MCCC Critical Thinking Basics Resource Draft

Definitions < Dispositions + Abilities w/ Criteria

- **Purposeful thinking** in which individuals systemically and habitually impose criteria and intellectual standards upon their thought


- A composition of skills and attitudes that involve the ability to recognize the existence of problems and to support the truthfulness of the problems


- **The propensity and skill to engage in an activity with reflective skepticism**


- The process of purposeful, self-regulatory judgment


- Critical thinking is the reasonable and reflective thinking focused on deciding what to believe or do.

  http://faculty.education.illinois.edu/rhennis/

Objectivity + Ambiguity = Ambiguity: grammatical structure that affords more than one clear meaning of the sentence

Using words that endow human attributes (e.g., "the organization made people...")

Amphibolies: grammatical structure that affords more than one clear meaning of the sentence

Using sweeping generalizations

Premature closure (using insufficient evidence or an isolated example to make a hasty generalization)

Begging the question (when a conclusion restates the premise using different words), circularity

Applying either/ classifications and ignoring other alternatives, like false dilemmas and dichotomies

Logic and Critical Thinking: Is it certain possible? Can a conclusion be true, or needs it be (only) the best?

Logic and critical thinking are not equivalent; logic is first about the structure of the argument or case for something, and only after this, the content or substance of the matter. For all arguments, the conclusion cannot reach further than the implications of the supporting premises/reasons. Generally speaking, there are two broad strategies for refuting a formal argument in logic: we can show either (a) that the argument is invalid (i.e., the conclusions do not logically (read: necessarily) follow from the premises, or that there is a counter-instance), or (b) that it is not sound (i.e., one or more of the premises is false, not factually the case). A valid and sound argument is (100%) certain. Similarly, to refute an informal logical argument, (a) it is not strong, but weak if the premises, if true, do not establish that the conclusion is the case to a degree of likelihood that is greater than 50%; the higher the stronger, the lower the weaker, or (b) that it is not cogent (i.e. enough of the premises are and/or the conclusion is factually false.) A strong and cogent argument is (only ever) probably true.

Adapted and expanded from: Massimo Pigliucci http://www.science20.com/rationally_speaking/plantinga%E2%80%99s_evolutionary_argument_against_naturalism-117875

**Common Logical Fallacies Summary (Adapted from Engel, 1990):**

<table>
<thead>
<tr>
<th>Types of Fallacies</th>
<th>Examples - Fallacies are errors in reasoning, not facts! Much more online... Fallacies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fallacies of ambiguity-Argument is not sound because the words used can be understood in more than one sense Poor sentence structure</td>
<td>Using words that endow human attributes (e.g., &quot;the organization made people...&quot;) Equivocation: using the same word to mean different things (e.g., using &quot;man&quot; to mean humankind and later to mean man as opposed to &quot;woman&quot;) Amphibolies: grammatical structure that affords more than one clear meaning of the sentence</td>
</tr>
<tr>
<td>Fallacies of presumption-Argument is not sound because of unproven assumptions or overlooking, evading, or distorting facts</td>
<td>Using sweeping generalizations Premature closure (using insufficient evidence or an isolated example to make a hasty generalization) Begging the question (when a conclusion restates the premise using different words), circularity Applying either/or classifications and ignoring other alternatives, like false dilemmas and dichotomies</td>
</tr>
<tr>
<td>Fallacies of relevance-Argument relies on irrelevant premises or attempts to obscure issues by stirring up emotions</td>
<td>Appealing to pity (rather than presenting evidence) Appealing to ignorance (trying to prove a claim by focusing on the lack of evidence against it) Appealing to fear Appealing to authority (trying to persuade by citing authorities, opinion, popularity and tradition, rather than germane evidence) Ad hominem arguments (avoiding discussion of the issues by describing attributes of the people involved) Employing distractions, e.g., Red Herring fallacy, faulty analogies</td>
</tr>
</tbody>
</table>

**Common Denominators of Critical Thinking** - In every domain of human thought, and within every use of reasoning within any domain, it is now possible to question:

1. ends and objectives, http://faculty.olympic.edu/dawson/definingcriticalthinking.htm
2. the status and wording of questions,
3. the sources of information and fact,
4. the method and quality of information collection,
5. the mode of judgment and reasoning used,
6. the concepts that make that reasoning possible,
7. the assumptions that underlie concepts in use,
8. the implications that follow from their use, and
9. the point of view or frame of reference within which reasoning takes place.

