krathwohl published a framework for categorizing educational goals: Taxonomy of Educational Objectives . Familiarly known as Bloom's Taxonomy , this framework has been applied by generations of K-12 teachers and college instructors in their teaching.

The framework elaborated by Bloom and his collaborators consisted of six major categories: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The categories after Knowledge were presented as "skills and abilities," with the understanding that knowledge was the necessary precondition for putting these skills and abilities into practice.

While each category contained subcategories, all lying along a continuum from simple to complex and concrete to abstract, the taxonomy is popularly remembered according to the six main categories.

A Condensed Version of the Cognitive Domain of the Taxonomy of Educational Objectives1

**The Original Taxonomy (1956)**

The original cognitive domain was described and published in 1956. This work was written by Benjamin Bloom, Max Englehart, Edward Furst, Walter Hill, and David Krathwohl. As Bloom was the senior and primary author, his name was listed first on the publication. Thus, this seminal work became commonly known as Bloom's Taxonomy.

## Knowledge

**1.00 KNOWLEDGE**

Knowledge, as defined here, involves the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting. For measurement purposes, the recall situation involves little more than bringing to mind the appropriate material. Although some alteration of the material may be required, this is a relatively minor part of the task. The knowledge objectives emphasize most the psychological processes of remembering. The process of relating is also involved in that a knowledge test situation requires the organization and reorganization of a problem such that it will furnish the appropriate signals and cues for the information and knowledge the individual possesses. To use an analogy, if one thinks of the mind as a file, the problem in a knowledge test situation is that of finding in the problem or task the appro~ priate signals, cues, and clues that will most effectively bring out whatever knowledge is filed or stored.

**1.10 Knowledge of Specifics**

The recall of specific and isolable bits of information. The emphasis is on symbols with concrete 'referents. This material, which is at a very low level of abstraction, may be thought of as the elements from which more complex and abstract forms of knowledge are built.

**1.11 Knowledge of Terminology.**

Knowledge of the referents for specific symbols (verbal and nonverbal). This may include knowledge of the most generally accepted symbol referent, knowledge of the variety of symbols that may be used for a single referent, or knowledge of the referent most appropriate to a given use of a symbol.

To define technical terms by giving their attributes, properties, or relations.

Familiarity with the forms and conventions of the major types of works; e.g., verse, plays, scientific papers, etc.

To make pupils conscious of correct form and usage in speech and writing.

**1.22 Knowledge of Trends and Sequences.**

Knowledge of the processes, directions, and movements of phenomena with respect to time.

Understanding of the continuity and. development of American culture as exemplified in American life.

Knowledge of the basic trends underlying the development of public assistance programs.

**1.23 Knowledge of Classifications and Categories.**

Knowledge of the classes, sets, divisions, and arrangements that are regarded as fundamental for a given subject field, purpose, argument, or problem.

To recognize the area encompassed by various kinds of problems or materials.

Becoming familiar with a range of types of literature.

**1.24 Knowledge of Criteria.**

Knowledge of the criteria by which facts, principles, opinions, and conduct are tested or A judged.

Familiarity with criteria for judgment appropriate to the type of work and the purpose for which it is read.

Knowledge of criteria for the evaluation of recreational activities.

**1.25 Knowledge of Methodology.**

Knowledge of the methods of inquiry, techniques, and procedures employed in a particular subject field as well as those employed in investigating particular problems and phenomena. The emphasis here is on the individual's knowledge of the method rather than his ability to use the method.

Knowledge of scientific methods for evaluating health concepts.

The student shall know the methods of attack relevant to the kinds of problems of concern to the social sciences.

**1.30 Knowledge of the Universals and Abstractions in a Field.**

Knowledge of the major schemes and patterns by Which phenomena and ideas are organized. These are the large structures, theories, and generalizations that dominate a subject field or that are quite generally used in studying phenomena or solving problems. These are at the highest levels of abstraction and complexity.

**1.31 Knowledge of Principles and Generalizations.**

Knowledge of particular abstractions that summarize observations of phenomena.

These are the abstractions that are of value in explaining, describing, predicting, or determining the most appropriate and relevant action or direction to be taken.

Knowledge of the important principles by which our experience with biological phenomena is summarized.

The recall of major generalizations about particular cultures.

**1.32 Knowledge of Theories and Structures.**

Knowledge of the body of principles and generalizations together with their interrelations that present a clear, rounded, and systematic view of a complex phenomenon, problem, or field. These are the most abstract formulations, and they can be used to show the interrelation and organization of a great range of specifics.

The recall of major theories about particular cultures. knowledge of arelatively complete formulation of evolution.

Abilities and skills refer to organized modes of operation and generalized techniques for dealing with materials and prob. lems. The materials and problems may be of such a nature that little or no specialized and technical information is required, Such information as is required can be assumed to be part of the individual's general fund of knowledge. Other problems may require specialized and technical information at a rather high level such that specific knowledge and skill in dealing with the problem and the materials are required. The abilities and skills objectives emphasize the mental processes of organizing and reorganizing material to achieve a particular purpose. The materials may be given or remembered.

**2.00 Comprehension**

This represents the lowest level of understanding. It refers to a type of understanding or apprehension such that the individual knows what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material or seeing its fullest implications.

**2.10 Translation**

Comprehension as evidenced by the care and accuracy With which the communication is paraphrased or rendered from one language or form of communication to another. Translation is judged on the basis of faithfulness and accuracy;that is, on the extent to which the material in the original communication is preserved although the form of the communication has been altered.

The ability to understand nonliteral statements (metaphor, sym bolism, irony, exaggeration).

Skill in translating mathematical verbal material into symbolic statements and vice versa.

**2.20 Interpretation**

The explanation or summarization of a communication. Whereas translation involves an objective part-for-part rendering of a communication, interpretation involves a reordering, rearrangement, or new view of the material.

The ability to grasp the thought of the work as a whole at any desired level of generality.

The ability to interpret various types of social data.

**2.30 Extrapolation**

The extension of trends or tendencies beyond the given data to determine implications, consequences, corollaries, effects, etc., in accordance with the conditions described in the original communication.

The ability to deal with the conclusions of a work in terms of the immediate inference made from the explicit statements.

Skill in predicting continuation of trends.

**3 .00 Application**

The use of abstractions in particular and concrete situations. The abstractions may be in the form of general ideas, rules of procedures, or generalized methods. The abstractions may also be technical principles, ideas, and theories that must be remembered and applied.

Application to the phenomena discussed in one paper of the scientific terms or concepts used in other papers.

The ability to predict the probable effect of a change in a factor on a biological situation previously at equilibrium.

**4.00 Analysis**

The breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between the ideas expressed are made explicit. Such analyses are intended to clarify the communication, to indicate how the communication is organized, and the way in Which it manages to convey its effects, as well as its basis and arrangement.

