"Deep Learning:" A Critical Thinking Resource

PREFACE TO TEACHING AND LEARNING TO THINK CRITICALLY

SOURCE Adapted from: Paul, Richard. (1996). "Preface" in ***Critical thinking Workshop Handbook, Winter/Spring 1996***. Santa Rosa, CA: Foundation for Critical Thinking (pp. iv-vi).

Critical thinking is simply the art of ensuring that you use the best thinking you are capable of — in some set of circumstances and given your present limited knowledge and skill. However, to maximize the quality of your thinking, you must learn how to become a more effective "critic" of your thinking. And to become a more effective critic of one's thinking, one has to make learning about thinking a priority. In other words, to become a better critic of my thinking, I have to become a better student of thinking. I must be willing to learn more about how thinking works and how to improve it. And I must be willing to put what I learn into practice. Improvement in thinking, in other words, is analogous to improvement in other domains of performance (in which different levels of quality are possible).

Much of the materials in this [course] highlight facts about thinking, and, by implication, about the ideal thinker. For example, when we understand that the ideal thinker is intellectually humble and hence is continually seeking to recognize the limitations of her knowledge, then we are more likely to recognize the importance of our recognizing the limitations of our own knowledge. When we recognize that the best thinkers are continually checking sources of information (for certain qualities of clarity, accuracy, and relevance), we are much more likely to begin to do so ourselves. We use the concept of the ideal thinker simply as a tool. No human will ever actually think in an "ideal" way. Nevertheless, by understanding the ideal we can strive toward it, and hence improve. We use knowledge of the ideal, in other words, as a tool for thinking better.

There is a particular set of performances we want in teaching content within a subject domain. We want significant concepts from the content to be internalized. We want students to leave our classes with the content of the course available to them in their minds, so that they can actually use the content in the "real" world. What does this have to do with thinking in general, and good thinking in particular? Everything.

Content is internalized by a mind, becomes available to a mind, becomes usable within a mind — only through thinking. When students think poorly while learning, they learn poorly. When they think well while learning, they learn well.…For example, every student comes into your classes with some habits of thinking. Without some encouragement and help in learning to think as a critic of their thinking, the students will simply process the content of your course through their typical thinking. If rote memorization is the process they have come to use to "learn" content in the past, then they will use rote memorization in your course. Of course, rote memorization is not an effective way to think through content for understanding. The result is poor performance, poor learning, poor results. A key insight into content (and simultaneously a key insight into thinking) is that all content represents typically a distinctive mode of thinking.…

One of the most important things which we can do for our students is to help them to begin the process of becoming a "critic" of their thinking. To do this we have to help them to "discover" their thinking and to discover that, potentially at least, they can make radical changes in their thinking. They need to learn about their "bad" habits of thought and about what they are striving for (ideal habits of thought). At whatever level they think they need to recognize that they can learn to think better.

Quite ironically, most of us got through school developing our thinking the "hard" way: through trial and error. Most of us had little help in learning how to become a critic of our thinking. The result is that we used our native capacities to think in a largely intuitive fashion. We developed some good habits of thought; we developed some bad habits of thought. And now the good and bad are intermixed and hard to disentangle. We learned without a clear sense of the "ideal" in thinking. We were not clear about what we were aiming at, as thinkers. Each class we took probably seemed more like a new set of tasks, than intimately connected to other classes.

We want our students to have more leverage on learning. We want them to have a clearer perspective on what they should be striving to achieve. It is useful, therefore, to think of teaching as a mode of mutual learning. We discover as our students discover. We improve as they do. Remember, good thinking works. It is practical. It enables us to be more successful, to save time and energy, and experience more positive and fulfilling emotions. It is in our interest to become a better critic of our own thinking: as teachers, scholars, parents, etc.…The result is that as we help the student improve their thinking, we improve our own. As we help them to discover their thinking, we "discover" our own. As we help our students become critics of their thinking, we become better critics of our own. As we help students transfer their classroom learning to the real world of their everyday lives, we give examples from our own transfer, and hence, enhance that transfer for ourselves as well as them. Good thinking works. For students. For teachers. For everyone.

POPULAR AND PARTICULAR DEFINITIONS OF CRITICAL THINKING

SOURCE: Paul, Richard. (1995). "Critical thinking in North America" in ***Critical thinking: What every person needs to survive in a rapidly changing world***, revised third edition (edited by Jane Willsen and A. J. A. Binker). Santa Rosa, CA: Foundation for Critical Thinking (pp. 136-137).

CRITICAL THINKING

1) the art of thinking about your thinking while you're thinking so as to make your thinking more clear, precise, accurate, relevant, consistent, and fair
2) the art of constructive skepticism
3) the art of identifying and removing bias, prejudice, and one-sidedness of thought
4) the art of self-directed, in-depth, rational learning
5) thinking that rationally certifies what we know and makes clear wherein we are ignorant

UNCRITICAL THINKING

1) thought captive of one's ego, desires, social conditioning, prejudices, or irrational impressions
2) thinking that is egocentric, careless, heedless of assumptions, relevant evidence, implications, or consistency
3) thinking that habitually ignores epistemological demands in favor of its egocentric commitments

SOPHISTIC CRITICAL THINKING (Richard Paul's weak sense)

1) thinking which meets epistemological demands insofar as they square with the vested interests of the thinker
2) skilled thinking that is heedless of assumptions, relevance, reasons, evidence, implications and consistency only insofar as it is in the vested interest of the thinker to do so
3) skilled thinking that is motivated by vested interest, egocentrism, or ethnocentrism rather than by truth or objective reasonability

FAIR-MINDED CRITICAL THINKING (Richard Paul's strong sense)

1) skilled thinking which meets epistemological demands regardless of the vested interests or ideological commitments of the thinker
2) skilled thinking characterized by empathy into diverse opposing points of view and devotion to truth as against self-interest
3) skilled thinking that is consistent in the application of intellectual standards, holding one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists
4) skilled thinking that demonstrates the commitment to entertain all viewpoints sympathetically and to assess them with the same intellectual standards, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation

ASSUMPTIONS OF DIDACTIC AND CRITICAL CONCEPTIONS OF EDUCATION

SOURCE: Paul, Richard. (1995). "The critical connection: Higher order thinking that unifies curriculum, instruction, and learning" in ***Critical thinking: How to prepare students for a rapidly changing world*** (edited by Jane Willsen and A. J. A. Binker). Santa Rosa, CA: Foundation for Critical Thinking (pp. 276-277).

No significant reform of education can occur unless we face the didactic ***lower order*** conception of education that informs daily practice. Present instruction implies that parroting information is equivalent to the acquisition of knowledge. Hence, teachers often feel compelled to cover information, even though they realize their students do not really understand and will soon forget it.

Behind this ***lower order*** practice is a network of uncritically held assumptions that need to be made explicit and unequivocally refuted, namely:

1) that students learn *how* to think when they know *what* to think,
2) that knowledge can be given directly to students without their having to think it through for themselves,
3) that the process of education is, in essence, the process of storing content in the head like data in a computer,
4) that quiet classes with little student talk are evidence of student learning,
5) that students gain significant knowledge without seeking or valuing it,
6) that material should be presented from the point of view of the one who knows,
7) that superficial learning can later be deepened,
8) that coverage is more important than depth,
9) that students who correctly answer questions, provide definitions, and apply formulae demonstrate substantial understanding, and
10) that students learn best by working alone.

One who understands and values education as ***higher order*** learning holds a very different set of assumptions, namely:

1) that students learn *what* to think only as they learn *how* to think,
2) that one gains knowledge *only* through thinking,
3) that the process of education is the process of each student gathering, analyzing, synthesizing, applying, and assessing information for him or herself,
4) that classes with much student talk, focused on live issues, is a better sign of learning than quiet classes focused on a passive acceptance of what the teacher says,
5) that students gain significant knowledge only when they value it,
6) that information should be presented so as to be understandable from the point of view of the learner, hence continually related to the learner's experiences and point of view
7) that superficial learning is often mis-learning and stands as an obstacle to deeper understanding,
8) that depth is more important than coverage,
9) that students can often provide correct answers, repeat definitions, and apply formulas while not understanding those answers, definitions, or formulas,
10) that students learn best by working together with other students, actively debating and exchanging ideas.

SOME BASIC THEORY: WORLD VIEWS, FORMS OF LIFE

SOURCE Adapted from: Paul, Richard. (1995). "Teaching critical thinking in the strong sense: A focus on self-deception, world views, and a dialectical mode of analysis" in ***Critical thinking: How to prepare students for a rapidly changing world***, (edited by Jane Willsen and A. J. A. Binker). Santa Rosa: Foundation for Critical Thinking (pp. 386-387).

