

Examples of Well-Written Learning Objectives

The following learning objectives have been written in terms of physician performance and are measurable:

- Run a 12 lead ECG with minimal electrical interference.
- Determine which of my geriatric patients will benefit from flu vaccine based on their co-morbidities.
- Evaluate non-Hodgkin's lymphoma therapies for applicability to post menopausal women so that symptom control from HRT is not compromised.



Why are these objectives well-written?

They are written well because they:

- Use verbs that state what the learner will do in a s practice setting instead of what the teacher will teach
- Include a standard against which the objective's success can be measured
- The are specific and relatable
- They are written in the 2nd person ("you" or "your") so that the objective becomes personal to the learner

Example of Objectives that Address and Close Identified Gaps

Once the gap analysis has been completed, learning objectives are developed that articulate the content of the activity in terms of steps that will address the identified gaps and close them.

Current	Content (Objectives)	Ideal
Difficulties associated with difficult behaviors and medication cessation in end stage dementia.	<ol style="list-style-type: none"> 1. In the end stage of dementia, evaluate at what point medication should be discontinued according to diagnostic criteria. 2. In end stage dementia, develop a protocol to discontinue cognitive medications while maintaining comfort measures through sociological and physical interventions as determined by your hospital ethics committee guidelines. 	In end stage dementia, patient is successfully discontinued from cognitive medications with limited need for a behavior management regimen
Difficulties associated with short-term memory deficits and medication compliance in early stage dementia	In patients with short-term memory deficits, develop a telephone and home visit strategy involving family members to ensure bid compliance.	Short term memory deficit patient is compliant in medication management.
Difficulty associated with delivery of the diagnosis of dementia to the patient and the family	In early stage dementia, you will summarize the diagnostic criteria (based on 'The Treatment and Management of Alzheimer's Disease Guidelines, 2002) in language that the family and the patient understand.	Family and patient accepts the diagnosis of AD

Behavioral Verbs for Writing Objectives in the Cognitive, Affective and Psychomotor Domains

Some Verbs for Use in Stating **Cognitive** Outcomes

<u>Knowledge</u>	<u>Compre- hension</u>	<u>Application</u>	<u>Analysis</u>	<u>Synthesis</u>	<u>Evaluation</u>
define	discuss	compute	distinguish	diagnose	evaluate
list	describe	demonstrate	analyze	propose	compare
recall	explain	illustrate	differentiate	design	assess
name	identify	operate	compare	manage	justify
recognize	translate	perform	contrast	hypothesize	judge
state	restate	interpret	categorize	summarize	appraise
repeat	express	apply	appraise	plan	rate
record	convert	use	classify	formulate	choose
label	estimate	practice	outline	arrange	decide
		predict		organize	

Some Verbs for Use in Stating **Affective** Outcomes

<u>Receiving</u>	<u>Responding</u>	<u>Valuing</u>	<u>Organization</u>	<u>Value Complex</u>
sit erect	answer	join	adhere	act
reply	greet	share	integrate	practice
accept	read	complete	organize	discriminate
show	report	follow		influence

Some Verbs for Use in Stating **Psychomotor** Outcomes

<u>Perception</u>	<u>Set</u>	<u>Guided Response</u>	<u>Mechanism</u>	<u>Complex</u>	<u>Adaptation</u>	<u>Origination</u>
identify	react	display	display	display	adapt	create
detect	respond	manipulate	manipulate	manipulate	revise	compose
differentiate	start	work	work	work	change	arrange
		perform	write	operate		

Bad words that should not be used as cognitive objectives!

know	really know	understand	appreciate	become
learn	thinks critically	approach	improve	grow
increase	expand horizons	grasp the significance of		

Table 1a. Major Categories in the Cognitive Domain of the Taxonomy of Educational Objectives (Bloom, 1956; from Gronlund)

Descriptions of the Major Categories in the Cognitive Domain

1. **Knowledge.** Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.

 2. **Comprehension.** Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words, to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.

 3. **Application.** Application refers to the ability to use learned material in **new** and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.

 4. **Analysis.** Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.

