CRITICAL THINKING IN EDUCATION

What is critical thinking?

Given the complexity of critical thinking, there are many definitions of critical thinking. Thus, putting too much weight on definition is bound to have important limitations. However, there are some common threads of emphasis that run through most of those definitions, some of which are the following:

- that critical thinking enables thinkers proficient in it to better produce and assess intellectual work as well as to act more reasonably and effectively in the world affairs and personal life;

- that the possibility of assessing intellectual work and action in the world requires intellectual standards essential to sound reasoning and personal and professional judgment;

- that self-assessment is an integral dimension of such reasoning and judgment;

- that as one learns to think critically, one is better able to master content in diverse disciplines;

- that critical thinking is essential to and made manifest in all academic disciplines, including sound reasoning and expert performance in such diverse fields as biology, chemistry, mathematic, sociology, history, anthropology, literature, philosophy, as well as in of the arts and professions;

- that as one becomes proficient in critical thinking, one becomes more proficient in using and assessing goals and purposes, questions and problems, information and data, conclusions and interpretations, concepts and theoretical constructs, assumptions and presuppositions, implications consequences, and points of view and frames of reference;

- that mastery of language contributes to critical thinking;

- that as one becomes more proficient in critical thinking, one improves one's capacity to think more clearly, more accurately, more precisely, more relevantly, more deeply, more broadly and more logically;

- that as one becomes more proficient in critical thinking, one becomes more intellectually perseverant, more intellectually responsible, more intellectually disciplined, more intellectually humble, more intellectually empathic and more intellectually productive;

- that as one becomes more proficient in critical thinking, one becomes a better reader, writer, speaker and listener;

- that proficiency in critical thinking is integral to lifelong learning and the capacity to deal effectively with a world of accelerating change.

(Adapted from Critical Thinking : Basic Theory & Instructional Structures, Foundation for Critical Thinking, 1997)

The concept of critical thinking is multi-dimensional in the sense that it includes the intellectual (logic, reason), the psychological (self-awareness, empathy), the ethnical (involving moral norms and evaluation and the philosophical (the meaning of human nature and life)

The heart of critical thinking is developing a reflective orientation toward our minds which involves exploring our thinking and the thinking of other people so that we can understand how our minds work, how we conceptualize the world and construct knowledge. Becoming a critical thinker goes beyond developing basic attitudes and dispositions. Critical thinking involves the ability to accurately assess one's own reasoning ability. There are two interrelated dimensions of reasoning. The first dimension consists of the elements of reasoning and the second dimension consists of the universal standards by which we are able to measure the ability to use each of those elements of reasoning. Hence, universal intellectual are standards which must be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue or situation. While there are numerous universal standards, the following are the most significant:

CLARITY: "Could you elaborate further on that point? Could you express that point in another way? Could you give me an example?" Clarity is a gateway standard. If a statement is unclear, we cannot determine whether it is accurate or relevant. In fact, we cannot tell anything about it because we have yet to know what it is saying. For example, the question "What can be done about the education system in America?" is unclear. In order to adequately address the question, we would need to have clearer understanding of what the person asking the question is considering the "problem" to be. A clearer question might be "What can educators do to ensure that students learn the skills and abilities which help them function successfully on the job and in their daily decision making?"

ACCURACY: "Is that really true? How could we check that? How could we find out if that is true?" A statement can be clear but not accurate, as in "Most dogs are over 300 pounds in weight."

PRECISION: "Could you give more details? Could you be more specific?" A statement can be both clear and accurate, but not precise, as in "Jack is overweight" (We don't know how overweight Jack is, one pound or 500 pounds).

RELEVANCE: "How is that connected to the question? How does that bear on the issue?" A statement can be clear, accurate and precise, but not relevant to the question at issues. For example, students often think that the amount of effort they put into a course should be used in raising their grade a course. Often, however, effort does not measure the quality of student learning, and when that is so, efforts is irrelevant to their appropriate grade.

DEPTH: "How does your answer address the complexities in the questions? How are you taking into account the problem in the question? Is that dealing with the most significant factors?" A statement can be clear, accurate, precise and relevant, but superficial (that is, lack depth). For example, the statement "Just Say No" which is often used of discourage children and teens from using drugs, is clear accurate, precise, and relevant. Nevertheless, it lacks depth because it treats an extremely complex issue, the pervasive problem of drug use among young people, superficially. It fails to deal with the complexities of the issues.