Teaching critical thinking in the strong sense helps students develop reasoning skills precisely in those areas where they are most likely to have egocentric and sociocentric biases. Such biases exist most profoundly in areas of their identities and vested interests. Their identities and interests are linked in turn to their unarticulated world views. One's unarticulated world view represents the person that one *is* (the view implicit in the principles which guide one's actions). One's articulated view represents the person that one *thinks* one is (the view implicit in the principles used to *justify* one's actions). Excepting honest mistakes, the contradictions or inconsistencies between these two represent the degree to which one reasons and acts in bad faith or self-deceptively.…Here are some basic theoretical underpinnings for a "strong sense" approach:

1) As humans we are — first, last and always — engaged in inter-related life projects which, taken as a whole, define our personal "form of life" in relation to broader social forms. Because we are engaged in some projects rather than others, we organize or conceptualize the world and our place in it in somewhat different terms than others do. We have somewhat different *interests*, somewhat different *stakes*, and somewhat different *perceptions* of what is so. We make somewhat different assumptions and reason somewhat differently from them.

2) We also express to ourselves and others a more articulated view of how we see things, a view only partially consistent at best with the view presupposed by and reflected in our behavior. We have, then, *two* world views overlapping each other, one implicit in our activity and engagements, another implicit in how we describe our behavior. One must recognize contradictions between these conflicting views to develop as a critical thinker and as a person in good faith with one's self. Both traits are measured by the degree to which we can articulate what we live and live what we articulate.

3) Reasoning is an essential and defining operation presupposed by all human acts. To reason is to use elements in a logical system to generate conclusions. Conclusions may be explicit in words or implicit in behavior. Sometimes reasoning is explicitly cast into the form of an argument, sometimes not. However, since reasoning presupposes a system or systems of which it is a manifestation, the full implications of reasoning are rarely (if ever) exhausted or displayed in arguments in which they are cast. Arguments presuppose questions at issue. Questions at issue presuppose a point of view and interests at stake. Different points of view frequently differ, not simply in answers to questions, but in the appropriate formulations of questions themselves.

4) When we, including those of us who are logicians, analyze and evaluate arguments important to us (this includes all arguments which, if accepted, would strengthen or weaken beliefs to which we have committed ourselves in word or deed), we do so in relationship to prior belief-commitments. The best we can do to move toward increased objectivity is to bring to the surface the set of beliefs, assumptions, and inferences from the perspective of which our analysis proceeds, and to see explicitly the dialectical nature of our task, the critical moves we might make at various points, and the various possible counter-moves to them.

5) Skill in analyzing and evaluating reasoning is skill in reciprocity, the ability to reason within more than one point of view, understanding strengths and weaknesses through comprehending the objections that could be raised at various points in the arguments by alternative points of view.

6) Laying out elements of reasoning in deductive form is useful, not principally to see whether a "mistake" had been made, but to see critical moves one might make to determine the strengths and weaknesses of the reasoning in relation to alternatives.

7) Since vested interest typically influences perception, assumptions, reasoning in general, and specific conclusions, we must become aware of the nature of our own and others' engagements to recognize strengths and weaknesses in reasoning.

a) Only when we recognize that a given argument reflects or, if justified, would serve a given interest can we, by imaginatively entertaining a competing interest, construct an opposing point of view and so an opposing argument or set of arguments. By developing both arguments dialectically, we can see their strengths and weaknesses.

b) Arguments are not things-in-themselves but constructions of specific people who must further interpret and develop them, for example, to answer objections. By recognizing the interests typically correlated with given arguments, we can often challenge the credibility of others' premises by alluding to discrepancies between what they say and what they do. In doing so we force them to critique their own behavior in line with the implications of their arguments, or to abandon the line of argument. There are a variety of critical moves they may make upon being so challenged.

c) By reflecting on interests as implicit in behavior, one can often much more effectively construct the assumptions most favorable to those interests. Once formulated, one can begin to formulate alternative competing assumptions. Both can then be more effectively questioned and arguments for and against them can be entertained.

8) The total set of factual claims that buttress a world view, hence the various arguments generated by it, is usually indefinitely large and often involves shifting conceptual problems and implicit judgments of value (especially shifts in how to formulate the "facts"). The credibility of an individual claim often depends on the credibility of many other claims; very often the claims themselves are very difficult to verify "directly" and atomically. Very often then, to analyze an argument, we must judge relative credibility. These judgments are more plausible if they take into account the vested interests and the track records of the sources.

9) The terms in which an argument is cast often reflects the biased interest of the person who formulated it. Calling into question the very concepts used or the use to which they are put is an important critical move. To become adept at this, we must practice recognizing how social groups systematically and selectively move back and forth between usage in keeping with the logic of ordinary language and that which accords with the ideological commitments of the group (and so conflicts with ordinary use). Consider the ways many people use key terms in current international debate — say, 'freedom fighter', 'liberator', 'revolutionary', 'guerrilla', 'terrorist' — and reflect on:

a) what is implied by the *logic* of the terms apart from the usage of any particular social group (say U.S. citizens, Germans, Israelis, Soviets);

b) what is implied by the usage of a particular group with vested interests (say, U.S. Citizens, Germans, Israelis, Soviets); and

c) the various historical examples that suggest inconsistency in the use of these by that group, and how this inconsistency depends on fundamental, typically unexpressed, assumptions. Through such disciplined reflection, one can identify predictable, self-serving inconsistencies.

THREE CATEGORIES OF QUESTIONS: CRUCIAL DISTINCTIONS

SOURCE: Paul, Richard. (1997). In ***Critical thinking: Basic Theory & Instructional Structures*** (Workshop Handbook, Winter/Spring 1997). Santa Rosa, CA: Foundation for Critical Thinking (p. 4-7). Also available at Foundation's website.
http://www.criticalthinking.org/University/3catquest.html

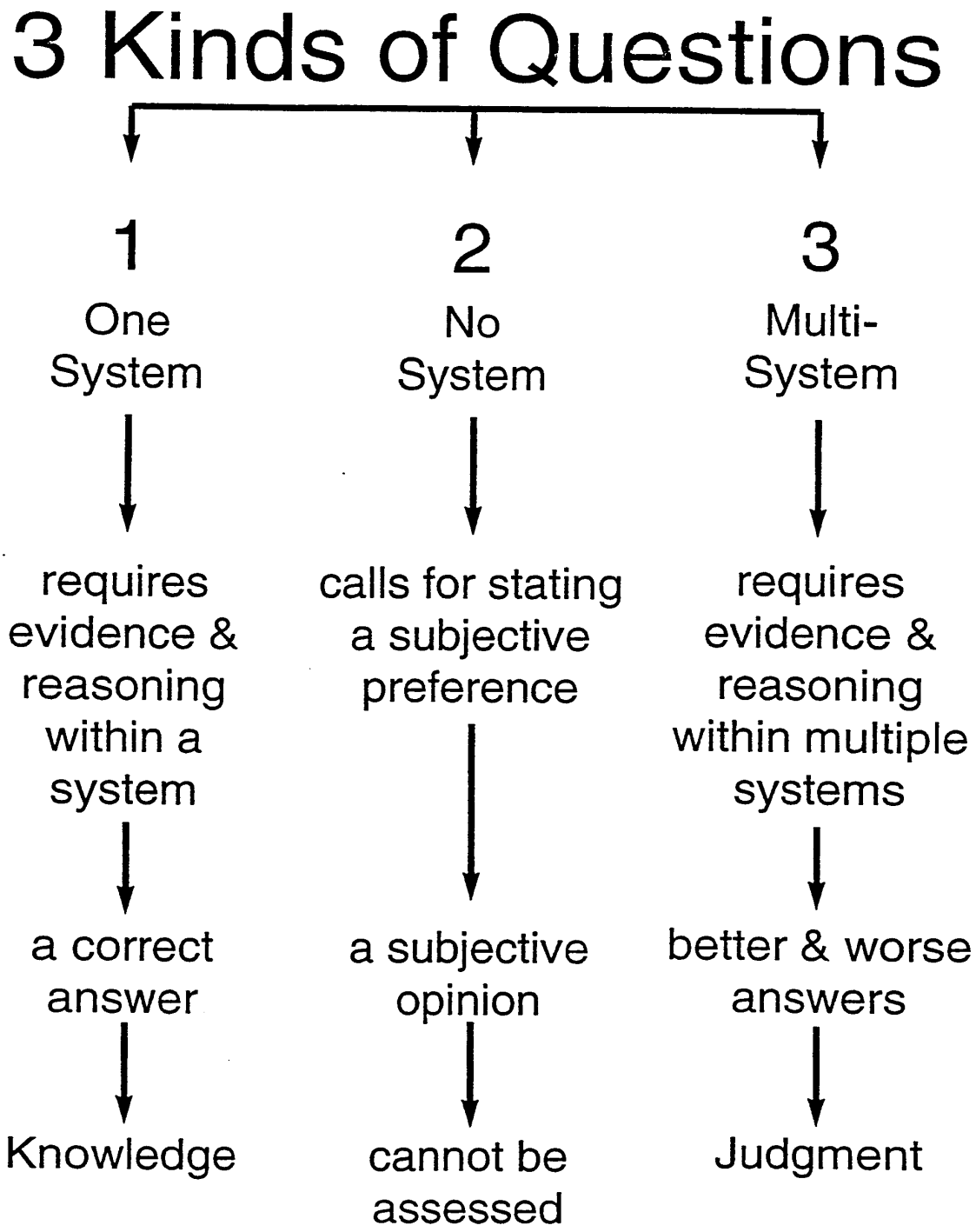
Many pseudo critical thinking approaches present all judgments as falling into two exclusive and exhaustive categories: fact and opinion. Actually, the kind of judgment most important to educated people and the kind we most want to foster falls into a third, very important, and now almost totally ignored category, that of reasoned judgment. A judge in a court of law is expected to engage in reasoned judgment; that is, the judge is expected not only to render a judgment, but also to base that judgment on sound, relevant evidence and valid legal reasoning. A judge is not expected to base his judgments on his subjective preferences, on his personal opinions, as such. You might put it this way, judgment based on sound reasoning goes beyond, and is never to be equated with, fact alone or mere opinion alone. Facts are typically used in reasoning, but good reasoning does more than state facts. Furthermore, a position that is well-reasoned is not to be described as simply "opinion." Of course, we sometimes call the judge's verdict an "opinion," but we not only expect, we demand that it be based on relevant and sound reasoning. Here's a somewhat different way to put this same point. It is essential when thinking critically to clearly distinguish three different kinds of questions:

