Critical Thinking

Tools:
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Critical thinking

Critical thinking consists of a mental process of analyzing or evaluating information, particularly statements or propositions that people have offered as true. It forms a process of reflecting upon the meaning of statements, examining the offered evidence and reasoning, and forming judgments about the facts.

Critical thinkers can gather such information from observation, experience, reasoning, and/or communication. Critical thinking has its basis in intellectual values that go beyond subject-matter divisions and which include: clarity, accuracy, precision, evidence, thoroughness and fairness.

Overview

Within the framework of skepticism, the process of critical thinking involves acquiring information and evaluating it to reach a well-justified conclusion or answer. Part of critical thinking comprises informal logic. Given research in cognitive psychology, educators increasingly believe that schools should focus more on teaching their students critical thinking skills than on memorizing facts by rote-learning.

As defined in A Greek-English Lexicon the verb krinō means to choose, decide or judge. Hence a krites is a discerner, judge or arbiter. Those who are kritikos have the ability to discern or decide.

The word krinō also means to separate (winnow) the wheat from the chaff or that which has worth from that which does not.

Critical thinking is very important, as it allows information received to be evaluated, decreasing the risk of acting on a false premise. The loss of this faculty through injury, intoxication, denial or subversion can lead to a greater risk of one making a fatal Error.

However even with the use of critical thinking, mistakes can happen due to the thinker not being in possession of the full facts. Plus there is always the possibility of Human error.

The process of critical thinking responds to many subjects and situations, finding connections between them. It forms, therefore, a system of related modes of thought that cut across fields like science, mathematics, engineering, history, anthropology, economics, moral reasoning and philosophy.

One can regard critical thinking as involving two aspects:

1. a set of cognitive skills
2. the ability and intellectual commitment to use those skills to guide behavior.

Critical thinking does not include simply the acquisition and retention of information, or the possession of a skill-set which one does not use regularly; nor does critical thinking merely exercise skills without acceptance of the results.

Methods of critical thinking

Critical thinking has a useful sequence to follow:

1. Itemize opinion(s) from all relevant sides of an issue and collect Logical argument(s) supporting each.
2. Break the arguments into their constituent statements and draw out various additional implication(s) from these statements.
3. Examine these statements and implications for internal contradictions.
4. Locate opposing claims between the various arguments and assign relative weightings to opposing claims:
   * Increase the weighting when the claims have strong support especially distinct chains of reasoning or different news sources, decrease the weighting when the claims have contradictions.
   * Adjust weighting depending on relevance of information to central issue.
   * Require sufficient support to justify any incredible claims; otherwise, ignore these claims when forming a judgment.
5. Assess the weights of the various claims.

Mind maps provide an effective tool for organizing and evaluating this information; in the final stages, one can assign numeric weights to various branches of the mind map.
Critical thinking does not assure that one will reach either the truth or correct conclusions. First, one may not have all the relevant information; indeed, important information may remain undiscovered, or the information may not even be knowable. Second, one's bias(es) may prevent effective gathering and evaluation of the available information.

Critical thinking may be distinguished, but not separated, from feeling. Refusal to recognize their interaction in real life leads to various forms of self-deception, individually and socially; and at the left, right, and mainstream of economic, political, and religious issues. Further analysis and resources about this interaction may be found in Roderick Hindery (2001): Indoctrination and Self-deception or Free and Critical Thought.

**Overcoming bias**

*Main article: list of cognitive biases*

To reduce one's bias, one can take various measures during the process of critical thinking. Instead of asking "How does this contradict my beliefs?" ask: "What does this mean?"

In the earlier stages of gathering and evaluating information, one should first of all suspend judgement (as one does when reading a novel or watching a movie). Ways of doing this include adopting a perceptive rather than judgmental orientation; that is, avoiding moving from perception to judgment as one applies critical thinking to an issue. In the terminology of Edward De Bono's Six Thinking Hats, use white hat or blue hat thinking and delay black hat thinking for later stages.

One should become aware of one's own fallibility by:
1. accepting that everyone has subconscious biases, and accordingly questioning any reflexive judgments;
2. adopting an egoless and, indeed, humble stance
3. recalling previous beliefs that one once held strongly but now rejects
4. realizing one still has numerous blind spots, despite the foregoing

How does one ever eliminate biases without knowing what the ideal is? A possible answer: by referencing critical thinking against a "concept of man" (see Erich Fromm). Thus we can see that critical thinking and the formation of secure ethical codes form an integral whole, but a whole which remains limited without the backing of a concept of humanity.

Finally, one might use the Socratic method to evaluate an argument, asking open questions, such as the following:
- What do you mean by_______________?
- How did you come to that conclusion?
- Why do you believe that you are right?
- What is the source of your information?
- What assumption has led you to that conclusion?
- What happens if you are wrong?
- Can you give me two sources who disagree with you and explain why?
- Why is this significant?
- How do I know you are telling me the truth?
- What is an alternate explanation for this phenomenon?

