

## Guide to Writing Instructional Objectives in a Standards-based System

Behavioral objectives, learning objectives, instructional objectives, and performance objectives are terms that refer to a description of observable student behavior or performance. In a standards based system, describing student behavior or performance is necessary in order to determine accurately whether or not a student has met the standards. At some point, almost every teacher, especially new teachers and student teachers, must deal with writing such objectives. Here, such objectives are referred to as instructional objectives. Writing clear measurable objectives that are tied to a specific standard is a skill that requires practice, feedback, and experience. Over the past 30 years or so, the emphasis on, and attention paid to instructional objectives has waxed and waned as different ideas change about how best to express instructional intent. In a standards-based system, instructional objectives provide detail and specificity to the knowledge and skills that students must acquire to meet the standards.

Instructional objectives are about curriculum, not instruction. This is a key point. Many tend to confuse instructional objectives with objectives a teacher may have that relate to student conduct or behavior in a classroom. Instructional objectives are learning objectives; they specify what behavior a student must demonstrate or perform in order for a teacher to infer that learning took place. Since learning cannot be seen directly, teachers must make inferences about learning from evidence they can see and measure. Instructional objectives, if constructed properly, provide an ideal vehicle for making those inferences. They also guide the development and planning of the instructional activities.

The purpose of an instructional objective is to communicate. Therefore, a well-constructed instructional objective should leave little room for doubt about what is intended. A well constructed instructional objective describes an intended learning outcome and contains three parts, each of which alone means nothing, but when combined into a sentence or two, communicates the conditions under which the behavior is performed, a verb which defines the behavior itself, and the degree (criteria) to which a student must perform the behavior. If any one of these three components is missing, the objective cannot communicate accurately.

Therefore, the parts of an instructional objective are:

1. **Conditions** (a statement that describes the conditions under which the behavior is to be performed)
2. **Behavioral Verb** (an action word that denotes an observable student behavior)
3. **Criteria** (a statement that specifies how well the student must perform the behavior).

An instructional objective is the focal point of a lesson plan. It is a description of an intended learning outcome and is the basis for the rest of the lesson. It provides criteria for constructing an assessment for the lesson, as well as for the instructional procedures the teacher designs to implement the lesson. Without an instructional objective, it is difficult, if not impossible to determine exactly what a particular lesson is supposed to accomplish.

Instructional objectives are derived from the standards. In order to write an instructional objective, one should begin with an understanding of the particular content to which the objective will relate. Understanding in more than one way the content to be learned should be a goal of teachers as well as students. This implies that teachers or others who prepare objectives as part of lesson plans or curriculum documents and guides should have more than superficial knowledge of the appropriate content. The standard provides a body of content in which a series of objectives can be written that define how a student will demonstrate mastery of the standard.

Instructional objectives deal only with what the student will know or be able to do. They have nothing to do with what the teacher will do during the instruction. Below you'll find a description of the parts that make up instructional objectives.

### ***The Conditions***

The conditions part of an objective specify the circumstances, commands, materials, directions, etc., that the student is given to initiate the behavior. All behavior relevant to intended student learning outcomes can best be understood within a context of the conditions under which the behavior is to be performed or demonstrated. The conditions part of an objective usually begins with a simple declarative statement such as the following:

- Upon request the student will (this means the student is given an oral or written request to do something).
- Given (some physical object) the student will (this means the student is actually given something that relates to performing the intended behavior).

Notice that in the examples above, there is no mention of the description of the instruction that precedes the initiation of the behavior. The instruction that leads to the behavior should never be included in the actual objective. Instruction that leads students to accomplishing an objective is a separate issue. Here, we want to concentrate on describing only the conditions under which the desired student behavior is to be performed.

### ***The Verb***

We all learned in elementary school that a verb is an action word. In an instructional objective, the verb is also an action word, but it is also a special kind of action word. The verb in an instructional objective is an action word that connotes an observable behavior. For example, although we as teachers all want our students to appreciate one thing or another, it is impossible to see when a student "appreciates" something. Understand is another noble word that connotes something we want our students to do, but we cannot see "understanding." The best we can do is make inferences that a student appreciates or understands something based on what the student does or says in a controlled situation.