1) Those with one right answer (factual questions fall into this category).
   - What is the boiling point of lead?
2) Those with as many answers as there are different human preferences (a category in which mere opinion does rule).
   - Which would you prefer, a vacation in the mountains or one at the seashore?
3) Those with better or worse answers (well-reasoned or poorly reasoned answers)
   - How can we best address the most basic and significant economic problems of the nation today?

Only the second kind of question is a matter of sheer opinion. The third kind is a matter of reasoned judgment — we can rationally evaluate answers to the question (using universal intellectual standards such as clarity, depth, consistency and so forth).

When questions that require better or worse answers are treated as matters of opinion, pseudo critical thinking occurs. Students come, then, to uncritically assume that everyone's opinion is of equal value. Their capacity to appreciate the importance of intellectual standards diminishes, and we can expect to hear questions such as these: What if I don't like these standards? Why shouldn't I use my own standards? Don't I have a right to my own opinion? What if I'm just an emotional person? What if I like to follow my intuition? What if I don't believe in being "rational?" They then fail to see the difference between offering legitimate reasons and evidence in support of a view and simply asserting the view as true. The failure to teach students to recognize, value, and respect good reasoning is one of the most significant failings of education today.

SOURCE: Paul, Richard. (1997). In ***Critical thinking: Basic Theory & Instructional Structures*** (Workshop Handbook, Winter/Spring 1997). Santa Rosa, CA: Foundation for Critical Thinking (p. 4-6).



A TAXONOMY OF SOCRATIC QUESTIONS

SOURCES Adapted from: (1) Paul, Richard, and A. J. A. Binker. (1995). "Socratic questioning" (pp. 341, 343-344) AND (2) Paul, Richard. (1995). "The contribution of philosophy to thinking" (pp. 456-457). Both in ***Critical thinking: How to prepare students for a rapidly changing world*** (edited by Jane Willsen and A. J. A. Binker). Santa Rosa, CA: Foundation for Critical Thinking.

Important Considerations For Participating Effectively in Socratic Questioning

- listen carefully to what others say and mean
- take what they say seriously
- look for reasons and evidence
- recognize and reflect upon assumptions
- discover implications and consequences
- seek examples, analogies, and objections
- seek to distinguish what one *knows* from what one merely *believes*
- maintain a healthy sense of skepticism
- seek to enter empathetically into the perspectives or points of view of others
- be on the alert for inconsistencies, vagueness, and other possible problems in thought
- look beneath the surface of things
- respond to others in ways that extend the discussions deeper and farther
- be willing to helpfully play the role of devils' advocate

Questions of Clarification

- What do you mean by_____?
- What is your main point?
- How does _____ relate to _____?
- Could you put that another way?
- Is your basic point _____ or _____?
- What do you think is the main issue here?
- Let me see if I understand you; do you mean _____ or _____?
- How does this relate to our discussion (problem, issue)?
- What do you think John meant by his remark? What did you take John to mean?
- Jane, would you summarize in your own words what Richard has said?…Richard, is that what you meant?
- Could you give me an example?
- Would this be an example: _____?
- Could you explain that further?
- Would you say more about that?
- Why do you say that?

USING INTELLECTUAL STANDARDS TO ASSESS STUDENT REASONING

[**SOURCES Adapted from**: Paul, Richard, with Gerald M. Nosich. (1995). (1) "A model for the National assessment of higher order thinking" (pp. 124-126); (2) "Using intellectual standards to assess student reasoning" (pp. 153-156); both in ***Critical thinking: How to prepare students for a rapidly changing world*** (edited by Jane Willsen and A. J. A. Binker). Santa Rosa, CA: Foundation for Critical Thinking (pp. 153-156); and (3) Paul, Richard. (1996). "Helping students assess their thinking" in ***Critical thinking Workshop Handbook, Winter/Spring 1996***. Santa Rosa, CA: Foundation for Critical Thinking (p. 3-10).]

Assessing student reasoning requires that we focus our attention on two inter-related dimensions of reasoning. The first dimension consists of the ***elements of reasoning***; the second dimension consists of the ***universal intellectual standards*** by which we measure student ability to use, in a skillful way, each of those elements of reasoning. These different dimensions are defined and discussed below.

ELEMENTS OF REASONING. Once we progress from thought which is purely associational and undisciplined, to thinking which is conceptual and inferential, thinking which attempts in some intelligible way to figure something out, in short, to reasoning, then it is helpful to concentrate on what can be called "the elements of reasoning." The elements of reasoning are those essential dimensions of reasoning whenever and wherever it occurs. Working together, they shape reasoning and provide a general logic to the use of reason. We can articulate these elements by paying close attention to what is implicit in the act of figuring anything out by the use of reason. These elements, then — purpose, question at issue, assumptions, inferences, implications, point of view, concepts and evidence — constitute a central focus in the assessment of student thinking. The basic conditions implicit whenever we gather, conceptualize, apply, analyze, synthesize, or evaluate information — the elements of reasoning — are discussed below. It is helpful to recognize, in light of the universal features in the logic of human thought, that there are identifiable categories of questions for the adept Socratic questioner to dip into that pertain to the elements of reasoning. Examples of generic questions for each of these elements are also included as part of the discussion of the different elements.

1) PURPOSE, OBJECTIVE, or END IN VIEW

Whenever we reason, we reason to achieve some purpose, objective, to satisfy some desire or fulfill some need, or with end in view. One source of problems in student reasoning is traceable to defects at the level of goal, purpose, or end. If the goal is unrealistic, for example, or contradictory to other goals the student has, if it is confused or muddled in some way, then the reasoning used to achieve it is problematic. A teacher's assessment of student reasoning, then, necessarily involves an assessment of the student's ability to handle the dimension of purpose in accord with relevant intellectual ***standards***. It also involves giving ***feedback*** to students about the degree to which their reasoning meets those standards. Is the student's purpose — in an essay, a research project, an oral report, a discussion — ***clear***? Is the purpose ***significant*** or trivial or somewhere in between? Is the student's purpose, according to the most judicious evaluation on the teacher's part, ***realistic***? Is it an ***achievable*** purpose? Does the student's overall goal dissolve in the course of the project, does it change, or is it ***consistent*** throughout? Does the student have contradictory purposes? Is the student able to distinguish ***clearly*** and ***accurately*** between the purpose, question at issue, assumptions, inferences, consequences, and other elements of thought?

- 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.

Questions About the Purpose

- Do you have a purpose for your reasoning? What is it?
- What are you trying to achieve in your reasoning?
- What is the goal towards which your reasoning is directed?

- What is the desired result of your reasoning?
- What do you intend to accomplish with your reasoning?
- What is the aim of your reasoning?
- How did you determine what your purpose is?
- Do you think your purpose is realistic?
- Is your purpose significant?
- Is your purpose achievable? Are you trying to accomplish too much?
- How would you state your purpose using other words?
- Would you state your purpose more explicitly?
- How do you know when you have deviated from your purpose?
- What other purposes might your purpose be confused with?
- Are you pursuing more than one goal or objective? Are you going off in different directions?
- Are the different points you are making in your reasoning consistent with your purpose? Are the points consistent with each other?
- How is your purpose related to the author's purpose? How would you distinguish between them? How are these different purposes similar? How are they different?
- Are some of your assumptions or points at cross-purposes?