Critical Thinking can be looked at within many frameworks or paradigms.

One is a four tiered system.
1: Dualistic reasoning: In this mode of thought things are thought of in terms of either/or, right/wrong or good/bad.
2: Multiplicity: At this level, the thinker understands that different agents may have different perspectives on a given object or matter.
3: Relativity: This level of thinking holds that different people have different perspectives, and that all are ultimately equal.
4: Relativity With Commitiment: This level of thinking recognizes that different agents hold different perspectives and opinions, but that criteria for judgement can assess the validity of a given perspective, stance or opinion.

**Reaching a conclusion**

One useful perspective in critical thinking is to employ Occam's Razor. Also called the "principle of parsimony," Occam's razor requires that one not make more assumptions than necessary. In other words, the simplest
solution is likely the best. Given the nature of the process, critical thinking is never final. One arrives at a tentative conclusion, given the evidence and based on an evaluation. However, the conclusion must always remain subject to further evaluation if new information comes to hand.

**Critical thinking in the classroom**

In the UK school system, the syllabus offers **Critical thinking** as a subject which 16-18 year olds can take as an A-Level. Under the **OCR** exam board, students can sit two exam papers: "Credibility of Evidence" and "Assessing/Developing Argument". The exam tests candidates not on particular information they have learned during the course, but on their ability to think critically about, and analyse, arguments on their deductive or inductive validity. The full advanced GCE is now available and, though very challenging, is extremely useful for degree courses in politics, philosophy, history or theology (to name but a few), providing the skills required for critical analysis that are useful, for example, in biblical study. Though an untraditional A level, it remains both as valid and as useful as any other advanced GCE subject.

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**Defining Critical Thinking**

**Summary**

Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

It entails the examination of those structures or elements of thought implicit in all reasoning: purpose, problem, or question-at-issue; assumptions; concepts; empirical grounding; reasoning leading to conclusions; implications and consequences; objections from alternative viewpoints; and frame of reference. Critical thinking - in being responsive to variable subject matter, issues, and purposes - is incorporated in a family of interwoven modes of thinking, among them: scientific thinking, mathematical thinking, historical thinking, anthropological thinking, economic thinking, moral thinking, and philosophical thinking.

Critical thinking can be seen as having two components: 1) a set of information and belief generating and processing skills, and 2) the habit, based on intellectual commitment, of using those skills to guide behavior. It is thus to be contrasted with: 1) the mere acquisition and retention of information alone, because it involves a particular way in which information is sought and treated; 2) the mere possession of a set of skills, because it involves the continual use of them; and 3) the mere use of those skills ("as an exercise") without acceptance of their results.

Critical thinking varies according to the motivation underlying it. When grounded in selfish motives, it is often manifested in the skillful manipulation of ideas in service of one's own, or one's groups', vested interest. As such it is typically intellectually flawed, however pragmatically successful it might be. When grounded in fairmindedness and intellectual integrity, it is typically of a higher order intellectually, though subject to the charge of "idealism" by those habituated to its selfish use.

Critical thinking of any kind is never universal in any individual; everyone is subject to episodes of undisciplined or irrational thought. Its quality is therefore typically a matter of degree and dependent on, among other things, the quality and depth of experience in a given domain of thinking or with respect to a particular class of questions. No one is a critical thinker through-and-through, but only to such-and-such a degree, with such-and-such insights and blind spots, subject to such-and-such tendencies towards self-delusion. For this reason, the development of critical thinking skills and dispositions is a life-long endeavor.

**Why Critical Thinking?**

**The Problem**

Everyone thinks; it is our nature to do so. But much of our thinking, left to itself, is biased, distorted, partial, uninformed, or downright prejudiced. Yet the quality of our life and that of what we produce, make, or build depends precisely on the quality of our thought. Shoddy thinking is costly, both in money and in quality of life. Excellence in thought, however, must be systematically cultivated.

**A Definition**

Critical thinking is that mode of thinking-about any subject, content, or problem-in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing, and reconstructing it. Critical thinking is self-
directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities, as well as a commitment to overcome our native egocentrism and sociocentrism.

To Analyze Thinking:
Identify its purpose, question, information, conclusion(s), assumptions, implications, main concept(s), and point of view.

To Assess Thinking:
Check it for clarity, accuracy, precision, relevance, depth, breadth, significance, logic, and fairness.

The Result
A well-cultivated critical thinker:
- Raises vital questions and problems, formulating them clearly and precisely;
- Gathers and assesses relevant information, using abstract ideas to interpret it effectively;
- Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards;
- Thinks openmindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences; and
- Communicates effectively with others in figuring out solutions to complex problems.

The Etymology and Dictionary Definition of "Critical Thinking"
The concept of critical thinking we adhere to reflects a concept embedded not only in a core body of research over the last 30 to 50 years but also derived from roots in ancient Greek. The word 'critical' derives etymologically from two Greek roots: "kriticos" (meaning discerning judgment) and "kriterion" (meaning standards). Etymologically, then, the word implies the development of "discerning judgment based on standards."

