

# Professional Readings from tc<sup>2</sup>

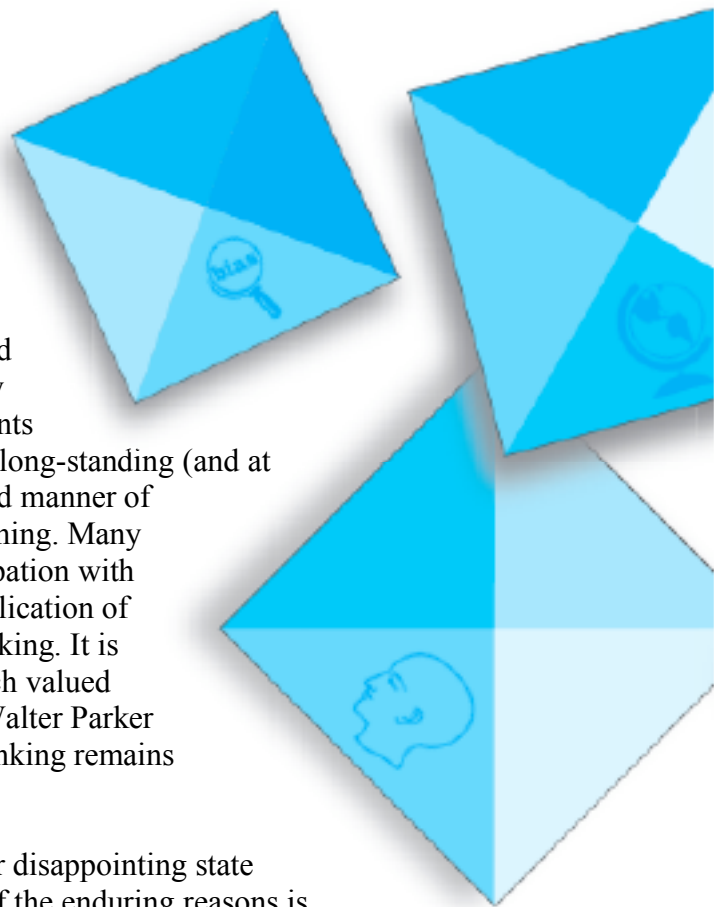
## Preconceptions of critical thinking

by Roland Case & LeRoi Daniels

If schools are to succeed in teaching critical thinking, educators must have a clear idea what it is ...

The idea of critical thinking is not new. For decades-no, for centuries-it has been recognized as an important educational goal by practitioners and theorists alike. Curriculum documents and learning resources in all subjects at every level of schooling recommend that students be taught to think critically. Despite this long-standing (and at least, formal) commitment, the extent and manner of teaching for critical thinking is disheartening. Many studies document the enormous preoccupation with transmission of information and rote application of how little of class time is devoted to thinking. It is a depressing irony: critical thinking is much valued and yet inadequately addressed. Or, as Walter Parker (1991, p. 234) puts it, the teaching of thinking remains "more wish than practice."<sup>i</sup>

Numerous factors contribute to the rather disappointing state of critical thinking in our schools. One of the enduring reasons is an apparent educational dilemma: how to get students to think for themselves and simultaneously teach the subject matter that we want them to learn. This tension is captured in the so-called division between the teaching of -content- and -process.- Confusion surrounding how to integrate these seemingly competing goals has led to opposing camps with some educational theorists urging a content focus, others espousing a general skills emphasis. The former are preoccupied with covering



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the subject matter of the curriculum and the latter absorbed in exercising generic mental operations. This division is educationally bankrupt since it is based upon a false dichotomy: thinking without content is vacuous and content acquired without thought is mindless and inert. As Richard Paul (1993, p 277) notes one gains knowledge only through thinking.”

The problem of transmitting information without getting students to think is that students frequently adopt the ideas without understanding them. Research suggests for example, that a large proportion of university students who have passed examinations in physics are unable to provide credible explanations for simple real-world problems, such as which of two balls, one heavier than the other, would hit the floor first when dropped by experimenter (Mackenzie, 1988). In explaining this anomaly between advanced study in a subject and lack of basic understanding, teacher-author, Richard Feynman, concludes: "After a lot of investigation, I finally figured out that the students had memorized everything, but that they didn't know what anything meant" (cited in Mackenzie, 1988, p. 61). Even educators who endeavor to engage their students in thinking critically about the content of the curriculum are often hampered by vagueness about what that would involve for their subject area with the students they teach. Foundational to the general neglect of critical thinking and, we think, to impaired student understanding of curriculum content are vague conceptions, if not outright confusions, about the nature of critical thinking and how to foster it. A crucial first step in more effectively promoting both

critical thinking and subject matter understanding is greater clarity about critical thinking—what it can and should comprise. Without a solid understanding, we are likely to adopt a superficial approach, have significant gaps in our treatment or proceed in an ineffectual if not counterproductive manner. As suggested by the title for Part I of the book, the theme is to recognize or re-think our understanding of critical thinking. Doubtless all of us have impressions of what is involved. The point is to unpack these perceptions and reconsider whether or not our "picture" is adequate to the challenge of concurrently promoting critical thinking and subject matter understanding.