 5. **Synthesis.** Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (report or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

 6. **Evaluation.** Evaluation is concerned with the ability to judge the value of material (statements, lab results, teaching materials, journal articles) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose); the learner may either determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious judgments based on clearly defined criteria.
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**TABLE 1b. Examples of General Goals and Behavioral Verbs
for the Cognitive Domain of the Taxonomy (Gronlund)**

<i>Illustrative General Goals</i>	<i>Illustrative Behavioral Verbs</i>
<p>Knowledge Knows common terms or specific facts Knows methods and procedures Knows basic concepts Knows principles</p>	<p>Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states</p>
<p>Comprehension Understands facts and principles Interprets verbal material Interprets charts and graphs Translates verbal material to math formulas Estimates future consequences implied in data</p>	<p>Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes</p>
<p>Application Applies concepts and principles to <i>new</i> situations Applies laws and theories to real situations Solves mathematical problems Constructs charts and graphs Demonstrates use of a procedure</p>	<p>Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses</p>
<p>Analysis Recognizes unstated assumptions Recognizes logical fallacies in reasoning Distinguishes between facts and inferences Evaluates the relevancy of data Analyzes the organizational structure of a work</p>	<p>Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides.</p>
<p>Synthesis Writes a well-organized theme Gives a well-organized speech/presentation Proposes a plan for an experiment Integrates learning from different areas into a plan for solving a problem Formulates a new scheme for classifying facts</p>	<p>Categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes</p>
<p>Evaluation Judges the logical consistency of material Judges the adequacy with which conclusions are supported by data Judges the value of a work using internal criteria Judges the value of a work using external standards of excellence</p>	<p>Appraises, compares, concludes, contrasts, criticizes, describes, discriminates, explains, justifies, interprets, relates, summarizes, supports</p>

TABLE 2a. Major Categories in the Affective Domain of the Taxonomy of Educational Objectives (Krathwohl, 1964; from Gronlund)
Descriptions of the Major Categories in the Affective Domain

- 1. Receiving.** Receiving refers to the learner's willingness to attend (or pay attention) to particular phenomena or stimuli (classroom activities, social messages, patient complaints). From a teaching standpoint, it is concerned with getting, holding, and directing the learner's attention. Learning outcomes in this area range from the simple awareness that a thing exists to selective attention on the part of the learner. Receiving represents the lowest level of learning outcomes in the affective domain.
- 2. Responding.** Responding refers to active participation on the part of the learner. At this level s/he not only attends to a particular phenomenon but also *reacts* to it in some way. Learning outcomes in this area may emphasize acquiescence in responding (reads assigned material), willingness to respond (voluntarily reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment).
- 3. Valuing.** Valuing is concerned with the worth or value a learner attaches to a particular object, phenomenon, or behavior. This ranges in degree from the more simple acceptance of a value (desires to improve research skills) to the more complex level of *commitment* (assumes responsibility for the effective functioning of a group). Valuing is based on the internalization of a set of specified values, but clues to these values are expressed in the learner's overt behavior. Learning outcomes in this area are concerned with *behavior that is consistent and stable* enough to make the value clearly identifiable. Instructional objectives that are commonly classified under "attitudes" and "appreciation" often fall into this category.
- 4. Organization.** Organization is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an *internally consistent value system*. Thus the emphasis is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibility of each individual for improving staff relations) or with the organization of a value system (develops a life plan that satisfies his need for both economic security and service to society). Instructional objectives relating to the development of a philosophy of life (life-long learning) would fall into this category.
- 5. Characterization by a Value or Value Complex.** At this level of the affective domain, the individual has a value system that has controlled his behavior for a sufficiently long time for him to have developed a characteristic "life style." Thus the *behavior is pervasive, consistent, and predictable*. Learning outcomes at this level cover a broad range of activities, but the major emphasis is on the fact that the behavior is typical or characteristic of the learner. Instructional objectives that are concerned with the learner's general patterns of adjustment (personal, social, or emotional) would be appropriate here.

TABLE 2b. Examples of General Goals and Behavioral Verbs for the Affective Domain of the Taxonomy (from Gronlund)

<i>Illustrative General Goals</i>	<i>Illustrative Behavioral Verbs</i>
<p>Receiving Listens attentively Shows awareness of the importance of learning Shows sensitivity of human needs and social problems Accepts differences of race and culture Attends closely to the educational activities</p>	<p>Pays attention, watches, asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, sits erect, replies, uses, selects</p>
<p>Responding Completes assigned learning tasks Obeys institutional rules Participates in discussions Completes laboratory work Volunteers for special tasks</p>	<p>Answers, complies, performs conforms, discusses, greets, helps, labels, practices, tells, presents, reads, recites, reports, selects, writes, assists</p>
<p>Valuing Demonstrates belief in the democratic process Appreciates good work (literature, art or music) Shows concern for the welfare of others Demonstrates good problem-solving attitudes Demonstrates commitment to social improvement</p>	<p>Completes, describes, differentiates, explains, follows, forms, initiates, invites, joins, justifies, proposes, reads, reports, selects, shares, studies, works</p>
<p>Organization Recognizes the role of systematic planning in solving problems Accepts responsibility for his/her own behavior Understands and accepts her/his own strengths and limitations Formulates a life plan in harmony with abilities, interests, and beliefs</p>	<p>Adheres, alters, arranges, combines, compares, completes, defends, explains, generalizes, identifies, integrates, modifies, orders, organizes, prepares, relates, synthesizes</p>
<p>Value Complex Displays safety consciousness Demonstrates self-reliance in working independently Practices cooperation in group activities Uses an objective approach in problem solving Demonstrates industry, punctuality and self-discipline Maintains good health habits</p>	<p>Acts, discriminates, displays, influences, listens, modifies, performs, practices, proposes, qualifies, questions, revises, serves, solves, uses, verifies</p>

