

## Education Article

# Instructional Objectives: What They Are, What They Aren't

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Research has found that presenting an instructional objective to the student will influence the learning and retention of information. A useful objective communicates to the student an intended instructional outcome, and should convey a vivid verbal description of what a student will be able to do that is exactly what the instructor intended. A well-stated objective must include a clear statement of observable performance, and should include any required conditions for performance, and a statement describing the standard by which a student's performance will be evaluated. Often the most difficult task in writing instructional objectives is selecting suitable verbs. Clearly stated, well-written instructional objectives enhance communication and are important to deliver instruction effectively.

*Keywords:* Instructional objective; Observable performance; Performance condition; Performance standard; Instructional outcome

## INTRODUCTION

Objective (ôb jek' tiv) *n.* Something worked toward or aspired to: goal.  
-Webster's Ninth New Collegiate Dictionary, c1989.

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During pharmacy school, the typical student endures countless hours of lectures, guided discussions, independent study groups, projects, presentations, demonstrations, simulations, clinical teachings, conferences, and supervised practice settings. In addition, new electronic media have emerged to transmit instructional messages. Web-based course development programs such as WebCT and Blackboard, are projected to take the place of much of the traditional learning environment (Locatis, 2001). More than ever, clearly stated, well-written instructional objectives are of paramount importance to deliver instruction effectively.

## WHY OBJECTIVES?

Research has found that presenting an instructional objective to the student will influence the learning and retention of information (Gagne, 1985). It follows then, that to convey the content of a curriculum in the form of precise statements

of what the learner is expected to be able to do following the instruction would increase the efficiency of instruction and enhance the probability that effective learning will take place.

The use of objectives is common in education and instructional technology. However, objectives have fallen to disfavour in some educational circles, not just because they are difficult to compose, but primarily because their origin is rooted in Behaviourist theory, which runs contrary to Constructivist approaches to learning: in the latter, objectives are not seen as having a meaningful role (Marsh, 1999).

## LEARNING THEORIES

### Behaviourism and Constructivism

The question of how individuals learn has been a challenging philosophic topic for centuries (Wilhelmsen *et al.*, 1998). Theories have emerged in response to, and because of, the development of understanding about learning and cognition. Two major theoretical approaches that contribute to understanding the nature of learning are Behaviorism and Constructivism. The application of principles of behavioural psychology in the search for solutions to training problems marked the beginning of a movement toward a science of instruction influenced by Behaviorism (McCombs, 1986).

Dominant in the 1950s and 1960s, Behaviorism is considered the earliest of the psychological theories, and remains influential (Wilhelmsen *et al.*, 1998). The highly-publicised experiments with pigeons by Skinner, using the so called "Skinner Box", are examples of learning experiments exploring Behaviourism. Experimentation focussed on how an organism adapts to the environment through observable behavioural changes. Despite early experiments that concentrated largely on reflex behaviour, Behaviorism has been generalized to many higher level cognitive functions.

Alternatively, Constructivism views the learner as one who acts on objects and events within his or her environment, and as a result, gains some understanding of the features held by the objects and events (Ertmer and Newby, 1993). Constructivism is not a recent concept; it was the leading perspective among public school educators in the United States in the 1930s and 1940s. According to this theory, teachers are seen as facilitators or "coaches" who assist students in the construct of their own conceptualisations and solutions to problems. Knowledge cannot be transmitted from one person to another, but is individually constructed by each person.

Critics of the behavioural approach claim that it simply reduces education to a matter of teaching that which can be stated and measured in the language of behavioural objectives (Borg and Gall, 1989). Critics of Constructivism claim that a higher degree of guidance is necessary in the learning process. Students cannot be left entirely on their own to haphazardly find, or not find, what is important to grasp in a particular learning situation (Ertmer and Newby, 1993). Of course, any educational approach can be poorly or inappropriately developed or applied. Most educators would agree that there are appropriate times to apply the ideas from each theory. Of paramount importance is to do the most to enhance the learning possibilities in the given environment and particular domain.

### LEARNING OBJECTIVES

Depending on the author and literature source, objectives have been called "instructional objectives," "behavioural objectives," or "performance objectives." If a greater emphasis has been placed on the critical role of the learner, then they have been referred to as "learning objectives." How they are referred to is of lesser importance than how they enhance the learning process. An objective is a description of a performance that learners are able to exhibit before one considers them

*competent* (Mager, 1984). In other words, instructional objectives define the content of a curriculum in terms of what the student is expected to be able to *do* as a *result* of effective instruction. Objectives provide a basis for the design of instruction and for the development of evaluation procedures that provide evidence that the objectives have been attained.

### Objectives are not Goals

An instructional goal is a broadly defined statement of purpose or intent of what the student is expected to know after instruction has taken place (Dick and Cary, 1990). This is not to be confused with an objective, which is a precisely defined statement of a behaviour that is observable and measurable upon completion of the instruction. Objectives are developed *from* goals by applying the "divide and conquer" principle; breaking them into subordinate learning tasks, then creating measurable behavioural statements (Workshop on PSALM: Personalized Self-Administered Learning Modules, 1990a). For example, a goal statement would be: "the student will know the principles of cardiac pulmonary resuscitation." Accomplishment of this goal would require mastery of a number of more specific behavioural objectives. An example of an objective derived from this goal might be: "the student will be able to perform one-man basic life support on an adult CPR mannequin."

