3.2 It’s Critical

LEARNING OBJECTIVES

1. Understand what critical thinking is and why it’s important.
2. Identify logical pitfalls.
3. Discover assumptions and biases.
4. Practice problem solving and decision making.
5. Know the power of questions.
6. Evaluate information (on and off the Internet).

Americans Have Access to…

- 1 million *new* books each year
- 5,500 magazines
- 10,500 radio stations
- 65,000 iPhone apps
- 1,000,000,000,000 Web pagesScott McLeod and Karl Fisch, “Did You Know? 4.0,” video, http://www.youtube.com/watch?v=6ILQrUrEWe8 (accessed January 10, 2010).

In today’s environment, it is not so critical to “know” a great deal of information. The list above indicates how much information we can easily access. In fact, the abundance of information might be the greater challenge. Your success will depend on what you can do with the information, not just on what you know. How we filter and use that abundance of data is the reason critical thinking has become so important today.

Critical thinking is the ability to discover the value of an idea, a set of beliefs, a claim, or an argument. It requires you to use logic and reasoning to evaluate evidence or information to make a decision or reach a conclusion. Critical thinking is

- a foundation for effective communication,
- the principal skill used in effective decision making,
- at the core of creating new knowledge,
- a way to uncover bias and prejudices.

Critical thinking is a part of everyday life, too. Decisions you make can have a lasting impact on your life, and these decisions benefit from critical thinking. Did you ever decide to quit smoking or to lose weight? Were you successful? How did you decide to attend the college you are in? Was that the right choice for you? In any of these cases, could you have made a better decision if you had better or more information?

The Critical Thinking Process

The critical thinking process is really nothing more than asking the right questions to understand a problem or issue and then gathering the data you need to complete the

decision or take sides on an issue.

What is the problem or issue I am considering really about? Understanding this is key to successful critical thinking. What is the objective? A position? A decision? Are you deciding what candidate in an election will do a better overall job, or are you looking to strengthen the political support for a particular cause? Are you really against a recommendation from your dad, or are you using the issue to establish your independence?

Do you understand the terms related to the issue? Are you in agreement with the proponent's definitions? For example, if you are evaluating a quotation on the health-care system for use in a paper, your objective might be to decide to use the quotation or not, but before you can make that decision you need to understand what the writer is really saying. If a term like "family" is used, for example, does it mean direct relations or extended family?

What are my options? What are choices that are available to you (if you are making a decision), or what are the "sides" (in the case of a position) you might choose to agree with? What are their differences? What are the likely consequences of each option? In making a decision, it might be helpful to ask yourself, "What is the worst thing that might happen in each scenario?" Examining different points of view is very important; there may be dozens of alternative viewpoints to a particular issue—and the validity of each can change depending on circumstances. A position that is popular or politically correct today may not have been a year ago, and there is no guarantee it will be right in the future. Likewise, a solution to a personal problem that was successful for your roommate may not apply to you. Remember also that sometimes the best option might be a combination of the options you identify initially.

What do I know about each option? First, make sure you have all the information about each option. Do you have all the information to support each of your likely options? What is still missing? Where can you get the information you need? Keep an open mind and don't dismiss supporting information on any position before you evaluate it carefully.

How good is my information? Now it's time to evaluate the quality of the support of each option or point of view. Evaluate the strengths and the weaknesses of each piece of supporting evidence. Are all the relevant facts presented? Are some facts presented in misleading ways? Are enough examples presented to support the premise? Consider the source of the supporting information. Who is the expert presenting the facts? That "expert" may have a vested interest in the position. Consider that **bias**, more for understanding the point of view than for rejecting it. Consider your own opinions (especially when working with emotional issues); are your emotional ties to a point of view getting in your way of clear thinking (your own biases)? If you really like a particular car model, are you giving the financial implications of buying that car a fair consideration? Are there any errors or fallacies in your logic? (See Table 3.2 "Fallacies and How to Avoid Them".)

Fallacies are defects in logic that weaken arguments. You should learn to identify them in your own thinking so you can strengthen your positions, as well as in the arguments of others when evaluating their strength.

