

GUIDELINES TO WRITE LEARNING OUTCOMES (LO)

ALL the learning outcomes have to be measurable. In the QUALITY ASSESSMENT WORKSHOP we are going to develop evaluation tools based on the LEARNING OUTCOMES YOU HAVE DEFINED. If the learning outcomes are not well defined, the evaluation is going to be wrong.

1. What is a learning outcome?

It is *statements of what a learner is expected to know, understand and/or be able to do at the end of a period of learning*. They **describe significant and essential learning that learners have achieved**, and can reliably demonstrate at the end of a course or program. Learning outcomes refer to **observable and measurable** knowledge/ skills/attitudes.

2. Main difference between Objectives and Learning outcomes

Objectives: focused on what the **teacher/lecturer** does.

Learning outcomes: focused on what the **student** should learn or do.

Table 1. Examples of verbs used to define objectives and to define learning outcomes

Objectives	Learning outcomes
Know	Distinguish between
Understand	Choose
Determine	Modify
Be familiar with	Identify
Learn	Apply, solve

3. Verbs we should use in learning outcomes

Cognitive verbs

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

Mostly belong to the BSc oriented courses

Mostly belong to the MSc oriented courses

Words to AVOID

know	really know	approach	think critically	grasp the significance of
learn	understand	appreciate	expand horizons	expand understanding

Examples

After attending this activity, the participant will demonstrate the ability to:

- Recognize four common causes of shoulder pain
- Compare and contrast several management strategies for patients with chronic shoulder pain
- Describe the current clinical practice for the treatment of metastatic brain tumors in adults
- Evaluate the process of translating laboratory research into clinical trials for patients with malignant gliomas
- Outline current advances in molecular biology, immune therapy, stem cell therapeutics, and drug delivery systems for brain tumors

4. Some extra examples

Learning (Cognitive) category	Examples of LEARNING OUTCOMES, key words (verbs) top define the LO
<p>Remembering: Recall or retrieve previous learned information.</p>	<p>Examples: Recite a policy. Quote prices from memory to a customer. Recite the safety rules. Key Words: defines, describes, identifies, knows, labels, lists, matches, names, outlines, recalls, recognizes, reproduces, selects, states</p>
<p>Understanding: Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.</p>	<p>Examples: Rewrite the principles of test writing. Explain in one's own words the steps for performing a complex task. Translate an equation into a computer spreadsheet. Key Words: comprehends, converts, defends, distinguishes, estimates, explains, extends, generalizes, gives an example, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates</p>
<p>Applying: Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situations in the work place.</p>	<p>Examples: Use a manual to calculate an employee's vacation time. Apply laws of statistics to evaluate the reliability of a written test. Key Words: applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses</p>
<p>Analyzing: Separates material or concepts into component parts so that its organizational structure may be understood. Distinguishes between facts and inferences.</p>	<p>Examples: Troubleshoot a piece of equipment by using logical deduction. Recognize logical fallacies in reasoning. Gathers information from a department and selects the required tasks for training. Key Words: analyzes, breaks down, compares, contrasts, diagrams, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates</p>
<p>Evaluating: Make judgments about the value of ideas or materials.</p>	<p>Examples: Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget. Key Words: appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes, supports</p>
<p>Creating: Builds a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.</p>	<p>Examples: Write a company operations or process manual. Design a machine to perform a specific task. Integrates training from several sources to solve a problem. Revises and process to improve the outcome. Key Words: categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes</p>