BREADTH: "Do we need to consider another point of view? Is there another way to look at the question? What would this look like from a conservative standpoint? What would this look like form the point of view of...?" A line of reasoning

may be clear, accurate, precise, relevant and deep, but lack breadth (an in argument from either the conservative of liberal standpoints which gets deeply into an issue but only recognizes the insights of one side of the question).

LOGIC: "Does this really make sense? Does that follow from what you said? How does that follow? But before you implied this and now you are saying that, I don't see how both can be true." When we think, we bring a variety of thoughts together into some order. When the combination of thoughts are mutually supporting and make sense in combination, the thinking is logical. When the combination is not mutually supporting, is contradictory in some sense, or does not make sense, the combination is not logical.

(Adapted from Critical Thinking : Basic Theory & Instructional Structures, Foundation for Critical Thinking, 1997)

The interrelation between the two dimensions of reasoning is illustrated in the following diagram:

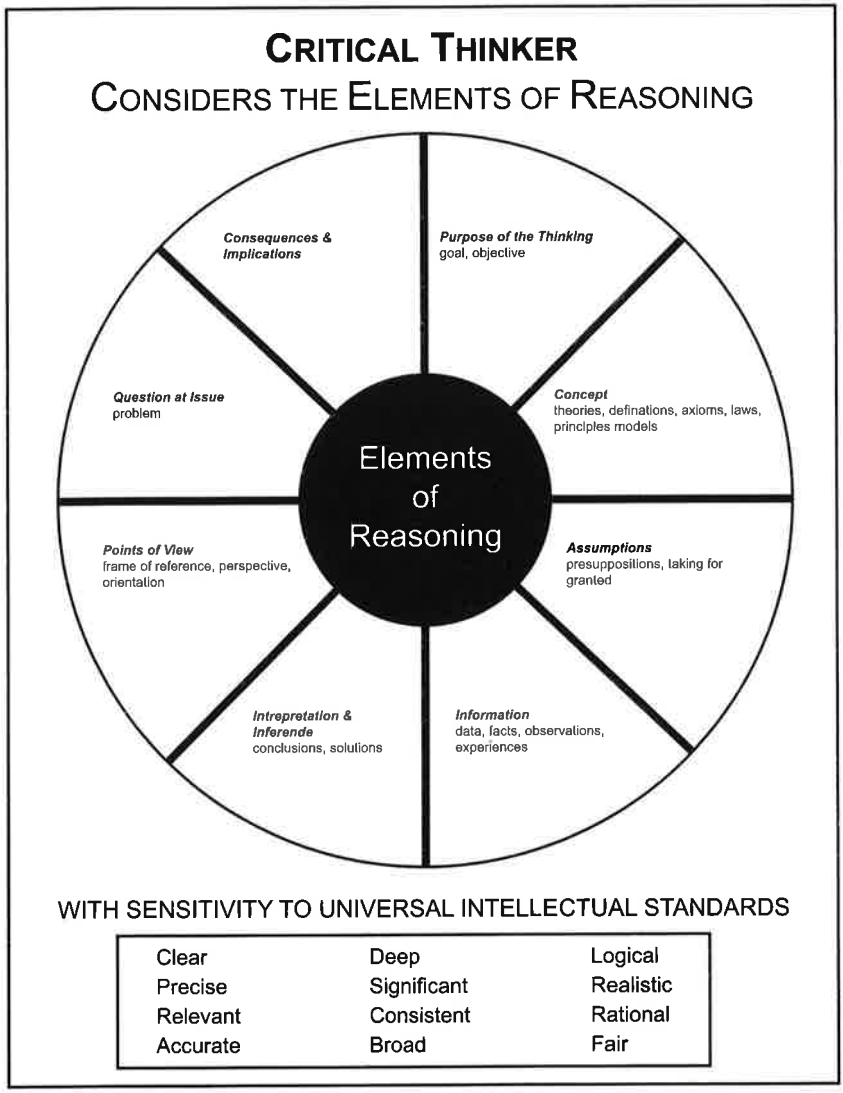

Figure 1, Source: Critical Thinking: Basic Theory & Instructional Structures, Foundation for Critical Thinking, 1997

In essence, critical thinking is not just thinking, but thinking which entails self-improvement and this improvement comes from the skill in using standards by which one appropriately assesses thinking. Hence, it is self-improvement (in thinking) through standards (that assess thinking). Richard Paul (1995) argues that there are fundamental intellectual traits that are base on basic values essential to critical thinking. He delineates them as follows:

INTELLECTUAL HUMILITY: Having a consciousness of the limits of one's knowledge, including a sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice and limitations of one's viewpoint. Intellectual humility depends on recognizing that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness or conceit, combined with insight into the logical foundations or lack of such foundations of one's beliefs.