Feedback About the Purpose, Objective, or End in View

Primary Standards: 1) Clarity of Purpose, 2) Significance of Purpose, 3) Achievability of Purpose, 4) Consistency of Purpose
Common Problems: 1) Unclear Purpose, 2) Trivial Purpose, 3) Unrealistic Purpose, 4) Contradictory Purpose
Principle: Reasoning is successful only to the degree that it is done with an end in view, to achieve some purpose, objective, or to satisfy some desire or fulfill some need.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
take the time to state their purpose clearly	are often unclear about their central purpose	- You have not made the purpose of your reasoning clear. What are you trying to achieve? Who are you trying to persuade? + Your paper reflects an excellent sense of unity of purpose. It all fits together like pieces of a puzzle.
distinguish it from related purposes	oscillate between different and/or sometimes contradictory purposes	+ You do a good job of distinguishing different but related goals. - You seem to have a number of different purposes in mind. I am not sure how you see them as related. You seem to be going off in somewhat different directions.
periodically remind themselves of their purpose to determine whether they are straying from it	lose track of their fundamental end or goal	- After the second paragraph you seem to wander from your purpose. How do your 3rd and 4th paragraphs relate to your central goal? + I like the way you periodically show the reader how the points you are making all add up to a central conclusion.
adopt realistic purposes and goals	adopt unrealistic purposes set unrealistic goals	+ You make a wise decision not to try to accomplish too much. Accomplishing a little well is almost always better than doing a lot poorly - You try to accomplish too much in so short a paper.
choose significant purposes and goals	adopt trivial purposes and goals as if they were significant	- Your paper would have been stronger if you had chosen a more important goal. + The goal of your paper is worth while and well-chosen.
choose goals and purposes that are consistent with other goals and purposes they have chosen	inadvertently negate their own purposes; do not monitor their thinking for inconsistent goals	- One part of your paper seems to undermine what you are trying to accomplish in another part. You first try to persuade the reader how realistic Dickens' characters are, but after that you seem to be showing that they are caricatures.
adjust their thinking regularly to their purpose	do not adjust their thinking regularly to their purpose	+ Your unity of purpose is reflected in every section of your paper.

2) QUESTION AT ISSUE or PROBLEM TO BE SOLVED

Whenever we reason, we attempt to reason something out; there is at least one question at issue or at least one problem to be solved. One area of concern for assessing student reasoning, therefore, will be the formulation of the question to be answered or problem to be solved, whether with respect to the student's own reasoning or to that of others. Assessing skills of mastery of this element of reasoning requires assessing — and giving feedback on — students' ability to formulate a problem in a ***clear*** and ***relevant*** way, to choose from among ***significant*** alternative formulations, to discuss ***fairly*** the merits of different versions of the question at issue, to recognize ***accurately*** key common elements in statements of different problems, to structure the articulation of problems so as to make possible lines of solution more apparent in a ***reasonable*** and ***realistic*** manner. It requires giving students direct commentary on whether the question they are addressing is an ***important*** one, whether it is ***answerable***, on whether they understand the requirements for settling the question, for solving the problem.

- Take time to clearly and simply 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.

Questions About the Question

- What precisely is at issue? Is it well-stated, unbiased?
- How can we find out?
- What does this question assume?
- Would Nicole put the question differently?
- Why is this question important?
- How could someone settle this question?
- Can we break this question down at all?
- Is the question clear? Do we understand it?
- Does this question ask us to evaluate something?
- Is this question easy or hard to answer? Why?
- What kind of question are you trying to answer?
- Do we all agree that this is the question?
- Different questions require different modes of settlement. What are the precise demands of the question-at-issue?
- Do we need facts to answer this?
- To answer this question, what questions would we have to answer first?
- Does the expression of the question do justice to the complexity of the matter-at-issue?
- Is this the fairest way to put the issue?
- How are you interpreting the main question at issue.
- Is this the same issue as _____?
- How would _____ put the issue?

Feedback About the Question at Issue or Problem to Be Solved

Primary Standards: 1) Clarity of Question, 2) Significance of Question, 3) Answerability of Question, 4) Relevance of Question
Common Problems: 1) Unclear, 2) Insignificant, 3) Not Answerable, 4) Irrelevant
Principle: To settle a question you must understand the logic of it and what it requires.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
are clear about the question they are trying to settle	are often unclear about the kind of question they are asking	- The main question at issue is never made clear. + You do a good job of clarifying the question at issue.
can re-express a question in a variety of ways	express questions vaguely and find them difficult to reformulate	- You need to reformulate your question in a couple of ways to recognize the complexity of it. + I like the way you reformulate your question in different ways. It helps the reader see it from different points of view.
can break a question into sub-questions	are unable to break down the questions they are asking	+ You do a good job of analyzing the main question into sub-questions. - It would be easier to solve your main problem if you would break it down somewhat.
have sensitivity to the kind of question they are asking	have little sensitivity to the kind of question they are asking	- You are confusing a legal question with a moral one.
routinely distinguish questions of different types	confuse questions of different types often respond inappropriately to the questions they ask	+ You do a good job of keeping the economic issues separate from the social ones.
distinguish significant from trivial questions	confuse trivial questions with significant ones	- You begin with a significant question but seem to wander off into some insignificant ones. + The problem you raise is a very significant one.
distinguish relevant questions from irrelevant ones	confuse irrelevant questions with relevant ones	- The questions you raise in the second part of your paper do not seem to be relevant to the main question at issue.
are sensitive to the assumptions built into the questions they ask	often ask loaded questions	- The way you put the question is loaded. You are taking for granted from the outset the correctness of your own position. + You put your question in a neutral and unbiased form.
distinguish questions they can answer from questions they can't	try to answer questions they are not in a position to answer.	+ You were correct in leaving that question unanswered and in recognizing what extra information you would need to answer the question.

3) POINT OF VIEW or FRAME OF REFERENCE

Whenever we reason, we reason within some point of view or frame of references. Any "defect" in that point of view or frame of reference is a possible source of problems in the reasoning. A point of view may be too narrow, too parochial, may be based on false or misleading analogies or metaphors, may contain contradictions, and so forth. It may be restricted or unfair. Alternatively, student reasoning involving articulation of their point of view may meet the relevant standards to a significant degree: their point of view may be ***broad***, ***flexible***, ***fair***; it may be ***clearly*** stated and ***consistently*** adhered to. Feedback to students would involve commentary noting both when students meet the standards and when they fail to meet them. Evaluation of students' ability to handle the dimension of point of view would also appropriately direct students to lines of reasoning that would promote a richer facility in reasoning about and in terms of points of view. Is the student able to judge and distinguish ***clearly*** between different statements of that point of view, to be ***intellectually fairminded*** in recognizing bias, narrowness, and contradictions when they occur in the point of view, to ***accurately*** recognize relations between the frame of reference being used and its main concepts, assumptions, and implications?

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

Questions About Viewpoints or Perspectives

- From what point of view are we reasoning?
- You seem to be approaching this issue from a _____ perspective. Why have you chosen this rather than that perspective?
- How would other groups/types of people respond? Why? What would influence them?
- How could you answer the objection that ___ would make?
- What might someone who believed ____ think?
- What would someone who disagree say?
- Are there alternative points of view from which the problem or issue might be approached? What are they and how do we determine which ones to use?
- Can/did anyone see this another way?
- How does our reasoning stand up to competing or alternative reasoning?
- Have we empathically reconstructed the relevant points of view?
- Have we reasoned from a variety of relevant points of view?
- Have we rationally identified and considered the strengths and weaknesses of these points of view as a result of this process?
- Are there objections to our reasoning we should consider?
- How are Ken's and Joni's ideas alike? Different?

Feedback About Point of View or Frame of Reference

Primary Standards: 1) Flexibility in Point Of View, 2) Fairness of Point Of View, 3) Clarity of Point Of View, 4) Breadth of Point Of View
Common Problems: 1) Restricted, 2) Biased, 3) Unclear, 4) Narrow
Principle: Reasoning is better when multiple, relevant points of view are sought out, articulated clearly, empathized with fairly and logically, applied consistently and dispassionately.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
keep in mind that people have different points of view, especially on controversial issues	don't realize that people approach the question at issue from different points of view	- You haven't articulated the point of view from which you are approaching this issue.
consistently articulate other points of view and reason from within those points of view	cannot see issues from points of view that are significantly different from their own; cannot reason with empathy from alien points of view	+ You have reasoned out this controversial issue clearly from multiple relevant points of view. - You have characterized your own point of view, but what are the most significant aspects of the problem from X's point of view?
seek other viewpoints especially when the issue is one they believe in passionately	can sometimes give other points of view when the issue is not emotionally charged, but cannot do so for issues they are deeply committed to	+ You have done an excellent job of spelling out the other side of this issue. This is especially difficult when a person is as deeply committed to one side as you are. - This is an unfair way of presenting X's point of view.
confine their monological reasoning to problems that are clearly monological	confuse multilogical with monological issues; insist that there is only one frame of reference within which a given multilogical question must be decided	- Is the question here monological or multilogical? How can you tell? - You are reasoning as if only one point of view is relevant to this issue.
recognize when they are most likely to be prejudiced	are unaware of their own prejudices	- Is this prejudice? + Is this reasoned judgment?
approach problems and issues with a richness of vision and an appropriately broad point of view	reason from within inappropriately narrow or superficial points of view	- Your approach to this question is too narrow. + You have considered this problem with the depth it requires.

