The Miniature Guide to Critical Thinking CONCEPTS & TOOLS

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Why A Critical Thinking Mini-Guide?

This miniature guide is designed for administrators, faculty and students. It consists of the essence of critical thinking concepts and tools distilled into pocket size. For faculty it provides a shared concept of critical thinking. For students it is a critical thinking supplement to any textbook for any course. Faculty can use it to design instruction, assignments, and tests in any subject. Students can use it to improve their learning in any content area.

Its generic skills apply to all subjects. For example, critical thinkers are clear as to the purpose at hand and the question at issue. They question information, conclusions, and points of view. They strive to be clear, accurate, precise, and relevant. They seek to think beneath the surface, to be logical, and fair. They apply these skills to their reading and writing as well as to their speaking and listening. They apply them in history, science, math, philosophy, and the arts; in professional and personal life.

When this guide is used as a supplement to the textbook in multiple courses, students begin to perceive the usefulness of critical thinking in every domain of learning. And if their instructors provide examples of the application of the subject to daily life, students begin to see that education is a tool for improving the quality of their lives.

If you are a student using this mini-guide, get in the habit of carrying it with you to every class. Consult it frequently in analyzing and synthesizing what you are learning. Aim for deep internalization of the principles you find in it—until using them becomes second nature.

If successful, this guide will serve faculty, students, and the educational program simultaneously.

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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 down-right 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 taking charge of the structures inherent in thinking and imposing intellectual standards upon them.

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.

Critical thinking is, in short, 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 and a commitment to overcome our native egocentrism and sociocentrism.

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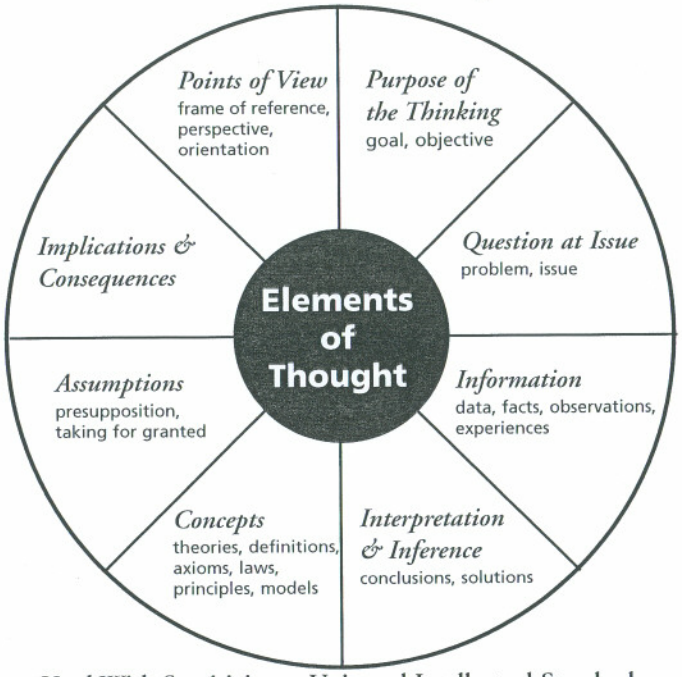
The Elements of Thought



Used With Sensitivity to Universal Intellectual Standards

Clarity → Accuracy → Depth → Significance
Precision
Relevance

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A Checklist for Reasoning

1) All reasoning has a PURPOSE.

- Take time to state your purpose clearly.
- Distinguish your purpose from related purposes.
- Check periodically to be sure you are still on target.
- Choose significant and realistic purposes.

2) All reasoning is an attempt to FIGURE something out, to settle some QUESTION, solve some PROBLEM.

- Take time to clearly and precisely state the question at issue.
- Express the question in several ways to clarify its meaning and scope.
- Break the question into sub-questions.
- Identify if the question has one right answer, is a matter of mere opinion, or requires reasoning from more than one point of view.

3) All reasoning is based on ASSUMPTIONS.

- Clearly identify your assumptions and determine whether they are justifiable.
- Consider how your assumptions are shaping your point of view.

4) All reasoning is done from some POINT OF VIEW.