What then are instructional verbs? The answer is quite simple. An instructional verb is a word that denotes an observable action, or the creation of an observable product. Verbs such as identify, name, and describe are behavioral because you can observe the act or product of identifying, naming, or describing. Some verbs are embedded in a phrase that gives them a specific behavioral meaning. Examples are state a rule and apply a rule. In this case the behavior is contextual, and the context is the rule in question.

There are many verbs that qualify as behavioral. For a list of these verbs, and their definitions, see the table below or some of the examples used in language arts, mathematics, science, and social studies below.

### ***The Criteria***

The criteria are a set of descriptions that describe how well the behavior must be performed to satisfy the intent of the behavioral verb. Usually, criteria are expressed in some minimum number, or as what must be, as a minimum, included in a student response. For example an objective might be of the form: Given a list of the first 100 numbers arranged in ascending order (conditions), the student will identify (verb) at least nine prime numbers (criteria). Notice that the objective doesn't specify which nine numbers, and sets a floor of at least nine as a minimum. Also, the method by which the student identifies the minimum nine prime numbers is not specified; that is determined in the actual assessment. The student could circle the numbers, highlight them, draw line through them, etc. It is also implied that the student will be correct if he identifies more than nine correctly, but does not specify whether it is acceptable to identify nine correctly and one or more incorrectly. According to the objective, it would be acceptable to circle the following numbers and still meet the intent of the objective: 1-3-5-7-11-13-17-19-23-24-26, because he got nine correct, and two (24-26) incorrect. If the student must identify only prime numbers, then the objective would need to be modified to include that provision.

### ***Putting it all together***

Well-written instructional objectives are the heart of any lesson plan or unit of study. If the objectives you compose are "fuzzy" and difficult, if not impossible to measure, the rest of the lesson plan you create that is based on the objective is likely to be flawed. Before you begin to write an objective, spend a little time thinking about what you are describing, and remember to make the student behavior observable. You will find this process helps you to clarify what you intend, and you will be better able to communicate that intent to your students, regardless of their grade level, age, or subject. Instructional objectives clearly communicate the intended learning outcome.

Any time you write an instructional objective for a standard, ask yourself these questions, "Does this objective clearly communicate and describe the intended learning outcome? Is the learning outcome clearly tied to the content identified in the standard?" If you can find exceptions or loopholes as a way of meeting the objective, then the objective should be rewritten.

### ***Definitions of Instructional Verbs***

Instructional verbs are the heart of learning objectives and lesson plans. They are, if used effectively, the best way to indicate, and communicate to others, specific, observable student behavior. Instructional verbs describe an observable product or action. Inferences about student learning can be made on the basis of what a student does or produces. The following verbs and their definitions can be helpful when composing instructional objectives. These are general definitions that describe only the observable behavior and do not include linkages to any specific content. These definitions are provided for those who seek a basis for a technical vocabulary regarding student performance.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Different instructional verbs are used for specific levels of knowledge. See the chart on the next page for examples of verbs used with the different levels of Bloom's taxonomy.

