

## Chapter 1 Thinking vs. Thinking Critically

what happens when thinking becomes a usable tool?

“ . . . as a nation, we have gone from being resource-rich in the old economy to resource-poor in the new economy almost overnight! Our public education has not successfully made the shift from teaching the memorization of facts to achieving the learning of critical thinking skills. We are still trapped in a K-12 public education system which is preparing our youth for jobs that no longer exist. ”

-John Sculley

Stir up your thinking before you start reading

**One of the most valuable and basic forms of research is the interview. In this book, you will be asked several times to interview other people and find out what they know, think, and believe. This information will provide you with important insights and ideas for what you learn in these chapters. Begin now.**

**Before you start reading this chapter, take an informal survey and then compare the answers you receive with what you learn in this chapter. Ask three people to answer the questions below. Briefly record their answers.**

Do you think there is any difference between thinkers and critical thinkers? If there is a difference, how is that difference shown in what they learn in college?

Responses:

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2.

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3.

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“We must return to basics, but the basics of the 21st century are not only reading, writing, and arithmetic. They include communication and higher order problem-solving skills, and scientific and technological literacy-the thinking tools that allow us to understand the technological world around us.... Development of students’ capacities for problem-solving and critical thinking in all areas of learning is presented as a fundamental goal. ”

-Educating Americans for the 21st Century

What questions am I going to have answered in this chapter?

1. What is the difference between thinking and critical thinking?
2. Is critical thinking a process or a combination of thinking behaviors-or both?
3. How are specific critical thinking skills related to the development of critical thinking prowess?

4. Is there any relationship between critical thinking and negative thinking?
5. What is the relationship between learning and thinking in my college education?

**WHY TEACH THINKING?**

- ° How are a CD-ROM, a laser disc, and a battery-operated flashlight similar?
- ° What would you have to do in order to make ice burst into flames?
- ° What are five different uses for the spare Watch parts found in an abandoned Watch factory?
- ° In what Ways are the possible causes of the resurgence of Nazism related to fluctuations in World stock market daily averages?
- ° What does that advertisement really say about the buying habits of Canadians?

These are examples of questions that are not easily answered, and probably not answerable at all for people who haven't developed their critical thinking skills. You'll understand why as you read further.

**WHY SHOULD I (OR ANYONE) ENGAGE IN CRITICAL THINKING?**

'Why should I engage in or value critical thinking?' is a question that has to be addressed, especially at the beginning of a book that proposes to guide students to understand, develop, and use a broad array of critical thinking skills.

**THINK ABOUT THIS!**

Where Does Thinking Take Place?

Hey! Don't I mean how does thinking take place?

No, I mean where.

Brain surgeons can tell us about the physical aspects of thinking but that's not what I am referring to.

Try the following mental exercise: Pretend that you are required for some strange reason (perhaps because you are a very highly paid business consultant) to determine the number of hamburgers your local McDonald s serves in one year. To find the answer you will be placed in an absolutely empty room. You will have no furniture ,books, telephone, computer, radio, paper, or pencil. Nothing. You will be kept there for fifteen minutes and then you will be asked for your answer. Certainly you can think while you are in the room but that's about all you can do. What do you think the chances are of coming up with the answer? Not very good.

On the other hand what if that room were a well equipped office with telephone, computer with modem, fax machine, books, paper, pencils, and even a small group of reference librarians? Do you think that you could figure out how to determine the number of hamburgers sold in a year?

It's very likely you could *because your thinking is enhanced enriched clarified tested and made possible by everything and everyone around you*. Just writing ideas on paper produces more thinking than is possible without writing thoughts down. Collaboration with others produces expanded thinking. Computers, writing materials, and books make productive thinking possible. Without these aids to thinking very little thinking other than superficial or personal reflection is possible.

So where do you think thinking takes place?