**4.10 Analysis of Elements Identification of the elements included in a communication.**

The ability to recognize unstated assumptions. Skill in distinguishing facts from hypotheses.

**4.20 Analysis of Relationships**

The connections and interactions between elements and Parts of a communication.

Ability to check the consistency of hypotheses with given information and assumptions.

Skill in comprehending the interrelationships among the ideas in a passage.

**4.30 Analysis of Organizational Principles**

The ozganization, systematic arrangement, and structure that hold the communication together. This includes the "ex. plicit" as well as "implicit" structure. It includes the bases, necessary arrangement, and mechanics that make the com. munication a unit.

The ability to recognize form and pattern in literary or artistic works as a means of understanding their meaning.

Ability to recognize the general techniques used in persuasive materials such as advertising, propaganda, etc.

**5.00 Synthesis**

The putting together of elements and parts so as to form a whole. This involves the process of working With pieces, parts, elements, etc., and arranging and combining them in such a way as to constitute a pattern or structure not clearly there before.

**5.10 Production of a Unique Communication**

The development of a communication in which the writer or speaker attempts to convey ideas, feelings, and/or experiences to others.

Skill in writing, using an excellent organization of ideas and statements. Ability to tell a personal experience effectively.

**5.20 Production of a Plan or Proposed Set of Operations**

The development of a plan of work or the proposal of a plan of operations. The plan should satisfy requirements of the task that may be given to the student or that he may develop for himself.

Ability to propose ways of testing hypotheses.

Ability to plan a unit of instruction for a particular teaching situation.

**5.30 Derivation of a Set of Abstract Relations**

The development of a set of abstract relations either to assify or explain particular data or phenomena, or the deducm of propositions and relations from a set of basic proposi115 or symbolic representations.

Ability to formulate appropriate hypotheses based upon an analysis of factors involved, and to modify such hypotheses in the light of new factors and considerations.

Ability to make mathematical discoveries and generalizations.

**6.00 Evaluation**

Judgments about the value of material and methods for given purposes. Quantitative and qualitative judgments about the extent to which material and methods satisfy criteria. Use of a standard of appraisal. The criteria may be those determined by the student or those given to him.

**6.10 Judgments in Terms of Internal Evidence**

Evaluation of the accuracy of a communication from such evidence as logical accuracy, consistency, and other internal criteria.

Judging by internal standards, the ability to assess general probability of accuracy in reporting facts from the care given to exactness of statement, documentation, proof, etc.

The ability to indicate logical fallacies in arguments.

**6.20 Judgments in Terms of External Criteria Evaluation of material with reference to selected or remembered criteria.**

The comparison of major theories, generalizations, and facts about particular cultures.

Judging by external standards, the ability to compare a work with the highest known standards in its field-especially with other works of recognized excellence.

**7.00 The Revised Taxonomy (2001)**

A group of cognitive psychologists, curriculum theorists and instructional researchers, and testing and assessment specialists published in 2001 a revision of Bloom's Taxonomy with the title A Taxonomy for Teaching, Learning, and Assessment. This title draws attention away from the somewhat static notion of "educational objectives" (in Bloom's original title) and points to a more dynamic conception of classification.

There are six levels of cognitive learning according to the revised version of Bloom's Taxonomy. Each level is conceptually different. The six levels are remembering, understanding, applying, analyzing, evaluating, and creating.

**Using Bloom's Revised Taxonomy in Assessment**

These levels can be helpful in developing learning outcomes because certain verbs are particularly appropriate at each level and not appropriate at other levels (though some verbs are useful at multiple levels).

A student might list presidents or proteins or participles to demonstrate that they remember something they learned, but generating a list does not demonstrate (for example) that the student is capable of evaluating the contribution of multiple presidents to American politics or explaining protein folding or distinguishing between active and passive participles.

**7.10 Remember**

**Definition:** retrieve, recall, or recognize relevant knowledge from long-term memory (e.g., recall dates of important events in U.S. history, remember the components of a bacterial cell). Appropriate learning outcome verbs for this level include: cite, define, describe, identify, label, list, match, name, outline, quote, recall, report, reproduce, retrieve, show, state, tabulate, and tell.

**7.20 Understand**

**Definition:** demonstrate comprehension through one or more forms of explanation (e.g., classify a mental illness, compare ritual practices in two different religions). Appropriate learning outcome verbs for this level include: abstract, arrange, articulate, associate, categorize, clarify, classify, compare, compute, conclude, contrast, defend, diagram, differentiate, discuss, distinguish, estimate, exemplify, explain, extend, extrapolate, generalize, give examples of, illustrate, infer, interpolate, interpret, match, outline, paraphrase, predict, rearrange, reorder, rephrase, represent, restate, summarize, transform, and translate.

**7.30 Apply**

**Definition:** use information or a skill in a new situation (e.g., use Newton's second law to solve a problem for which it is appropriate, carry out a multivariate. statistical analysis using a data set not previously encountered). Appropriate learning outcome verbs for this level include: apply, calculate, carry out, classify, complete, compute, demonstrate, dramatize, employ, examine, execute, experiment, generalize, illustrate, implement, infer, interpret, manipulate, modify, operate, organize, outline, predict, solve, transfer, translate, and use .

**7.40 Analyze**

**Definition:** break material into its constituent parts and determine how the parts relate to one another and/or to.an overall structure or purpose (e.g., analyze the relationship between different flora and fauna in an ecological setting; analyze the relationship between different characters in a play; analyze the relationship. between different institutions in a society). Appropriate learning outcome verbs for this level include: analyze,. arrange, break down, categorize, classify, compare,. connect, contrast, deconstruct, detect, diagram,. differentiate, discriminate, distinguish, divide, explain,. identify, integrate, inventory, order, organize, relate, separate, and structure.

**7.50 Evaluate**

**Definition:** make judgments based on criteria and standards (e.g., detect inconsistencies or fallacies within a process or product, determine whether a scientist's conclusions follow from observed data, judge which of two methods is the way to solve a given problem, determine the quality of a product based on disciplinary criteria). Appropriate learning outcome verbs for this level include: appraise, apprise, argue, assess, compare, conclude, consider, contrast, convince, criticize, critique, decide, determine, discriminate, evaluate, grade, judge, justify, measure, rank, rate, recommend, review, score, select, standardize, support, test, and validate.

**7.60 Create**

Definitions: put elements together to form a new. coherent or functional whole; reorganize elements into a new pattern or structure (design a new set for a theater production, write a thesis, develop an alternative hypothesis based on criteria, invent a product, compose a piece of music, write a play). Appropriate learning. outcome verbs for this level include: arrange, assemble,. build, collect, combine, compile, compose, constitute, construct, create, design, develop, devise, formulate, generate, hypothesize, integrate, invent, make, manage, modify, organize, perform, plan, prepare, produce, propose, rearrange, reconstruct, reorganize, revise, rewrite, specify, synthesize, and write.