## **Your perceptions of critical thinking**

As a beginning step in exploring your perceptions of critical thinking, take a moment to consider the six statements posed in the box. You may want to pencil in your answers to remind you of your initial thoughts. At the end of the chapter we will invite to reconsider your answers. In the meantime—as you read further—continually think (critically) about whether or not your answers match with the ideas we present. While the abstract ideas raised by this discussion are often subtle and complex, the implications for promoting students' ability to think critically are profound. In this chapter we focus on re-conceptualizing critical thinking; in the next chapter we turn our attention to the more practical matter of how to implement it.

What do you think?		Agree	Disagree	Unsure
1	Educational goals are often described in terms of knowledge, skills and attitudes. Critical thinking falls within the category of skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	There are many different kinds of thinking: critical thinking is different from problem solving, decision making, inquiry and creative thinking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Thinking is essentially the carrying out of any of a variety of mental operations on a data base of information. If students learn to perform these general operations (analyze, synthesis, etc.) they can then apply them to whatever topic they choose to think about.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Students are certainly doing critical thinking if they are engaged in 'higher-order' thinking such as analyzing, interpreting, comparing or classifying information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	'Lower-order' thinking such as comprehending or understanding does not require that students think critically.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Critical thinking is a priority only for those teachers who want their students to learn to criticize things, especially to challenge the status quo.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Profile of exemplary critical thinkers

Implicit in the boxed set of questions are six widely shared assumptions about the nature of critical thinking. Our task now is to examine—to think critically about—the adequacy of these

assumptions. A useful general strategy to assist in unpacking vague confusing notions is to consider actual examples of the concept—both positive examples (what it looks like when it is

demonstrably present) and negative examples (what it looks like when it is demonstrably absent). We regularly use this strategy in our professional development workshops to help educators refine their understanding of the key elements of critical thinking. We invite workshop participants to think of actual individuals who they deem to be exemplary critical thinkers and to identify the attributes or traits these individuals exhibit which distinguish

them as critical thinkers. Before examining a representative sample of the responses we receive to this request, take a moment to think of an exemplary critical thinker you know and list several qualities that make this person such a good thinker. At the very least, consider whether you agree that the traits listed in the box are the sorts of qualities that, in your eyes, characterize an exemplary critical thinker.

### Typical attributes of exemplary critical thinkers

#### I

- *are open to new ideas*
- *persist/ have staying power in thinking through a problem*
- *have empathy/ can appreciate others' viewpoints*
- *have courage of convictions/ not afraid to take an unpopular stand*
- *question ideas/ don't accept everything at face value*
- *don't jump to conclusions/ not hasty or rash in coming to a conclusion*
- *are flexible/ willing to change tactics*
- *don't take themselves too serious/ can laugh at themselves*
- *are willing to live with ambiguity/ don't need black-or-white answers*
- *welcome challenges*

#### II

- *restate a problem in unambiguous language or in graphic form*
- *confirm understanding by restating in own words*
- *ask questions which probe for more information*
- *examine issues from varying perspectives*
- *look for connections with known features*
- *test ideas using a "reality check"*
- *focus on one thing at a time/ break complex challenges into manageable bits*
- *consider the assumptions presupposed by a position*
- *look for possible counter-arguments or negative consequences*

### III

- *have extensive general knowledge/ are experienced/ are well read*
- *are knowledgeable about the specific topic*

### IV

- *recognize common informal fallacies (e.g., straw person/ slippery slope)*

### V

- *recognize good (well supported ) arguments*
- *value clarity and specificity*

### ***Attitudes or habits of mind***

The first part of the list contains more items than any of the other parts. The inference is that the salient qualities of critical thinkers are most frequently of this first type. But what is the common feature of this set of qualities (e.g., open, persistent, empathic, flexible)? It may be somewhat surprising to realize that they are attitudes. This suggests that an individual's attitudes—or, to use a term that we prefer, habits of mind—are key constituents of good critical thinking. People who are, for example, closed to new ideas or inflexible in their thinking are seriously impaired in their ability to arrive at justifiable resolutions of issues.

Recognition of the role of attitudes in critical thinking challenges a popular perception that critical thinking is a skill (or set of skills). This perception is unfortunate since no amount of "skill" will overcome the limitations of closed-minded, prejudicial thinking. The case of people who deny the Holocaust illustrates this point. These individuals may be very clever, have extensive knowledge of the events, be able to

marshal persuasive arguments and possess many other qualities on our list of attributes. Despite considerable critical thinking ability, these individuals are fundamentally mistaken in their belief that the Holocaust did not happen because, in many cases, their racial prejudice prevents them from impartially considering the evidence. Open-mindedness is but one of an array of habits of mind needed by critical thinkers. The tendency of some individuals to rashly leap to conclusions underlies yet another crucial mental habit of a good thinker, the inclination to deliberate—to think before acting. As we will illustrate, successful critical thinking is significantly (but by no means exclusively) a matter of attitude.