4) ASSUMPTIONS

Whenever we reason, we base our reasoning on some assumptions, with some things taken for granted because all reasoning must begin somewhere. Any "defect" in the assumptions or presuppositions with which the reasoning begins is a possible source of problems for students. Assessing skills of reasoning about assumptions involves assessing students' ability to recognize and articulate their assumptions, again according to the relevant standards. The student's assumptions may be stated ***clearly*** or unclearly; the assumptions may be ***justifiable*** or unjustifiable, ***crucial*** or extraneous, ***consistent*** or contradictory. Is the student able to identify ***clearly*** unstated assumptions, assumptions underlying given inferences, points of view, and goals, to evaluate ***accurately*** different formulations of the assumptions, to distinguish ***precisely*** between assumptions, inferences, and conclusions, to rank ***reasonably*** assumptions with respect to their plausibility, to be ***intellectually fairminded*** by choosing the most plausible version of assumptions underlying points of view with which they disagree. The feedback students receive from teachers on their ability to meet the relevant standards will be a large factor in the improvement of student reasoning.

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

Questions that Probe Assumptions

- What are you assuming?
- What is Karen assuming?
- What inferences are you making from your assumptions? How justifiable are they?
- Are your assumptions justified and well-supported?
- What could we assume instead?
- You seem to be assuming _____. Do I understand you correctly?
- All of your reasoning depends on the idea that ____. Why have you based your reasoning on _____ rather than _____?
- Is it always the case? Why do you think the assumption holds here?
- You seem to be assuming _____. How would you justify taking this for granted?
- Why would someone make this assumption?
- What values are your assumptions based on? What would your assumptions be if you valued ____ instead?

Feedback About Assumptions

Primary Standards: 1) Clarity of Assumptions, 2) Justifiability of Assumptions, 3)Consistency of Assumptions
Common Problems: 1) Unclear, 2) Unjustified, 3) Contradictory
Principle: Sound reasoning is based on some assumptions, with certain things taken for granted because all reasoning must begin somewhere.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
make assumptions that are clear	often make assumptions that are unclear	- It is not clear what you are assuming. - It is not clear what you base your main assumption on. + Your assumptions seem clear and reasonable.
make assumptions that are reasonable	often unjustified or unreasonable assumptions	- It seems unreasonable to make assumptions about the future based on just one experience from the past.
make assumptions that are consistent with each other	often make assumptions that are contradictory	- The assumptions you make in the first part of your paper seem to contradict the assumption you make in the last section of your paper.

5) CONCEPTS or IDEAS

Whenever we reason, our reasoning is expressed through, and shaped by some concepts or ideas and not others. These concepts can include the theories, principles, axioms and rules implicit in our reasoning. Any "defect" in the concepts or ideas of the reasoning is a possible source of problems in student reasoning. Feedback to students would note whether their understanding of theories and rules was ***deep*** or merely superficial. Are the concepts they use in their reasoning ***clear*** ones? Are their ideas ***relevant*** to the issue at hand, are their principles ***unbiased*** by their point of view? Does the student demonstrate the ability to identify main concepts that are ***relevant*** to the problem, to choose ***reasonably*** among different versions of those concepts (some perhaps equally good), to see ***clearly*** relations among concepts, to reason ***consistently*** about the similarity of points of view on the basis of similarity of fundamental concepts, to distinguish ***precisely*** central from peripheral concepts, derived concepts from basic concepts, and to see ***accurately*** and ***fairly*** the implications of using one concept rather than another?

- 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.

Questions That Probe Concepts

- What concepts are you using?
- How are you defining the central concepts?
- Why did you select these concepts?
- How appropriate are your definitions?
- Have you analyzed the problematic nature of your concepts?
- What other concepts could you use instead?
- How else could you define your concepts?
- What is the basic logic of your central concepts?
- What differences would it make if you used some other concepts or definitions?
- What are the implications of your concepts for how the problem is defined?
- What assumptions are implicit in your definitions?

Feedback About Concepts

Primary Standards: 1) Clarity of Concepts, 2) Relevance of Concepts, 3)Depth of Concepts, 4) Neutrality of Concepts
Common Problems: 1) Unclear, 2) irrelevant, 3) Superficial 4) Biased
Principle: Reasoning can only be as clear, relevant, and deep as the concepts or ideas which shape it.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
are aware of the key concepts and ideas they use	are unaware of the key concepts and ideas they use	- The concept of democracy, central to your essay, is not analyzed in your paper. You assume that if people are in any sense allowed to vote, they are living in a democracy. You need to consider the idea of democracy more deeply. + You do well in distinguishing training, socialization, indoctrination, and education.
are able to explain the basic implications of the key words and phrases they use	do not accurately explain basic implications of their key words and phrases	+ Yes, the word 'cunning' has negative implications that the word 'clever' does not.
are able to distinguish special, non-standard uses of words from standard uses	are not able to recognize when their use of a word or phrase departs from educated usage	- Where did you get your definition of this central concept? - You assume that abortion is murder, but you won't find a dictionary that defines it as "the murder of a very young person". Don't put your conclusion into the definition.
are aware of irrelevant concepts and ideas; use concepts and ideas in ways relevant to their functions	use concepts in ways inappropriate to the subject or issue	- Do you think that the notion of "dog-eat-dog" applies to moral situation? Isn't the question one of moral responsibility?

6) INFORMATION, DATA, AND EVIDENCE

Whenever we reason, there is some "stuff," some information, data, evidence, some phenomena about which we are reasoning. Any "defect," then, in the experiences, data, evidence, or raw material upon which a person's reasoning is based is a possible source of problems. Students would be assessed and receive feedback on their ability to give evidence that is gathered and reported ***clearly***, ***fairly***, and ***accurately***. Does the student furnish data at all? Is the data ***relevant***? Is the information ***adequate*** for achieving the student's purpose? Is it applied ***consistently***, or does the student distort it to fit her own point of view? Is the student able to distinguish ***clearly*** evidence from conclusions based on that evidence, to recognize or generate ***relevant*** data that would support a particular position, data that would oppose it, data that would be neutral, to notice ***accurately*** the presence or lack of relevant evidence, to be ***intellectually courageous*** in recognizing (and labeling as such) mere speculation that goes beyond the 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.

Questions That Probe Reasons, Evidence, and Causes

- What would be an example?
- How do you know?
- Why do you think that is true?
- Do you have any evidence for that?
- What difference does that make?
- What are your reasons for saying that?
- What other information do we need?
- How dependable are your sources of information?
- Could you explain your reasons to us?
- Is that good evidence for believing that?
- Is there reason to doubt that evidence?
- Who is in a position to know if that is the case?
- What would you say to Fred if he said _____?
- Why do you say that?
- What do you think the causes are? What are some other possible causes?
- Can someone else give evidence to support that response?
- By what reasoning did you come to that conclusion?
- How could we find out whether that is true?
- Are these reasons adequate?
- Are your reasons persuasive?
- What led you to that belief?
- How does that apply to this case?
- What would change your mind?
- What would convince you otherwise?
- What accounts for that?
- How did this come about?

Feedback About Reasons, Evidence, and Causes

Primary Standards: 1) Clear Evidence, 2) Relevant Information, 3)Fairly gathered and reported Evidence, 4) Accurate Data, 5) Adequate Evidence, 6) Consistently applied Data
Common Problems: 1) Unclear, 2) Irrelevant, 3) Biased, 4) Inaccurate, 5)Insufficient, 6) Inconsistently applied
Principle: Reasoning can only be as sound as are the "stuff," the phenomena, information, data, evidence, or experiences about which one reasons.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
assert a claim only when they have sufficient evidence to back it up	assert claims without considering any evidence	+ This is a clear statement of the relevant data. - This claim can't merely be asserted but must be supported by evidence.
can articulate and therefore evaluate the evidence behind their claims	don't articulate their evidence even when they have it, so they do not subject it to rational scrutiny	- I think you probably have evidence to support your claim here; you just haven't articulated it.
actively search for information against (not just for) their own position	gather evidence only when it supports their own point of view	+ You have gathered and reported evidence fairly on both sides of this issue. - Where is a good place to look for evidence on the opposite side? Have you looked there?
focus on relevant information and discard what is irrelevant to the question at issue	do not carefully distinguish between relevant data and irrelevant data	+ The information you cite is relevant and to the point. - The data you supply is irrelevant. - How is this relevant to the claim you are making?
draw conclusions only to the extent that they are supported by the data	make inferences that go beyond what the data support	- Though you give some evidence to back your claim, the claim goes beyond the evidence you've cited. + Your claims are well-supported by the evidence you cite.
state their evidence clearly and fairly	distort the data, or state it inaccurately	+ This is a clear and coherent presentation of the pertinent information.