In Webster's New World Dictionary, the relevant entry reads "characterized by careful analysis and judgment" and is followed by the gloss: "critical, in its strictest sense, implies an attempt at objective judgment so as to determine both merits and faults." Applied to thinking, then, we might provisionally define critical thinking as thinking that explicitly aims at well-founded judgment and hence utilizes appropriate evaluative standards in the attempt to determine the true worth, merit, or value of something.

The tradition of research into critical thinking reflects the common perception that human thinking left to itself often gravitates toward prejudice, over-generalization, common fallacies, self-deception, rigidity, and narrowness.

The critical thinking tradition seeks ways of understanding the mind and then training the intellect so that such "errors", "blunders", and "distortions" of thought are minimized. It assumes that the capacity of humans for good reasoning can be nurtured and developed by an educational process aimed directly at that end.

The history of critical thinking documents the development of this insight in a variety of subject matter domains and in a variety of social situations. Each major dimension of critical thinking has been carved out in intellectual debate and dispute through 2400 years of intellectual history.

That history allows us to distinguish two contradictory intellectual tendencies: a tendency on the part of the large majority to uncritically accept whatever was presently believed as more or less eternal truth and a conflicting tendency on the part of a small minority those who thought critically to systematically question what was commonly accepted (and seek, as a result, to establish sounder, more reflective criteria and standards for judging what it does and does not make sense to accept as true).

Our basic concept of critical thinking is, at root, simple. We could define it as the art of taking charge of your own mind. Its value is also at root simple: if we can take charge of our own minds, we can take charge of our lives; we can improve them, bringing them under our self command and direction. Of course, this requires that we learn self-discipline and the art of self-examination. This involves becoming interested in how our minds work, how we can monitor, fine tune, and modify their operations for the better. It involves getting into the habit of reflectively examining our impulsive and accustomed ways of thinking and acting in every dimension of our lives.

All that we do, we do on the basis of some motivations or reasons. But we rarely examine our motivations to see if they make sense. We rarely scrutinize our reasons critically to see if they are rationally justified. As consumers we sometimes buy things impulsively and uncritically, without stopping to determine whether we really need what we are inclined to buy or whether we can afford it or whether it's good for our health or whether the price is competitive. As parents we often respond to our children impulsively and uncritically, without stopping to determine whether our actions are consistent with how we want to act as parents or whether we are contributing
to their self esteem or whether we are discouraging them from thinking or from taking responsibility for their own behavior.

As citizens, too often we vote impulsively and uncritically, without taking the time to familiarize ourselves with the relevant issues and positions, without thinking about the long-run implications of what is being proposed, without paying attention to how politicians manipulate us by flattery or vague and empty promises. As friends, too often we become the victims of our own infantile needs, "getting involved" with people who bring out the worst in us or who stimulate us to act in ways that we have been trying to change. As husbands or wives, too often we think only of our own desires and points of view, uncritically ignoring the needs and perspectives of our mates, assuming that what we want and what we think is clearly justified and true, and that when they disagree with us they are being unreasonable and unfair.

As patients, too often we allow ourselves to become passive and uncritical in our health care, not establishing good habits of eating and exercise, not questioning what our doctor says, not designing or following good plans for our own wellness. As teachers, too often we allow ourselves to uncritically teach as we have been taught, giving assignments that students can mindlessly do, inadvertently discouraging their initiative and independence, missing opportunities to cultivate their self-discipline and thoughtfulness.

It is quite possible, and unfortunately quite "natural", to live an unexamined life, to live in a more or less automated, uncritical way. It is possible to live, in other words, without really taking charge of the persons we are becoming, without developing, or acting upon, the skills and insights we are capable of. However, if we allow ourselves to become unreflective persons, or rather, to the extent that we do, we are likely to do injury to ourselves and others, and to miss many opportunities to make our own lives, and the lives of others, fuller, happier, and more productive.

On this view, as you can see, critical thinking is an eminently practical goal and value. It is focused on an ancient Greek ideal of "living an examined life". It is based on the skills, the insights, and the values essential to that end. It is a way of going about living and learning that empowers us and our students in quite practical ways. When taken seriously, it can transform every dimension of school life: how we formulate and promulgate rules, how we relate to our students, how we encourage them to relate to each other, how we cultivate their reading, writing, speaking, and listening, what we model for them in and outside the classroom, and how we do each of these things.

Of course, we are likely to make critical thinking a basic value in school only insofar as we make it a basic value in our lives. Therefore, to become adept at teaching so as to foster critical thinking, we must become committed to thinking critically and reflectively about our own lives and the lives of those around us. We must become active, daily, practitioners of critical thought. We must regularly model for our students what it is to reflectively examine, critically assess, and effectively improve the way we live.

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