

Bloom's Taxonomy

Bloom's Taxonomy is a way to classify types of questions that a teacher might ask a student. It was first developed in 1956 by a committee of educators led by Benjamin Bloom, and is particularly useful to teachers, as well as college students preparing for exams.

The taxonomy, or categorization of question types, is hierarchical. That is, the higher the level of question asked, the more thinking that is involved and the greater the understanding. Skills in the *cognitive domain* involve knowledge, comprehension, and critical thinking. Teachers tend to emphasize the skills in this domain, particularly the lower-order questions, when they are asking questions or making summative assessment tools (tests).

Bloom's Taxonomy is an important guide for teachers because real learning, and real evidence of learning, takes place when higher-order questions are asked. *But Education students (or any college student, for that matter) can study for exams more effectively if they ensure that they can answer questions at the highest levels. I'll illustrate this further below.*

Knowledge

The lowest order of questions is one that involves remembering facts. These are recall-type questions that may involve students showing that they have memorized something, can recognize something, or know some information. For example, a teacher might ask "Which of these shapes is a square?", or "What is seven times six?", or "Who is the current Prime Minister of Canada?"

Clearly these are low-level questions because no understanding of the material is necessary to answer them. Yet factual knowledge is important, particularly in the lower grades, because further understanding must be based on a solid body of information.

Comprehension

This is the second level of questioning. Here the teacher wants to make sure that the students not only can recall information, but that they understand it. Students may be asked to interpret data, graphs or diagrams. They may be asked to restate something in their own words, reorganize facts and ideas, or interpret the meaning of a written passage.

College students preparing for an exam need to make sure they understand what they have been taught, and what's in their notes. One way to do this is to make sure they can restate everything using their own words, rather than trying to memorize a collection of ideas, theories or facts.

Application

The third level of questioning involves problem solving and applying information to answer new questions. It could involve the use of principles or rules in new situations.

A teacher might ask “How is this an example of ...”, or “How would you apply this theory to ...”, or “Solve this problem using what you know about ...”

Clearly a college student needs to be able to anticipate the types of questions that will appear on an exam, and make sure that they can use all the principles or theories they have learned to answer or solve questions or problems that are posed. Often further reading, or perhaps help from someone else, will be necessary to accomplish this.

Analysis

This next higher level of questioning involves analyzing information and breaking it into parts to show that it is understood. It might involve making a summary, outline or diagram of information that has been presented. A teacher might ask “How does this compare with ...”, or “What evidence can you list for ...”, or “What are the features of ...”.

College students will need to break down the information in their notes and make sure they understand all the component parts, and how they relate to other learning in the course.

Synthesis

Synthesis is the second highest level, and it is all about creating things. Students will be asked to take information that they understand and make something new and unique with it. This may be a new idea, a design, a solution to a new problem, or a written piece that combines several ideas into a whole.

Teachers might ask “What would you infer from ...”, or “What ideas can you add to ...”, or “What might happen if you ...”. or even “How will this information help you to ...”

Clearly a lot of thought must go into a student’s answer, which will involve knowledge, comprehension, applications and analysis. A good answer will tell the teacher that the student really understands the material.

College students, and particularly education students, are asked to do this all the time when they write papers. Obviously writing skills are very important, particularly those which involve organizing ideas and presenting them logically. Students can expect similar types of questions on their final exams, and should do some writing to prepare. Their instructor might suggest themes which could be explored in writing, to get ready for the exam.

Evaluation

The highest level of questioning in this version of Bloom's Taxonomy is 'evaluation'. This usually involves responding to information that has been presented, by giving opinions, identifying strengths and weaknesses, prioritizing, or making decisions based on criteria you develop.

A teacher might ask "Do you agree ...", or "What is the most important ...", or "What do you think about ...".

Students preparing for college exams should have had experience answering these types of questions in their day-to-day classes. They should have been recording in their notes not just the information presented by the instructor, but the questions that were asked too. Discussing the ideas in the notes with someone who can ask you probing questions at this level is a good way to study.

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The purpose of this article was two-fold. First, the aim was to illustrate how teachers can both improve learning and check for thorough understanding by asking higher-level questions. Student teachers doing a practicum will be expected to use higher-order questions once in a while, as will practicing teachers who are being evaluated.

The second purpose was to give college students a better idea of how to prepare for exams. This preparation needs to go way beyond just reading the notes. Preparing thoroughly for a college exam with the expectation of getting a good mark should also include further reading, some writing, as well as discussions with others about the material. These discussions should include higher-level questions.