7) INTERPRETATIONS or INFERENCES AND CONCLUSIONS

Whenever we reason, we make interpretations of or inferences from our evidence in order to draw conclusions and thereby give meaning to data. As reasoning develops, statements will logically be entailed by it. Reasoning proceeds by steps in which we reason as follows: "Because this is so, that also is so (or probably so)," or "Since *this*, therefore *that*." Any "defect" in such inferences and in seeing the implications and consequences of our reasoning is a possible source of problems in our reasoning. Assessment would evaluate the ability of students to make ***sound*** inferences in their reasoning. When is an inference ***sound***? When it meets ***reasonable*** and ***relevant*** standards of inferring. Are the inferences the student draws ***clear***? Are they ***justifiable***? Are students able to rank inferences with respect to both their ***plausibility*** and their ***relevance***, to discriminate ***accurately*** among various formulations of ***important*** inferences, and to take something they do not believe yet consider it for the sake of argument and draw ***reasonable*** inferences from it? Do students draw ***deep*** conclusions or do they stick to the trivial and superficial? Are the conclusions they draw ***consistent***?

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

Questions that Probe Inferences and Conclusions

- What is the point you are trying to prove?
- What are your major inferences?
- Do your inferences go beyond what the evidence implies?
- Are your inferences consistent with each other?
- What is your conclusion? Can you justify your conclusion?
- Is your conclusion actually an opinion?
- Do your conclusions have adequate support or proof?
- Can you differentiate between your conclusion and what you consider to be the evidence and reasons for your conclusion?
- ls your conclusion based on strong or weak reasons and evidence?
- Have you confused your inferences with facts?
- What assumptions or kinds of information are your inferences based on?
- Is your conclusion based on facts?
- Are your inferences and conclusions clear and sound?
- Have you mistaken a definition, statistic, or some background information for your conclusion?
- Are you basing your conclusion only on personal experience?
- What might your conclusion be if you had experienced _____?
- What are some other possible conclusions?
- What inferences do you have to make to come up with these alternative conclusions?
- What are the important relationships between facts and inferences?
- Which of your alternative inferences are most plausible?
- What are the important differences and similarities between an inference and a conclusion?
- Have you inferred something other than what is implied by what you have learned?

Feedback About Inferences and Conclusions

Primary Standards: 1) Clarity of Inferences, 2) Justifiability of Inferences, 3) Profundity of Conclusions, 4) Reasonability of Conclusions, 5) Consistency of Conclusions
Common Problems: 1) Unclear, 2) Unjustified, 3) Superficial, 4) Unreasonable, 5) Contradictory
Principle: Reasoning can only be as sound as the interpretations or inferences it makes and conclusions it draws.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
make inferences that are clear and precise	often make inferences that are unclear	- It is not clear what your main conclusion is. - It is not clear what you base your main conclusion on. + Your reasoning is very clear and easy to follow.
usually make inferences that follow from the evidence or reasons presented	often make inferences that do not follow from the evidence or reasons presented	- The conclusion you come to does not follow from the reasons presented. + You justify your conclusion well with supporting evidence and good reasons.
often make inferences that are deep rather than superficial	often make inferences that are superficial	+ Your central conclusion is well-thought-out and goes right to the heart of the issue. - Your conclusion is justified, but it seems superficial, given the problem.
often make inferences or come to conclusions that are reasonable	often make inferences or come to conclusions that are unreasonable	- It is unreasonable to infer a person's personality from one action.
make inferences or come to conclusions that are consistent with each other	often make inferences or come to conclusions that are contradictory	- The conclusions you come to in the first part of your paper seem to contradict the conclusions that you come to at the end.

8) IMPLICATIONS AND CONSEQUENCES

Whenever we reason, our reasoning will always have further implications and consequences, no matter where we stop our reasoning. As reasoning develops, statements will logically be entailed by it. Any "defect" in the implications or consequences of our reasoning is a possible source of problems. The ability to reason well is measured in part by an ability to understand and enunciate the implications and consequences of the reasoning. Students therefore need help in coming to understand both the relevant standards of reasoning and the degree to which their own reasoning meets those standards. When they spell out the implications of their reasoning, have they succeeded in identifying ***significant*** and ***realistic*** implications, or have they confined themselves to unimportant and unrealistic ones? Have they enunciated the implications of their views ***clearly*** and ***precisely*** enough to permit their thinking to be evaluated by the validity of those implications. Other skills to be assessed would include the ability of students to identify ***clearly*** important implications, to make fine discriminations ***precisely*** among necessary, probable, and improbable consequences, to distinguish ***accurately*** between implications and assumptions, to recognize ***reasonably*** the weakness of a position as shown by implausibility of its implications, to exercise ***intellectual fairmindedness*** in discriminating between the likelihood of dire and mild consequences of an action to which one is opposed.

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

Questions That Probe Implications and Consequences

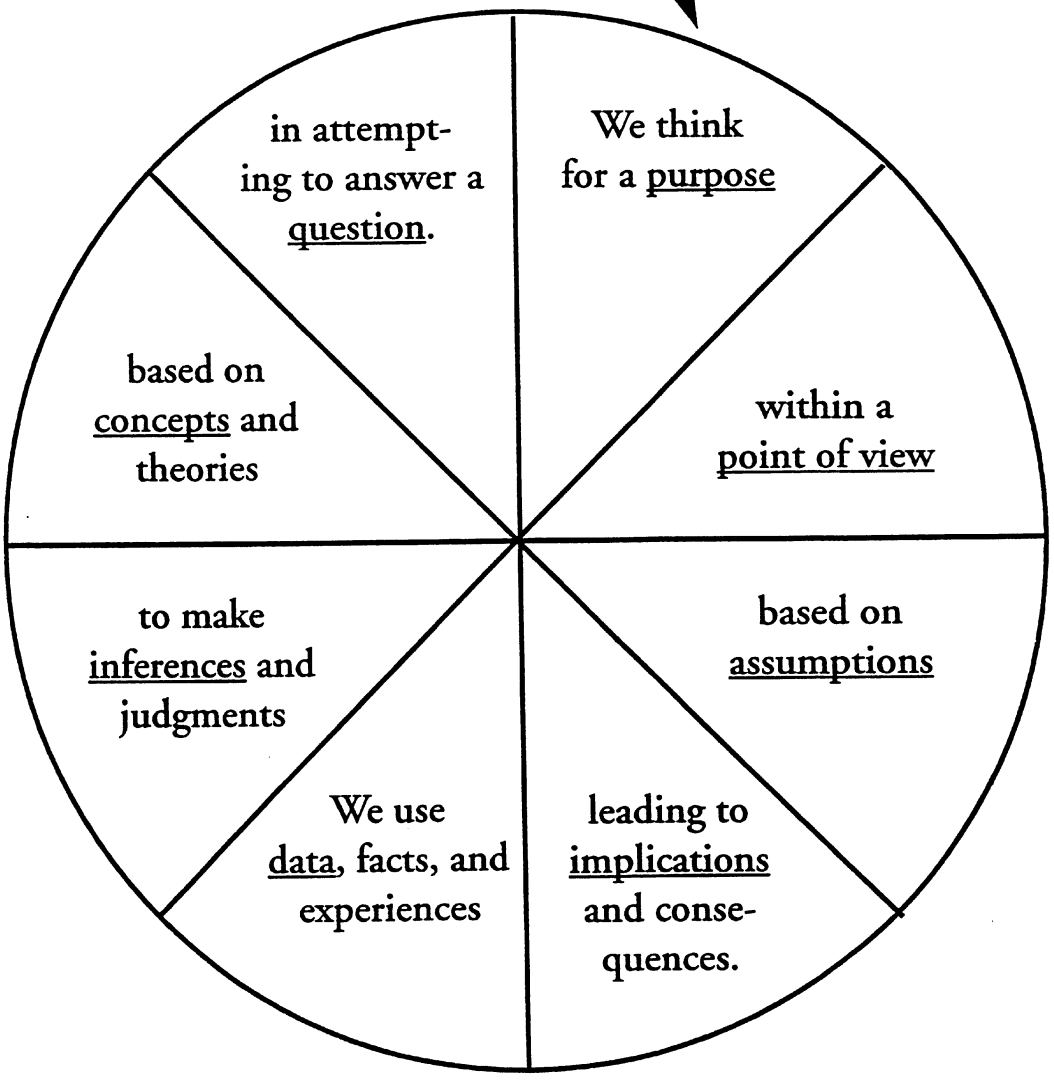
- What are you implying by that?
- What are the implications of your reasoning?
- When you say _____, are you implying _____?
- But if that happened, what else would happen as a result? Why?
- What effects would that have?
- Would that necessarily happen or only probably happen?
- What is an alternative?
- If this and this are the case, then what else must also be true?
- If we say that this is unethical, how about that?

