

# One Pagers

By: Manny Straehle, Stacey McLaughlin, Dasha Bukreyeva, Sherryl Hering, and Austin Fossey

## What You Need to Know About Cognitive Levels and Bloom's Taxonomy

Our staff of experts over the past few years have consulted over 100 credentialing and certification examination programs. Over the years, we have formulated a method to help you consider and use cognitive levels effectively.

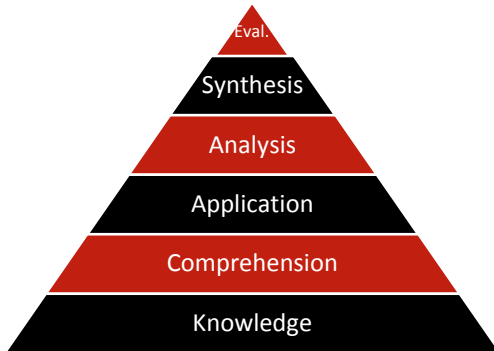


Figure 1. Bloom's Taxonomy

**Example of Application and Above Cognitive Level Question:** A 72-year-old man is brought to the hospital since he has had pain across the right area of his upper chest for the past 2 hours. His temperature is 100.0°F, pulse rate is 110/min, and is medicated for hypertension. Upon further physical examination, it is revealed that he has consumed a significant amount of liquor and has not taken his blood pressure medicine for the past month. He has no history of any heart abnormalities and his last physical examination revealed no health issues except for hypertension three months ago. Please estimate from the range below his blood pressure.

**Example of Knowledge/Comprehension Cognitive Level Question:** What is a normal blood pressure range?

### What are cognitive levels?

In 1956, [Benjamin Bloom and his colleagues](#) of educational psychologist classified levels of learning as individuals progressed to mastery. In fact, part of the title of Bloom's taxonomy for the cognitive domain was called a *Taxonomy for Educational Objectives, The Classification of Educational Goals*. Often, assessment professionals forget that these are educational goals rather than assessment goals.

### What was the intended purpose of cognitive levels?

Cognitive levels were primarily designed for K-12 educators to write instructional objectives that could later be evaluated. Bloom and his colleagues wrote, "You are reading about an attempt to build a taxonomy of educational objectives. It is intended to provide for classification of the goals of our educational system. It is expected to be of general help to all teachers, administrators, professional specialists, and research workers who deal with curricular and evaluation problems." (p. 1).

### Why does the credentialing industry attempt to use cognitive levels?

Some researchers believe that the use of cognitive levels in credentialing stems from the process of assessing and evaluating instructional objectives, as was demonstrated in [Ralph Tyler's](#) influential work. However, many agree that the use of Bloom's Taxonomy was linked to the demands of state testing after President Johnson introduce legislation as a part of Title 1 to define the various levels of skills across K-12 students.

### What is the issue with Bloom's Taxonomy related to assessment purposes?

Even experts have difficulty in classifying and understanding objectives or questions accurately, particularly at higher cognitive levels. The hierarchy has been shown to have issues and attempts have been made to improve upon these issues with revised taxonomies. At AERE, we have observed this experience with the subject matter experts who have difficulty writing items that require higher cognitive levels because they are unable to accurately classify these assessment goals to the taxonomy. Hence, the reason psychometricians at AERE have devised methods to overcome this shortcoming.

### What does AERE recommend when writing your items pertaining to cognitive levels?

1. Understand the goals of your certification program. At the end of the day, what do you expect your credential holder to know and at what level of proficiency.
2. Determine the type of items that will be used on the exam. If it is a performance based assessment, you may want to consider application levels rather than recall or understanding.
3. When reviewing the completed test specifications, perhaps use two categories for each task, knowledge, and other characteristic statements. At AERE, we recommend using recall/understanding level or applied level instead of using the Bloom's complete Taxonomy since item writers and others have difficulty defining and relating to the other levels.
4. Consider using other skill and mastery models such as [Miller's model](#) or [Dreyfus and Dreyfus](#) since they are more applicable.