## Bloom's Taxonomy of the Cognitive Domain

<b>LEVEL</b>	<b>DEFINITION</b>	<b>SAMPLE VERBS</b>	<b>SAMPLE BEHAVIORS</b>
<b>KNOWLEDGE</b>	Student recalls or recognizes Information, ideas, and principles in the approximate form in which they were learned.	<ul style="list-style-type: none"> <li>• Write</li> <li>• List</li> <li>• Label</li> <li>• Name</li> <li>• State</li> <li>• Define</li> </ul>	The student will define the 6 levels of Bloom's taxonomy of the cognitive domain.
<b>COMPREHENSION</b>	Student translates, comprehends, or interprets information based on prior learning.	<ul style="list-style-type: none"> <li>• Explain</li> <li>• Summarize</li> <li>• Paraphrase</li> <li>• Describe</li> <li>• Illustrate</li> </ul>	The student will explain the purpose of bloom's taxonomy of the cognitive domain.
<b>APPLICATION</b>	Student selects, transfers, and uses data and principles to complete a problem or task with a minimum of direction.	<ul style="list-style-type: none"> <li>• Use</li> <li>• Compute</li> <li>• Solve</li> <li>• Demonstrate</li> <li>• Apply</li> </ul>	The student will write an instructional objective for each level of bloom's taxonomy.
<b>ANALYSIS</b>	Student distinguishes, classifies, and relates the assumptions, hypotheses, evidence, or structure of a statement or question	<ul style="list-style-type: none"> <li>• Analyze</li> <li>• Categorize</li> <li>• Compare</li> <li>• Contrast</li> <li>• Separate</li> </ul>	The student will compare and contrast the cognitive and affective domains.
<b>SYNTHESIS</b>	Student originates, integrates, and combines ideas into a product, plan or proposal that is new to him or her.	<ul style="list-style-type: none"> <li>• Create</li> <li>• Design</li> <li>• Hypothesize</li> <li>• Invent</li> <li>• Develop</li> </ul>	The student will design a classification scheme for writing educational objectives that combines the cognitive, affective, and psychomotor domains.
<b>EVALUATION</b>	Student appraises, assesses, or critiques on a basis of specific standards and criteria.	<ul style="list-style-type: none"> <li>• Use</li> <li>• Judge</li> <li>• Recommend</li> <li>• Critique</li> <li>• Justify</li> </ul>	The student will judge the effectiveness of writing objectives using Bloom's taxonomy.

### **Examples of Activities: English Language Arts**

**APPLY A RULE:** In response to the question, "Is cttn an English word?" the student would reply, "No, because it has no vowels. All English words must have at least one vowel."

**CLASSIFY:** The student could be asked to classify the words of given sentences into categories of parts of speech. He could be asked to literary forms according to style (novel, drama, poetry, etc.).

**COMPOSE:** The student could be asked to compose a limerick.

**CONSTRUCT:** From the description provided in the text, the student could be asked to construct a model of the frontier settlement described in *Singing Wheels*, fourth level reader.

**DEFINE:** The student could be given a number of words and be asked to figure out ways that similar words could be grouped. His response might include statements such as, "The words that tell about color could be put into one group. Those that tell about the feelings of people could be put into another group. Those that don't tell about anything could be put in another group. **NOTE:** Defining is not memorizing and writing definitions written by someone else - it is creating definitions.

**DEMONSTRATE:** The student could be asked to demonstrate with a percussion instrument, the rhythm (meter) of a poem by Edgar Allen Poe.

**DESCRIBE:** The student could be asked to describe the procedures of a formal debate.

**DIAGRAM:** The student could be asked to diagram the stage settings for *Man and Superman* by G.B. Shaw.

**DISTINGUISH:** Given a list of pairs of nouns and pronouns, the student could be asked to distinguish between the two.

**ESTIMATE:** The student could be asked to estimate, within twenty-five pages, the page number where any given word would be found in a 475 page dictionary.

**IDENTIFY:** The student could be asked to identify all the consonants in the alphabet. He could be asked to identify a sonnet from among several examples of poetry.

**INTERPRET:** The student could be asked to interpret any passage of literature that is given to him.

**LOCATE:** The student could be asked to locate, in time, the English Romantic Period.

**NAME:** The student could be asked to name the parts of speech. He could be asked to name five authors of the Early American Period. He could be asked to name three literary works of Americans who are also Black.

**ORDER:** Given a series of scrambled paragraphs, the student could be asked to order them to conform with short essay style.

**STATE A RULE:** The student could be asked to state a rule covering the use of "ei", "ie" combinations in the spelling of words.

**TRANSLATE:** Given a passage from a Shakespeare play, the student could be asked to translate it into modern American English.

### **Examples of Activities: Science**

**APPLY A RULE:** The student could be asked to explain why a shotgun "kicks" when fired. His response would include a statement to the effect that for every action there is an equal and opposite reaction (Newton's Law of Motion), and that the "kick" of the shotgun is equal to the force propelling the shot toward its target. The faster the shot travels and the greater the weight of the shot, the greater the "kick" of the gun.

