

**Definitions < Dispositions + Abilities w/ Criteria**

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

From: Paul R. How to Prepare Students For A Rapidly Changing World. Santa Rosa, CA: Foundation for Critical Thinking; 1995.

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

from Watson GB, Glaser EM. Test Manual: The Watson Glaser Critical Thinking Appraisal. San Antonio, TX: Psychological Corp; 1994

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

from McPeck JE. Teaching Critical Thinking: Dialogue and Dialect. New York, NY: Routledge; 1990

- The process of purposeful, self-regulatory judgment

From American Philosophical Association. Critical Thinking, The Delphi Report: Research Findings and Recommendations Prepared for the Committee on Pre-College Philosophy. San Francisco, CA: California Academic Press; 1990

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

From <http://faculty.education.illinois.edu/rhennis/>

Domain specificity is an unresolved issue in critical thinking (CT). Allowing for both what may be domain specific for effective CT and for what may not be, seems prudent. The importance of background information, the informational context, and unique procedures and tools is especially key with respect to domain specific issues. The roles of content knowledge acquisition may vary in different cases, but the sufficiency of such is a precursor constituent of effective CT in some degree or manner anyway, generally speaking. This does not preempt any application of more general CT resources, even if it may limit and prompt adjustment of them.

- Critical thinking is the ability and willingness to assess claims and make objective judgments on the basis of well-supported reasons. It is the ability to look for flaws in arguments and resist claims that have no supporting evidence. Critical thinking, however, is not merely negative thinking. It also fosters the ability to be creative and constructive to generate possible explanations for findings, think of implications, and apply new knowledge to a broad range of social and personal problems. You can't really separate critical thinking from creative thinking, for it's only when you question what is that you can begin to imagine what can be.

from: Wade and Tavris, Psychology, 5th edition (Longman Publishers, 1998, pp.4-5

**Logic and Critical Thinking:** Is certainty possible? Can a conclusion be true, or need 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 implicature 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](http://www.science20.com/rationally_speaking/plantinga%E2%80%99s_evolutionary_argument_against_naturalism-117875)

**Common Logical Fallacies Summary (Adapted from Engel, 1990)** <http://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/Overview-of-Critical-Thinking-Skills.aspx>

Types of Fallacies	Examples - Fallacies are errors in reasoning, not facts! Much more online... <b>Fallacies</b>
<b>Fallacies of ambiguity</b> -Argument is not sound because the words used can be understood in more than one sense Poor sentence structure	Using words that endow human attributes (e.g., "the organization made people..." Equivocation: using the same word to mean different things (e.g., using "man" to mean humankind and later to mean man as opposed to "woman") Amphibolies: grammatical structure that affords more than one clear meaning of the sentence
<b>Fallacies of presumption</b> -Argument is not sound because of unproven assumptions or overlooking, evading, or distorting facts	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
<b>Fallacies of relevance</b> -Argument relies on irrelevant premises or attempts to obscure issues by stirring up emotions	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

**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:

- ends and objectives, <http://faculty.olympic.edu/cbarker/definingcriticalthinking1.htm>
- the status and wording of questions,
- the sources of information and fact,
- the method and quality of information collection,
- the mode of judgment and reasoning used,
- the concepts that make that reasoning possible,
- the assumptions that underlie concepts in use,
- the implications that follow from their use, and
- the point of view or frame of reference within which reasoning takes place.

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

1. Gathering knowledge	8. Making criteria-based judgments
2. Making logical inferences	9. Making evidence-based decisions
3. Developing & communicating ideas	10. Offering opinions with reasons
4. Asking Questions	11. Evaluating/Classifying everything
5. Grasping principles	12. Defining terms, criteria & aims
6. Recognizing relevancies	13. Self-examining courage
7. Avoiding emotion-governed conclusions	14. Tempering trust with cause
8. Resisting but tolerating uncertainty	16. Focusing adaptively

Adapted from: <http://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/Overview-of-Critical-Thinking-Skills.aspx> & <http://faculty.nkminic.edu/cbarker/neurholnsw/CriticalThinking/CriticalThinkinginPsycholnsw.htm>

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 Tavris Psychology, 5th edition (Longman Publishers, 1998

**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 unconsidered & 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. seriously consider other points of view than their own
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 Ennis, Robert H. (2011a, 2011b). Critical thinking: Reflection and perspective—Parts I and II. *Inquiry: Critical Thinking Across the Disciplines*, 26, 1-2, pp. 4-18, pp. 5-19.