### ***Thinking strategies***

The qualities in the second part of the above list (e.g., restates in own words, asks questions, looks for possible objections) are most closely aligned with what are loosely called skills, although for clarity we refer to them as thinking strategies. In addition to possessing certain attitudes, good critical thinkers

use a variety of strategies to work their way through the challenges facing them. These strategies may be very elaborate such as following a comprehensive decision-making model (for example, when tackling a complex problem begin by identifying the issue, then consider the consequences, research each option, and so on). Alternatively they may be very focused strategies addressing a specific task (for example, to gain clarity about a problem restate it in your own words, ask others for clarification or graphically represent the problem). A strategy to which we referred earlier is to consider actual examples of a concept—in our case, the concept of critical thinking—as a means of getting clearer about the notion. There are literally thousands of strategies—in various (i.e., procedures, models, algorithms, graphic organizers and other types of heuristics)—that guide individuals in working through the challenges they encounter. Because critical thinking typically has been labeled a skill, these attributes of critical thinking have received considerable attention by teachers. However, the strong association of critical thinking with skills has often meant that the other attributes of good thinking have been overlooked. We have already discussed the role of attitudes or habits of mind, let us now consider the role of knowledge in critical thinking.

### ***Background knowledge***

Looking at the third part of the list of attributes (e.g., experienced, well read, knowledgeable) we see that critical thinking involves more than strategies and attitudes, it also requires background knowledge. Many of us are incapable of thinking very critically about numerous

topics—possibly subjects such as nuclear physics and Baroque art. This may not be because we lack appropriate habits of mind or thinking strategies, but more likely because we are largely ignorant in these matters. It should be obvious that we cannot think critically about a topic if we know little or nothing about it. Yet this fact is overlooked if we treat critical thinking as a set of general skills that can be applied regardless of context.

Consider the example of teaching students the so-called operation of analysis. The mental “operations” approach expects students to learn to analyze any object or event, without attention to the need for knowledge of the topic. Yet without adequate background, students must, of necessity, guess or speculate blindly. We cannot effectively teach students *the* process of analyzing for the simple reason that analysis of, say, a poem for its meter, rhyme and symbolism poses a significantly different challenge than that posed by the analysis of an ore sample for its chemical properties. Although a few strategies may be shared in both forms of analysis (for example, following procedures such as isolating each discrete part, and listing the features or characteristics of each), successful completion of these tasks is determined, in large measure, by possession of relevant background knowledge in poetry and chemistry. More specifically, without knowledge of the color, density and composition of relevant minerals and trace elements, students cannot understand the results of their efforts to analyze the ore sample’s constituent parts.

In this respect, the "generic" approach to critical thinking is not only ineffective, but potentially counter-productive since it may reinforce an undesirable habit of mind—that of being prone to make hasty or uninformed judgments. Our alternative conception—at least the picture emerging from the first three parts of our list of attributes of a good critical thinker—suggests that “analysis” requires a variable array of at least three types of attributes. Depending on the context, good thinkers will possess suitable habits of mind (e.g., an inclination to attend to detail and to refrain from leaping rashly to a conclusion), relevant background knowledge in the field under investigation and appropriate thinking strategies (e.g., isolate each discrete part, list the features of each).

We have talked about the importance of *background* knowledge. There is another relevant type of knowledge—*conceptual* knowledge or knowledge of vocabulary. Although this is not frequently cited as a key attribute of critical thinkers, it is reflected in the fourth part of our list of attributes (i.e., the reference to knowledge of fallacies such as straw person and slippery slope).

### ***Conceptual knowledge***

Teachers have long recognized the importance of concepts—especially teachers of students who are not native speakers of the language of instruction. For example we teach students key vocabulary prior to reading a story in language arts and explain concepts in science or social studies prior to analyzing physical or social phenomena. What has not been as widely appreciated

is the need to teach the vocabulary of thinking. Students cannot enter very deeply into conversations about their thinking if they do not have the words to identify or recognize key distinctions. For example, if students cannot distinguish a premise from a conclusion or do not know what a reason is, they are less likely to provide sound justifications for their opinions. Knowing the difference between ‘cause’ and ‘correlation’ is crucial when analyzing objects and events. Without this conceptual distinction students are more likely to incorrectly view a factor that simply occurs concurrently with another (e.g., an ore sample may contain granite and be smooth) as a factor that influences the other (e.g., the smoothness of the ore sample is a function of its granite content).

