

## 4.1 THE KNOWLEDGE DIMENSION

MAJOR TYPES AND SUBTYPES	EXAMPLES
<b>A. FACTUAL KNOWLEDGE</b> —The basic elements students must know to be acquainted with a discipline or solve problems in it	
<b>AA.</b> Knowledge of terminology	Technical vocabulary, music symbols
<b>AB.</b> Knowledge of specific details and elements	Major natural resources, reliable sources of information
<b>B. CONCEPTUAL KNOWLEDGE</b> —The interrelationships among the basic elements within a larger structure that enable them to function together	
<b>BA.</b> Knowledge of classifications and categories	Periods of geological time, forms of business ownership
<b>BB.</b> Knowledge of principles and generalizations	Pythagorean theorem, law of supply and demand
<b>BC.</b> Knowledge of theories, models, and structures	Theory of evolution, structure of Congress
<b>C. PROCEDURAL KNOWLEDGE</b> —How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods	
<b>CA.</b> Knowledge of subject-specific skills and algorithms	Skills used in painting with water colors, whole-number division algorithm
<b>CB.</b> Knowledge of subject-specific techniques and methods	Interviewing techniques, scientific method
<b>CC.</b> Knowledge of criteria for determining when to use appropriate procedures	Criteria used to determine when to apply a procedure involving Newton's second law, criteria used to judge the feasibility of using a particular method to estimate business costs
<b>D. METACOGNITIVE KNOWLEDGE</b> —Knowledge of cognition in general as well as awareness and knowledge of one's own cognition	
<b>DA.</b> Strategic knowledge	Knowledge of outlining as a means of capturing the structure of a unit of subject matter in a text book, knowledge of the use of heuristics
<b>DB.</b> Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge	Knowledge of the types of tests particular teachers administer, knowledge of the cognitive demands of different tasks
<b>Dc.</b> Self-knowledge	Knowledge that critiquing essays is a personal strength, whereas writing essays is a personal weakness; awareness of one's own knowledge level

## 5.1 THE COGNITIVE PROCESS DIMENSION

CATEGORIES & COGNITIVE PROCESSES	ALTERNATIVE NAMES	DEFINITIONS AND EXAMPLES
<b>1. REMEMBER</b> —Retrieve relevant knowledge from long-term memory		
<b>1.1 RECOGNIZING</b>	Identifying	Locating knowledge in long-term memory that is consistent with presented material (e.g., Recognize the dates of important events in U.S. history)
<b>1.2 RECALLING</b>	Retrieving	Retrieving relevant knowledge from long-term memory (e.g., Recall the dates of important events in U.S. history)
<b>2. UNDERSTAND</b> —Construct meaning from instructional messages, including oral, written, and graphic communication		
<b>2.1 INTERPRETING</b>	Clarifying, paraphrasing, representing, translating	Changing from one form of representation (e.g., numerical) to another (e.g., verbal) (e.g., Paraphrase important speeches and documents)
<b>2.2 EXEMPLIFYING</b>	Illustrating, instantiating	Finding a specific example or illustration of a concept or principle (e.g., Give examples of various artistic painting styles)
<b>2.3 CLASSIFYING</b>	Categorizing, subsuming	Determining that something belongs to a category (e.g., Classify observed or described cases of mental disorders)
<b>2.4 SUMMARIZING</b>	Abstracting, generalizing	Abstracting a general theme or major point(s) (e.g. Write a short summary of the event portrayed on a videotape)
<b>2.5 INFERRING</b>	Concluding, extrapolating, interpolating, predicting	Drawing a logical conclusion from presented information (e.g., In learning a foreign language, infer grammatical principles from examples)
<b>2.6 COMPARING</b>	Contrasting, mapping, matching	Detecting correspondences between two ideas, objects, and the like (e.g., Compare historical events to contemporary situations)
<b>2.7 EXPLAINING</b>	Constructing models	Constructing a cause-and-effect model of a system(e.g., explain the causes of important 18th Century events in France)
<b>3. APPLY</b> —Carry out or use a procedure in a given situation		
<b>3.1 EXECUTING</b>	Carrying out	Applying a procedure to a familiar task (e.g., Divide one whole number by another whole number, both with multiple digits)
<b>3.2 IMPLEMENTING</b>	Using	Applying a procedure to an unfamiliar task (e.g., Use Newton's Second Law in situations in which it is appropriate)

## 5.1 THE COGNITIVE PROCESS DIMENSION (CONTINUED)

CATEGORIES & COGNITIVE PROCESSES	ALTERNATIVE NAMES	DEFINITIONS AND EXAMPLES
<b>4. ANALYZE</b> —Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose		
<b>4.1 DIFFERENTIATING</b>	Discriminating, distinguishing, focusing, selecting	Distinguishing relevant from irrelevant parts or important from unimportant parts of presented material (e.g., Distinguish between relevant and irrelevant numbers in a mathematical word problem)
<b>4.2 ORGANIZING</b>	Finding coherence, intergrating, outlining, parsing, structuring	Determining how elements fit or function within a structure (e.g., Structure evidence in a historical description into evidence for and against a particular historical explanation)
<b>4.3 ATTRIBUTING</b>	Deconstructing	Determine a point of view, bias, values, or intent underlying presented material (e.g., Determine the point of view of the author of an essay in terms of his or her political perspective)
<b>5. EVALUATE</b> —Make judgments based on criteria and standards		
<b>5.1 CHECKING</b>	Coordinating, detecting, monitoring, testing	Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting the effectiveness of a procedure as it is being implemented (e.g., Determine if a scientist's conclusions follow from observed data)
<b>5.2 CRITIQUING</b>	Judging	Detecting inconsistencies between a product and external criteria, determining whether a product has external consistency; detecting the appropriateness of a procedure for a given problem (e.g., Judge which of two methods is the best way to solve a given problem)
<b>6. CREATE</b> —Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure		
<b>6.1 GENERATING</b>	Hypothesizing	Coming up with alternative hypotheses based on criteria (e.g., Generate hypotheses to account for an observed phenomenon)
<b>6.2 PLANNING</b>	Designing	Devising a procedure for accomplishing some task (e.g., Plan a research paper on a given historical topic)
<b>6.3 PRODUCING</b>	Constructing	Inventing a product (e.g., Build habitats for a specific purpose)