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One rather simplistic answer to that question comes immediately to mind: You should engage in critical thinking because if you don't, you are left with thinking that is characterized by a thoughtless intellectual acceptance and passivity. Most of our learning has been heavily memorizing dependent. This means that we have focused most of our learning time on acquiring content from primary sources, periodicals, and text-books, and we have depended, to some degree, on lectures for information. Because of the largely one-way nature of these information sources, which don't routinely challenge us to question, verify, relate, think, and reason about what we are learning, most of us don't have frequent opportunities to develop skill in reasoning, that is, in critical thinking. The focus of our education has been on getting us to remember details rather than on getting us to understand the relationships and interactions between those details and whatever else we know. Meanwhile, national standardized tests and assessments are changing. Their creators are adding reasoning to the "skills" being measured and expecting you to have acquired critical thinking expertise that you can demonstrate on the tests.

What all this means is that it is up to you to learn to be a critical thinker. But we are not yet finished answering the question, *Why should I engage in critical thinking?* The next several pages should provide you with a more complete answer.

**THERE IS A BIG DIFFERENCE BETWEEN THINKING AND CRITICAL THINKING**

You will not be able to understand just what critical thinking is until you understand that it is related to what we refer to as thinking but goes considerably beyond simple thinking.

**THINKERS**

A Cool Byrd

Why was it necessary for Admiral Byrd to take along a refrigerator on his Antarctic expedition? Hmmm.

**Need a Hint?**

What is the single biggest problem in the Antarctic? What else does a refrigerator do besides keep things cold?

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**Thinking About Thinking**

Without asking anyone for help with this, and without resorting to a dictionary, take a stab at defining for yourself the word thinking before it is defined for you. Don't read any further in this chapter until you have done this. Write your definition here:

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Now look up thinking in your dictionary and compare that definition with the one you just wrote. How close were you to the dictionary's "official" definition? You may not have used the same words, but you probably came pretty close. Just about any dictionary's basic definition of thinking will read something like this: "the action of using one's mind to produce thoughts." Sometimes the definition will then go on to describe a range of thinking operations that could be employed consciously or

unconsciously. Actually, these definitions really don't tell us much. We already sort of know what thinking is, even if we can't put it into words.

### **Thinking and Critical Thinking Are Easier to Illustrate Than to Define**

Perhaps the following definition of thinking will help, especially in the next few pages where we discuss critical thinking.

**THINKING**  
The process of producing thoughts based on recall of remembered and memorized information

As you can see from this definition, thinking depends on recall of remembered information (acquired passively, without trying) or memorized information (acquired actively, by planning). Try the following "thinking" exercise.

#### **STIR UP YOUR THINKING**

Without checking with your fellow students, answer this question with the first answer that comes to mind, no matter what it is. A student went to the campus bookstore and bought two pencils for a total of 10 cents. How much did each pencil cost?

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If you answered 5 cents (a total of 10 cents divided by two pencils equals 5 cents), your thinking fits the definition of thinking given above and was based on simple recall of memorized information. You fell back on all those math formulas you memorized in school in order to answer the question. On the other hand, if you had any other answer, you weren't simply thinking, you were thinking critically, because you were doing more than relying on recall of information.

Here's probably what happened: You first thought about your thinking on an almost unconscious level. Your thinking/ reasoning warning light went off. Perhaps you said to yourself, "I can't tell. Maybe one pencil is bigger than the other, so maybe one pencil cost 6 cents and the other cost 4: cents," or perhaps you thought, "Wait a minute, I need more information." Perhaps you questioned the whole idea of two pencils being so cheap, or perhaps you were thinking that this had to be some type of trick question because it was so simple. \_H you did more than passively employ memorized math formulas to answer- or challenge-the question, you were going beyond thinking to thinking critically.

#### **WHAT IS CRITICAL THINKING?**

In order to study critical thinking and understand its important contribution to success in college and in life, it is necessary that we be clear about what critical thinking is. We can't do that by simply turning to a dictionary, because there are over a dozen related but different definitions of the term critical thinking. On top of this, critical thinking is sometimes called higher-order thinking; reflective thinking productive thinking inquiry thinking or logical reasoning! These multiple terms reveal that critical thinking is viewed by some as a process of thinking, whereas others see critical thinking as a composite of thinking skills.