Knowledge of a seemingly simple distinction between the concepts ‘like’ and ‘worthwhile’ is key in students’ ability to think critically. For example, when asked to determine the better dietary choice—hamburger or salad—many students, especially younger students, will select what they would like to eat. In doing so, they do not think about the relative merits of each option, they merely report their preference. Critical reflection is likely only when students have the conceptual lens to distinguish between considering what is worthwhile—what would be a sound dietary choice (e.g., nutritious, environmentally sound, easy to prepare, tasty, widely available, inexpensive,)—and what is likable—what is merely a pleasing personal choice. Conceptual distinctions such as ‘like’ and ‘worthwhile,’ ‘premise’ and ‘conclusion,’ or ‘cause’ and ‘effect’ allow us to see important features of good thinking,

without which we are left in a conceptual haze. Knowledge of the vocabulary of critical thinking is another of the under-acknowledged attributes of good thinkers.

### ***Criteria for judgment***

The final and possibly least acknowledged set of attributes of exemplary critical thinkers is reflected in the fifth part of our list (e.g., concern for well-supported arguments and for clear and unambiguous statements). These attributes refer to commitments to applying relevant criteria when thinking critically. As was suggested above, when thinking critically we are not merely espousing a personal opinion or belief—we are not merely expressing what we like. We are, in effect, offering a judgment or an assessment of the worth or reasonableness of some idea, product or action. We can see why this is so by resorting to our strategy of considering actual examples. In this case, let us imagine an example of a poor critical thinker. Our picture of the quintessential non-critical thinker is likely someone who simply accepts at face value everything he is told or who typically leaps to conclusions without deliberation. The crucial missing ingredient in this picture is the individuals' lack of any assessment or judgment as to whether or not the ideas or conclusions are sensible. Or, putting it positively, thinking critically requires that individuals assess the reasonableness of the alternatives before them. And assessments inevitably are done on the basis of criteria. For example, in deciding whether or not a particular movie is good, typically we will have a reason or reasons for our assessment. It may simply be that the

movie made us laugh—in which case, our criterion for good movies is the amount of humor. Alternatively we may have a more elaborate set of criteria: we might feel that the movie had a poignant message, the visual effects were breathtaking and the actors were engaging. These reasons reveal additional implicit criteria for our assessment of the movie (i.e., significance of the message, quality of the cinematography and believability of the acting). To think critically is essentially to engage in deliberations with the intention of making a judgment based on appropriate criteria. Notice that students may judge movies on very narrow and dubious criteria, such as the amount of sex and violence. Our job in helping students think more critically about movies includes encouraging them to care about a wider and, arguably, more adequate set of criteria. For this reason, an important category of critical thinking tool is awareness of and concern for the relevant “criteria for judgment.”

The close relationship between the term “critical” thinking and “criteria” is instructive. Mathew Lipman (1988) suggests that the word 'critical' should be seen as a synonym for 'criterial'—to think critically is to think in light of or using criteria. To put it another way, the grounding on criteria is what gives our judgments rigor. When thinking critically about a movie we are not asserting a personal preference (“It’s good simply because I like the movie”) or reaching a conclusion based on a dubious set of considerations (“It’s a good movie because it contains lots of bloodshed”). Rather, we are offering a reasoned assessment of the merits of the movie—we are making a judgment

based on an ample set of relevant criteria. An important critical thinking objective is to help students identify and appreciate relevant criteria for judging diverse endeavors across the curriculum, from what makes for a good argumentative essay or a sound solution to a business problem, to the qualities of a reliable scientific experiment or an accomplished artistic performance.

### **The “tools” conception in a nutshell**

Summarizing the points made thus far, we believe that the basic building blocks of thinking are not usefully cast in terms of generic skills or mental operations. We do not learn to analyze, interpret, evaluate, predict and so on, and then simply apply these “processes” to a particular situation. Extrapolating from our discussion of the five types of attributes possessed by exemplary critical thinkers, we suggest that promoting critical thinking among our students is largely a matter of helping them develop mastery of an increasing broader repertoire of five types of intellectual resources:

- background knowledge
- critical thinking vocabulary
- thinking strategies
- criteria for judgment
- habits of mind.

We offer the notion of intellectual resources or “tools” to explain the development of good thinking. The ability to think critically develops over time as individuals acquire more of the tools of good thinking. The metaphor of intellectual tools is preferable to that of mental operations because we cannot

teach students to be good analyzers or predictors, *per se*, students can learn to analyze or predict in specific contexts by acquiring the diverse tools required in that context. Students will not become better at predicting weather, earthquakes or story endings unless they acquire the relevant information, learn to attend to detail and develop other tools required for thoughtful completion of these tasks. Notice, too, that there is no “process” of predicting that is discrete from “content”—we cannot (thoughtfully) predict weather without knowledge of meteorology.

As the title of our book suggests, our focus in promoting critical thinking is on teaching students the tools that good critical thinkers possess. Although our terminology for the tools may appear unfamiliar, it is important to remember the list we drew upon to unpack these tools was compiled from countless educators’ suggested attributes of their ideal thinkers. We have simply categorized the attributes that all of us recognize as constituting good critical thinking.

