

Thinking Through Quality Questioning

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Frame Quality Questions

- Design a set of incentives to encourage individuals to conserve energy and participate in community recycling programs. (planning)
- Construct a website that will attract individuals who are committed to beautifying their local neighborhood. (producing)

The six cognitive levels are further explicated in Figure 2.6.

Figure 2.6 The Cognitive Process Dimension

Categories and Cognitive Processes	Alternative Names	Definitions and Examples
1. Remember —Retrieve relevant knowledge from long-term memory		
1.1 Recognizing	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)
1.2 Recalling	Retrieving	Retrieving relevant knowledge from long-term memory (e.g., Recall the dates of important events in U.S. history)
2. Understand —Construct meaning from instructional messages, including oral, written, and graphic communication		
2.1 Interpreting	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)
2.2 Exemplifying	Illustrating Instantiating	Finding a specific example or illustration of a concept or principle (e.g., Give examples of various artistic painting styles)
2.3 Classifying	Categorizing Subsuming	Determining that something belongs to a category (e.g., concept or principle) (e.g., Classify observed or described cases of mental disorders)
2.4 Summarizing	Abstracting Generalizing	Abstracting a general theme or major point(s) (e.g., Write a short summary of the events portrayed on a videotape)
2.5 Inferring	Concluding Extrapolating Interpolating Predicting	Drawing a logical conclusion from presented information (e.g., In learning a foreign language, infer grammatical principles from examples)

(Continued)

Figure 2.6 (Continued)

Categories and Cognitive Processes	Alternative Names	Definitions and Examples
2.6 Comparing	Contrasting Mapping Matching	Detecting correspondences between two ideas, objects, and the like (e.g., Compare historical events to contemporary situations)
2.7 Explaining	Constructing	Constructing a cause-and-effect model of a system (e.g., Explain the causes of important 18th-century events in France)
3. Apply —Carry out or use a procedure in a given situation		
3.1 Executing	Carrying out	Applying a procedure to a familiar task (e.g., Divide one whole number by another whole number, both with multiple digits)
3.2 Implementing	Using	Applying a procedure to an unfamiliar task (e.g., Use Newton's Second Law in situations in which it is appropriate)
4. Analyze —Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose		
4.1 Differentiating	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)
4.2 Organizing	Finding coherence Integrating Outlining Parsing Structuring	Determine 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)
4.3 Attributing	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)
5. Evaluate —Make judgments based on criteria and standards		
5.1 Checking	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)

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Categories and Cognitive Processes	Alternative Names	Definitions and Examples
5.2 Critiquing	Judging	Detecting inconsistencies between 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)
6. Create —Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure		
6.1 Generating	Hypothesizing	Coming up with alternative hypotheses based on criteria (e.g., Generate hypotheses to account for an observed phenomenon)
6.2 Planning	Designing	Devising a procedure for accomplishing some task (e.g., Plan a research paper on a given historical topic)
6.3 Producing	Constructing	Inventing a product (e.g., Build habitats for a specific purpose)

Anderson & Krathwohl, A TAXONOMY OF LEARNING, TEACHING, AND ASSESSING, Table 5.1 "The Cognitive Process Dimension" pp. 66–67, © 2001 by Addison Wesley Longman, Inc. Reproduced by permission of Pearson Education, Inc.

Thinking Through QQ: The Revised Bloom Taxonomy (Anderson & Krathwohl, 2001) reorders the six cognitive levels introduced in the original taxonomy. What is your reaction to these changes? How might you be able to use the revised taxonomy as a tool for helping students better understand the different dimensions of cognitive processing?



MATCH TO SOCIAL CONTEXT

The traditional context for student questioning is the Initiation-Response-Evaluation-Follow-up model, in which a teacher asks a question of one student, evaluates the student's answer as to its correctness, and moves on to pose a question to another student. Wells (2001a) describes this as the "default option" to which most teachers almost always return (p. 185).

When teachers revert to the default option for asking questions, two student decisions strongly influence who will answer: (1) deciding whether to volunteer a response by raising (or waving!) their hands and (2) determining where to position themselves in the classroom, either in