- Identify your point of view.
- Seek other points of view and identify their strengths as well as weaknesses.
- Strive to be fairminded in evaluating all points of view.

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5) All reasoning is based on DATA, INFORMATION & EVIDENCE.

- Restrict your claims to those supported by the data you have.
- Search for information that opposes your position as well as information that supports it.
- Make sure that all information used is clear, accurate, and relevant to the question at issue.
- Make sure you have gathered sufficient information.

6) All reasoning is expressed through, and shaped by, CONCEPTS and IDEAS.

- Identify key concepts and explain them clearly.
- Consider alternative concepts or alternative definitions to concepts.
- Make sure you are using concepts with care and precision.

7) All reasoning contains INFERENCES or INTERPRETATIONS by which we draw CONCLUSIONS and give meaning to data.

- Infer only what the evidence implies.
- Check inferences for their consistency with each other.
- Identify assumptions which lead you to your inferences.

8) All reasoning leads somewhere or has IMPLICATIONS and CONSEQUENCES.

- Trace the implications and consequences that follow from your reasoning.
- Search for negative as well as positive implications.
- Consider all possible consequences.

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Questions Using the Elements of Thought

(in a paper, an activity, a reading assignment...)

Purpose: What am I trying to accomplish?
What is my central aim? My purpose?

Information: What information am I using in coming to that conclusion?
What experience have I had to support this claim?
What information do I need to settle the question?

Inferences/ Conclusions: How did I reach this conclusion?
Is there another way to interpret the information?

Concepts: What is the main idea here?
Could I explain this idea?

Assumptions: What am I taking for granted?
What assumption has led me to that conclusion?

Implications/ Consequences: If someone accepted my position, what would be the implications? What am I implying?

Points of View: From what point of view am I looking at this issue?
Is there another point of view I should consider?

Questions: What question am I raising?
What question am I addressing?

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The Problem of Egocentric Thinking

Egocentric thinking comes from the unfortunate fact that humans do not naturally consider the rights and needs of others, nor do we naturally appreciate the point of view of others or the limitations in our own point of view. We become explicitly aware of our egocentric thinking only if trained to do so. We do not naturally recognize our egocentric assumptions, the egocentric way we use information, the egocentric way we interpret data, the source of our egocentric concepts and ideas, the implications of our egocentric thought. We do not naturally recognize our self-serving perspective.

As humans we live with the unrealistic but confident sense that we have fundamentally figured out the way things actually are, and that we have done this objectively. We naturally believe in our intuitive perceptions—however inaccurate. Instead of using intellectual standards in thinking, we often use self-centered psychological (rather than intellectual) standards to determine what to believe and what to reject. Here are the most commonly used psychological standards in human thinking.

> "IT'S TRUE BECAUSE I BELIEVE IT." Innate egocentrism: I assume that what I believe is true even though I have never questioned the basis for many of my beliefs.

> "IT'S TRUE BECAUSE WE BELIEVE IT." Innate sociocentrism: I assume that the dominant beliefs within the groups to which I belong are true even though I have never questioned the basis for many of these beliefs.

> "IT'S TRUE BECAUSE I WANT TO BELIEVE IT." Innate wish fulfillment: I believe in, for example, accounts of behavior that put me (or the groups to which I belong) in a positive rather than a negative light even though I have not seriously considered the evidence for the more negative account. I believe what "feels good," what supports my other beliefs, what does not require me to change my thinking in any significant way, what does not require me to admit I have been wrong.

> "IT'S TRUE BECAUSE I HAVE ALWAYS BELIEVED IT." Innate self-validation: I have a strong desire to maintain beliefs that I have long held, even though I have not seriously considered the extent to which those beliefs are justified, given the evidence.

> "IT'S TRUE BECAUSE IT IS IN MY SELFISH INTEREST TO BELIEVE IT." Innate selfishness: I hold fast to beliefs that justify my getting more power, money, or personal advantage even though these beliefs are not grounded in sound reasoning or evidence.

Since humans are naturally prone to assess thinking in keeping with the above criteria, it is not surprising that we, as a species, have not developed a significant interest in establishing and teaching legitimate intellectual standards. It is not surprising that our thinking is often flawed. We are truly the "self-deceived animal."