It is also significant that our categories draw support from within the diverse body of literature on thinking. We have come across “schools” of thinking that focus on each of the five categories of tools we identify. More specifically, in the critical thinking as background knowledge camp, we find advocates such as John McPeck (1990) and E.D. Hirsch (1988) arguing that sound thinking is best served by promoting student mastering of the subject matter of the disciplines. David Perkins and his associates (1993) believe that the central ingredients of good thinking are thinking dispositions—what we call habits of

mind. Similarly, Harvey Siegel (1988) suggests that habits of mind are the most important features of a critical thinker and Robert Ennis (1985) lists dispositions as one of two categories of essential ingredients of critical thinking. Prominent among advocates of the centrality of criteria for judgment (also called intellectual standards) are Matthew Lipman (1988) and Richard Paul (1988). The informal logic school of thinking stresses two categories of our tools: those criteria for judgment reflected in the formal and informal rules of logic (e.g., the rules of class, conditional, probabilistic reasoning) and what we refer to as critical thinking vocabulary—concepts such as argument, validity, credibility, truth, soundness, induction, deduction and various informal fallacies (e.g., ad hominem, strawperson, hasty generalization). The final category of tool—thinking strategies—is arguably the most widely espoused dimension of critical thinking. Much of the literature on promoting thinking skills is a matter of teaching strategies for carrying out various operations (see, for example, Glaser, 1984). The fact that collectively the different camps espouse all of our categories of tools is grounds for believing that our conception represents a more complete synthesis of the range of critical thinking attributes than is otherwise found.<sup>ii</sup>

### **Three additional misconceptions**

Before concluding our discussion of the nature of critical thinking, it may be helpful to expose three additional misconceptions. Critical thinking is widely characterized in terms of a specified range of mental operations or as a discrete type of thinking; critical

thinking is thought by some to encourage students to criticize everything; and critical thinking is said to be a gender or culturally biased.

### ***Critical thinking as discrete mental operations or type of thinking***

Many professional and academic writers contrast critical thinking with a variety of other “forms” of thinking. Some distinguish critical thinking from other mental operations by distinguishing “higher order” and “lower order” thinking, and others contrast critical thinking with other so-called types of thinking such as decision making, problem solving and creative thinking. We think the stark contrasts drawn by these groups of writers are misplaced and unhelpful.

### ***Higher order versus lower order thinking.***

As we have suggested, much of the talk about thinking refers to discrete mental processes or thinking operations such as comprehending, analyzing, predicting and evaluating. According to this view, only certain tasks—those typically referred to as “higher-order” operations—are the domain of critical thinking. It is thought that if students perform “higher-order” operations such as analyzing or synthesizing they are necessarily thinking critically and if students perform so-called “lower-order” operations such as comprehending or remembering they cannot be thinking critically. This tendency to equate critical thinking with particular mental operations encourages two undesirable impressions. It suggests, on one hand, that teachers are supporting critical thinking merely by asking students to

carry out tasks involving analysis, interpretation or other “higher-order” operations, and, on the other hand, that there is no role for critical thinking in the so-called “lower-order” operations.

We believe there is no direct or necessary connection between “higher-order” operations and critical thinking and no necessary disjunction between “lower-order” operations and critical thinking. Whether or not students are thinking critically depends more on the qualities that characterize their thinking as they carry out the task, than on the specific nature or type of mental operation. The mere fact that students are analyzing does not mean they are doing it critically. Analysis will involve critical thinking only if the relevant habits of mind and criteria for judging thoughtful analyses guide students' deliberations. If students blindly accept dubious assumptions, leap to fallacious conclusions and rely on inaccurate statements we would be hard pressed to describe their “analysis” as exhibiting critical thinking. Conversely, the so-called “lower-order” operations such as comprehending or remembering can be occasions for critical thinking. Trying to understand a difficult text or lecture is not a rote transfer of information but

may involve elaborate and thoughtful recourse to decoding strategies, habits of mind and background knowledge. So too, with remembering. Many of us with poor memories have likely experimented with various strategies—use of mnemonics, keeping lists, making mental notes, repeating the idea several times and so on. If we did not whimsically adopt or reject these approaches but, however informally, assessed them for their reliability, ease of use, and broad application we were thinking critically about remembering. As these examples suggest, the so-called “higher order” operations can be done in a rote and thoughtless way and the so-called “lower order” operations can be done in a critically thoughtfully manner.

To generalize the point, critical thinking should not be tied to any particular category of mental operation but be seen to refer to a quality of thinking (more accurately, to a set of qualities) that may or may not be evident in any particular intellectual task. The two columns below illustrate this point. On the left-hand side is a list of thinking tasks or operations, and on the right-hand side is a list of qualities or characteristics of thinking. Into which category would you classify critical thinking?

**Does critical thinking designate a type of thinking task or operation or a range of qualities or characteristics of thinking?**

Task/ Operation	Quality/ Characteristic
<ul style="list-style-type: none"> <li>• interpreting a passage</li> <li>• predicting a result</li> <li>• analyzing an issue</li> </ul>	<ul style="list-style-type: none"> <li>• superficially or in-depth</li> <li>• discerningly or blindly</li> <li>• seriously or frivolously</li> </ul>

- preparing a talk
- designing an experiment

- carefully or hurriedly
- rashly or cautiously

As we see it, the “higher order” view would locate critical thinking in the left-hand column, as a label for a type of thinking or range of operations that students undertake. We believe this to be a mistake—critical thinking is more appropriately located in the right-hand list, as referring to a set of qualities or characteristics that may or may not be present in any thinking task students undertake. Just as students may read a passage slowly or quickly, or superficially or in-depth, so too they can read a passage thoughtlessly or thoughtfully.