**Why Use bloom's taxonomy?**

The authors of the revised taxonomy also suggest a multi-layered answer to this question, to which the author of this teaching guide has added some clarifying points:

1. Objectives (learning goals) are important to establish in a pedagogical interchange so that teachers and students alike understand the purpose of that interchange.
2. Organizing objectives helps to clarify objectives for themselves and for students.
3. Having an organized set of objectives helps teachers to: “plan and deliver appropriate instruction”; “design valid assessment tasks and strategies”;and “ensure that instruction and assessment are aligned with the objectives.”
4. There can be instructional objectives for a degree program, a course, or even a module or learning object within a course.

**B. Affective Domain**

The second largest number of objectives found in the educational literature could be placed into one of the levels of the affective domain. The taxonomy committee found it more difficult to determine a hierarchal order of affective behaviors. The affective domain contains behaviors and objectives that have some emotional overtone. It encompasses likes and dislikes, attitudes, values, and beliefs. The following is an abstract 01‘ the taxonomy of educational objectives for the affective domain.

A Condensed Version of the Affective Domain of the Taxonomy of Educational Objectives

**1.0 Receiving (Attending**)

At this level we are concerned that the learner be sensitized to the existence of certain phenomena and stimuli, that is, be willing to receive or to attend to them. This is clearly the first and crucial step if the learner is to be properly oriented to learn what the teacher intends to be learned. To indicate that this is the bottom rung of the ladder, however, is not at all to imply that the teacher is starting de novo. Because of previous experience (formal or informal), the student brings to each situation a point of view or set that may facilitate or hinder recognition of the phenomena to which the teacher 13 trying to provide sensitivity.

The category of Receiving has been divided into three subcategories to indicate three different levels of attending to phenomena. While the division points between the subcategories are arbitrary, the subcategories do represent a continuum. From an extremely passive position or role on the part of the learner, where the sole responsibility for the evocation of the behavior rests with the teacher-that is, the responsibility entails “capturing” the student’s attention-the continuum extends to a point at which the learner directs attention, at least at a semiconscious level, toward the preferred stimuli.

**1.1 Awareness**

Awareness is almost a cognitive behavior. But unlike Knowledge, the lowest level of the cognitive domain, we are not so much concerned with a memory of, or ability to recall, an item or fact as we are that, given appropriate opportunity, the learner will merely be conscious of something-that account be taken of. a situation, phenomenon, object, or state of affairs. Like Knowledge it does imply an assessment of the qualities

or nature of the stimulus, but unlike Knowledge it does not necessarily imply attention. There can be simple awareness without specific discrimination or recognition of the objective characteristics of the object, even though these characteristics must be deemed to have an effect. The individual may not be able to verbalize the aspects of the stimulus that cause the awareness.

Develops awareness of aesthetic factors in dress, furnishings, architecture, city design, good art, and the like.

Develops some consciousness of color, form, arrangement, and design in the objects and structures in the environment and in' descriptive or symbolic representations of people, things, and situations.

**1.2 Willingness to Receive**

In this category we have come a step up the ladder but are still dealing with what appears to be cognitive behavior. At a minimum level, we are here describing the behavior of being willing to tolerate a given stimulus, not to avoid it. Like Awareness, it involves a neutrality or suspended judgment toward the stimulus. At this level of the continuum the teacher is not concerned that the student seek it out, nor even, perhaps, that in an environment crowded with many other stimuli the learner will necessarily attend to the stimulus. Rather, at worst, given the opportunity to attend in a field with relatively few competing stimuli, the learner is not actively seeking to avoid it. At best, one is willing to take notice of the phenomenon and give it attention.

Attends (carefully) when others speak-in direct conversation, on the telephone, in audiences.

Appreciation (tolerance) of cultural patterns exhibited by individuals from other groups-religious, social, political, economic, national, etc.

Increase in sensitivity to human need and pressing social problems.

1.3 Controlled or Selected Attention At a somewhat higher level we are concerned with a new phenomenon, the differentiation of a given stimulus into figure and ground at a conscious or perhaps semiconscious level-the differentiation of aspects of a stimulus that is perceived as clearly marked off from adjacent impressions. The perception is still without tension or assessment, and the student may not know the technical terms of symbols with which to describe it correctly or precisely to others. In some instances it may refer not so much to the selectivity of attention as to the control of attention, so that when certain stimuli are present they will be attended to. There is an element of the learner's controlling the attention here, so that the favored stimulus is selected and attended to despite competing and distracting stimuli.

Listens to music with some discrimination as to its mood and mean~ ing and with some recognition of the contributions of various musical elements and instruments to the total effect.

Alertness toward human values and judgments on life as they are recorded in literature.

**2.0 Responding**

At this level we are concerned with responses that go beyond merely attending to the phenomenon. The student is sufficiently motivated as to not just be 1.2 Willing to attend, but perhaps to be actively attending. As a first stage in 3 "learning by doing" process the student is becoming committed in some small measure to the phenomena involved. This is a very low level of commitment, and we would not say at this level that this was "a personal value" or that one had "such and such an attitude." These terms belong to the next higher level that we describe. But we could say that one is doing something with or about the phenomenon besides merely perceiving it, as would be true at the next level below this of 1.3 Controlled or selected attention.

This is the category that many teachers will find best describes their "interes " objectives. Most commonly we use the term to indicate the desire that a child become sufficiently involved in or committed to a subject, phenomenon, or activity so as to seek it out and gain satisfaction from working with it or engaging in it.

2.1 Acquiescence in Responding We might use the word "obedience" or "compliance" to describe this behavior. As both of these terms indicate, there is a passiveness so far as the initiation of the behavior is concerned, and the stimulus calling for this behavior is not subtle. Compliance is perhaps a better term than obedience, since there is more of the element of reaction to a suggestion and less of the implication of resistance or yielding unwillingly. The student makes the response, without fully accepting the necessity for doing so.

Willingness to comply with health regulations. Obeys the playground regulations.

**2.2 Willingness to Respond**

The key to this level is in the term "willingness," with its implication of capacity for voluntary activity. There is the implication that the learner is sufficiently committed to exhibiting the behavior not just because of a fear of punishment, but "on one's own" or voluntarily. It may help to note that the element of resistance or of yielding unwillingly, which is possibly present at the previous level, 'is here replaced with consent or proceeding from one 's own choice.