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Universal Intellectual Standards:

And questions that can be used to apply them

Universal intellectual standards are standards which must be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue, or situation. To think critically entails having command of these standards. To help students learn them, teachers should pose questions which probe student thinking, questions which hold students accountable for their thinking, questions which, through consistent use by the teacher in the classroom, become internalized by students as questions they need to ask themselves.

The ultimate goal, then, is for these questions to become infused in the thinking of students, forming part of their inner voice, which then guides them to better and better reasoning. While there are a number of universal standards, we have elected to comment on the following:

Clarity:

Could you elaborate further on that point? Could you express that point in another way? Could you give me an illustration? 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 don't yet 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 a 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 me 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.)

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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 issue. For example, students often think that the amount of effort they put into a course should be used in raising their grade in a course. Often, however, "effort" does not measure the quality of student learning, and when that is so, effort is irrelevant to their appropriate grade.

Depth:

How does your answer address the complexities in the question? How are you taking into account the problems 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 to 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 issue.

Breadth:

Do we need to consider another point of view? Is there another way to look at this question? What would this look like from a conservative standpoint? What would this look like from the point of view of...?

A line of reasoning may be clear, accurate, precise, relevant, and deep, but lack breadth (as in an argument from either the conservative or 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."

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Clarity	Could you elaborate further? Could you give me an example? Could you illustrate what you mean?
Accuracy	How could we check on that? How could we find out if that is true? How could we verify or test that?
Precision	Could you be more specific? Could you give me more details? Could you be more exact?
Relevance	How does that relate to the problem? How does that bear on the question? How does that help us with the issue?
Depth	What factors make this a difficult problem? What are some of the complexities of this question? What are some of the difficulties we need to deal with?
Breadth	Do we need to look at this from another perspective? Do we need to consider another point of view? Do we need to look at this in other ways?
Logic	Does all this make sense together? Does your first paragraph fit in with your last? Does what you say follow from the evidence?
Significance	Is this the most important problem to consider? Is this the central idea to focus on? Which of these facts are most important?
Fairness	Do I have any vested interest in this issue? Am I sympathetically representing the view points of others?

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Template for Analyzing the Logic of an Article

Take an article that you have been assigned to read for class, completing the "logic" of it using the template below. This template can be modified for analyzing the logic of a chapter in a textbook.

The Logic of "(name of the article)"

1) The main **purpose** of this article is _____.
(State as accurately as possible the author's purpose for writing the article.)

2) The key **question** that the author is addressing is _____.
(Figure out the key question in the mind of the author when s/he wrote the article.)

3) The most important **information** in this article is _____.
(Figure out the facts, experiences, data the author is using to support her/his conclusions.)

4) The main **inferences**/conclusions in this article are _____.
(Identify the key conclusions the author comes to and presents in the article.)

5) The key **concept**(s) we need to understand in this article is (are) _____. By these concepts the author means _____. (Figure out the most important ideas you would have to understand in order to understand the author's line of reasoning.)

6) The main **assumption**(s) underlying the author's thinking is (are) _____. (Figure out what the author is taking for granted [that might be questioned].)

7) a) If we take this line of reasoning seriously, the **implications** are _____. (What consequences are likely to follow if people take the author's line of reasoning seriously?)

b) If we fail to take this line of reasoning seriously, the **implications** are_____. (What consequences are likely to follow if people ignore the author's reasoning?)

8) The main **point(s) of view** presented in this article is (are) _____. (What is the author looking at, and how is s/he seeing it?)

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Criteria for Evaluating Reasoning

1. **Purpose**: What is the purpose of the reasoner? Is the purpose clearly stated or clearly implied? Is it justifiable?

2. **Question**: Is the question at issue well-stated? Is it clear and unbiased? Does the expression of the question do justice to the complexity of the matter at issue? Are the question and purpose directly relevant to each other?

3. **Information**: Does the writer cite relevant evidence, experiences, and/or information essential to the issue? Is the information accurate? Does the writer address the complexities of the issue?

4. **Concepts**: Does the writer clarify key concepts when necessary? Are the concepts used justifiably?