Rather than focusing on the type of operation, we emphasize the qualities of the thinking. Teachers can help students learn to think critically regardless of the task. Let us see how even seemingly rote tasks such as taking notes can be opportunities to think critically. Consider, first, critically thoughtless note taking. This happens when students write down virtually everything that the teacher says or when they record ideas unsystematically without consideration of importance, relevance or accuracy. On the other hand, students can be assisted in treating note taking as an occasion to think critically by introducing them to the criteria for judging good notes and by suggesting various strategies—circling key words, webbing of ideas, paraphrasing—and, perhaps also, by nurturing appropriate habits of mind. In teaching the criteria for good notes, students could be asked to imagine that they have been approached by a local

politician to prepare concise briefing notes on the day's front-page news. The requirements of their task are that the precis be less than one-half page in length and should accurately summarize all the important points but only for those topics that are relevant to the local politician. Students are thinking critically about their note taking as they judge whether or not their suggested entries are accurate, relevant, comprehensive and concise. What distinguishes the thoughtful from thoughtless taking of notes are the qualities that characterize the students' undertaking of the task—their willful use of strategies, attention to appropriate criteria, and a conscientious habit of mind.

By viewing critical thinking as a way of engaging in virtually any task that students undertake in school, we can appreciate why all teachers—from art to zoology and from arithmetic to woodwork—should care about helping students think critically. As one elementary teacher who had begun working with our approach remarked in her journal: “As I reflect on critical thinking and what I am learning, I am realizing more and more that critical thinking is a form of teaching, embedded in every aspect of life in the classroom. It doesn't happen in isolation, or in specific subjects, but it permeates the curriculum.” Who would want their students to write an essay, paint a picture or, for that matter, take notes in a critically thoughtless way? Of course, teachers may not want to encourage their

students to think critically about every topic. For example, some teachers may chose not to encourage the questioning of basic societal values or inquiry into highly controversial or especially complex topics. Nevertheless, even if some areas are deemed “off-limits,” it would be counter-productive to discourage students from thinking critically about a vast array of curriculum-related challenges. For this reason, critical thinking should not be looked upon as the domain of a narrow subset of classroom activities, but as an orientation to much of what students undertake regardless of the subject: critical thinking belongs in science when students formulate explanatory hypotheses about a particular phenomenon, in information technology courses when framing the optimal parameters for an internet search, in physical education when designing a “game plan” or a fitness program, in mathematics when exploring the rules behind given number patterns, and so on across the curricular spectrum.

***Critical thinking as a discrete form of thinking.***

Widespread infusion of critical thinking is not universally endorsed because, in some circles, critical thinking is seen as but one of many types of thinking distinct from decision making, problem solving, issue analysis, inquiry and so on. As mentioned above, critically thinking, as we define it, occurs whenever an individual seeks to reach a reasoned judgment about what would be reasonable or sensible to do or believe. Viewed this way, critical thinking pertains to all of these contexts. Who would want to reach unreasonable solutions or make senseless choices?

Here again, we see that critical thinking is not usefully characterized as a unique form of thinking but as the quality of thinking required to competently solve problems, reach sound decisions, resolve issues responsibly, conduct thoughtful inquiries and so on.

In a similar vein, it is common among writers who espouse different forms of thinking to sharply contrast critical thinking and creative thinking. This division is often painted in terms of the cold logic, relentless deliberation and technical rationality of the critical thinker versus the intuitive sensitivity, spontaneous impulse and imagination of the creative thinker. It is suggested also that critical thinkers are preoccupied with reacting in established ways to existing ideas while creative thinkers produce new ones. We believe this portrayal of critical and creative as dichotomous forms of thinking is a caricature of what each involves. Artists, writers, inventors and other “creative” people often deliberate about their work, considering whether or not their creations meet the aesthetic and technical criteria they seek to effect (e.g., Is their work imaginative? balanced? evocative? functional?). Even when following their intuitions, creative thinkers are likely at some point to step back and assess whether or not their hunches or impulses are worth pursuing. The frequency with which writers and other creators discard drafts of their work and start over is a testament to the role of critical introspection in creative endeavors. Conversely, the image of the critical thinker as unimaginative, unfeeling and overly analytic is a stereotype. Critical thinkers need to be creative—they must speculate about potential implications, generate original

approaches and view things from novel perspectives.