Acquaints oneself with significant current issues in international, political, social, and economic affairs through voluntary reading and discussion. '

Acceptance of responsibility for personal health and for the protection of the health of others. '

**2.3 Satisfaction in Response**

The additional element in the step beyond the Willingness to respond level, the consent, the assent to responding, or the voluntary response, is that the behavior is accompanied by a feeling of satisfaction, an emotional response, generally of pleasure, zest, or enjoyment. The location of this category in the hierarchy has given us a great deal of difficulty. Just where in the process of internalization that attachment of an emo~ tional response, kick, or thrill to a behavior occurs has been hard to determine. For that matter there is some uncertainty as to whether the level of internalization at which it occurs may not depend on the particular behavior. We have even questioned whether it should be a category. If our structure is to be a hierarchy, then each category should include the behavior in the next level below it. The emotional component appears gradually through the range of internalization categories. The attempt to specify a given position in the hierarchy as the one at which the emotional component is added is doomed to failure.

The category is arbitrarily placed at this point in the hierarchy where it seems to appear most frequently and where it is cited as, or appears to be, an important component of the objectives at this level on the continuum. The category's inclusion at this point serves the pragmatic purpose of reminding us of the presence of the emotional component and its value in the building of affective behaviors. But it should not be thought of as appearing and occurring at this one point in the continuum and thus destroying the hierarchy that we are attempting to build.

Enjoyment of self-expression in music and in arts and crafts as another means of personal enrichment.

Finds pleasure in reading for recreation.

Takes pleasure in conversing with many different kinds of people.

**3.0 Valuing**

This is the only category headed by a term that is in common use in the expression of 'objectives by teachers. Further, it is employed in its usual sense: that a thing, phenomenon, or behavior has worth. This abstract concept of. worth is in part a result of the individual's own valuing or assessment, but it is much more a social product that has been slowly internalized or accepted and has come to be used by the student as a personal criterion of worth.

Behavior categorized at this level is sufficiently consistent and stable to have taken on the characteristics of a belief or an attitude. The learner displays this behavior with sufficient consistency in appropriate situations so as to be perceived as bolding a value. At this level we are not concerned with the relationships among values but rather with the internalization of a set of specified, ideal values. Viewed from another standpoint, the objectives classified here are the prime stuff from which the conscience of the individual is developed into active control of behavior.

This category will be found appropriate for many objectives that use the term "attitude" (as well as, of course, "value").

An important element of behavior characterized by Valuing is that it is motivated, not by the desire to comply or obey, but by the individual's commitment to the underlying value guiding the behavior.

**3.1 Acceptance of a Value**

At this level we are concerned with the ascribing of worth to a phenomenon, behavior, object, etc. The term "belief," which is defined as "the emotional acceptance of a proposition or doctrine upon what one implicitly considers adequate ground" (English and English, 1958, p. 64), describes quite well what may be thought of as the dominant characteristic here. Beliefs have varying degrees of certitude. At this lowest level of

Valuing we are concerned with the lowest levels of certainty; that is, there is more a readiness to reevaluate one's position than at the higher levels. It is a position that is somewhat tentative.

One of the distinguishing characteristics of this behavior is consistency of response to the class of objects, phenomena, etc., with which the belief or attitude is identified. It is consistent enough so that the person is perceived by others as holding the belief or value. At the level we are describing here, one is both sufficiently consistent that others can identify the value and sufficiently committed so as to be willing to be so identified.

Continuing desire to develop the ability to speak and write effectively. Grows in own sense of kinship with human beings of all nations.

**3.2 Preference for a Value**

The provision for this subdivision arose out of a feeling that there were objectives that expressed a level of internalization between the mere acceptance of a value and commitment or conviction in the usual connotation of deep involvement in an area. Behavior at this level implies not just the acceptance of a value to the point of being willing to be identified with it, but the individual is sufficiently committed to the value to pursue it, to seek it out, and to want it.

Assumes responsibility for drawing reticent members of a group into conversation.

Deliberately examines a variety of viewpoints on controversial issues with a view to forming opinions about them.

Actively participates in arranging for the showing of contemporary artistic efforts.

**3.3 Commitment**

Belief at this level involves a high degree of certainty. The ideas of "conviction" and "certainty beyond a shadow of a doubt" help to convey further the level of behavior intended. In some instances this may border on faith, in the sense of it being a firm emotional acceptance of a belief upon admittedly non-rational grounds. Loyalty to a position, group, or cause would also be classified here.

The person who displays behavior at this level is clearly perceived as holding the value. One acts to further the thing valued in some way, to extend the possibility of developing it, to deepen personal involvement with it and With the things representing it. One tries to convince others and seeks converts to the cause. There is a tension here that needs to be satisfied; action is the result of an aroused need or drive. There is a real motivation to act out the behavior.

Devotion to those ideas and ideals that are the foundations of democracy.

Faith in the power of reason and in methods of experiment and discussion.

**4.0 Organization**

As the learner successively internalizes values, he or she encounters situations for Which more than one value is relevant. Thus necessity arises for: a) the organization of the values into a system, b) the determination of the interrelationships among them, and c) the establishment of the dominant and pervasive ones. Such a system is built gradually, subject to change as new values are incorporated. This category is intended as the proper classification for objectives that describe the beginnings of the building of a value system. It is subdivided into two levels, since a prerequisite to interrelating is the conceptualization of the value in a form that permits organization. Conceptualization forms the first subdivision in the organization process, Organization of a value system the second.

While the order of the two subcategories seems appropriate enough With reference to one another, it is not so certain that 4.1 Conceptualization of a value is properly placed as the next level above 3.3 Commitment. Conceptualization undoubtedly begins at an earlier level for some objectives. Like 2.3 Satisfaction in response, it is doubtful that a single completely satisfactory location for this category can be found. Positioning it before 4.2 Organization of a value system appropriately indicates a prerequisite of such a system. It also calls attention to a component of affective growth that occurs at least by this point on the continuum but may begin earlier.

**4.1 Conceptualization of a Value**

In the previous category, 3.0 Valuing, we noted that consistency and stability are integral characteristics of the particular value or belief. At this level (4.1) the quality of abstraction or conceptualization is added. This permits the individual to see how the value relates to those already held or to new ones that are coming to be held.

Conceptualization will be abstract, and in this sense it will be symbolic. But the symbols need not be verbal symbols. Whether conceptualization first appears at this point on the affective continuum is a moot point, as noted above.

Attempts to identify the characteristics of an admired art object.

Forms judgments as to the responsibility of society for conserving human and material resources.

**4.2 Organization of a Value System**

Objectives properly classified here are those that require the learner to bring together a complex of values, possibly disparate values, and to bring these into an ordered relationship with one another. Ideally, the ordered relationship will be one that is harmonious and internally consistent. This is, of course, the goal of such objectives, which seek to have the student formulate a philosophy of life. In actuality, the integration may be something less than entirely harmonious. More likely the relationship is better described as a kind of dynamic equilibrium that is, in part, dependent upon those portions of the environment that are salient at any point in time. In many instances the organization of values may result in their synthesis into a new value or value complex of a higher order.