INTELLECTUAL COURAGE: Having a consciousness of the need to face and fairly address ideas, beliefs or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing. This courage

is connected with the recognition that ideas considered dangerous or absurd are sometimes rationally justified (in whole or in part) and that conclusions and beliefs inculated us are sometimes false or misleading. To determine for ourselves which is which, we must not passively and uncritically accept what we have learned. Intellectual courage comes into play here, because inevitably we will come to see some truth in some ideas considered dangerous and absurd and distortion or falsity in some ideas strongly held in our social group. We need courage to be true to our own thinking in such circumstances. The penalties for non-conformity can be severed.

INTELLECTUAL EMPATHY: Having a consciousness of the need to imaginatively put oneself in the place of others in order to genuinely understand them, which requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief. This trait correlates with the ability to reconstruct accurately to viewpoints and reasoning of others and to reason from premises, assumptions and ideas other than our own. This trait also correlated with the willingness to remember occasions when we were wrong in the past despite an intense conviction that we were right and with the ability to imagine our being similarly deceived in a case-at-hand.

INTELLECTUAL INTEGRITY: Recognition of the need to be true to one's own thinking; to be consistent in the intellectual standards one applies; to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists; to practice what one advocates for others; and to honestly admit discrepancies and inconsistencies in one's own thought and action.

INTELLECTUAL PERSEVERANCE: Having a consciousness of the need to use intellectual insights and truth in spite of difficulties, obstacles and frustrations; firm adherence to rational principles despite the irrational oppositions of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time to achieve deeper understanding or insight.

FAITH IN REASON: Confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, by encouraging people to come to their own conclusions by developing their own rational faculties; faith that, with proper encouragement and cultivation, people can learn to think for themselves, to form rational viewpoints, draw reasonable conclusions, think coherently and logically,

persuade each other by reason and become reasonable persons, despite the deep-seated obstacles in the native character of the human mind and in society as we know it.

FAIRMINDEDNESS: Having a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation; implies adherence to intellectual standards without reference to one's own advantage or the advantages or the advantage of one's group.

Adapted from Paul, Richard, Critical Thinking: How to Prepare Students for a Rapidly Changing World, CA: The Foundation for Critical Thinking, 1995.

An overview of the concept of critical thinking can be depicted by the following chart:

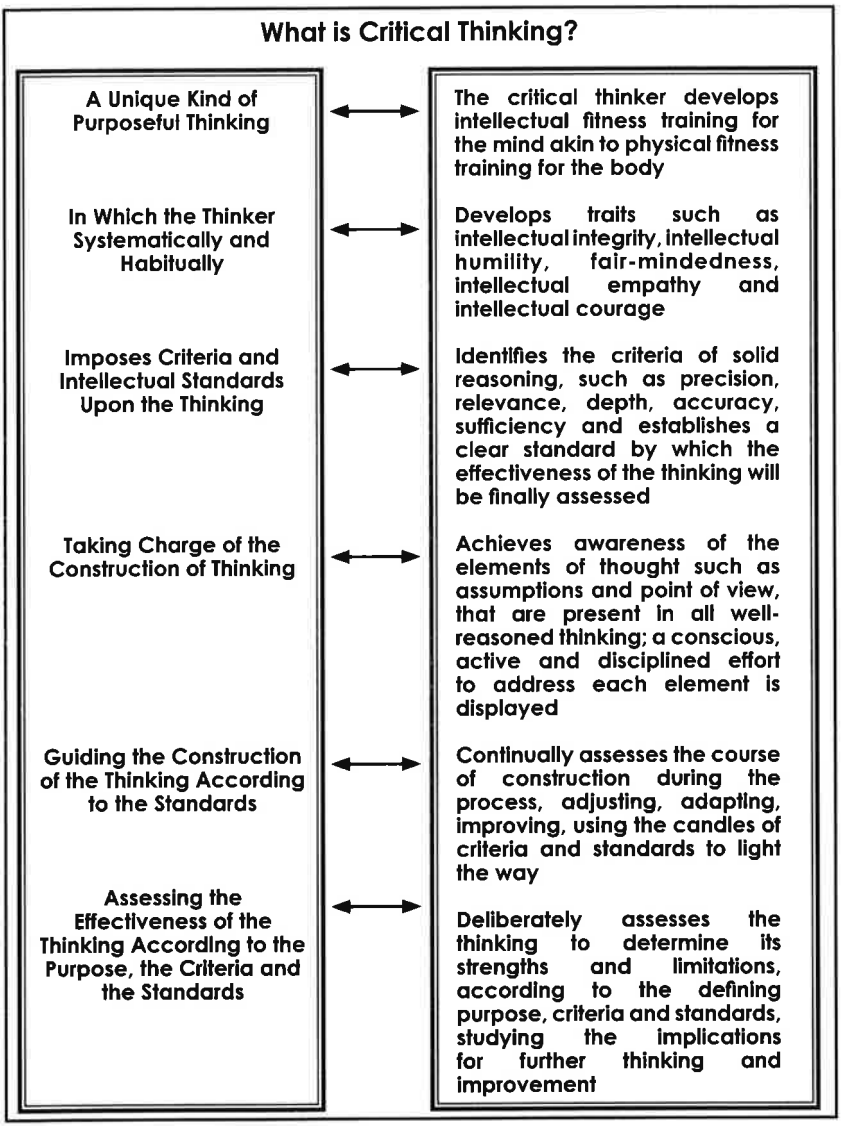

Figure 2, Source: Richard Paul in Critical Thinking: How to Prepare Students for a Rapidly Changing World (1995)

Why is critical thinking essential?

If we understand that the quality of our thinking determines the quality of everything we do, then we should concede critical thinking as being fundamental to our survival. If this is the case then the pursuit of critical thinking becomes a lifelong commitment beginning from the earliest years of our lives. It is human nature to think, however, we all begin as largely unreflective thinkers, unaware of the role that thinking plays in our lives. We also may not realize the many ways that problems in thinking are causing problems in our lives. Unconsciously we think of ourselves as the source of truth and assume our own belief to be true. We often take in many absurd beliefs merely because those around us believe in them. We are very likely to create and maintain pleasant illusions. In other words, if it feels good to believe something, then we believe it.

The glaring truth is that much of our thinking, if left to itself, is biased, distorted, partial, uninformed or down-right prejudiced. If the quality of our life depends precisely on the quality of our thought, then we must begin to develop real insight into the flawed nature of our own thinking. If this insight was to be effective, it must be concrete and specific for this to happen, we must maximize the quality of our thinking and we must learn how to become a more

effective critic of our thinking. In essence, we can become a better critic of out thinking if we become a better student of thinking. This means we must be willing to learn more about how thinking works and how to improve it and ultimately putting what we learn into practice.

Hence, a well-cultivated thinker:

- formulates and raises vital questions and problems clearly and precisely;
- gathers, assesses and interprets relevant information effectively using abstractions
- arrives at carefully reasoned conclusions and solutions and tests them against relevant criteria and standards
- thinks openmindedly within alternative systems of thought, recognizing and assessing, as needed, their assumptions, implications, and practical consequences; and
- communicates effectively with others in seeking solutions to complex problems

Why is critical thinking essential to educators?

When we teach content within a subject domain, we want our students to internalize the significant concepts from the content and use it effectively in their lives academically and personally. We do not want our students to leave school with a wealth of facts but are not

able connect them how to use them. If we want students to retain the content of a particular lesson, we must organize it and help them see that the ideas are connected. We need to help students to organize their thinking around basic ideas and to be a good questioner. The students must have the ability to probe deeply, to get down to the core idea and not only the mere appearance of things. For students to be good questioners, they must get into the spirit of "wonderment" about the situation being discussed. It entails wondering about that which is not obvious and questioning in a precise manner in order to discover the essence of truth while keeping an open mind. It is of paramount importance that educators provide a variety of opportunities for students to think critically by drawing conclusions, clarifying ideas, evaluating assumptions, drawing inferences and giving reasons and examples to support ideas. Hence, critical thinking acts as an excellent tool for teachers in helping students to learn how to think rather than just what to think. Critical thinking allows students to become active participants in their learning process and makes education more meaningful to them, thus facilitating learning. More importantly, a teacher needs to become a model of critical thinking for the students because only through this interaction can content be analyzed, synthesized and evaluated.