**Criteria for Evaluating Critical Thinking Skills & Findings**

<b>Accuracy</b>	<b>Adequacy</b>	<b>Clarity</b>
<b>Completeness</b>	<b>Consistency</b>	<b>Depth</b>
<b>Fairness</b>	<b>Precision</b>	<b>Realism</b>
<b>Relevance</b>	<b>Significance</b>	<b>Specificity</b>

**Logic**

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

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

**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

from: [http://people.queensu.ca/~pdp/psw/psw\\_101\\_102\\_103/psw\\_101\\_102\\_103\\_104\\_105\\_106\\_107\\_108\\_109\\_110\\_111\\_112\\_113\\_114\\_115\\_116\\_117\\_118\\_119\\_120\\_121\\_122\\_123\\_124\\_125\\_126\\_127\\_128\\_129\\_130\\_131\\_132\\_133\\_134\\_135\\_136\\_137\\_138\\_139\\_140\\_141\\_142\\_143\\_144\\_145\\_146\\_147\\_148\\_149\\_150\\_151\\_152\\_153\\_154\\_155\\_156\\_157\\_158\\_159\\_160\\_161\\_162\\_163\\_164\\_165\\_166\\_167\\_168\\_169\\_170\\_171\\_172\\_173\\_174\\_175\\_176\\_177\\_178\\_179\\_180\\_181\\_182\\_183\\_184\\_185\\_186\\_187\\_188\\_189\\_190\\_191\\_192\\_193\\_194\\_195\\_196\\_197\\_198\\_199\\_200\\_201\\_202\\_203\\_204\\_205\\_206\\_207\\_208\\_209\\_210\\_211\\_212\\_213\\_214\\_215\\_216\\_217\\_218\\_219\\_220\\_221\\_222\\_223\\_224\\_225\\_226\\_227\\_228\\_229\\_230\\_231\\_232\\_233\\_234\\_235\\_236\\_237\\_238\\_239\\_240\\_241\\_242\\_243\\_244\\_245\\_246\\_247\\_248\\_249\\_250\\_251\\_252\\_253\\_254\\_255\\_256\\_257\\_258\\_259\\_260\\_261\\_262\\_263\\_264\\_265\\_266\\_267\\_268\\_269\\_270\\_271\\_272\\_273\\_274\\_275\\_276\\_277\\_278\\_279\\_280\\_281\\_282\\_283\\_284\\_285\\_286\\_287\\_288\\_289\\_290\\_291\\_292\\_293\\_294\\_295\\_296\\_297\\_298\\_299\\_300\\_301\\_302\\_303\\_304\\_305\\_306\\_307\\_308\\_309\\_310\\_311\\_312\\_313\\_314\\_315\\_316\\_317\\_318\\_319\\_320\\_321\\_322\\_323\\_324\\_325\\_326\\_327\\_328\\_329\\_330\\_331\\_332\\_333\\_334\\_335\\_336\\_337\\_338\\_339\\_340\\_341\\_342\\_343\\_344\\_345\\_346\\_347\\_348\\_349\\_350\\_351\\_352\\_353\\_354\\_355\\_356\\_357\\_358\\_359\\_360\\_361\\_362\\_363\\_364\\_365\\_366\\_367\\_368\\_369\\_370\\_371\\_372\\_373\\_374\\_375\\_376\\_377\\_378\\_379\\_380\\_381\\_382\\_383\\_384\\_385\\_386\\_387\\_388\\_389\\_390\\_391\\_392\\_393\\_394\\_395\\_396\\_397\\_398\\_399\\_400\\_401\\_402\\_403\\_404\\_405\\_406\\_407\\_408\\_409\\_410\\_411\\_412\\_413\\_414\\_415\\_416\\_417\\_418\\_419\\_420\\_421\\_422\\_423\\_424\\_425\\_426\\_427\\_428\\_429\\_430\\_431\\_432\\_433\\_434\\_435\\_436\\_437\\_438\\_439\\_440\\_441\\_442\\_443\\_444\\_445\\_446\\_447\\_448\\_449\\_450\\_451\\_452\\_453\\_454\\_455\\_456\\_457\\_458\\_459\\_460\\_461\\_462\\_463\\_464\\_465\\_466\\_467\\_468\\_469\\_470\\_471\\_472\\_473\\_474\\_475\\_476\\_477\\_478\\_479\\_480\\_481\\_482\\_483\\_484\\_485\\_486\\_487\\_488\\_489\\_490\\_491\\_492\\_493\\_494\\_495\\_496\\_497\\_498\\_499\\_500\\_501\\_502\\_503\\_504\\_505\\_506\\_507\\_508\\_509\\_510\\_511\\_512\\_513\\_514\\_515\\_516\\_517\\_518\\_519\\_520\\_521\\_522\\_523\\_524\\_525\\_526\\_527\\_528\\_529\\_530\\_531\\_532\\_533\\_534\\_535\\_536\\_537\\_538\\_539\\_540\\_541\\_542\\_543\\_544\\_545\\_546\\_547\\_548\\_549\\_550\\_551\\_552\\_553\\_554\\_555\\_556