**Habits of those who demonstrate critical thinking are:**

1. Gathering knowledge
2. Making logical inferences
3. Developing & communicating ideas
4. Asking Questions
5. Grasping principles
6. Recognizing relevancies
7. Avoiding emotion-governed conclusions
8. Resisting but tolerating uncertainty
9. Making criteria-based judgments
10. Making evidence-based decisions
11. Offering opinions with reasons
12. Defining terms, criteria & aims
13. Self-examining courage
14. Tempering trust with cause
15. Focusing adaptively


The philosopher Richard Paul has described three kinds of people: **vulgar believers**, who use slogans and platitudes to bully those holding different points of view into agreeing with them; **sophisticated believers**, who are skilled at using intellectual arguments, but only to defend what they already believe; and **critical believers**, who reason their way to conclusions and are ready to listen to others. - Wade and Tarrin, Psychology, 5th edition (Longman Publishers, 1998, pp 4-5)
Dispositions to Think Critically – These are not skills, but more like attitudinal habits, and serve as prerequisite conditions to critical thinking and associated skills. They serve an ongoing normative regulating role.

**EFFECTIVE CRITICAL THINKERS ARE DISPOSED TO:**

1. try to be well informed by habitually building breadth and depth of knowledge and techniques
2. seek a clear assessment and statement of the situation, thesis or question, as well as its framing
3. search for, identify and judge well the quality of reasons & arguments, including their assumptions, sources, evidence (including their credibility & relevance), and their degree of support for any conclusion and action
4. use credible reasons, sources and observations to convince her-/himself and others
5. take into account the total situation, its parts and conceivably related considerations
6. keep in mind the original or most basic concern in the context, while not overlooking changing & intervening factors
7. be alert for alternatives, options and considered & unavailable elements
8. aim for a solution, but withhold judgment when the evidence and reasons are insufficient, unless circumstances press for a best judgment
9. be open-minded but forthright about what is relevant
10. be capable of establishing a position, and changing it as evidence and reasons are sufficient to dictate
11. be aware of one's own thinking patterns and deeply-held beliefs (and those of others), and to both trust and be wary of them
12. be sensitive to the feelings, level of knowledge, and degree of sophistication of others
13. reason from starting points with which the parties disagree, without letting the disagreement interfere with their reasoning and determinations
14. utilize tested procedures, such as verifying observations & measurements, formulating plausible hypotheses & plans and conducting well-designed experiments as is fitting
15. routinely ask clarifying questions and seek as much accuracy & precision as the matter permits
16. deal in an orderly manner with the parts and relations of a complex whole
17. employ & reemploy their critical thinking abilities to the issue being considered, as well as to how it is being considered
18. Be sensitive to the feelings, level of knowledge, and degree of sophistication of others
19. try to "get it right", including seeking the truth where there is truth, and the best in any case

Adapted from: http://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/CTS-Tools-for-Assessment.aspx

---

### CRITERIA FOR EVALUATING CRITICAL THINKING SKILLS & FINDINGS

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>Adequacy</th>
<th>Clarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness</td>
<td>Consistency</td>
<td>Depth</td>
</tr>
<tr>
<td>Relevance</td>
<td>Significance</td>
<td>Specificity</td>
</tr>
<tr>
<td>Logic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are there any irregularities regarding any these in any step, evidence, conclusion, action, etc.?