5. **Assumptions**: Does the writer show a sensitivity to what he or she is taking for granted or assuming? (Insofar as those assumptions might reasonably be questioned?) Does the writer use questionable assumptions without addressing problems which might be inherent in those assumptions?

6. **Inferences**: Does the writer develop a line of reasoning explaining well how s/he is arriving at her or his main conclusions?

7. **Point of View**: Does the writer show a sensitivity to alternative relevant points of view or lines of reasoning? Does s/he consider and respond to objections framed from other relevant points of view?

8. **Implications**: Does the writer show a sensitivity to the implications and consequences of the position s/he is taking?

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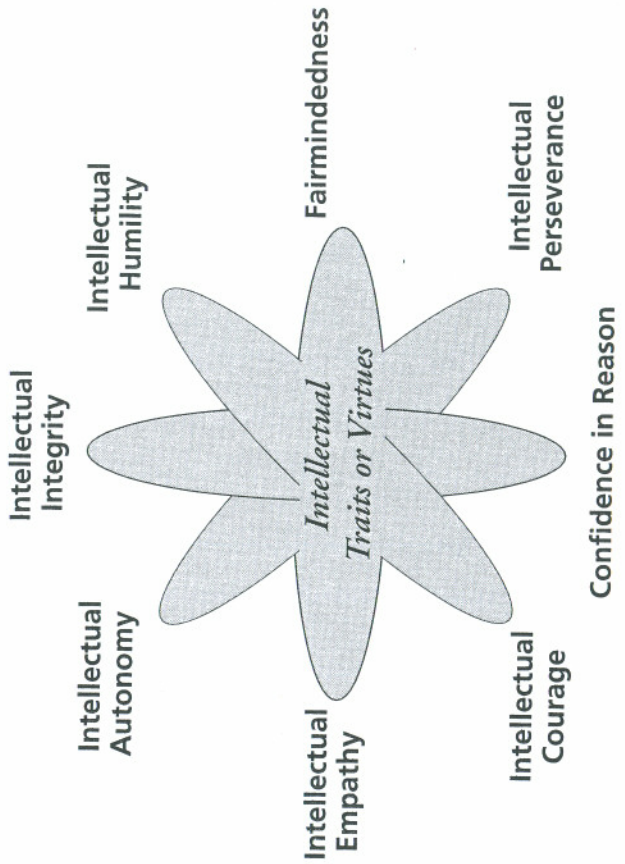

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Essential Intellectual Traits

Intellectual Humility **vs Intellectual Arrogance**
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 foudations, of one's beliefs.

Intellectual Courage **vs Intellectual Cowardice**
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 inculcated in 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 severe.

Intellectual Empathy **vs Intellectual Closemindedness**
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 the viewpoints and reasoning of others and to reason from premises, assumptions, and ideas other than our own. This trait also correlates 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.

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Intellectual Autonomy **vs Intellectual Conformity**
Having rational control of one's beliefs, values, and inferences. The ideal of critical thinking is to learn to think for oneself, to gain command over one's thought processes. It entails a commitment to analyzing and evaluating beliefs on the basis of reason and evidence, to question when it is rational to question, to believe when it is rational to believe, and to conform when it is rational to conform.

Intellectual Integrity **vs Intellectual Hypocrisy**
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 Perserverence **vs Intellectual Laziness**
Having a consciousness of the need to use intellectual insights and truths in spite of difficulties, obstacles, and frustrations; firm adherence to rational principles despite the irrational opposition 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.

Confidence In Reason **vs Distrust of Reason and Evidence**
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 **vs Intellectual Unfairness**
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 advantage of one's group.