Conclusion

For the most part, the present mode of instruction in schools is didactic in nature. Hence, the fundamental problems at all levels of schooling is fragmentation and lower order learning. What appears to be missing is coherence, connection and depth of understanding. It would seem that the present instruction implies that parroting information is equivalent to acquiring knowledge. Teachers are often compelled to cover information even when they realize that the students would soon forget the fragmented information put forth to them. As educators, we can only begin to rectify this problem when we understand the need to reconceptualize and restructure our current practice in order to narrow that gap between goals and results. We do this by basically improving student thinking which in turn would improve student performance. The first step towards this is to create opportunities and incentives for our students to think. Much of this effort would depend on our commitment in encouraging critical thinking along with the values and dispositions essential to it. We must also understand the reciprocal relationship between knowledge and thought. This would entail fostering the traits of mind essential to critical thinking in every subject

area or domain and not just selected assignments. Listed below are several fundamental approaches which we can take in order to help our students begin the process of becoming a critic of their thinking.

1) Design coverage so that students grasp more! Plan instruction so students attain organizing concepts that enable them to retain more of what you teach. Cover **less** when **more** entails that they learn **less.**

2) **Speak less** so that they **think more!** (Try not to lecture more than 20% of total class time).

3). **Don't be a mother robin** – chewing up the text for the students and putting it into their beaks through lecture! Teach them instead how to read the text for themselves, actively and analytically. Focus, in other words, on how to read the text not on "reading to text for them".

4) **Focus on fundamental and powerful concepts with high generalizability.** Don't cover more than 50 basic concepts in any one course. Spend the time usually spend introducing more concepts applying and analyzing the basic ones while engaged in problem-solving and reasoned application.

5) **Present concepts**, as far as possible, **in the context of their use** as functional tools for the solution of real problems and the analysis of significant issues.

6) **Develop specific strategies for cultivating critical reading, writing, speaking, and listening.** Assume that your students enter your class-as indeed they do-with limited skills in these essential learning modalities.

7) **Think aloud in front of your students.** Let them hear you thinking, better, puzzling your way slowly through problems in the subject. (Try to think aloud at the level of a good student, not as a speedy professional. If your thinking is too advanced or proceeds too quickly, they will not be able to internalize it).

8) **Regularly question your students Socratically:** probing various dimensions of their thinking; their purpose; their evidence, reasons, data; their claims, beliefs, interpretations, deductions, conclusions; the implications and consequences of their thought; their response to alternative thinking from contrasting points of view, and so on.

9) **Call frequently on students who don't have their hands up.** Then when one students says something, call on other students to summarize in their own words what the first student said (so that they actively listen to each other).

10) **Use concrete examples whenever you can** to illustrate abstract concepts and thinking. Cite experiences that you believe are more or less common in the lives of your students (relevant to what you are teaching).

11) **Require regular writing for class.** But grade using random sampling to make it possible for you to grade their writing without having to read it all (which you probably won't have time for).

12) **Spell our explicitly the intellectual standards you will be using in your grading,** and why. Teach the students, as well as you can, how to assess their own work using those standards.

13) **Break the class frequently down into small groups** (of twos, threes, fours, etc.) give the group specific tasks and specific time limits, and call on particular groups afterward to report back on what part

of their task they completed, what problems occurred, how they tackled those problems, etc.

14) **In general design all activities and assignments, including readings, so that students must think their way through them.** Lead discussions on the kind of thinking that is required.

15) **Keep the logic of the most basic concepts in the foreground,** continually reweaving new concepts into the basic ones. Talk about the whole in relation to the parts and the parts in relation to the whole.

16) **Let them know they're in for.** On the first day of class, spell out as completely as possible what your philosophy of education is, how you are going to structure the class and why, the students will be required to think their way through it, why standard methods of rote memorization will not work, what strategies you have in store for them to combat the strategies they use for passing classes without much thinking, etc.

(From Critical Thinking: Basic Theory & Instructional Structures, Foundation for Critical Thinking, 1997)

As we begin to make a paradigm shift from a didactic to a critical model of education, a very important point to note is that this shift cannot be achieve by any short-term strategy. If students are to learn to think critically, they must be exposes to critical thinking over an extended period of time, over years and not months. It must be experienced as something of a conversion, as a new way of thinking about every dimension of schooling. It is like making a global shift in our lifestyle.

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