TABLE 3a. A Classification of Educational Objectives in the Psychomotor Domain (Simpson, 1972; from Gronlund)

Description of the major Categories in the Psychomotor Domain

1. **Perception.** The first level is concerned with the *use of the sense organs to obtain cues* that guide motor activity. This category ranges from sensory stimulation (awareness of a stimulus, identification of tenderness), through cue selection (selecting task-relevant cues), to translation (relating perception to action in a performance).
2. **Set.** Set refers to *readiness to take a particular type of action*. This category includes mental set (mental readiness to act), physical set (physical readiness to act), and emotional set (willingness to act). Perception of cues serves as an important prerequisite for this level.
3. **Guided Response.** Guided response is concerned with the early stages in learning a complex skill. It includes *imitation* (repeating an action or procedure demonstrated by the instructor) and trial and error. Adequacy of performance is judged by an instructor or by a set of criteria.
4. **Mechanism.** Mechanism is concerned with performance acts where the learned responses have become habitual and the movements can be *performed with some confidence and proficiency*. Learning outcomes at this level are concerned with various types of performance skills, but the movement patterns are less complex than at the next higher level.
5. **Complex Overt Response.** Complex overt response is concerned with the skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a *quick, smooth, accurate performance*, requiring a minimum of energy. This category includes resolution of uncertainty (performs without hesitation) and automatic performance (movements are made with ease and good muscle control). Learning outcomes at this level include highly coordinated motor activities.
6. **Adaptation.** Adaptation is concerned with skills that are so well developed that the individual can modify movement patterns to fit special requirements or to *meet a problem situation*.
7. **Origination.** Origination refers to the creating of new movement patterns to fit a particular situation or specific problem. Learning outcomes at this level emphasize *creativity* based upon highly developed skills.

**TABLE 3b. Examples of General Goals
and Behavioral Verbs for the Psychomotor Domain (from Gronlund)**

<i>Illustrative General Goals</i>	<i>Illustrative Behavioral Verbs</i>
<p>Perception Recognizes malfunction by sound of machine Relates taste of food to need for seasoning Associates music with a particular dance step Recognizes pain.</p>	<p>Chooses, describes, detects, differentiates, distinguishes, identifies, isolates, relates, selects, separates</p>
<p>Set Knows sequence of steps in varnishing wood Demonstrates proper bodily stance for batting a ball Shows desire to type efficiently</p>	<p>Begins, displays, explains, moves, proceeds, reacts, responds, shows, starts, volunteers</p>
<p>Guided Response Performs a golf swing as demonstrated Applies a bandage as demonstrated Determines best sequence for performing a task</p>	<p>Assembles, builds, calibrates, constructs, dismantles, displays, dissects, fastens, fixes, grinds, heats, manipulates, measures, mends mixes, organizes, sketches, works</p>
<p>Mechanism Writes smoothly and legibly Sets up equipment Operates a slide projector Demonstrates a simple movement</p>	<p>Assembles, builds, calibrates, constructs, dismantles, displays, dissects, fastens, fixes, grinds, heats, manipulates, measures, mends mixes, organizes, sketches, works</p>
<p>Complex Response Operates a tool skillfully Demonstrates correct form in swimming Demonstrates skill in driving an automobile Performs skillfully on a musical instrument</p>	<p>Assembles, builds, calibrates, constructs, dismantles, displays, dissects, fastens, fixes, grinds, heats, manipulates, measures, mends mixes, organizes, sketches, works</p>
<p>Adaptation Adjusts tennis play to match opponent's style Modifies rowing strokes to fit water roughness</p>	<p>Adapts, alters, changes, rearranges, reorganizes, revises, varies</p>
<p>Origination Creates a dance step Creates a musical composition Designs a new dress style</p>	<p>Arranges, combines, composes, constructs, creates, designs, originates</p>