Feedback About Implications and Consequences

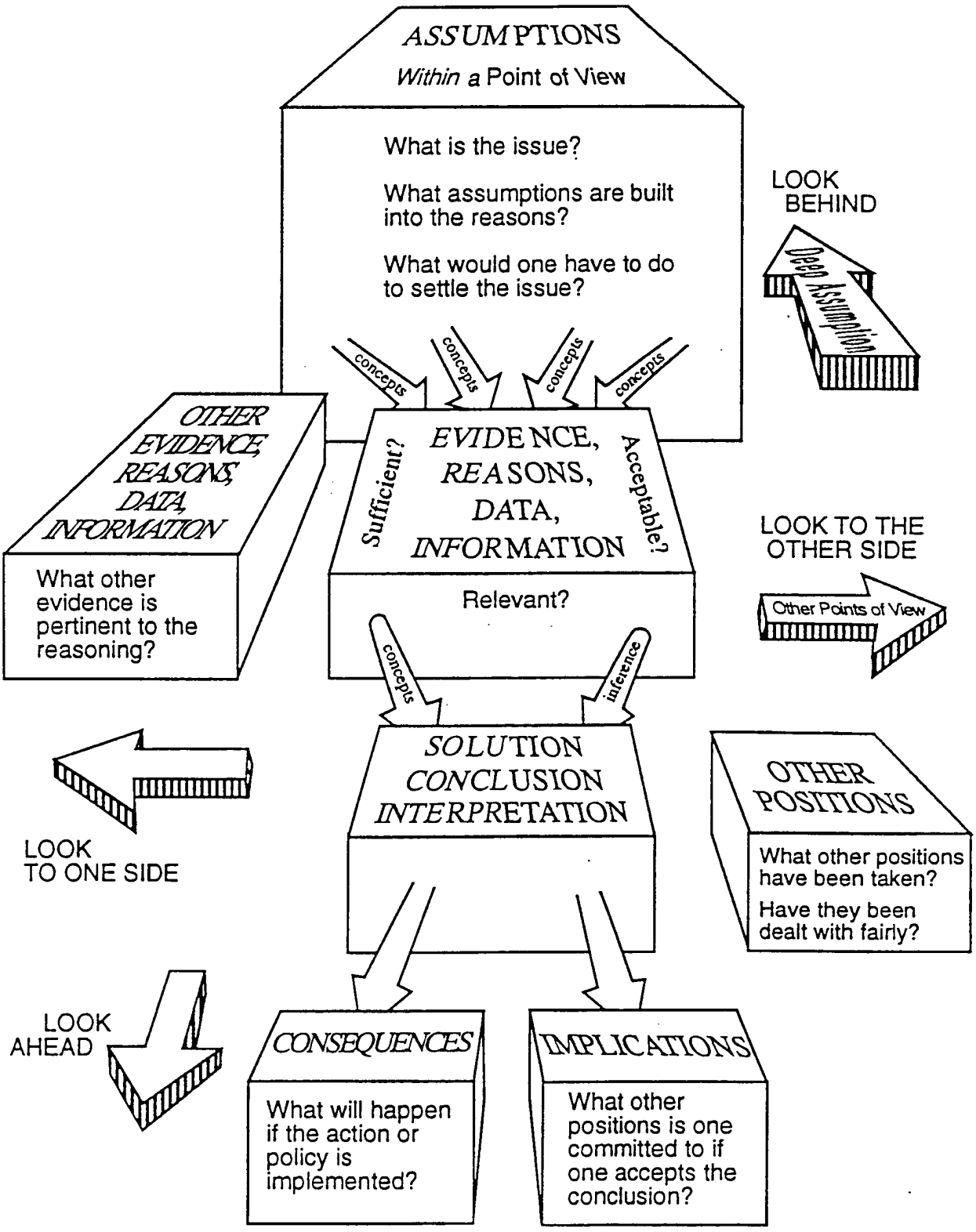
Primary Standards: 1) Significance of Implications, 2) Realistic nature of Implications, 3) Clarity of articulated Implications, 4) Precision of articulated Implications, 5) Completeness of articulated Implications
Common Problems: 1) Unimportant, 2) Unrealistic, 3) Unclear, 4) Imprecise, 5) Incomplete
Principle: To reason through an issue or decision, you must articulate and understand the implications and consequences that follow from it.

Good Reasoners:	**Bad Reasoners**:	**Feedback to Students**:
trace out a number of significant implications and consequences of their reasoning	trace out few or none of the implications and consequences of holding a position or making a decision	- You don't spell out the consequences of the action you are advocating. - If you took this course of action, what other consequences would follow?
articulate the implications and consequences clearly and precisely	are unclear and imprecise in the consequences they articulate	+ You have spelled out the implications of your reasoning in as clear and precise a way as the subject permits. - You will be much clearer about whether the action is reasonable if you are more precise when you delineate the consequences likely to follow from it.
search for negative as well as for positive consequences	trace out only the consequences they had in mind at the beginning either positive or negative, but usually not both	- You've done a good job of spelling out some positive consequences of the decision at issue, but what are some of the negative consequences?
anticipate the likelihood of unexpected negative and positive implications	are surprised when their decisions have unexpected consequences	- In addition to the ones you've traced out, there are several important consequences you've missed. - Would other factors in the decision lead to significant consequences you left out?

Whenever we think



The Elements of Reasoning Within a Point of View



INTELLECTUAL STANDARDS. When we assess student reasoning, we want to evaluate, in a reasonable, defensible, objective way, not just ***that*** students are reasoning, but ***how well*** they are reasoning. We assess not just that they are using the elements of reasoning, but the degree to which they are using them well, critically, in accord with appropriate intellectual standards. To assess a student's response, whether written or oral, in structured discussion of content or in critical response to reading assignments, by how ***clearly*** or ***completely*** it states a position, is to assess it on the basis of a standard of reasoning. Similarly, assessing student work by how ***logically*** and ***consistently*** it defends its position, by how ***flexible*** and ***fair*** the student is in articulating other points of view, by how ***significant*** and ***realistic*** the student's purpose is, by how ***precisely*** and ***deeply*** the student articulates the question at issue — each of these is an evaluation based on standards of reasoning.

Distinct from such reasoning standards are other standards that teachers sometimes use to assess student work. To evaluate a student response on the basis of how concisely or elegantly it states a position is to use standards that are inappropriate to assessing student reasoning. Similarly unrelated to the assessment of reasoning is evaluating student work by how humorous, glib, personal or sincere it is, by how much it agrees with the teacher's views, by how "well-written" it is, by how exactly it repeats the teacher's words, by the mere quantity of information it contains. The danger is that such standards are often conflated with reasoning standards, often unconsciously, and students are assessed on grounds other than the degree to which they are reasoning well. The ***intellectual standards*** we use for this course are listed below in association with their common opposites and definitions that have been adapted for our use.

THOROUGH, CAREFUL	as opposed to	CURSORY, CARELESS
SUFFICIENT	as opposed to	INSUFFICIENT, INADEQUATE
CLEAR, PRECISE	as opposed to	VAGUE
ACCURATE	as opposed to	ERRONEOUS
SPECIFIC	as opposed to	GENERAL
BROAD	as opposed to	NARROW
DEEP	as opposed to	SUPERFICIAL
SIGNIFICANT, MEANINGFUL	as opposed to	TRIVIAL
RELEVANT	as opposed to	IRRELEVANT
REALISTIC, PLAUSIBLE	as opposed to	UNREALISTIC, UNLIKELY
REASONED, LOGICAL	as opposed to	ILLOGICAL
CONSISTENT	as opposed to	INCONSISTENT
JUSTIFIED	as opposed to	UNSUBSTANTIATED
FAIR, UNBIASED	as opposed to	BIASED, PREJUDICED

THOROUGH: 1. Exhaustively complete; treating all parts or aspects without omission; having all necessary or normal parts, components, or steps as required or assigned; 2. Showing or marked by precision and attentiveness to all aspects or details; meticulous. **CAREFUL**: 1. Painstaking in action or execution; mindful; heedful; 2. Exercise of attention, circumspection, and solicitude; ***as opposed to*** **CURSORY**: 1. Performed with haste and scant attention to details and/or all assigned parts, steps, or components; **CARELESS**: 1. Taking insufficient care; negligent; 2. Marked by or resulting from lack of forethought or thoroughness; 3. Showing a lack of consideration; 4. Unconcerned or indifferent; heedless; 5. Unstudied or effortless; 6. Lacking in logic or sense: illogical; clouded; 7. Showing a lack of discernment: undiscerning; impulsive; uncritical; undiscriminating; rash; thoughtless.