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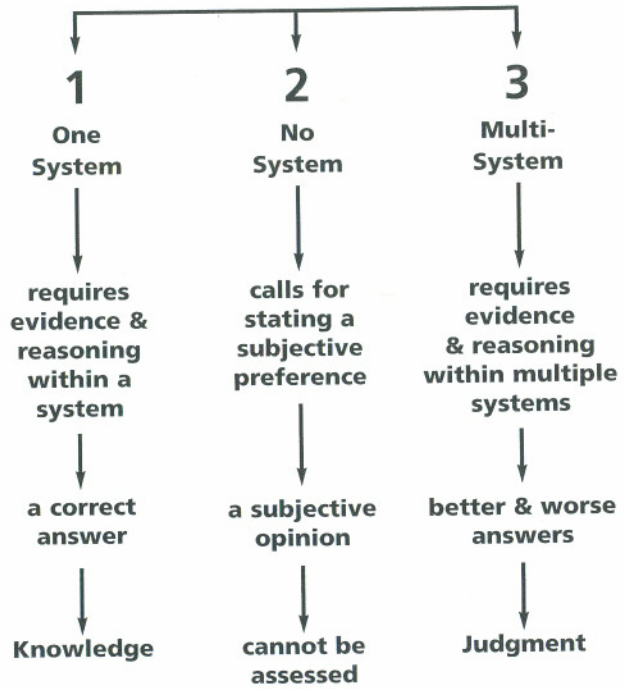
Three Kinds of Questions

In approaching a question, it is useful to figure out what type it is. Is it a question with one definitive answer? Is it a question that calls for a subjective choice? Or does the question require you to consider competing answers?



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A Template for Problem-Solving

To be an effective problem solver:

1) Figure out, and regularly re-articulate, your goals, purposes, and needs. Recognize problems as emergent obstacles to reaching your goals, achieving your purposes, and satisfying your needs.
2) Wherever possible take problems one by one. State the problem as clearly and precisely as you can.
3) Study the problem to make clear the "kind" of problem you are dealing with. Figure out, for example, what sorts of things you are going to have to do to solve it. Distinguish problems over which you have some control from problems over which you have no control. Set aside the problems over which you have no control. Concentrate your efforts on those problems you can potentially solve.
4) Figure out the information you need and actively seek that information.
5) Carefully analyze and interpret the information you collect, drawing what reasonable inferences you can.
6) Figure out your options for action. What can you do in the short term? In the long term? Recognize explicitly your limitations as far as money, time, and power.
7) Evaluate your options, taking into account their advantages and disadvantages in the situation you are in.
8) Adopt a strategic approach to the problem and follow through on that strategy. This may involve direct action or a carefully thought-through wait-and-see strategy.
9) When you act, monitor the implications of your action as they begin to emerge. Be ready at a moment's notice to revise your strategy if the situation requires it. Be prepared to shift your strategy or your analysis or statement of the problem, or all three, as more information about the problem becomes available to you.

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A Checklist for Assessment

1) What are you assessing and why? (Be precise.)

2) Ask probing, evaluative questions (that reflect your purpose).

3) Specify the information you need to collect (to answer your question).

4) Decide on criteria or standards. (Are they practical, reasonable, and in line with your purpose?)

5) Be clear about what exactly you are trying to find out.

6) Are there any unintended negative consequences of your mode of evaluation?

7) Review your evaluation overall. Is it coherent, logical, realistic, and practical?

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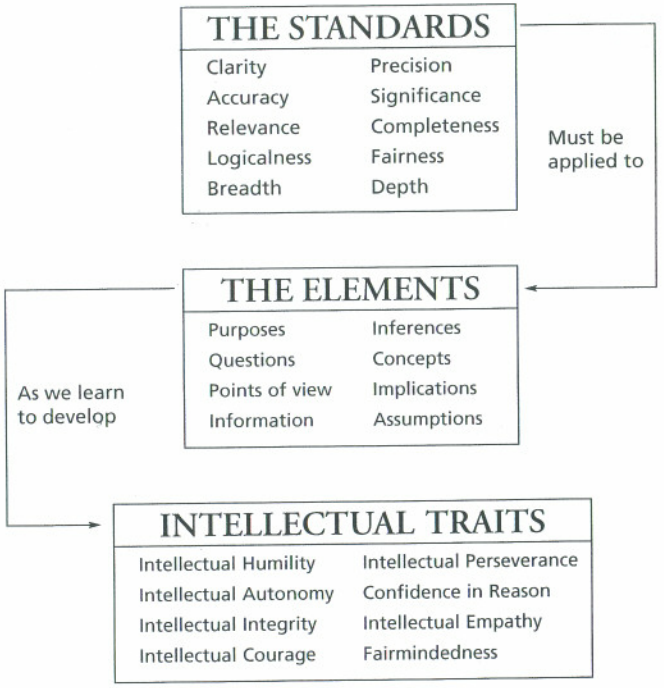
Critical thinkers routinely apply the intellectual standards to the elements of reasoning in order to develop intellectual traits.