---

### ESSENTIALS INVOLVED IN CRITICAL THINKING ARE:

1. Grasping the meaning of a statement
2. Judging whether there is ambiguity in a line of reasoning
3. Judging whether certain statements contradict each other
4. Judging whether a conclusion follows necessarily
5. Judging whether a statement is specific enough
6. Judging whether a statement is actually the application of a certain principle
7. Judging whether an observation statement is reliable
8. Judging whether an inductive conclusion is warranted
9. Judging whether the problem has been identified
10. Judging whether something is an assumption
11. Judging whether a definition is adequate
12. Judging whether a statement made by an alleged authority is acceptable

---

### AFFECTIVE STRATEGIES

1. thinking independently
2. developing insight into egocentricity or sociocentricity
3. exercising fair-mindedness
4. exploring thoughts underlying feelings and feelings underlying thoughts
5. developing intellectual humility and suspending judgment
6. developing intellectual courage
7. developing intellectual good faith or integrity
8. developing intellectual perseverance
9. developing confidence in reason

---

### COGNITIVE STRATEGIES - MACRO-ABILITIES

10. refining generalizations and avoiding oversimplifications
11. comparing analogous situations: transferring insights to new contexts
12. developing one's perspective: creating or exploring beliefs, arguments, or theories
13. clarifying issues, conclusions, or beliefs
14. clarifying and analyzing the meanings of words or phrases
15. developing criteria for evaluation: clarifying values and standards
16. evaluating the credibility of sources of information
17. questioning deeply: raising and pursuing root or significant questions
18. analyzing or evaluating arguments, interpretations, beliefs, or theories
19. generating or assessing solutions
20. analyzing or evaluating actions or policies
21. reading critically: clarifying or critiquing texts
22. listening critically: the art of silent dialogue
23. making interdisciplinary connections
24. practicing Socratic discussion: clarifying and questioning beliefs, theories, or perspectives
25. reasoning dialogically: comparing perspectives, interpretations, or theories
26. reasoning dialectically: evaluating perspectives, interpretations, or theories

---

### CRITICAL THINKING PROCEDURES

INFORMED: When appraising a situation, whether new, novel, complex, or not, attend to this outline:

- I Issues and Information Known
- N Need to Know what?
- F Find Information, input
- O Others, Teach, Consult and Learn From Them
- R Recycle, Reflect, and Identify Real Problems
- M Make a List of Solutions
- E Evaluate Solutions
- D Decide, Deliver, and Debrief…Do INFORMED again

FRISCO: When appraising a position, whether yours or another's, attend to at least these elements:

- F for Focus: Identify or be clear about the main point, that is, the conclusion
- R for Reasons: Identify and evaluate the reasons
- I for Inference: Consider whether the reasons establish the conclusion, given the alternatives
- S for Situation: Pay attention to the situation
- C for Clarity: Make sure that the meanings are clear
- O for Overview: Review your entire assessment as a unit

---

Adapted from: http://faculty.olympic.edu/cbarker/strategylist.htm

---

Adapted from: E. Bront's, & S. Inouye: Critical Thinking Across the Disciplines, 26, 1, 2, pp. 4-18, pp. 5-19.

---

Dimensions of Critical Thinking Skills

1. Grasping the meaning of a statement
2. Judging whether there is ambiguity in a line of reasoning
3. Judging whether certain statements contradict each other
4. Judging whether a conclusion follows necessarily
5. Judging whether a statement is specific enough
6. Judging whether a statement is actually the application of a certain principle
7. Judging whether an observation statement is reliable
8. Judging whether an inductive conclusion is warranted
9. Judging whether the problem has been identified
10. Judging whether something is an assumption
11. Judging whether a definition is adequate
12. Judging whether a statement made by an alleged authority is acceptable

---

Adapted from: http://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/CTS-Tools-for-Assessment.aspx

---

F R I S C O: When appraising a position, whether yours or another's, attend to at least these elements:

- F for Focus: Identify or be clear about the main point, that is, the conclusion
- R for Reasons: Identify and evaluate the reasons
- I for Inference: Consider whether the reasons establish the conclusion, given the alternatives
- S for Situation: Pay attention to the situation
- C for Clarity: Make sure that the meanings are clear
- O for Overview: Review your entire assessment as a unit

---

Adapted from: http://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/CTS-Tools-for-Assessment.aspx

---

For Focus: Identify or be clear about the main point, that is, the conclusion. For Reasons: Identify and evaluate the reasons. For Inference: Consider whether the reasons establish the conclusion, given the alternatives. For Situation: Pay attention to the situation. For Clarity: Make sure that the meanings are clear. For Overview: Review your entire assessment as a unit.