Weighs alternative social policies and practices against the standards of the public welfare rather than the advantage of specialized and narrow interest groups.

Develops a plan for regulating rest in accordance with the demands of his or her activities.

**5.0 Characterization by a Value or Value Complex**

At this level of internalization the values already have a place in the individual's value hierarchy; are organized into some . kind of internally consistent system; have controlled the behavior of the individual for a sufficient time that adaptation has been made to behaving this way; and an evocation of the behavior no longer arouses emotion or affect except when the individual is threatened or challenged.

The individual acts consistently in accordance with the values internalized at this level, and our concern is to indicate two things: a) the generalization of this control to so much of the individual's behavior that one can describe and characterize the person by these pervasive controlling tendencies, and b) the integration of these beliefs, ideas, and attitudes into a total philosophy or world view. These two aspects constitute the subcategories.

**5.1 Generalized Set**

The generalized set is that which gives an internal consistency to the system of attitudes and values at any particular moment. -It is selective responding at a very high level. It is sometimes spoken of as a determining tendency, an orientation toward phenomena, or a predisposition to act in a certain way. The generalized set is a response to highly generalized phenomena. It is a persistent and consistent response to a family of related situations or objects. It may often be an unconscious set that guides action without conscious forethought. The generalized set may be thought of as closely related to the idea of an attitude cluster, where the commonality is based on behavioral characteristics rather than the subject or object of the attitude. A generalized set is a basic orientation that enables the individual to reduce and order the complex world within one's environment and to act consistently and effectively in it.

Readiness to revise judgments and to change behavior in the light of evidence.

Judges problems and issues in terms of situations, issues, purposes, and consequences involved rather than in terms of fixed, dogmatic precepts or emotional wishful thinking.

**5.2 Characterization**

This, the peak of the internalization process, includes those objectives that are broadest with respect both to the phenomena covered and to the range of behavior that they comprise. Thus, here are found those objectives that concern one's view of the universe, one's philosophy of life, one's Weltanschauung-a value system having as its object the whole of what is known or knowable.

Objectives categorized here are more than generalized sets in the sense that they involve a greater inclusiveness and, within the group of attitudes, behaviors, beliefs, or ideas, an emphasis on internal consistency. Though this internal consistency may not always be exhibited behaviorally by the students toward whom the objective is directed, since we are categorizing teachers' objectives, this consistency feature will always be a component of Characterization objectives.

As the title of the category implies, these objectives are so encompassing that they tend to characterize the individual almost completely.

Develops for regulation of one's personal and civic life a code of behavior based on ethical principles consistent with democratic ideals. Develops a consistent philosophy of life.

**C. Psychomotor Domain**

Bloom's committee did not develop a taxonomy for the psychomotor domain. Moreover, until recently little work had been done in this area. Below is an example of one of the more recent developments in the construction of a taxonomy for behaviors in the psychomotor domain.

The Classification of Educational Objectives in the Psychomotor Domain

The major organizational principle operating is that of com. plexity with attention to the sequence involved in the per. formance of a motor act. That is, objectives that would be classified at the lower levels are less complex in nature than re. lated objectives at upper levels. In general, they are easier to carry out. And, those at the upper levels build on those at the lower. Harrow's [1972] taxonomy for the psychomotor domain is useful for classifying when a variety of skills need to be learned and mastered.)

**1 .00 Perception**

This is an essential first step in performing a motor act. It is the process of becoming aware of ébjects, qualities, or relations by way of the sense organs. It is a necessary but not sufficient condition for motor activity. It is basic in the situation-interpretation-action chain leading to motor activity. The category of perception has been divided into three subcate gories indicating three different levels of the perception process. 'This level is a parallel of the first category, receiving or attending, in the affective domain.

**1.10 Sensory Stimulation Impingement of a stimulus upon one or more of the sense organs.**
**1.11 Auditory. Hearing or the sense of organs of hearing.**
**1.12 Visual. Concerned with the mental pictures or mages obtained through the eyes.**
**1.13 Tactile. Pertaining to the sense of touch.**
**1.14 Taste. Determine the relish or flavor 'by taking a portion into the mouth.**
**1.15 Smell. To perceive by excitation of the olfactory nerves.**
**1.16 Kinesthetic. The muscle sense; pertaining to sensitivity from activation of receptors in muscles, tendons, and joints**
**1.10 Sensory Stimulation-Illustrative educational objectives.**

Sensitivity to auditory cues in playing a musical instrument as a member of a group.
Awareness of difference in "hand" of various fabrics.
Sensitivity to flavors in seasoning food.

The preceding categories are not presented in any special order of importance, although, in Western cultures, the visual cues are said to have dominance, Where as in some cultures, the auditory and tactile cues may preempt the high position we give the visual. Probably no sensible ordering of these is possible at this time. It should also be pointed out that "the cues that guide action may change for a particular motor activity as learning progresses (e.g., kinesthetic cues replacing visual cues)."

## 1.20 Cue Selection

Deciding to What cues one must respond in order to satisfy the particular requirements of task performance. This involves identification of the one or cues and associating them with the task to be performed.

It may involve grouping of cues in terms of past experience and knowledge. Cues relevant to the situation are selected as a guide to action; irrelevant cues are ignored or discarded.

**1.20 Cue Selection-Illustrative educational objectives.**

Recognition of operating difficulties with machinery through the sound of the machine in operation.

Sensing where the needle should be set in beginning machine stitching. Recognizing factors to take in to account in batting in a softball game.

**1.30 Translation**

Relating of perception to action in performing a motor t. This is the mental process of determining the meaning of .» cues received for action. It involves symbolic translation, t is, having an image or being reminded of something,

"having an idea," as a result of cues received. It may involve in. sight that is essential in solving a problem through perceiving the relationships essential to solution. Sensory translation is an aspect of this level. It involves "feedback," that is, knowledge of the effects of the process. Translation is a continuous part of the motor act being performed.

**1.30 Translation-Illustrative educational objectives.**

Ability to relate music to dance form. Ability to follow a recipe in preparing food.

Knowledge of the "feel" of operating a sewing machine successfully and use of this knowledge as a guide in stitching.

**2.00 SET**

Set is a preparatory adjustment of readiness for a particular kind of action or experience. Three aspects of set have been identitied: mental, physical, and emotional.

**2.10 Mental Set**

Readiness, in the mental sense, to perform a certain motor act. This involves, as prerequisite, the level of perception and its subcategories. Discrimination, that is, using judgment in making distinctions, is an aspect of mental set.

**2.10 Mental set-Illustrative educational objectives.**

Knowledge of steps in setting the table.

Knowledge of tools appropriate for performance of various sewing operations.