#### **A Process or a Composite of Many Skills?**

When described as a process, critical thinking is seen as the way in which a particular result is pursued. As early as 1949, the Dictionary of Education had defined critical thinking as a process, as "thinking that

proceeds on the basis of careful evaluation of premises and evidence and comes to conclusions cautiously through the consideration of all pertinent factors.” In 1985, Robert Ennis, a college professor, defined critical thinking more simply as “reflective and reasonable thinking that is focused on deciding what to believe or do.” Since then, most people have agreed that this is a reasonably good description of critical thinking as a process, as a way of thinking. The problem, however, with defining critical thinking as a process is that the steps or stages in the process are frequently either unclear or so lengthy that they frustrate anyone who tries to implement the process.

The majority of approaches to critical thinking appear to agree that critical thinking involves a broad collection of separate thinking skills or thinking operations--a composite of elements of reasoning, attitudes, knowledge, intellectual standards, and specific thinking skills -- which, when necessary, are called upon so that analysis and evaluation can take place.

These separate thinking skills are developed by individuals and then used singly or in combination. We use them to get below the surface of information when the need arises to analyze, make decisions, solve problems, create solutions, reflect, think creatively, and face challenges to our thinking. This is very close to how critical thinking is defined in this book.

#### CRITICAL THINKING:

The use of any and all appropriate thinking skills when intellectual tasks call for anything more than information recall

#### CRITICAL THINKING SKILL(S)

Just about every thinking ability or behavior that can be taught, including such mental operations as questioning, classifying, synthesizing, comparing, recognizing bias, inducing, deducing, and inferring

### **An Important Observation: Critical Doesn't Mean Negative**

Critical thinking may be a lot of things, but what it isn't is negative or fault-finding thinking. The word critical, when used in combination with words like viewing listening; or thinking means “examined” or “analyzed.” For example, film critics, drama critics, book critics, and music critics, although they sometimes display negative attitudes toward whatever they are evaluating, are really committed to analyzing and examining their subjects. They are not committed to being negative.

### **STIRRING UP THINKING**

Much of our thinking is habitually biased, partial, uninformed, or even prejudiced because we seldom think about our thinking and so do not apply any standards to it. We merely respond. Any time that your thinking is stirred up so that you force yourself to think about your thinking and apply standards to it, you are using thinking skills that go beyond recall of information-you are exercising some degree of critical thinking. There are many ways that this is done, and nearly all of them are interesting and sometimes entertaining. Systematically cultivating the process of critical thinking leads to an increased ability to conceptualize, analyze, synthesize, and evaluate information fairly and accurately. You'll experience stirred-up-thinking opportunities frequently in this book.

### **THE SHIFT FROM LEARNING TO THINKING**

What then is the relevance of critical thinking to the enhancement of your college education? Why are this book's author and so many of your professors convinced that critical thinking skills are so important

to your learning? The answer lies in the steady shift that has occurred over the last several years in education, a steady shift from focusing on learning to focusing on thinking. In 1987, the American Philosophical Association published a consensus statement addressing the importance of critical thinking. This brief statement captured the feeling of educators concerning the importance of critical thinking:

We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. Critical thinking is essential as a tool of inquiry. As such, critical thinking is a liberating force in education and a powerful resource in one's personal and civic life.<sup>1</sup>

Teachers at all levels, elementary, secondary, and college, have concluded that it is better for students to think for themselves than merely to learn what other people have thought. They declare that effective and meaningful education requires that teaching and learning at all levels be coordinated so as to foster in students the mental skills and the habits of unemotional questioning associated with critical thinking.

They have long made the case that educating students to be critical thinkers is vital for the students themselves and for society in general. Recently, however, with the explosive growth of new information, information retrieval systems, and individualized access to information through computers, it has become even more important that every person be trained to be an independent thinker. Over a decade ago, in a 1984 poll of professional educators, nine out of ten respondents said that better instruction in thinking skills should be a major priority<sup>2</sup>? It appears that most educators believe that instruction in critical thinking is not merely an educational option, but that students have the right to be taught how to think critically. Even government officials, business leaders, and a sizable segment of the American public support the teaching of critical thinking<sup>3</sup>? The U.S. Department of Labor's Secretary's Commission on Achieving Necessary Skills in 1992 even went so far as to identify the acquisition of critical thinking skills as one of three essentials for successful entry into the workplace of the future.