### Objectives are not the Course Syllabus

An objective describes an intended *result* of instruction, rather than the process of instruction *itself* (Workshop on PSALM: Personalized Self-Administered Learning Modules, 1990b). It is *important* to state the objectives in terms of what *the student is to accomplish*, not the instructor.

### Instructional Objectives are not "Instructor Objectives"

A common approach used in teaching is to prepare a syllabus or detailed course outline of the content of the course and deliver instruction (lectures, handouts) based on the points outlined in the syllabus. This method may provide the student what they need to know to get through the course, but does not provide a method of focussing on the desired outcomes of learning. A course description may tell only what a course is about, but an objective *tells what the learner will be able to perform as a result of some learning experiences*. By preparing clearly stated instructional objectives, the desired learning outcomes become the focus for the design of instruction that will help bring about those outcomes. In essence, the distinction is that an instructor should know what they want their students *to accomplish as a result of their instruction*.

### ATTRIBUTES OF USEFUL OBJECTIVES

A useful objective communicates to the student an intended instructional outcome. It is useful to the extent that it conveys a vivid verbal description of what a student will be able to do that is exactly what the instructor intended. A multitude of words, images, and even symbols can be used to express an intended outcome. Most authors agree that the approach to planning objectives centres around three key concepts that help to make an objective clearly communicate the intent of the instructor. As succinctly expressed by Mager (1984), these characteristics answer three questions:

- (1) What should the learner be able to do?
- (2) Under what conditions do you want the learner to be able to do it? and
- (3) How well must it be done? That is, a *well-stated* objective must include a *clear statement* of observable *performance*, and *should*

TABLE I Verb ideas for objectives

<i>General discriminative behaviours</i>					
Choose	Describe	Discriminate	Indicate	Match	Place
Collect	Detect	Distinguish	Isolate	Omit	Point
Define	Differentiate	Identify	List	Order	Select
<i>"Study" behaviours</i>					
Arrange	Classify	FIND	Label	Name	Reproduce
Categorize	Compile	FOLLOW	Locate	Note	Search
Chart	Copy	Formulate	Look	Organize	Sort
Circle	Diagram	Gather	Map	Quote	Underline
Cite	Document	Itemize	Mark	Record	
<i>Analytical behaviours</i>					
Analyse	Compare	Criticize	Evaluate	Generate	Plan
Appraise	Conclude	Deduce	Explain	Induce	Structure
Combine	Contrast	Defend	Formulate	Infer	
<i>Laboratory science behaviours</i>					
Apply	Decrease	Increase	Manipulate	Replace	Straighten
Calibrate	Demonstrate	Insert	Operate	Report	Time
Conduct	Dissect	Keep	Plant	Reset	Transfer
Connect	Feed	Lengthen	Prepare	Set	Weigh
Convert	Grow	Limit	Remove	Specify	
<i>Social behaviours</i>					
Accept	Answer	Coordinate	Forgive	Join	Praise
Agree	Argue	Disagree	Help	Meet	Talk
Aid	Communicate	Discuss	Interact	Participate	Thank
Allow	Compliment	Excuse	Invite	Permit	Volunteer
<i>Miscellaneous behaviours</i>					
Attempt	Distribute	Guide	Position	Send	Suggest
Attend	End	Hold	Present	Serve	Supply
Begin	Erase	Include	Produce	Sew	Support
Bring	Expand	Inform	Propose	Share	Switch
Buy	Extend	Lead	Provide	Sharpen	Take
Complete	Find	Lend	Put	Shorten	Tear
Consider	Finish	Light	Raise	Shut	Touch
Correct	Fit	Make	Relate	Signify	Type
Crush	Fix	Mend	Repeat	Start	Use
Designate	Give	Miss	Return	Store	Vote
Discover	Grind	Offer	Save	Strike	Watch

Adapted from Workshop on PSALM: Personalized Self-Administered Learning Modules (1990b).

include any required *conditions* for performance, in addition to being a statement describing the *standard* by which a student's performance will be evaluated.

## STUDENT PERFORMANCE

Consider the following objective: "To understand the significance of effective pharmacy practice management." Although achievement of this outcome may be important, the statement does not disclose what a student will be doing when

demonstrating mastery of the objective. Does mastery involve writing an essay on the significance of practice management? Does it involve answering multiple-choice questions? Drafting a departmental budget? Preparing a daily work schedule? Devising a procedure for hiring competent people? The objective is not clear as to the specific outcome, and it is open to too many interpretations. A well-written objective with a specific outcome might be: "Given all available drug company data regarding a new drug product, be able to write a drug monograph summary. The monograph must define and describe the major chemical and therapeutic

characteristics of the product appropriate to its introduction to the market, including descriptions of at least three major uses." What would students be doing when demonstrating mastery of this objective? *Writing a summary of a drug monograph.* These words describe a performance, providing useful information about what the instruction is to accomplish. The way to write an objective that meets the requirement of describing performance is to write a statement describing an instructional intent, then to modify it until it answers the question: *What is the student actually doing when demonstrating achievement of the objective?* The significant aspect is "doing." If the verb in the objective describes something a student is able to *do*, then it describes a performance.