**CLASSIFY:** Given several examples of each, the student could be asked to classify materials according to their physical properties as gas, liquid, or solid.

**CONSTRUCT:** The student could be asked to construct a model of a carbon atom.

**DEFINE:** Given several types of plant leaves, the student could be asked to define at least three categories for classifying them. **NOTE:** Defining is not memorizing and writing definitions created by someone else -- it is creating definitions.

**DEMONSTRATE:** Given a model of the earth, sun, and moon so devised that it may be manipulated to show the orbits of the earth and moon, the student could be asked to demonstrate the cause of various phases of the moon as viewed from earth.

**DESCRIBE:** The student could be asked to describe the conditions essential for a balanced aquarium that includes four goldfish.

**DIRGRAM:** The student could be asked to diagram the life cycle of a grasshopper.

**DISTINGUISH:** Given a list of paired element names, the student could be asked to distinguish between the metallic and non-metallic element in each pair.

**ESTIMATE:** The student could be asked to estimate the amount of heat given off by one liter of air compressed to one-half its original volume.

**EVALUATE:** Given several types of materials, the student could be asked to evaluate them to determine which is the best conductor of electricity.

**IDENTIFY:** Given several types of materials, the student could be asked to identify those which would be attracted to a magnet.

**INTERPRET:** The student could be asked to interpret a weather map taken from a newspaper.

**LOCATE:** The student could be asked to locate the position of chlorine on the periodic table.

**NOTE:** To locate is to describe location. It is not identification of location.

**MEASURE:** Given a container graduated in cubic centimeters, the student could be asked to measure a specific amount of liquid.

**NAME:** The student could be asked to name the parts of an electromagnet.

**ORDER:** The student could be asked to order a number of animal life forms according to their normal length of life.

**PREDICT:** From a description of the climate and soils of an area, the student could be asked to predict the plant ecology of the area.

**SOLVE:** The student could be asked to solve the following: How many grams of H<sub>2</sub>O will be formed by the complete combustion of one liter of hydrogen at 70 degrees C?

**STATE A RULE:** The student could be asked to state a rule that tell what form the offspring of mammals will be, i.e. they will be very similar to their parent organisms.

**TRANSLATE:** The student could be asked to translate 93,000,000 into standard scientific notation.

### **Examples of Activities: Mathematics**

**APPLY A RULE:** Given a pair of equations such as  $2 + 4 + 7 = 13$ , and  $7 + 2 + 4 = \underline{\quad}$ , the student could be asked to apply a rule that would give him the solution to the second equation of the pair without adding the factors. His response should include a statement to the effect that the same numbers are to be added in each equation, but in different order (analysis) and that the order of addition makes no difference in the solution of the equations. Therefore, the sum of both equations is the same.

**CLASSIFY:** Given a series of numbers drawn at random from 1 - 1000, the student could be asked to classify them into categories of even divisibility by 2, 3, 4, and so on.

**CONSTRUCT:** Given a straight edge, compass, and paper, the student could be asked to construct an equilateral triangle.

**DEFINE:** Given an assortment of various kinds of coins, the student could be asked to define some categories into which the coins could be classified. His response would include definitions such as, "All of the pennies, all of the nickels, all of the dimes, etc., could be put in separate piles. Or all the coins containing silver could be put in one pile and those that don't into another pile."

**DEMONSTRATE:** Given a sufficient number of concrete objects and an equation such as  $3 \times 4 = 12$ , the student could be asked to use the objects to demonstrate that multiplication is repeated addition. His response would include placement of twelve objects in three groups of four each, or four groups of three each. He may also be asked to describe how the demonstrations show repeated addition.

**DESCRIBE:** The student could be asked to describe a method of determining a number of groups of five objects in a collection of 45 objects. The response would include a statement that groups of five members would be counted out and then the number of groups could be counted. The student may also be asked to demonstrate the process he described.

**DIAGRAM:** The student could be asked to graph the equation  $y = 2x^2 - x + 3$ .

**DISTINGUISH:** Given pairs of numbers, one number of each pair a prime number, the student could be asked to identify the prime number in each pair.