#### THE VERDICT IS IN: CRITICAL THINKING IS ESSENTIAL

Your professors want you to be able to exercise good judgment in interpreting, evaluating, and applying what you read and hear in their classes, and this good judgment cannot be brought to bear unless it

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<sup>1</sup> This statement was recorded by Peter A. Facione, in "Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction" (Institute for Critical Thinking Resource Publication, Series 4, No. 6, 1991, p. 3).

<sup>2</sup> For more information about this poll, see B. Z. Presseisen, *Thinking Skills: Meanings, Models, and Materials* (Research for Better Schools, Inc., Philadelphia, Pa., National Institute of Education, Washington, D.C., 1984 [ERIC ED 257 858]).

<sup>3</sup> See, for example, *Academic preparation for college: What students need to know and be able to do* (New York: College Board, 1983).

rests upon proficient thinking skills. If developing your critical thinking skills can produce an improvement in your education, it will be because it brings you academic empowerment. We live in what frequently has been referred to as an information age because of all the information that is brought to us daily by way of newspapers, magazines, books, radio, television, and computer networks. Sorting it all out and determining what information to act upon and what information to question requires developed thinking skills. Acquiring critical thinking skills enables you to think more and more independently, skillfully, and efficiently apart from what you are told on the information highway and even in classes and assigned textbooks. If by the time you finish this book your thinking is characterized by the use of critical thinking skills, you will have developed thinking habits that will serve you well through life.

### **THE GOAL OF CRITICAL THINKING IS INDEPENDENT THINKING**

Students who develop and practice critical thinking are able to think independently. They recognize the limits to their knowledge, they analyze important issues before acting, and they are not easily manipulated. Now that kind of independence is a worthy goal for every person.

Whether we are currently computer literate or not, and whether we have ever “surfing the Net” or not, the use of computers and the Internet promises to play a very big part in our future careers and lives. Why? Let’s find out. With a group of four or five classmates, make a list of possible reasons for college students to become active users of Internet services such as Prodigy, America Online, or CompuServe. Do some brainstorming and write down all the ideas that you can think up, without evaluating them. When you have a list of reasons, go through them and prioritize them, starting with the best ones and ending with the least useful ones. Notice how brainstorming stirs up your thinking and allows you to feed off other people’s ideas and thinking. Many of you will recognize brainstorming as a useful prewriting activity.

Surprise! It’s time to write. Writing is the single best activity for stirring up your thinking and for developing your many different thinking abilities. It causes you to reflect on information and ideas, synthesize information from all sources, question relevance and value, and so on. So, it is not surprising that you will frequently be asked to write in this book.

Write a letter to your parents (or your grandparents, a rich uncle, a philanthropic foundation, or other source of funds) asking for support in the amount of twenty dollars a month to enable you to connect to the Internet and spend a “reasonable” amount of time (up to twenty dollars’ worth) using the Internet services. Using the lists of reasons developed in Stir It Up 1.1, select the most persuasive reasons to make your case for this monthly allowance. How will you be a better student, be better off intellectually, get better grades, or learn more and faster if you are connected? Consider well who you are writing to when you give your reasons. Who knows-you may be able to send this letter if you craft it well and persuasively enough.

On the other hand, if you are not convinced of the value of the Internet for college students, write a letter convincing your audience that its use should not be encouraged.

First, examine the letter you wrote for Stir It Up 1.2 and try to find weaknesses or flaws in your reasoning. Make a list of what your letter reader might find weak or wrong in your argument. Next, exchange letters with a classmate and evaluate the reasoning and arguments in his or her letter. Just how persuasive is the letter? On a separate piece of paper, shoot down (nicely, please) the reasoning if you can. Then, suggest ways to strengthen the arguments. Discuss with each other why you were not persuaded and what your suggestions are for making a stronger case. Compare the list of probable weak

spots you prepared for your own letter with the weaknesses that your classmate found. Were they the same? What does that tell you?

Do some research in the library or on the Internet. See if you can find ten different definitions of critical thinking. Record the definitions and the sources where they were found. Speculate on why there is such a difference in definitions and a seeming lack of agreement on a definition.

Is there any relationship between each definition and the source where it was found? In other words, is a definition of critical thinking found in a psychology textbook uniquely psychological in its application, or can it be applied to nonpsychology situations also?