Table 3.2 Fallacies and How to Avoid Them

Fallacy	Description	Examples	How to Avoid It in Your Own Thinking
Generalizations	Making assumptions about a whole group of people based on an inadequate sample.	Engineering students are nerds. My economics class is boring, and my friend says her economic class is boring, too—therefore all economics classes are boring.	What kind of sample are you using? Is it large enough to support the conclusions? You may want to increase your sample size or draw a more modest conclusion by using the word “some” or “many.”
False Cause	Drawing improper conclusions through sequencing. If A comes before B, then A causes B.	I studied biology last term, and this term I’m taking organic chem, which is very confusing. Biology makes chemistry confusing.	When making causal statements, be sure you can explain the process through which A causes B beyond their mere sequence.
Personalizations	Also known by their Latin names (*ad hominem*, or “against the man,” and *tu quoque*, or “you too”). Inserting personalities inappropriately into an argument. Common in political arguments.	*Against the man:* I won’t support Senator Smith’s education bill. He’s had a mistress and marital problems.	Focus on the merits and supporting data of an argument, not on the personality or behavior of the people making the arguments.
Everyone Does It	Also known by its Latin name (*ad populum*, or “against many”). Justifying an issue based solely on the number of people involved.	*You too:* A parent explains the evidence of the risks of binge drinking. The child rejects the arguments, saying, “When you were my age, you drank too.” It’s healthy to drink only soda; millions of American kids do.	The popular position is not always the right one. Be wary of arguments that rely exclusively on one set of numbers.
Appealing to Authority	Using an endorsement from someone as a primary reason for supporting a point of view.	We should oppose higher taxes; Curt Schilling does. Pitcher Curt Schilling may be a credible authority on baseball, but is he an authority on taxes?	Quoting authorities is a valuable tool to build an argument; make sure the authorities you quote are truly subject matter experts on the issue you are discussing.
		Cars and motorcycles	You can draw an analogy between just about any two objects or ideas. If you are using an analogy, make

Weak Analogy	Using irrelevant similarities in two objects to draw a conclusion.	cars and motorcycles are both driven at high speeds on the highway. Car drivers aren't required to wear helmets, so motorcycle riders shouldn't have to either.	using an analogy, make sure you identify the properties relevant to the argument you are making and see if both share those properties. (In the example, the motorcycle does not provide protection to the rider, but the car does. Equating the two vehicles based on traveling speed is not relevant to the argument.)
False Dichotomy	Setting up a situation in which it looks like there are only two possible options. If one option is discredited, the other must be accepted.	The classic example here is "America, love it or leave it."	Examine your own thinking. Are there really only two options? Look for the third option. If you were asked to develop a compromise between the two positions, what would it look like? What would its strengths and weaknesses be?

You will need to use critical thinking throughout your college years and beyond. Here are some common critical thinking situations and the kinds of questions you should ask to apply critical thinking. Note that critical thinking is central to themes covered in detail throughout this book.

- **Personal choices.** Examples include "What should I major in?" and "Should I buy a new car?" What do you know about each of your options? What is the quality of that information? Where can you get more (reliable) information? How do those options relate to your financial and emotional needs? What are the pros and cons of each option? Are you open to the points of view of others who may be involved? (See Chapter 11 "Taking Control of Your Finances" and Chapter 12 "Taking Control of Your Future".)
- **Reading, listening, note taking, and studying.** What are the core messages of the instructor or author? Why are they important? How do these messages relate to one another or differ? (This is covered in much more detail in Chapter 4 "Listening, Taking Notes, and Remembering" and Chapter 5 "Reading to Learn".)
- **Research papers.** What evidence do you need to support your thesis? What sources are available for that evidence? Are they reliable sources? Are there any fallacies in your argument? (This is covered in more detail in Chapter 8 "Writing for Classes".)
- **Essay questions on exams.** What is the professor really asking you to do? What do you know about the question? What is your personal belief about the question? What are the beliefs or biases of the professor or quoted authors? What are the arguments against your point of view? What are the most important pieces of evidence you should offer to support your answer? (This covered in more detail in Chapter 6 "Preparing for and Taking Tests".)

Tips for Critical Thinking

- Consider all points of view; seriously consider more than two (look for grey areas).
- Keep an open mind.
- Answer three questions about your supporting data:
  1. Is it enough support?
  2. Is it the right support?
  3. Is it credible?