**2.20 Physical Set**

Readiness in the sense of having made the anatomical adjustments necessary for a motor act to be performed. Readiness, in the physical sense, involves receptor set, that is, sensory attending, or focusing the attention of the needed sensory organs and postural set, or positioning of the body.

**2.20 Physical set-Illustrative educational objectives.**

Achievement of bodily stance preparatory to bowling.

Positioning of hands preparatory to typing.

**2.30 Emotional Set**

Readiness in terms of attitudes favorable to the motor acts taking place. Willingness to respond is implied.

**2.30 Emotional set-Illustrative educational objective**s.

Disposition to perform sewing machine operation to best of ability. Desire to operate a production drill press with skill.

**3.00 Guided Response**

This is an early step in the development of skill. Emphasis here is upon the abilities that are components of the more complex skill. Guided response is the overt behavioral act of an individual under the guidance of the instructor or in response to self-evaluation where the student has a model or criteria against which to judge personal performance. Prerequisites to performance of the act are readiness to respond, in terms of set to produce the overt behavioral act and selection of the appropriate response. Selection of response may be defined as deciding what response must be made in order to satisfy the requirements of task performance. There appear to be two major subcategories, imitation and trial and error.

**3.10 Imitation**

**Imitation is the execution of an act as a direct response to the perception of another person performing the act.**

**3.10 Imitation-Illustrative educational objectives.**

Imitation of the process of stay-stitching the curved neck edge of a bodice.
Performing a dance step as demonstrated.
Debeaking a chick in the manner demonstrated.

**3.20 Trial and Error**

Trying various responses, usually with some rationale for each response, until an appropriate response is achieved. The appropriate response is one that meets the requirements of task performance, that is, "gets the job done" or does it more efficiently. This level may be defined as multiple-response learning in which the proper response is selected out of varied behaviors, possibly through the influence of reward and punishment.

**3.20 Trial and error-Illustrative educational objectives.**

Discovering the most efficient method of ironing a blouse through trial of various procedures.
Determining the sequence for cleaning a room through trial of several patterns.

**4.00 Mechanism**

Learned response has become habitual. At this level the learner has achieved a certain confidence and degree of profi~ ciency in the performance of the act. The act is a part of one's repertoire of possible responses to stimuli and the demands of situations where the response is an appropriate one. The response may be more complex than at the preceding level; it may involve some patterning in carrying out the task.

**4.00 Mechanism-Illustrative educational objectives.**

Ability. to perform a hand-hemming operation. Ability to mix ingredients for butter cake. Ability to pollinate an oat flower.

**5.00 Complex Overt Response**

At this level the individual can perform a motor act that is considered complex because of the movement pattern required. At this level skill has been attained. The act can be carried out smoothly and efficiently, that is, With minimum expenditure of time and energy. There are two subcategories: resolution of uncertainty and automatic performance.

**5.10 Resolution of Uncertainty**

The act is performed without hesitation of the individual to get a mental picture of task sequence. That is, one knows the sequence required and so proceeds With confidence. The act is here defined as complex in nature.

**5.10 Resolution of uncertainty-Illustrative educational objectives.**

Skill in operating a milling machine. Skill in setting up and operating a production band saw.

**5.20 Automatic Performance At this level the individual can perform a finely coordinated motor skill with a great deal of ease and muscle control.**

**5.20 Automatic performance-Illustrative educational objectives.**

Skill in performing basic steps of national folk dances. Skill in tailoring a suit. Skill in performing on the violin.

**6.00 ADAPTATION**

Altering motor activities to meet the demands of new problematic situations requiring a physical response.

**6.00 Adaptation-Illustrative educational objectives**.

Developing a modern dance composition through adapting known abilities and skills in dance.

**7.00 ORIGINATION**

Creating new motor acts or ways of manipulating materials out of understandings, abilities, and skills developed in the psychomotor area.

**7.00 Origination-Illustrative educational objectives.**

Creation of a modern dance. Creation of a new game requiring psychomotor response.

## Implementing Behavioral Taxonomies

Now that we have examined these taxonomies, you should practice using them to classify instructional objectives. You might try the following strategy in learning how to employ the taxonomies. First, turn to Appendix A in the text. There you will find several instructional objectives from various subject areas. Select several of the objectives listed and try to classify them using the three taxonomies. Remember that in doing so you must make two decisions: 1) the kind of learning outcome described in the objective (i.e., cognitive, affective, psychomotor), and 2) the level of the behavior implied by the objective within a particular domain.

When you have had sufficient practice in making these discriminations you may want to expand your skills in a slightly different direction. Select a unit of instruction from your own subject area. Develop a list of general objectives that describe the behaviors you want learners to demonstrate during and after the instructional unit. Now, examine each objective carefully and use the taxonomies to classify each one as you did for the objectives in Appendix A. You might use the synthesized version of the taxonomies contained in Appendix C as a flow chart for recording how each objective is classified.

How does your instructional unit look? Do you have an adequate sampling of desired types of learning outcomes or does your flow chart appear to be leaning toward a particular type of outcome? Note that the latter finding is not necessarily undesirable. It may be that you have selected a unit of instruction that is predominantly in one domain of behavior. In any case, the classification of objectives should reveal the relative distribution of the kind of learning outcomes dealt with in your objectives. This information should be valuable to you in assessing the extent to which current unit objectives reflect the kind of learner outcomes that you want students to achieve.

Now, examine the distribution of objectives within a particular domain. Have you focused your objectives on lower-level learning outcomes or do you have a relatively even distribution across various levels? Again, there is no inherent positive/negative assessment that can be made on the basis of the distribution alone. You must assess the distribution in light of what are the important types (i.e., levels) of learning outcomes relevant to your particular instructional unit. It may be that the particular unit selected is one that should focus on baseline, low-level behaviors as opposed to more complex forms of behavior. On the other hand, such a distribution for another kind of unit may suggest that you have devoted too much time to low-level behaviors and need to develop objectives that describe more complex behaviors.

Often teachers find that an analysis of learning outcomes is quite revealing. Sometimes we assume that our approach to a particular instructional unit is accomplishing desired goals, when in fact we are not achieving the level of sophistication that we really want in our students. An analysis of learning outcomes in the manner suggested can provide valuable information about the kind and level of learning outcomes in any size unit of instruction.

### An Aid to the Sequencing of Instructional Objectives

So far in this chapter we have emphasized the role of behavioral taxonomies in aiding one to write and classify instructional objectives. Among the advantages of classifying objectives is that it helps to identify the general structure of a given unit of instruction in terms of the kinds and levels of relevant learning outcomes stated in objectives. While this is an important and useful phase in the employment of instructional objectives, there are additional aspects related to their implementation that should be considered.

