

3.1 Types of Thinking

LEARNING OBJECTIVES

1. Understand that there are different types of thinking.
2. Identify how each type of thinking contributes to learning.

So what are the various types of thinking skills, and what kind things are we doing when we apply them? In the 1950s, Benjamin Bloom developed a classification of thinking skills that is still helpful today; it is known as **Bloom’s taxonomy**. He lists six types of thinking skills, ranked in order of complexity: knowledge, comprehension, application, analysis, synthesis, and evaluation. [Figure 3.2 "Types of Thinking Skills"](#) outlines each skill and what is involved in that type of thinking, as updated by Lorin Anderson and David Krothwohl. L. W. Anderson and David R. Krathwohl, eds., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom’s Taxonomy of Educational Objectives* (Boston, MA: Allyn & Bacon, 2001).

Figure 3.2 Types of Thinking Skills

Thinking Skill	What It Involves
1. Remembering and Recalling	Retrieving or repeating information or ideas from memory. This is the first and most basic thinking skill you develop (starting as a toddler with learning numbers, letters, and colors).
2. Understanding	Interpreting, constructing meaning, inferring, or explaining material from writers, spoken, or graphic sources. Reading is the most common understanding skill; these skills are developed starting with early education.
3. Applying	Using learned material or implementing material in new situations. This skill is commonly used starting in middle school (in some cases earlier).
4. Analyzing	Breaking material or concepts into key elements and determining how the parts relate to one another or to an overall structure or purpose. Mental actions included in this skill are examining, contrasting or differentiating, separating, categorizing, experimenting, and deducing. You most likely started developing this skill in high school (particularly in science courses) and will continue to practice it in college.
5. Evaluating	Assessing, making judgments, and drawing conclusions from ideas, information, or data. Critiquing the value and usefulness of material. This skill encompasses most of what is commonly referred to as critical thinking; this skill will be called on frequently during your college years and beyond. Critical thinking is the first focus of this chapter.
6. Creating	Putting parts together or reorganizing them in a new way, form, or product. This process is the most difficult mental function. This skill will make you stand out in college and is in very high demand in the workforce. Creative thinking is the second focus of this chapter.

All of these thinking skills are important for college work (and life in the “real world,” too). You’ve likely had a great deal of experience with the lower-level thinking skills (yellow section). The midlevel skills are skills you will get a lot of practice with in college, and you may be well on your way to mastering them already. The higher-level thinking skills (red section) are the most demanding, and you will need to invest focused effort to develop them.

EXERCISE: THOUGHT INVENTORY

Think about [Figure 3.2 "Types of Thinking Skills"](#). Are you using all six thinking skills? Reflect on your schoolwork in the past three weeks and identify specific examples where you used each of the thinking skills. Use the comment column to write notes about the skills that are second nature to you and those you would like to develop

further.

Skill Set	How You Used It in the Past Three Weeks	Comments
Remembering and Recalling		
Understanding		
Applying		
Analyzing		
Evaluating		
Creating		

Look at the lists of things you actually did in each case. Notice that there are certain verbs that apply to each skill set. When you see those verbs as a prompt in an assignment or an exam, you will know what kind of thinking the instructor expects from you. [Table 3.1 "Thinking Verbs"](#) lists some of the most common verbs associated with each thinking skill.

TABLE 3.1 THINKING VERBS

Skill Set	Verbs
1. Remembering and Recalling	Bookmark, count, describe, draw, enumerate, find, google, identify, label, list, match, name, quote, recall, recite, search, select, sequence, tell, write
2. Understanding	Blog, conclude, describe, discuss, explain, generalize, identify, illustrate, interpret, paraphrase, predict, report, restate, review, summarize, tell, tweet

3. Applying	Apply, articulate, change, chart, choose, collect, compute, control, demonstrate, determine, do, download, dramatize, imitate, implement, interview, install (as in software), participate, prepare, produce, provide, report, role-play, run (software), select, share, show, solve, transfer, use
4. Analyzing	Analyze, break down, characterize, classify, compare, contrast, debate, deduce, diagram, differentiate, discriminate, distinguish, examine, infer, link, outline, relate, research, reverse-engineer, separate, subdivide, tag
5. Evaluating	Appraise, argue, assess, beta test, choose, collaborate, compare, contrast, conclude, critique, criticize, decide, defend, "friend/de-friend," evaluate, judge, justify, network, post, predict, prioritize, prove, rank, rate, review, select, support
6. Creating	Adapt, animate, blog, combine, compose, construct, create, design, develop, devise, film, formulate, integrate, invent, make, model, modify, organize, perform, plan, podcast, produce, program, propose, rearrange, remix, revise, rewrite, structure

Throughout this book, we give tips that will help you develop your thinking skills. You have read about the learning cycle and the importance of *applying* your knowledge. You will learn tips for *remembering* information from your notes and classes. Preparing for class requires you to *analyze* what you know and what you need to learn. The sections on listening and reading will help you develop your *understanding* skills. Look for those tips and practice them.

In this chapter, we will focus on critical thinking (evaluating) and creative thinking. They deserve specific focus because they are likely to be the skills you have least practice with. These are the skills most helpful for success in college and in "real life." Creative thinking will help you come up with possible solutions for problems and new ideas. Critical thinking will help you decide which of those ideas have most merit and deserve to be implemented.

KEY TAKEAWAYS

- We use different types of thinking skills to address different requirements, and these skills are classified in Bloom's taxonomy.
- You have been using many thinking skills since childhood.
- Two very important thinking skills you will need to develop for success in college and in life are critical (or evaluative) thinking and creative thinking.

CHECKPOINT EXERCISES


1. List three verbs that are associated with application skills.


2. What is another name for "evaluation" thinking skills?

3. What thinking skills are associated with each of the following?

a. Compose and design: _____

- b. Tweet and describe: _____
- c. Break down and discriminate: _____
- d. Rank and beta test: _____
- e. Enumerate and google: _____

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