- Look for evidence that contradicts your point of view. Pretend to disagree with the position you are supporting. What parts of your argument are weak? Do you have the supporting facts to overcome that evidence?
- Create a set of criteria you will use to evaluate the strength of information you want to use to support your argument. Ask questions like these:
  - What is the source of this information?
  - Is the author well respected in the field?
  - When was this information developed? Is that important? Why?
  - Does the author or publisher have an agenda for publishing the information? How does that agenda affect the credibility of the information?
- Create a table on which you list your main points, then for each one, list the evidence you have to support it. This method will help you visually identify where you have weak evidence and what points actually lack evidence.
- Be willing to admit that you lack information to support a point of view or make a decision. Ask questions or do some focused research to get what you still need.
- Make sure that your assumptions and points of view are supported by facts, not opinions.
- Learn what types of fallacies you use habitually, and then be on the lookout for them. Writers will often rely on certain types of arguments as a matter of habit. Review some of your old papers to identify which fallacies you need to avoid.
- Question your characterizations of others. Are those authorities truly competent in the area you are considering? Are you attacking the opponents of your point of view rather than attacking their arguments?
- Be careful of broad generalizations. Claims that use absolute words like “all,” “none,” “always,” “never,” “no one,” and “everyone” require much more proof than claims that use words like “most,” “some,” “often,” “rarely,” “sometimes,” and so on.

Where Did That Come From?

One of the most consistent uses for critical thinking in your college work is in considering the value of research material and deciding how to use it. The Internet gives you access to an almost unlimited amount of data, and you must choose what to use carefully. Following are some guidelines.

1. Look at the **URL**, the Web address. It can give you important information about the reliability and intentions of the site. Start with the page publisher. Have you heard of this source before? If so, would you consider it a reliable source for the kind of material you are about to read? Now consider the domain type in the URL, which follows the period after the publisher: “.com” and “.biz” are used by commercial enterprises, “.org” is normally used by nonprofit organizations, and “.edu” is reserved for educational institutions. None of these is necessarily bad or good, but they may give you a sense behind the motivation for publishing this material. Are you dealing with a company or the Web site of an individual—and how might that affect the quality of the information on that site?
2. What can you learn from poking around with navigation tabs or buttons, and what do they tell you about the objective of the Web site? Look for a tab labeled “About Us” or “Biography.”
3. Consider what others are saying about the site. Does the author offer references,

reviews, or quotations about the material? What do they say? Check the blogosphere to see what other people think of the author or Web site.

4. Trust your own impressions about the material. Is the information consistent with what you already know?
5. Ask yourself why the Web site was written. (To inform? To provide data or facts? To sell something? To promote a cause? To parody?)

Based on what you learned, ask yourself if the information from this Web site is reliable for your needs. These steps are covered in more detail in Chapter 5 "Reading to Learn".

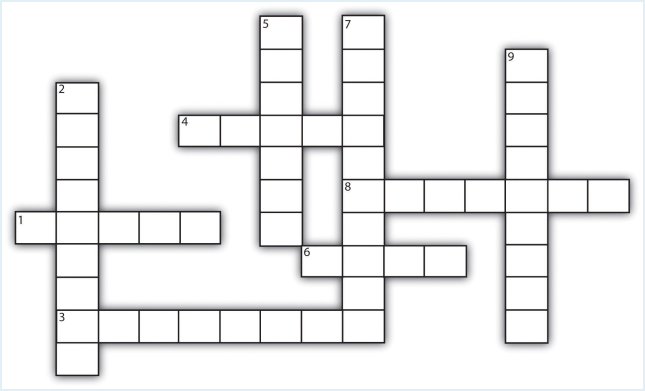
KEY TAKEAWAYS

- Critical thinking is evaluating the strength of your arguments, data, and information.
- Three questions to ask about the support for an argument or position:
  1. Is it enough support?
  2. Is it the right support?
  3. Is it credible?
- Weaknesses in arguments are most commonly logical fallacies. Recognizing them will help evaluate the strength of an argument effectively.

CHECKPOINT EXERCISES

Figure 3.3

Crossword: Full of Fallacies



Across	Down
1. Fallacy is an error in _____.	2. Appealing to _____
3. Also known as the “you too” fallacy	5. Ad _____; everybody does it
4. False _____; a fallacy based on the order of events	7. To draw conclusions based on a small sample
6. A tendency or inclination which prevents fair consideration of a point of view	9. False _____; a fallacy on forced choice between only two options
8. Weak _____; irrelevant comparison	