Critical thinkers must be concerned with their own emotions and those of others. The willingness to empathize with the feelings of others is an important dimension of good thinking, and individuals who embark on important decisions, such as deciding who to marry or what career to pursue, without considering their feelings epitomize poor and not exemplary thinking. The tendency to accentuate the gap between thinking and feeling is an overreaction to the need, some of the times, to put our feelings aside. The point is not to exclude feelings, but to check that our conclusions are not dictated by our feelings. When deciding how to vote, for example, we might want to consider whether or not the particular politician would make a good leader and not simply whether we like or dislike the person. The invocation to think critically is a request to check that we are not being misled by our feelings, but after thinking it through we might find it wise to go with our gut reactions. The person who undervalues or ignores her own feelings and those of others is as poor a thinker as is the person who thinks of nothing but how he and others will feel.

Critical thinking does mean that every event is dissected and scrutinized. In fact, it is decidedly unreasonable to deliberate about everything. Our colleague, Peter Norman, coined the complement to Socrates' famous dictum that "the unexamined life is not worth living" when he rejoined that "the un-lived life is not worth examining." The need to balance, on the one hand, the inclination to enjoy the moment and accept things for what they are with, on the other hand, the

inclination to stand back from the moment and question the situation is a challenge that all individuals—creative or critical—must address. In short, being creative is not antithetical to being critical. They are profoundly interrelated: considerable creativity is required for good critical thinking, and considerable critical thinking is involved in being creative.

In contrast to both the many *types* of thinking classification which distinguishes critical thinking from other so-called forms of thinking and the two *levels* model which distinguishes a few "higher order" operations, we have suggested that critical thinking pertains to any task or context provided the thinker is attempting to judge what would be reasonable or sensible to believe or do. Critical thinking is thus a way of undertaking any activity—namely, approaching it in a critically thoughtful manner. Success in the particular endeavor will depend on the possession of the tools of good thinking—the criteria, thinking strategies, habits of mind and other attributes—relevant to the task before them.

### ***Critical thinking as criticism***

Critical thinking is sometimes equated with criticizing—teaching students to think critically means encouraging them to criticize everything. This concern typically takes two forms: critical thinking teaches students (1) to be disparaging or "judgmental" and (2) to question (and reject) all authority. Both these are misleading characterizations of the purpose and necessary effect of promoting critical thinking.

### ***Critical thinking as being judgmental.***

It is understandable, given the connotation of the term “critical,” that some may equate critical thinking with being negative, harsh and mean spirited. However, this connection is not inevitable and in fact distorts the intention behind critical thinking. Although the notion of making judgments about the merits of an idea is central to critical thinking, making a thoughtful judgment is not identical with being judgmental. In fact, being judgmental implies rash, one-sided conclusions based on inadequate evidence. These qualities are the antithesis of the attributes of a good critical thinker. Thinking critically is essentially to engage in critique. A good critical thinker is like a respected critic. She is not simply disparaging of things but looks fairly at both the merits and shortcomings. In fact, the inclination to belittle and to ‘tear down’ everything marks the absence of key habit of minds of a good critical thinker. A fair-minded, empathic thinker is someone who treats everyone's ideas with respect (even when she disagrees with them) and is sensitive to the feelings of others. The creation of mean-spirited, judgmental individuals is not a result of critical thinking, but is more appropriately seen as a failing to teach critical thinking, properly understood.

### ***Critical thinking as cynical thinking.***

Another misleading tendency is to equate critical thinking with being cynical—with doubting or discounting everything one reads and hears. Disbelieving a statement in a newspaper just because the reader doesn't trust newspapers is not thinking critically. Being critical means that one does not accept everything that one is told

simply because someone has told us. On the other hand, thinking for one's self does not mean accepting as adequate whatever each of us happens to believe. The individual who rejects every opinion that is not consistent with her own has a one-sided and counter-productive understanding of critical thinking. The onus is on each of us to be as rigorous in questioning our own beliefs as we are in the beliefs of others. Put another way, critical thinkers should be as genuinely suspicious of their reasons for dismissing a statement in the newspaper as they are for accepting it.

The equating of critical thinking with promoting cynicism may stem from a tendency among some to stress questioning the opinions of others over self-questioning. Critical thinking like charity begins at home. The cynical student who discounts the opinions of all authority is no less uncritical than the student who accepts whatever any authority says. Or, as one philosopher observed “there are two ways to slide easily through life: to believe everything or to doubt everything—both ways save us from thinking” (cited in Ruggiero, 1996, p. 84). A key habit of mind of a critical thinker is an ongoing attitude of self-reflection. Teaching students to think critically includes getting them to question why they disagree with the opinions of others and it does not mean teaching them to discount the opinions of others. The irony of promoting critical thinking, especially among adolescents, is that it may lead them to be less dismissive of generally accepted views because they may be helped to appreciate that facile rejection of an opinion is no less thoughtless than is facile acceptance.

