

Learning Outcomes The Cognitive Process Dimension

Category	Action Verbs and Cognitive Processes	Assessment Formats
Remember - retrieve relevant knowledge from long-term memory	<p>Recognizing - comparing knowledge from long-term memory with presented information.</p> <p><u>Sample learning outcome verbs may include:</u> <i>identify, recognize, select, label, arrange, order, repeat, copy, duplicate, match, associate.</i></p>	True-false; Multiple choice; Matching items from two lists
	<p>Recalling - retrieving knowledge from long-term memory when presented with a question.</p> <p><u>Sample learning outcome verbs may include:</u> <i>recall, locate, retrieve, list, name, reproduce, state, describe, cite, recite, define, quote.</i></p>	Questions vary depending on the extent of providing hints and being placed within a larger context
Understand - construct meaning from oral, written, and graphic communication	<p>Interpreting - moving from one form of representation to another.</p> <p><u>Sample learning outcome verbs may include:</u> <i>represent, interpret, clarify, paraphrase, reproduce, change, modify, convert, transform, translate, restate, rewrite, quantify.</i></p>	Construct or selecting given information in a different form (e.g. transforming a verbal representation of a system into a use-case diagram)
	<p>Exemplifying - finding a specific example of a concept or principle.</p> <p><u>Sample learning outcome verbs may include:</u> <i>give example, illustrate.</i></p>	Asking the student to give a constructed or selected example
	<p>Classifying - placing something in category.</p> <p><u>Sample learning outcome verbs may include:</u> <i>group, categorize, classify.</i></p>	Asking a student to pair an instance with a concept, principle, or category
	<p>Summarizing - synthesizing general points.</p> <p><u>Sample learning outcome verbs may include:</u> <i>summarize, generalize, synthesize, assemble, combine, compile, integrate, consolidate.</i></p>	Asking a student to produce a theme or summary when presented with an information
	<p>Inferring - drawing a logical conclusion from the presented information.</p> <p><u>Sample learning outcome verbs may include:</u> <i>extrapolate, interpolate, predict, conclude, infer, deduce.</i></p>	Completion tasks - complete a series; Analogy tasks - complete an analogy; Oddity tasks - determining which of several items does not belong to a list

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	<p>Comparing - detecting correspondences between two or more entities.</p> <p>Sample learning outcome verbs may include: <i>compare, contrast, map, match, correlate.</i></p>	<p>Mapping - showing correspondence between respective parts of two entities</p>
	<p>Explaining - constructing a cause-and-effect model of a system.</p> <p>Sample learning outcome verbs may include: <i>sequence, explain, diagnose, troubleshoot, repair, redesign, predict, prescribe.</i></p>	<p>Reasoning - offering a reason for a given event; Troubleshooting - diagnosing the problem in a malfunctioning system; Redesigning - making changes in a system to accomplish some goal; Predicting - determining what effect a change in one part of a system will have on another part of a system</p>
<p>Apply - carry out or use a procedure in a given situation</p>	<p>Executing (carrying out a procedure with a familiar task) - associated with the use of skills and algorithms, applies procedural knowledge.</p> <p>Sample learning outcome verbs may include: <i>carry out, calculate, compute, operate, process, execute, follow, perform, use, utilize, practice.</i></p>	<p>Applying a well-known procedure to a familiar problem</p>
	<p>Implementing (using a procedure with an unfamiliar task) - associated with the use of techniques and methods, applies conceptual knowledge.</p> <p>Sample learning outcome verbs may include: <i>adapt, implement, demonstrate, determine, conduct.</i></p>	<p>Determining the procedure necessary for solving an unfamiliar problem</p>
<p>Analyze - break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose</p>	<p>Differentiating - distinguishing relevant from irrelevant parts or important from unimportant parts of presented material.</p> <p>Sample learning outcome verbs may include: <i>select, discriminate, distinguish, differentiate, focus on, point out.</i></p>	<p>Determining which parts in a given material are most important or relevant</p>
	<p>Organizing - determining how elements fit within a structure.</p> <p>Sample learning outcome verbs may include: <i>analyze, break down, organize, outline, sketch, draw, diagram, chart, tabulate, parse, separate, subdivide.</i></p>	<p>Providing an outline, table, matrix, or hierarchical diagram</p>

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	<p>Attributing - determining a point of view, intent, purpose.</p> <p><u>Sample learning outcome verbs may include:</u> attribute, ascribe, depict, describe, infer, deduce.</p>	<p>Constructing or selecting a description of the author's point of view or intentions when presented with some written or oral material</p>
<p>Evaluate - make judgments based on criteria and standards</p>	<p>Checking - detecting inconsistencies or fallacies within a process or product (internal inconsistency).</p> <p><u>Sample learning outcome verbs may include:</u> detect, monitor, coordinate, test.</p>	<p>Detecting inconsistencies or logical flaws in presented information</p>
	<p>Critiquing - detecting inconsistencies between a product and external criteria (external inconsistency).</p> <p><u>Sample learning outcome verbs may include:</u> grade, score, judge, reason, appraise, assess, defend, estimate, argue, rank, rate, support, review, critique, justify, recommend, prove, disprove, refute, qualify, criticize, verify, evaluate, discuss.</p>	<p>Evaluating a proposed solution or hypothesis; judging which of several methods provides a better solution to a problem</p>
<p>Create - put elements together to form a structure or reorganize elements into a new structure</p>	<p>Generating - coming up with alternative hypotheses based on criteria.</p> <p><u>Sample learning outcome verbs may include:</u> generate, hypothesize, theorize, research, experiment, explore.</p>	<p>Producing alternatives or hypotheses - generating alternative methods for achieving a particular result; Consequences tasks - listing all possible consequences of a certain event; Uses tasks - listing all possible uses for an object</p>
	<p>Planning - devising a procedure for accomplishing some task.</p> <p><u>Sample learning outcome verbs may include:</u> design, devise, solve, propose, formulate, plan, prepare, systematize, improve, innovate, refine.</p>	<p>Developing a solution method, describing solution plans, or selecting solution plans for a given problem.</p>
	<p>Producing - inventing a product.</p> <p><u>Sample learning outcome verbs may include:</u> write, construct, produce, compose, invent, create, program, build.</p>	<p>Developing a novel product that satisfies a description</p>