Higher Order Thinking: Bloom's Taxonomy

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1 Introduction

Many students start college using the study strategies they used in high school, which is understandable—the strategies worked in the past, so why wouldn't they work now? As you may have already figured out, college is different. Classes may be more rigorous (yet may seem less structured), your reading load may be heavier, and your professors may be less accessible. For these reasons and others, you'll likely find that your old study habits aren't as effective as they used to be. Part of the reason for this is that you may not be approaching the material in the same way as your professors. In this handout, we provide information on Bloom's Taxonomy—a way of thinking about your schoolwork that can change the way you study and learn to better align with how your professors think (and how they grade).

2 Why higher order thinking leads to effective study

Most students report that high school was largely about remembering and understanding large amounts of content and then demonstrating this comprehension periodically on tests and exams. Bloom's Taxonomy is a framework that starts with these two levels of thinking as important bases for pushing our brains to five other higher order levels of thinking—helping us move beyond remembering and recalling information and move deeper into application, analysis, synthesis, evaluation, and creation—the levels of thinking that your professors have in mind when they are designing exams and paper assignments. Because it is in these higher levels of thinking that our brains truly and deeply learn information, it's important that you integrate higher order thinking into your study habits.

The following categories can help you assess your comprehension of readings, lecture notes, and other course materials. By creating and answering questions from a variety of categories, you can better anticipate and prepare for all types of exam questions. As you learn and study, start by asking yourself questions and using study methods from the level of remembering. Then, move progressively through the levels to push your understanding deeper—making your studying more meaningful and improving your long-term retention.

2.1 Level 1: Remember

This level helps us recall foundational or factual information: names, dates, formulas, definitions, components, or methods.

Study methods	Types of questions to ask yourself
Make and use flashcards for key terms.	How would you define . . .?
Make a list or timeline of the main events.	List the . . . in order.
List the main characteristics of something.	Who were . . .?

表 1: Level 1: Remember

2.2 Level 2: Understand

Understanding means that we can explain main ideas and concepts and make meaning by interpreting, classifying, summarizing, inferring, comparing, and explaining.

Study methods	Types of questions to ask yourself
Discuss content with or explain to a partner.	How would you differentiate between . . . and . . .?
Explain the main idea of the section.	What is the main idea of . . .?
Write a summary of the chapter in your own words.	Why did . . .?

表 2: Level 2: Understand

2.3 Level 3: Apply

Application allows us to recognize or use concepts in real-world situations and to address when, where, or how to employ methods and ideas.

Study methods	Types of questions to ask yourself
Seek concrete examples of abstract ideas.	Why does . . . work?
Work practice problems and exercises.	How would you change . . .?
Write an instructional manual or study guide on the chapter that others could use.	How would you develop a set of instructions about . . .?

表 3: Level 3: Apply

2.4 Level 4: Analyze

Analysis means breaking a topic or idea into components or examining a subject from different perspectives. It helps us see how the "whole" is created from the "parts". It's easy to miss the big picture by getting stuck at a lower level of thinking and simply remembering individual facts without seeing how they are connected. Analysis helps reveal the connections between facts.

Study methods	Types of questions to ask yourself
Generate a list of contributing factors.	How does this element contribute to the whole?
Determine the importance of different elements or sections.	What is the significance of this section?
Think about it from a different perspective.	How would ... group see this?

表 4: Level 4: Analyze

2.5 Level 5: Synthesize

Synthesizing means considering individual elements together for the purpose of drawing conclusions, identifying themes, or determining common elements. Here you want to shift from "parts" to "whole".

Study methods	Types of questions to ask yourself
Generalize information from letures and readings.	Develop a proposal that would ...?
Condense and re-state the content in one or two sentences.	How can you paraphrase this information into 1-2 concise sentences?
Compare and contrast.	What makes ... similar and different from ...?

表 5: Level 5: Synthesize

2.6 Level 6: Evaluate

Evaluating means making judgments about something based on criteria and standards. This requires checking and critiquing an argument or concept to form an opinion about its value. Often there is not a clear or correct answer to this type of question. Rather, it' s about making a judgment and supporting it with reasons and evidence.

Study methods	Types of questions to ask yourself
Decide if you like, dislike, agree, or disagree with an author or a decision.	What is your opinion about ...? What evidence and reasons support your opinion?
Consider what you would do if asked to make a choice.	How would you improve this?
Determine which approach or argument is most effective.	Which argument or approach is stronger? Why?

表 6: Level 6: Evaluate

2.7 Level 7: Create

Creating involves putting elements together to form a coherent or functional whole. Creating includes reorganizing elements into a new pattern or structure through planning. This is the highest and most advanced level of Bloom' s Taxonomy.

Study methods	Types of questions to ask yourself
Build a model and use it to teach the information to others.	How can you create a model and use it to teach this information to others?
Design an experiment.	What experiment can you make to demonstrate or test this information?
Write a short story about the concept.	How can this information be told in the form of a story or poem?

表 7: Level 7: Create