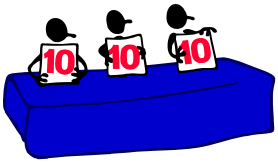

TIPS FOR WRITING LEARNING OBJECTIVES

National ACEP receives numerous requests from chapters for assistance on how to write good learning objectives. The information presented in this section has been gathered from several sources and should be helpful in developing learning objectives. ***Both the AMA and the ACCME require that a CME activity have stated objectives to qualify for Category 1 credit;*** in addition, educational objectives for a planned program of CME should be based on clearly identified CME needs. They also state that ***brochures should display both the educational objectives and intended audience*** to help physicians decide whether or not to participate.

Learning objectives should reflect what the participant should know or be able to do at the end of a learning period. **Instructional objectives** reflect what the instructor/sponsor intends to accomplish. In other words, state what the learner is to do rather than what the instructor is to teach. Stated another way, a learning objective is student oriented, but a teaching or instructional objective describes a process; the objective should describe a participant outcome rather than what will be taught (or "covered"). A statement of objectives is **not** the same as a course description.

The best way to communicate these learning objectives effectively is to use specific action verbs. ***An excellent format to introduce the statement of learning objectives is: "Upon completion of this (session, course, workshop, etc.) participants should be able to . . . "*** Use good action verbs like "explain," "describe," "discuss," "assess," "determine," "analyze," "differentiate". Words to avoid using include "understand," "know," and "learn."

Keep the learning objective statements simple and brief. Avoid including too much detail so the effort of writing the objectives does not become discouraging and the requirements overwhelming to the students. At the same time, ***it is to the sponsor's advantage not to be too general or broad in stating the learning objectives,*** especially when considering that a potential participant could have many and varied CME activities to choose from competitors. Every CME activity, whether it is a lecture, workshop, or panel discussion must have one or more learning objective.

A caution—when instructional planners first start to write objectives they tend to write descriptions of what is to occur during the instruction as if they were learning objectives. For example, "to view a filmstrip on animal habitats" or "to read pages 45-60 in the text" has been used. But those are *activities*, not indications of learning outcomes. When unsure if what is being stated is an objective, ask, "Is this what I want the student to be able to do at the end of the course or unit?"

Defining Levels of Understanding

A change in behavior, particularly "thinking" behavior, can occur at several levels. In order to appropriately plan for changes, it is important to be familiar with these different levels. In 1956, Benjamin Bloom, a distinguished professor of education at the University of Chicago and several other national experts in curriculum, developed a taxonomy of cognitive behavior. "Cognitive behavior" is simply educational jargon for "thinking." By understanding levels of thinking, you will be able to more specifically identify what objectives you want a course to accomplish.

The levels within Bloom's Taxonomy are as follows:

Level 1 – Knowledge:
Knowledge refers to rote memorization of facts or information. The information may have absolutely no meaning to the learner. You have probably been required to commit to memory m any things in your learning experience—a foreign phrase, a poem, formulas, etc. You would have been at a loss if someone asked you to explain, in your own words, what it is that you have just memorized. Think back to your experience as a youngster in kindergarten when you, along with your classmates, committed to memory the Pledge of Allegiance. Unless your I.Q. was 170 or above, you would have been hard pressed had someone asked you to explain in your own words the meaning of "indivisible" or the phrase "with liberty and justice for all." Nonetheless, you could flawlessly recite the Pledge of Allegiance after a few trials. The same will be true of those you teach. They will have memorized definitions and pat answers. Unfortunately, they will often have no idea what they are saying, which leads to the next level in Bloom's Taxonomy.

Level 2 – Comprehension (requires knowledge):
At this level the learner can restate, in his own words, that which he has committed to memory. In short, ***he can answer the question, "Tell me what that means."*** Not only can the learner rattle off a textbook definition, he can restate it in his own words.

Level 3 – Application (requires comprehension):
Learners operating at this level are ***able to apply to a given situation what they know and comprehend.*** Thus, for example, they may be able to give a textbook definition of "hypovolemic shock," explain the definition in their own words, and identify patients who are in hypovolemic shock. It is important to note the limitations of behavior at this level. Learners who are able to identify persons in hypovolemic shock do not necessarily understand the pathophysiology of shock, the relationship between shock and other bodily functions; nor can they necessarily judge what they should do in a situation when a patient presents with hypovolemic shock. These all involve higher levels of thinking which will be discussed further. Another word for this level is "intuition." Persons can use knowledge and comprehension and apply it to a given situation; but if you ask them "why," they are at a loss for words. A child, for example, may be able to discriminate between vehicles and non-vehicles and he may generalize to all instances in which a vehicle is presented. However, if you asked him, "Why is this a vehicle?" he could not answer the question. That involves a higher level of thinking. Intuition is certainly very important; we all use it every day. But, let's not mistake it for higher levels of thinking.

Level 4 – Analysis (requires application):
Learners performing at this level are **able to analyze a system and divide it into its constituent parts.** Thus, using our previous example, the learner would be able to analyze a system of shock and break it down into its constituent parts (ie, discuss its pathophysiology). In this case, he would not only be able to identify a person in shock but would also be able to explain why the patient is in shock. He would understand the system involved.

Level 5 – Synthesis (requires analysis):
Learners performing at this level are ***able to analyze several systems simultaneously and discuss how each system interacts with the other.*** Continuing with our example, the resident would not only understand the pathophysiology of shock but would also be able to discuss how shock affects and interacts with other systems (ie, the endocrine system, the cardiovascular system, etc.)