### ***Critical thinking as gender or cultural imposition***

Some writers suggest that critical thinking is the invention of a male-oriented society, specifically Western civilizations. As such is it said to be biased along gender and cultural lines. Typically, this critique is directed against critical thinking that is conceptualized as objective rationalism. Critical thinking is “masculine” because it is seen as confrontational, argumentative, detached and unemotional. On the other hand, “feminist” ways of thinking and deliberating are said to be consensual, supportive, contextual and caring. Critical thinking is viewed as ethnocentric because it is said to imply principles of truth and logic that are immutable, universal and objective. Culturally sensitive ways of thinking would require evolving, relative and diverse values and procedures.

We believe that the conception of critical thinking we advance is not gender or culturally biased, or at least it is not inherently biased in these ways. Many of the “tools” we describe (e.g., empathy, appreciate others' viewpoints, respect others' feelings, learn to work towards consensus, recognize that people see the world differently) expressly invite the sort of sensibilities that the feminist and cultural pluralist critiques seem to require. In addition, many other tools such as “warranted belief” or “appropriate response” do not presuppose a single (universal) standard. The standards are implicitly responsive to contextual factors: what may legitimately be accepted as warranted or appropriate may well differ among individuals or across groups. Our

conception does not presuppose that they will be uniform and unchanging.

Perhaps bias enters our conception through other of the intellectual tools we discuss. For example, we suggested earlier that critical thinkers question ideas and do not accept things at face value, they are flexible and value clarity and specificity. Can we be sure that these values are shared equally by all cultural groups and individuals? Are we not implying ‘universal’ standards? To some extent we believe there are common, cross-cultural and inter-subjective standards of good thinking. However, a fundamental premise of our conception is that intellectual standards are contextually bound. Individuals and groups will differ in what, how and when they “question ideas” or “value clarity.” For example, students in some cultures may be encouraged, perhaps even expected, to question the tenets of their religion or to seek clarity in interpersonal communications whereas in other cultures these kinds of pursuits may be discouraged. Significantly, the contextual desirability of “questioning ideas” or “valuing clarity” is true even where high value is attached to these standards. Situations arise even in the most “critically-minded” communities where questioning (perhaps, during a fire drill) and seeking clarity (perhaps, when expressing feelings at a funeral) are inappropriate. Despite the contextual variability, we believe that all societies must have some commitment to questioning of ideas, flexibility and seeking of clarity. We believe this because some purposes and practices are common by virtue of our shared needs and conditions. For example, even cultures that do not place a high premium on clarity will likely value

clarity in a range of situations (perhaps when identifying medicine to take, asking for directions, or building a house). If there was never any questioning of ideas, a society could not respond to the myriad of changes that are inevitable.

Some may counter that the very enterprise of critical thinking is fundamentally biased—it's a "male thing" or a Western liberal preoccupation. There may or may not be gender and cultural variations in the degree of importance attached to thinking, nevertheless all people must care to some extent about making reasoned judgments. We can not imagine a life where there is so little choice about what to believe and how to act that it would not matter whether someone thought about what was sensible or worthwhile. Although the focus and practice of critical thinking may vary significantly among and within groups, it has an important role to place in every society. This final point finds support in a 1998 international study of 182 experts in various fields (arts, politics, education, business) drawn from Thailand, Japan, five European countries

and North America. When asked what society should do to prepare citizens for the 21st century, consensus using a Delphi methodology was reached on 16 of 26 recommendations for educational policy. Of the 16 consensual recommendations supported by these diverse experts, only two were "very highly recommended." Significantly, both of these focused on critical thinking:

- Support the teaching of subject matter in a manner that encourages children to think critically.
- Emphasize students' ability to critically assess information in an increasingly media-based society. (Cogan & Derricott, 1998, p. 99)

Although our discussion about how best to conceptualize critical thinking does not exhaust the many points of contention on this subject, we think that an adequate foundation has been established. Before moving to discuss how to promote critical thinking, it may be useful to consolidate your understanding of the nature of critical thinking.

### **Revisiting your earlier impressions**

Return to your initial answers to the questions asked in "Your perceptions?" (pages 2-3). Have you changed your views about critical thinking? We believe the best answer to all six questions is "disagree." Do you agree with all of the conclusions we have offered in this chapter? If not, in what ways and why do you think we are mistaken? What have you found most interesting or revealing about what has been discussed thus far? What questions or concerns do you have about your understanding of the nature of critical thinking and about how to promote it in students?

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## Further reading

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<sup>i</sup> The widely cited and extensive study of 1,000 American classrooms by John Goodlad (1984) concluded that from the early grades school-based activities and environments condition students to reproduce what they are taught (p. 241) and not to use and evaluate information (p. 236). Fred Newmann's (1991, p 324) research on 16 schools observed that most instruction "follows a pattern of teachers transmitting information to students who are expected to reproduce it." Sandra McKee (1988) found in her study of seven high school teachers that 4% of classroom time was devoted to reasoning, and an average of only 1.6 student-posed questions per class.

<sup>2</sup> We are not implying that our conception is the only multi-dimensional account of critical thinking. Other writers, including many of those we mention, identify various of the tools we discuss (see, for example, Marzano *et al*, 1988; Nickerson, 1988; Walsh and Paul, 1987).