\\_557\\_558\\_559\\_560\\_561\\_562\\_563\\_564\\_565\\_566\\_567\\_568\\_569\\_570\\_571\\_572\\_573\\_574\\_575\\_576\\_577\\_578\\_579\\_580\\_581\\_582\\_583\\_584\\_585\\_586\\_587\\_588\\_589\\_590\\_591\\_592\\_593\\_594\\_595\\_596\\_597\\_598\\_599\\_600\\_601\\_602\\_603\\_604\\_605\\_606\\_607\\_608\\_609\\_610\\_611\\_612\\_613\\_614\\_615\\_616\\_617\\_618\\_619\\_620\\_621\\_622\\_623\\_624\\_625\\_626\\_627\\_628\\_629\\_630\\_631\\_632\\_633\\_634\\_635\\_636\\_637\\_638\\_639\\_640\\_641\\_642\\_643\\_644\\_645\\_646\\_647\\_648\\_649\\_650\\_651\\_652\\_653\\_654\\_655\\_656\\_657\\_658\\_659\\_660\\_661\\_662\\_663\\_664\\_665\\_666\\_667\\_668\\_669\\_670\\_671\\_672\\_673\\_674\\_675\\_676\\_677\\_678\\_679\\_680\\_681\\_682\\_683\\_684\\_685\\_686\\_687\\_688\\_689\\_690\\_691\\_692\\_693\\_694\\_695\\_696\\_697\\_698\\_699\\_700\\_701\\_702\\_703\\_704\\_705\\_706\\_707\\_708\\_709\\_710\\_711\\_712\\_713\\_714\\_715\\_716\\_717\\_718\\_719\\_720\\_721\\_722\\_723\\_724\\_725\\_726\\_727\\_728\\_729\\_730\\_731\\_732\\_733\\_734\\_735\\_736\\_737\\_738\\_739\\_740\\_741\\_742\\_743\\_744\\_745\\_746\\_747\\_748\\_749\\_750\\_751\\_752\\_753\\_754\\_755\\_756\\_757\\_758\\_759\\_760\\_761\\_762\\_763\\_764\\_765\\_766\\_767\\_768\\_769\\_770\\_771\\_772\\_773\\_774\\_775\\_776\\_777\\_778\\_779\\_780\\_781\\_782\\_783\\_784\\_785\\_786\\_787\\_788\\_789\\_790\\_791\\_792\\_793\\_794\\_795\\_796\\_797\\_798\\_799\\_800\\_801\\_802\\_803\\_804\\_805\\_806\\_807\\_808\\_809\\_810\\_811\\_812\\_813\\_814\\_815\\_816\\_817\\_818\\_819\\_820\\_821\\_822\\_823\\_824\\_825\\_826\\_827\\_828\\_829\\_830\\_831\\_832\\_833\\_834\\_835\\_836\\_837\\_838\\_839\\_840\\_841\\_842\\_843\\_844\\_845\\_846\\_847\\_848\\_849\\_850\\_851\\_852\\_853\\_854\\_855\\_856\\_857\\_858\\_859\\_860\\_861\\_862\\_863\\_864\\_865\\_866\\_867\\_868\\_869\\_870\\_871\\_872\\_873\\_874\\_875\\_876\\_877\\_878\\_879\\_880\\_881\\_882\\_883\\_884\\_885\\_886\\_887\\_888\\_889\\_890\\_891\\_892\\_893\\_894\\_895\\_896\\_897\\_898\\_899\\_900\\_901\\_902\\_903\\_904\\_905\\_906\\_907\\_908\\_909\\_910\\_911\\_912\\_913\\_914\\_915\\_916\\_917\\_918\\_919\\_920\\_921\\_922\\_923\\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**A. 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

**Dimensions of Critical Thinking Skills**

from: <http://faculty.olympic.edu/cbarker/strategylist.htm>

**B. 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

**C. Cognitive Strategies - Micro-Skills**

- 27 comparing and contrasting ideals with actual practice
- 28 thinking precisely about thinking: using critical vocabulary
- 29 noting significant similarities and differences
- 30 examining or evaluating assumptions
- 31 distinguishing relevant from irrelevant facts
- 32 making plausible inferences, predictions, or interpretations
- 33 giving reasons and evaluating evidence and alleged facts
- 34 recognizing contradictions
- 35 exploring implications and consequences

**Critical Thinking Procedures**

Adapted from <http://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/default.aspx>

**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 at least to 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