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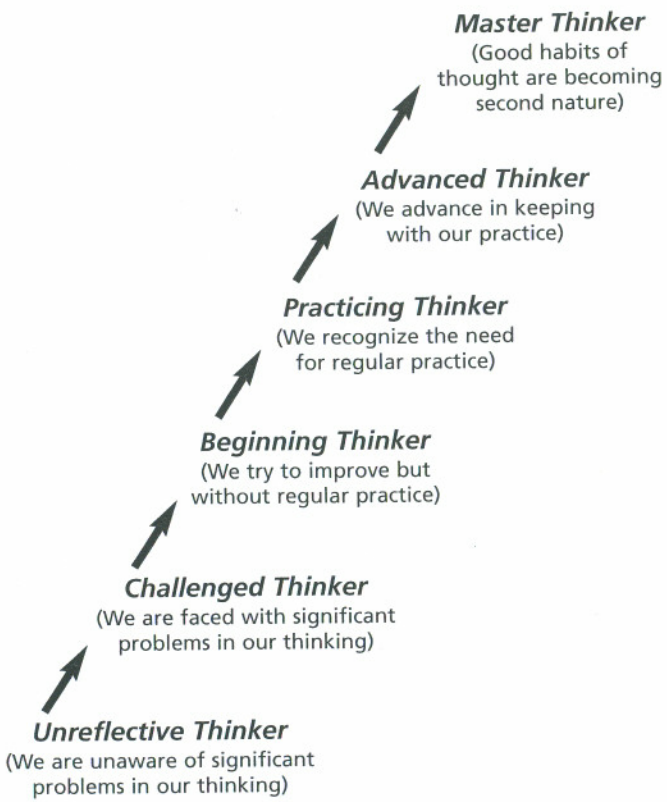
Stages of Critical Thinking Development



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Dr. Linda Elder is an educational psychologist who has taught both psychology and critical thinking at the college level. She is the President of the Foundation for Critical Thinking and the Executive Director of the Center For Critical Thinking. Dr. Elder has done original research into the relation of thought and emotion, the cognitive and the affective, and has developed an original theory of the stages of critical thinking development. She has authored and co-authored a series of articles on critical thinking including a column on critical thinking for the *Journal of Developmental Education*. She has co-authored a textbook published by Prentice Hall entitled *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*. She is a dynamic presenter with extensive experience in leading seminars on the relationship between the human mind and critical thinking.

Dr. Richard Paul is a major leader in the international critical thinking movement. He is Director of Research at the Center for Critical Thinking, and Chair of the National Council for Excellence in Critical Thinking, author of over 200 articles and seven books on critical thinking. Dr. Paul has given hundreds of workshops at the K–12 level and made a series of eight critical thinking video programs for PBS. He served as Professor of Philosophy (teaching critical thinking classes) at Sonoma State University for more than twenty years. His views on critical thinking have been canvassed in The *New York Times*, *Education Week*, The *Chronicle of Higher Education*, *American Teacher*, *Educational Leadership*, *Newsweek*, *U.S. News and World Report*, and *Reader's Digest*.

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The Foundation for Critical Thinking

The Foundation for Critical Thinking seeks to promote essential change in education and society through the cultivation of fair-minded critical thinking, thinking predisposed toward intellectual empathy, humility, perseverance, integrity, and responsibility. A rich intellectual environment is possible only with critical thinking at the foundation of education. Why? Because only when students learn to think through the content they are learning in a deep and substantive way can they apply what they are learning in their lives. Moreover, in a world of accelerating change, intensifying complexity, and increasing interdependence, critical thinking is now a requirement for economic and social survival. Contact us to learn about our publications, videos, workshops, conferences, and professional development programs.

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