Once objectives are written and classified, they must be sequenced in a manner to enhance learning. A careful taxonomic classification of instructional objectives may provide excellent direction for how they may be sequenced. The classification of objectives according to behavioral taxonomies provides a general overview of the kinds and types of learning outcomes that are desired for a particular unit of instruction. While this is useful, more specific information is needed about desired learning outcomes in order to plan and sequence instruction.

For example, consider the teacher who is in the process of developing a unit of instruction on public speaking. In following our suggestions, the teacher has listed the general objectives desirable for learners to achieve during and at the end of the unit of instruction. In addition, these objectives have been classified according to some category scheme, namely the traditional three-category system. The classification of objectives in the cognitive domain looks something like this:

**General Unit Objective:** *Students should be able to speak effectively in public.*
Instructional Objectives for the Cognitive Domain

| **Taxonomy Classification** | **Objective** |
|---|---|
| Knowledge: | |
| of terminology (1.11) | Able to distinguish among various types of speeches and their function.<br>Able to distinguish among various parts of a speech and their function.<br>Able to recall specific facts for use in speech development. |
| of conventions (1.21) | Able to use accepted forms of language in a speech. Able to identify standard ways of organizing speeches.<br>Able to select an appropriate form of visual aid. |
| of criteria (1.24) | Able to identify the major criteria used by professionals in assessing a speech.<br>Able to identify criteria for testing the validity of evidence. |
| of methodology (1.25) | Able to identify methods for analyzing an audience. Able to recall techniques for acquiring evidence and supporting materials. |
| of theories and structures (1.32) | Able to recall major rhetorical theories. |
| Comprehension: translation (2.10) | Able to illustrate arguments using statistical evidence.<br>Able to represent ideas through metaphors.<br>Able to restate ideas using different language forms. |
| interpretation (2.20) | Able to draw conclusions on the basis of evidence presented. |
| Application: | |
| | Able to organize ideas in a speech.<br>evidence appropriate for a given audience.<br>Able to generalize conclusions based on evidence. |
| Analysis: | |
| of elements (4.10) | Able to recognize unstable assumptiom in a speech.<br>Able to categorize the arguments in a speech.<br>Able to identify the main points of a speech. |
| of relationships (4.20) | Able to distinguish fallacies in arguments.<br>Able to compare the validity of opposing arguments. |
| of organizational principles (4.30) | Able to distinguish forms of support.<br>Able to analyze the patterns of organization in a speech.<br>Able to analyze an audience. |
| Synthesis: | |
| production of a unique | Able to write a well organized speech. |

| | |
|---|---|
| communication (5.10) | Able to deliver a speech. |
| production of a plan or proposed set of operations (5.20) | Able to plan an outline of a speech.<br>Able to plan a strategy for research a topic.<br>Able to plan a strategy for audience analysis. |
| Evaluation: judgments in terms of internal evidence | Able to judge the effectiveness of a speech. |

Examination of the classified objectives reveals a reason ably clear idea of what learning outcomes this teacher associates with the general objective "to be able to speak effectively in public.". However, there is less information provided about how this teacher sequences the stated objectives in order to obtain the terminal objective of the unit. It is reasonable to assume that the teacher would begin instruction at the lower level behaviors (e.g., knowledge, comprehension) and gradually work up to the higher-level behaviors (e.g., synthesis). Common sense, practical experience, and considerable research suggest that learners are able to master higher-level skills only when they have mastered prerequisite capabilities (see Gagné, 1977). Even if we are correct in the assumption that the teacher Will begin instruction at the lower-level outcomes and work up to the higher-level outcomes, we still do not have enough information about how the sequencing of objectives is accomplished.

The objectives listed in the example are general in nature compared to the highly specific objectives illustrated in Chapter 3. Several of the objectives listed may require further breakdown into component competencies in order to understand how instruction may be sequenced. For example, consider this objective from the taxonomic classification list: able to write a well organized speech. This objective deals with a reasonably complex behavior that requires the learner to demonstrate several prerequisite skills. In order to determine how this general objective might be sequenced, it is necessary to assess what prerequisite skills are necessary to write a well organized speech. If the taxonomic classification of learning outcomes is extremely detailed, it may contain all of the prerequisite skills necessary to accomplish the general objective. However, most taxonomic classifications of objectives are not detailed enough to provide this information. It is only by breaking down the general objective into its component learning parts that the teacher is able to acquire a clear idea of how instruction might be sequenced to accomplish the objective.

The procedure for breaking down an objective into its component parts is called task analysis. The procedure is very useful for designing instruction that can be organized hierarchically; that is, where learning outcomes can be arranged according to subordinate and superordinate components. Careful task analysis can provide considerable direction in sequencing in. struction to maximize learning efficiency and effectiveness (see Gagné, 1977).

Task analysis is by no means an easy procedure, although it is less difficult to conduct for some types of learning outcomes than for others (Gagné, 1977). The logic of the procedure is reasonably straightforward. Beginning With the terminal objective, one asks: what does a learner have to be able to do in order to accomplish that objective? The answer(s) to this question results in the identification of the necessary prerequiste skills that learners must have to achieve the terminal behavior. Presumably, these prerequisite skills in turn also have prerequisite skills that can be determined by again asking the central question. The key question is asked again and again until the answers are sufficient to assume that all learners possess the competencies necessary for instruction to begin. It is important to use action verbs (see Chapter 3) to describe each subordinate competency so that the analysis reflects observable behaviors. An example of a task analysis is provided in Figure 4-1.

The completed task analysis is useful for several reasons. First, it expands the taxonomic classification by providing detailed information about the specific components of each objective. Task analysis can be used "to fill in the gaps"of the general learning outcome analysis and to provide a more complete picture of the component parts (i.e., objectives) for a given unit of instruction. As can be seen in Figure 4-1, there are several additional objectives related to organizing a speech that were not included in the original list of learning outcomes. Imagine how much additional information could be added to the taxonomic classification objectives if a task analysis were completed on each of the complex objectives in the original list!

A second important use of task analysis is that it aids greatly in the sequencing of instruction. Task analysis provides Us with guidelines of the skills learners must possess before they can be expected to master

superordinate competencies. Task analysis can be used to select and sequence objectives already included in the taxonomic classification, or to reveal objectives that must be added to the list. In either case, specific informa. tion is provided for sequencing Objectives to maximize the ef. ficiency and effectiveness of instruction.

Related to this advantage is the role of task analysis in selecting and developing instructional strategies. Research On various instructional strategies offers no conclusive findings about which instructional procedures are most effective for achieving given levels of learner outcomes. However, knowing the specific level of desired learner outcomes and how they are related provides a good basis for making intelligent decisions about the selection of instructional strategies. For example, concept and discrimination learning require different external learning conditions than rule or problem solving learning (Gagné, 1977). Instructional strategies used for achieving types of learning outcomes should reflect the basic differ~ ences in the nature of the learning task that is required. Task analysis helps us to identify various types of learning outcomes in terms of their hierarchical relationship and aids the educator in selecting instructional strategies that are particularly well suited for the kind of learning outcomes desired.