#### THE KEY TO A WELL-WRITTEN OBJECTIVE: THE "RIGHT" VERB

How can one insure that an objective communicates its intent so effectively that it leaves no doubt in the mind of a student with reference to the expected outcome? Selecting a verb that demonstrates an observable performance (or product) can be accepted as evidence that the desired learning has occurred. Often the most difficult task in writing instructional objectives is selecting suitable verbs. A list of verbs useful in writing objectives is listed in Table I.

#### PERFORMANCE CONDITIONS

The second part of a well-written objective answers the question, under what conditions will you expect the desired performances to occur? For example, in the following objective: "Given a list of generic drug names, be able to recall (write) the FDA approved indication." It states the main intent (recall) and describes performance by which he main intent will be detected (i.e. "write the FDA approved

indication.") In addition, conditions are specified: students will be given a list of generic drugs to work from.

Specifying the conditions is particularly important for learning outcomes that are to be demonstrated under special circumstances or with the use of specific tools or equipment. That is, an instructor may ask, "what will the learner be allowed to use in demonstrating performance of the objective?" For example, if a performance requires information that is readily available in a reference, such as Martindale's Pharmacopoeia, the objective should indicate whether or not the student will be permitted to use such a reference.

#### PERFORMANCE STANDARDS OR "EXTENT OF INTENT"

Having described a student's performance to meet an objective, how will we know when the performance is good enough to be considered acceptable? Communication of an objective is enhanced by describing *how well* students should be able to do it. This is done with a description of the standard of performance. For example, the following objective appeared in a continuing education article in a recent pharmacy publication: "Identify common causes of medication errors" (Coleman, 1999). Although the verb "identify" appropriately communicates the intent, there is no limit or range of answers to evaluate the performance on the objective. A well-written objective distinguishes between acceptable and unacceptable performances. It might be more clear to the reader to state the objective as "based on a recent study published by National Association of Chain Drug Stores (NACDS), the student will describe at least three common causes of medication errors in the community practice setting." In this example, the student is given information from a report to work from (condition), and must come up with a set number of examples to reach acceptable performance. A standard is essentially a

TABLE II Instructional objectives: summary of important points

An objective is a collection of words, symbols, and/or pictures describing intent of instruction

- The purpose is to make clear to instructors and students what needs to be taught or what has been taught

- Three components make up a well-written objective

- Performance*. States what it is that the student will be able to *do* or reports the end *result* of what was done. The verb of an objective should describe events that are observable and can be measured

- Conditions*. Describes demands are placed on the student who attempts to accomplish the objective. States conditions that performance is to occur.

- Standards (Extent of Performance)*. Describes acceptable and unacceptable performance. States how well the learner must perform in order to meet the objective. Common performance standards are accuracy, completeness, rate of production, and time requirements or limitations.

- An instructional objective may be a single sentence, or several sentences depending on what is needed to convey intent of instruction

Adapted from Mager (1984). *Preparing Instructional Objectives*, 2nd Ed. (David S. Lake Publishers, Belmont, CA).

"yardstick" by which achievement of the objective is measured. If you can specify the acceptable performance for each objective, you will have a standard against which to test your instruction; you will have the means for determining whether your instruction is successful in achieving your instructional intent. The standard may be the performance itself, or it may be a product or outcome resulting from the performance. Common performance standards are accuracy, completeness, rate of production, and time requirements or limitations. For example, products such as pharmaceutical preparations are routinely judged according to specified standards of quality.

### SETTING STANDARDS

Some instructors say that their objective is always error-free (i.e. 100%) performance. Even if perfect performance is expected, it will seldom be observed because of measurement error. A more realistic standard for mastery might be

90%. Care must be taken however, to differentiate between situations that require 90% accuracy and those that require 100% accuracy, 90% of the time. For example in the objective, "the student will perform 9 of the 10 steps in a certain procedure." The one incorrect step might be life endangering in the health professions. A better way to state the objective might be, "the student should demonstrate the ability to correctly perform all 10 steps in the procedure, at least 90% of the time."

### SUMMARY

Clearly defined objectives provide student learners with the means to evaluate learning progress at any place along the course or route of instruction. With clear learning objectives, the student knows which activities on his part are relevant to his success, and it is no longer necessary for him to 'psych out' the instructor (Mager, 1984, p. 6) In other words, as the great baseball legend Yogi Berra said, "If you don't know where you are going, you might wind up somewhere else" (Gabor, 1998). Objectives are used to communicate to students where you intend to go with your instruction and what is to be accomplished (Table II).

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