Level 6 – Evaluation (requires synthesis):
Evaluation represents the highest level of thinking. ***Learners performing at this level make independent judgments based on analysis and synthesis.*** The learner operating at this level would make an independent judgment about the course of action for treating hypovolemic shock, having analyzed all the systems involved, predicting possible outcomes of each course of action, weighing those alternatives, and making a final judgment. If he arrives at a course of action based on an algorithm or decision tree, such behavior does not involve evaluation but rather application. Consider a case in which a patient with ventricular fibrillation has been in cardiac arrest for less than two minutes. The learner decides to administer an initial defibrillation countershock in the range of 200 to 300 joules. In all probability, he did not arrive at this decision independently but rather was following protocol as outlined by the American Heart Association. In other words, it was a learned response based upon previous knowledge and comprehension. Judgment is much more than applying pat answers to pat problems. It is creating new answers based on information available.

Other helpful ways to look at the levels of cognitive behavior and how to develop objective verbs for a specific topic are to refer to the tables on the last pages of this section.

Selecting the Action Verb

No doubt, you or other members of your planning team can easily choose the content reference for an objective. You also will have little difficulty in deciding on the standard of performance you want students to reach and the conditions under which learning is to take place. **The selection of the appropriate action verb to describe the required student behavior is the difficult part of objective writing.**

Most learning objectives in education programs are in the cognitive domain. Verbs that express behaviors on each of the six levels in Bloom's Taxonomy are listed below. They can help you recognize (and give attention to) the higher intellectual levels in your planning.

Verbs Applicable to the Levels in the Cognitive Domain (Note: Depending on the use, some verbs may apply to more than one level.)

1. Knowledge:

arrange	cite	communicate
define	duplicate	give
label	list	memorize
name	order	provide
quote	recall	recognize
relate	remember	repeat
reproduce	state	

2. Comprehension:

allocate	assign	classify
describe	designate	discuss
explain	express	identify
indicate	locate	match
paraphrase	recognize	report
restate	review	select
sort	tell	translate

3. Application:

apply	chart	choose
demonstrate	distribute	document
dramatize	employ	execute
illustrate	implement	interpret
operate	order	perform
practice	present	produce
record	schedule	sketch
solve	train	use

4. Analysis:

analyze	appraise	calculate
categorize	compare	contrast
criticize	determine	diagram
differentiate	discriminate	distinguish
examine	experiment	inventory
investigate	question	survey
test	verify	

5. Synthesis:

arrange	assemble	collect
compose	compute	conduct
construct	control	coordinate
create	design	develop
devise	discover	establish
extend	find	formulate
generate	integrate	invent
manage	organize	plan
prepare	propose	set up
synthesize	write	

6. Evaluation:

appraise	argue	assess
attach	choose	compare
conclude	critique	decide
deduce	defend	derive
diagnose	estimate	evaluate
judge	manage	measure
monitor	negotiate	predict
prescribe	rate	recommend
score	select	support
theorize	troubleshoot	value
hypothesize	infer	interpret

Target Population

Keep the following in mind when developing objectives for a target population.

Subject-matter Competence:

- What are the trainees' levels of current knowledge and skills in the subject-matter area?
- What background experiences do the trainees have in the subject-matter area?
- Are the trainees likely to have any major misconceptions in the subject-matter area?

Attitudes:

- What are the general attitudes of the trainees toward the instructional content? Are there any subtopics within the content toward which the trainees are likely to feel very positive or very negative?
- What preferences for instructional format and media do the trainees have?

Language:

- What is the language level of the trainees? How much of the specialized terminology is in their vocabularies?
- What preferences for style of language (eg, conversational or scholarly) do the trainees have?

Skills:

- What unique skills does each group have?
- What skills do they have in common?

Levels of Cognitive Behavior

Knowledge	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
(Ability to recall; to bring to mind the appropriate material)	(Ability to comprehend what is being communicated and make use of the idea without relating it to other ideas or material or seeing fullest meaning)	(Ability to use ideas, principles, theories in new particular and concentrated situations)	(Ability to break down a communication into constituent parts in order to make organization of the whole clear)	(Ability to put together parts and elements into a unified organization or whole)	(Ability to judge the value of ideas, procedures, methods, using appropriate criteria)
					Requires synthesis
				Requires analysis	Requires analysis
			Requires application	Requires application	Requires application
		Requires comprehension	Requires comprehension	Requires comprehension	Requires comprehension
	Requires knowledge	Requires knowledge	Requires knowledge	Requires knowledge	Requires knowledge

Objective Development Matrix
Verb Statements

Topic: Behavioral Emergencies

Sub Topic	**Define**	**List**	**State**	**Select**	**Identify**	**Explain**	**Demonstrate**	**Perform**
1) Adjustment Reactions	Adjustment Reactions	Circumstances in which they occur		Appropriate Treatment	Manifestations (Symptoms)	Difference between normal & abnormal reactions.		
2) Acute loss of trauma	The Term	Circumstances			Acute and delayed symptoms	Appropriate TX & consequences & failure to RX	Appropriate interactive response to patients family	
3) Depression & Suicide		Common misconceptions. Symptoms & depressions.		Appropriate Interaction	Symptoms of high risk suicidal patients.	Medical-legal implications of emergency Psych evaluation.	Appropriate intervention.	Psychology Assessment. Assess suicide scale.
4) The chronic ED repeating patient	The patient	Common characteristics.	Procedure for dealing with		Causes of repeaters	Impact on staff.		
5) Consultation and referral		Contacts for referral	When is referral appropriate				Interaction between ED and psychiatrist	Mental status examination
6) Restraints					Appropriate Cases	Medical-legal consequences & complications	Techniques	