A fourth reason for using task analysis IS related to evaluation, a major component of the instructional model. Breaking down a complex behavior into its component parts often provides considerable direction in selecting alternative ways of assessing learner achievement. For example, learners may be assessed throughout an instructional unit to determine where problems are encountered in mastering prerequisite skills. Such a procedure (often called formative evaluation) provides feedback to the teacher as well as students regarding where particular attention must be paid to the learning of necessary prerequisite skills. Often individualized instruction can be prescribed on the basis of such evaluation to deal with specific learning deficiencies. In addition, knowledge of the specific kind of learning outcomes and their relationships pertinent to a given unit of instruction provides essential information for final (i.e., summative) evaluation. For example, a common error in assessing student performance is to mismatch the level of behavior stated in the objective and the actual level of behavior evaluated (see Chapter 7). Sometimes a teacher will state a complex behavior in an objective and test students on simple recall and recognition, whereas at other times the mismatching is just the opposite. A task analysis (especially on complex objectives) helps to avoid this mismatching because clear guidelines are suggested for assessing various objectives in the hierarchy. Just as task analysis aids one in the selection of appropriate instructional strategies, it may also assist in designing hierarchically arranged assessment procedures.

Task analysis is also related to preassessment. Preassessment is designed to determine 1) whether students have the prerequisite behavioral capabilities for the instruction to follow, 2) how much of what is to be learned is already known, and 3) the instructional activities that should be presented to each student. Clearly, task analysis can provide essential information relevant to the design and implementation of preassessment procedures. It would appear extremely difficult to develop preassessment procedures Without first doing some form of task analysis in order to break down complex objectives into component parts. More will be said about preassessment in the next chapter.

It should be clear by now that task analysis is a useful procedure in planning and implementing instructional decisions of various kinds. As such, the advantages of using a task analysis more than justify the time and effort required to develop it. Gagné (1977) is particularly helpful in discussing learning outcomes in terms of a hierarchical arrangement and offers useful suggestions and examples of task analysis. In addition, Gagné and Briggs (1974) offer suggestions for implementing other aspects of instruction that are based on task analysis procedures.

As you design an instructional unit in your field (i.e., the taxonomic classification done earlier), attempt to conduct task analysis on several objectives in your list. This is perhaps one of the best ways to “get a feel" for using task analysis. You should be cautioned that it is a time-consuming procedure and that it takes some effort. However, once accomplished, you will likely see the many advantages the procedure offers for the design and implementation of instruction.

## Results

It was suggested that a behavioral taxonomy is often useful as a classiflcation scheme to organize instructional objectives. Taxonomies for the cognitive, affective, and psychomotor domains were presented. Suggestions were then offered for employing the taxonomies for classifying objectives. The six levels of cognitive learning helpful in developing learning outcomes because certain verbs are particularly appropriate at each level and not appropriate at other levels (though some verbs are useful at multiple levels).Task analysis was examined as a procedure for sequencing objectives in a hierarchal arrangement. As such, task analysis is a

procedure used to complement objective classification. Task analysis used in conjunction with taxonomic classification provides necessary information for sequencing instructional objectives.

The authors of the revised taxonomy as well suggest a multi-layered answer to this question, to which the author of this teaching guide has added some clarifying points:

1. Objectives (learning goals) are important to establish in a pedagogical interchange so that teachers and students alike understand the purpose of that interchange.
2. Organizing objectives helps to clarify objectives for themselves and for students.
3. Having an organized set of objectives helps teachers to: "plan and deliver appropriate instruction"; "design valid assessment tasks and strategies";and "ensure that instruction and assessment are aligned with the objectives."
4. There can be instructional objectives for a degree program, a course, or even a module or learning object within a course.

## Conclusion

Instructional objectives perform important functions for instructional designers, instructors and students. Whatever evaluation approach is used, there must be a direct relationship between instructional objectives and assessment measures. In this study, how instructional objectives have an impact on e/learning materials and increase both learners' and instructors' motivation, have been focused and described.

In addition to, Instructional objectives define target learning goals for an educational experience. A challenge is that learning is not directly observable. This sounds straightforward and obvious, but this phrase can mean many different things, depending on your beliefs about learning and your teaching style.

## Suggestion

**Avoiding errors in stating objectives**

Having the basic characteristics of objectives, an understanding of the domains and levels to be addressed and a supply of measurable and observable verbs, the teacher is ready to begin constructing his/her objectives. Considering the subject, context, aims and goals of a given unit, and the needs of the students, the teacher should be able to develop objectives which provide direction to a given unit. In doing this, however, it is important to avoid the many pitfalls that are commonly associated with objectives.

Below are listed five common errors in the stating of instructional objectives. (Note: the objectives provided as examples of correct objectives are incomplete and, if used in the context of a class session, need conditions and criteria in order to be complete).

1. A common error in stating instructional objectives is to describe teacher activities rather than student behavior. Wrong: The student will be exposed to the interrogative. Right: Given three statements, the student will be able to rephrase them in question form.

The first statement indicates what the teacher intends to present, while the second statement is written in terms of the expected outcomes.

2. A second common error in stating objectives is writing objectives in terms of learning process rather than learning product. For example:

The student will: Wrong: Gain knowledge of the difference between triangles. Right: Be able to construct three different triangles.

The first statement reflects a process of learning rather than an expected outcome of instruction. The second statement, however, clearly states the anticipated outcome.

3. The third common error in writing objectives is to list the subject matter to be to covered instead of the learning outcomes.

The student will be able to: Wrong: Know the human respiratory system. Right: Diagram and label the human respiratory system.

The first statement consists of only a subject matter topic. There is no indication of a learning outcome. The second statement illustrates a clearly stated learning outcome.

4. The fourth common error in writing objectives is to write with covert behaviors which are internal and difficult to observe by another person rather than with overt behaviors, which are manifesting activities that can easily be evaluated by an observer.

## Recommendation

The study recommends that classifying should begin their lesson with introduction of, and emphasis upon behavioural objectives, then Using Setting Objectives and Providing Feedback:

1. State learning objectives in simple language and in terms of knowledge rather than learning activities.
2. Relate the learning objectives to things that are personally relevant to students.
3. Model for students how to set their own learning objectives and provide feedback on the learning objectives that they set.
4. Periodically check student understanding of the learning objectives (e.g., ask them to write in their journals or on.notecards about their understanding of the learning objectives).
5. Select content sources, discussion questions, activities, assignments, and assessment methods according to how well they help students achieve learning objectives.

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