**ESTIMATE:** Given multiplication examples with three-digit numerals in both the multiplier and multiplicand, the student estimates the products to the nearest thousand.

**IDENTIFY:** The student could be asked to point to the numeral ninety-four on a numeration chart.

**INTERPRET:** Given a bar graph showing the per unit cost of food products when purchased in various size packages, the student interprets it by stating the lowest and highest per unit cost and by describing the relationship between increased package size and per unit cost of the product.

**LOCATE:** The student could be asked to locate a particular desk in his classroom by stating the row it is in and the ordinal position from the front of the room. "John's desk is the fourth one from the front, in the second row, from the east wall."

**NAME:** What is the name of this collection of objects? Answer: "A set." What is the name of this type of equation? Answer: "A quadratic equation."

**ORDER:** Given a number of objects of different lengths, the student orders them from lesser to greater length.

**PREDICT:** The student could be asked to predict the next term in an increasing arithmetic series such as 2, 5, 9, 14 \_\_\_\_.

**SOLVE:** The student could be asked to solve the following:  $2 + 3 = \underline{\quad}$ . In this example, the type of operation is clearly indicated. Or, he could be asked to solve the following: "Jimmy, John, Bill, and Sam each had three marbles. John gave Bill two of his marbles. How many marbles did Jimmy and Sam have together then?" In this example, the operation to be performed is not specified, and extraneous factors are introduced.

**STATE A RULE:** In response to the question: "Why is the sum of two numbers no different if the order of adding them is reversed?" The student answers: "Because of the commutative principle," or "Because the order makes no difference in addition."

### **Examples of Activities: Social Studies**

**APPLY A RULE:** Given population data that illustrates the principle that the standard of living decreases if population increases without corresponding increase in production, the student could be asked to analyze the data to tell and tell how he is able to determine what effects changing population will have upon the standard of living.

**CLASSIFY:** Given photographs of various people and definitions of racial classes, the student could be asked to classify the photographs according to the races of the people portrayed.

**CONSTRUCT:** Given appropriate materials, the student could be asked to construct a model of a city water system.

**DEFINE:** Given a filmed or taped situation in which several forms of communication are portrayed, the student could be asked to define several categories of communication. His response could include definitions for verbal, non-verbal, pictorial, visual, auditory, or any of several other classes or categories of communication.

**DEMONSTRATE:** The student could be asked to demonstrate the use of calipers to determine the measurements for obtaining cephalic indices. Or he could be asked to demonstrate use of a compass to determine direction.

**DESCRIBE:** The student could be asked to describe the culture of a particular Indian tribe.

**DIAGRAM:** The student could be asked to diagram the steps involved in the passage of a bill through the legislature.

**DISTINGUISH:** Given the names of ancient Greek and Roman gods paired according to function, the student could be asked to distinguish between them.

**ESTIMATE:** Given the day of the year and the latitude, the student could be asked to estimate the length of daylight at a particular place.

**IDENTIFY:** Given the name of one of the U.S. presidents, and photographs of several, the student could be asked to identify the picture of the one which was named.

**INTERPRET:** Given a bar graph that shows production of steel in the U.S. during the last fifty years, the student could be asked to interpret the graph. His response could include references to times of production increases or decreases, total amount of decreases or increases, and differences in production between the years.

**LOCATE:** The student could be asked to locate, in time, the first battle of the American Revolution.

**MEASURE:** Given a string and a globe with a scale of miles, the student could be asked to measure the scaled distance between any two given points.

**NAME:** The student could be asked to name the factors that contribute to natural population increases.

**ORDER:** Given the names of the declared wars in which the U.S. has engaged, the student could be asked to order them according to the time of occurrence.

**PREDICT:** The student could be asked to predict the type of economy that could be supported in described geographic regions.

**SOLVE:** Given tables of prices and costs, the student could be asked to solve problems related to the law of diminishing returns.

**STATE A RULE:** In response to the question: "What controlled the inheritance of family property in the European Middle Ages?" the student would respond with a statement that indicated that property was inherited by the eldest son.

Source:

Adapted from "Writing Behavioral Objectives", Dr. Robert Kizlik