SUFFICIENT: Being what is needed without being in excess; ***as opposed to*** **INSUFFICIENT**: 1. Barely adequate: meager; scant; sparse; limited; 2. Less than required: deficient; inferior; lacking; substandard; **INADEQUATE**: 1. Not adequate to fulfill a need or meet a requirement; 2. Below the expected standard: unsatisfactory; disappointing; unsatisfying; poor; wanting.

CLEAR: 1. Plain or evident to the mind; readily seen; distinct; unmistakable; 2. Discerning or perceiving easily; keen; sharp; focused; 3. Free from doubt or confusion; certain; unambiguous; unequivocal; **PRECISE.** 1. Clearly expressed or delineated; definite; indisputable; certain; 2. Exact, as in performance, execution, or amount; strictly and completely in accord with fact; not deviating from truth or reality; accurate or correct; characterized by accurate measurements or inferences with small margins of error; not approximate; 3. Strictly distinguished from others; 4. Conforming strictly to standards, rules, or proper form; ***as opposed to*** **VAGUE**: 1. Not clearly expressed; inexplicit; 2. Not thinking or expressing oneself clearly; 3. Not clear in meaning or application.

ACCURATE: 1. Conforming exactly to fact; 2. Errorless; absence of incorrect or false knowledge, misconceptions, misunderstandings, misrepresentations, or misinterpretations; exclusion of faults resulting from defective judgment, deficient knowledge, or carelessness; ***as opposed to*** **ERRONEOUS**: 1. Containing or derived from error; mistaken; 2. Not correct; faulty; flawed.

SPECIFIC: 1. Explicitly set forth in detail with attention to particulars, individual parts, or items, considered individually and in relation to a whole; thoroughly or meticulously; excessively concerned with details; definite; fully and clearly expressed, defined, or formulated; leaving nothing implied; 2. Special, distinctive, or unique; 3. Concerned particularly with the subject specified; ***as opposed to*** **GENERAL**: Involving only the main features rather than precise details.

BROAD: 1. Covering a wide scope of relevant ideas, viewpoints, perceptions, thoughts, or actions; 2. Relating to or covering the main facts or the essential points; ***as opposed to*** **NARROW**: 1. Of small or limited width, especially in comparison with length or breadth; 2. Limited in area or scope; delimited; bounded; confined; narrow-minded; restricted; 3. To reduce in width or extent; make narrower. 4. To limit or restrict in coverage, as in the breadth of relevant ideas, viewpoints, perceptions, thoughts, or actions.

DEEP: 1. Extending far downward below a surface; in-depth; detailed; thorough; characterized by intellectual complexity or penetration; consisting of interconnected or interwoven parts; intricate or complicated; 2. Understand the inner nature or significance of something; 3. Profound in meaning, quality, or feeling; penetrating beyond what is superficial or obvious; ***as opposed to*** **SUPERFICIAL**: 1. Of, affecting, or being on or near the surface; 2. Concerned with or comprehending only what is apparent or obvious; shallow; lacking depth of intellect, emotion, or knowledge; 3. Apparent rather than actual or substantial.

SIGNIFICANT: 1. Having or likely to have a major effect; important; strongly affecting the course of events or the nature of things; 2. Having considerable value or worth; valuable; useful; 3. Having or expressing a meaning, an inner significance; having function, or purpose; **MEANINGFUL**: 1. Fraught with meaning; 2. effectively conveying a feeling, an idea, or a mood; ***as opposed to*** **TRIVIAL**: insignificant; of little significance or value; ordinary; commonplace.

RELEVANT: Having a bearing on or connection with the matter at hand; pertinent; germane; **as opposed to** **IRRELEVANT**: Unrelated to the matter at hand; not pertinent to the subject under consideration; extraneous.

REALISTIC: 1. Tending to or expressing an awareness of things as they really are; 2. Of or relating to the representation of objects, actions, or social conditions as they actually are; **PLAUSIBLE**: 1. Capable of being believed; seemingly or apparently valid, likely, or acceptable; credible; probable; 2. apt to achieve success or yield a desired outcome; promising; ***as opposed to*** **UNREALISTIC**: 1. Not compatible with reality or fact; 2, Having little likelihood of happening or being accomplished; **UNLIKELY**: 1. Not likely; improbable; doubtful; questionable; dubious; 2. Not promising; likely to fail.

REASONED: 1. To determine or conclude by logical thinking the relationship between elements and between an element and the whole in a set of objects, individuals, principles, or events; 2. To persuade or dissuade (someone) with reasons; 3. To make a judgment by the use of a sufficient ground of explanation or of logical defense or justification. **LOGICAL**: 1. Of, relating to, in accordance with, or of the nature of logic; 2. Based on earlier or otherwise known statements, events, or conditions; 3. Reasoning or capable of reasoning in a clear and consistent manner; ***as opposed to*** **ILLOGICAL**: 1. Contradicting or disregarding the principles of logic; 2. Without logic; senseless; careless; unreasonable; unreasoned; unthinking; 3. Falsely based or reasoned; faulty; invalid.

CONSISTENT: 1. Being in agreement with itself or logical coherence among things or parts; 2. Marked by absence of contradiction, disagreement, and discrepancy; ***as opposed to*** **INCONSISTENT**: 1. Displaying or marked by a lack of consistency; erratic; having no fixed or regular course; wandering; lacking regularity; lack of uniformity, as in overall purpose, design, or content; 2. Lacking in correct logical relation; contradictory.

JUSTIFIED: 1. To demonstrate or prove to be just, right, valid, or reasonable by proof or competent evidence or legitimate authority; authenticate; affirm; confirm; corroborate; document; validate; verify; substantiate; 2. To provide or show what constitutes sufficient grounds (as for doing, using, saying, or preferring something); ***as opposed to*** **UNSUBSTANTIATED**: not substantiated by evidence, fact, or reason.

FAIR: 1. Having or exhibiting a disposition that is objective and free of favoritism, self-interest, or bias; impartial; evenhanded or fair-minded; not favoring one person or side over another or others; open-minded; tolerant; unprejudiced or **UNBIASED**; 2. Just to all parties; equitable; dictated by reason, conscience, and a natural sense of what is fair and just to all concerned; ***as opposed to*** **BIASED**: 1. Marked by or exhibiting a preference or an inclination, especially one that inhibits impartial judgment; 2. a predisposition to favor a particular person, thing, point of view, or course of action; 3. Lacking flexibility; rigid; 4. Lacking tolerance or sympathy; petty; 5. **PREJUDICED**: 1. Marked by or exhibiting an adverse, premature, or irrational judgment or opinion or preconceived preference or idea formed beforehand or without knowledge or examination of the facts. 2. The act or state of holding unreasonable preconceived judgments, convictions, opinions, or beliefs without a rational basis. 3. Marked by intolerance: intolerant; close-minded; mean; mean-spirited; narrow-minded; small; small-minded; unfair.

THE INTELLECTUAL AND MORAL VIRTUES OF THE CRITICAL PERSON.

SOURCE Adapted from: Adapted from: Paul, Richard. (1995). "Critical thinking, moral integrity, and citizenship: Teaching for the intellectual virtues" in ***Critical thinking: How to prepare students for a rapidly changing world*** (edited by Jane Willsen and A. J. A. Binker). Santa Rosa, CA: Foundation for Critical Thinking (pp. 257-259, 262-268).

The term "critical thinking" can be used in either a weak or a strong sense, depending upon whether we think of critical thinking narrowly, as a list or collection of discrete intellectual skills, or, more broadly, as a mode of mental integration, as a synthesized complex of dispositions, values, and skills necessary to becoming a fair-minded, rational person. Teaching critical thinking in a strong sense is a powerful, and I believe necessary means to moral integrity and responsible citizenship.

Intellectual skills in and of themselves can be used either for good or ill, to enlighten or to propagandize, to gain narrow, self-serving ends, or to further the general and public good. The micro-skills themselves, for example, do not define fair-mindedness and could be used as easily by those who are highly prejudiced as those who are not. Those students not exposed to the challenge of strong sense critical thinking assignments (for example, assignments in which they must empathically reconstruct viewpoints that differ strikingly from their own) will not, as a matter of abstract morality or general good-heartedness, be fair to points of view they oppose, nor will they automatically develop a rationally defensible notion of what the public good is on the many issues they must decide as citizens.

Critical thinking, in its most defensible sense, is not simply a matter of cognitive skills. Moral integrity and responsible citizenship are, in turn, not simply a matter of good-heartedness or good intentions. Many good-hearted people cannot see through and critique propaganda and mass manipulation, and most good-hearted people fall prey at times to the powerful tendency to engage in self-deception, especially when their own egocentric interests and desires are at stake. One can be good-hearted and intellectually egocentric at the same time.…Our basic ways of knowing are inseparable from our basic ways of being. How we think reflects who we are. Intellectual and moral virtues or disabilities are intimately interconnected. To cultivate the kind of intellectual independence implied in the concept of strong sense critical thinking, we must recognize the need to foster intellectual (epistemological) humility, courage, integrity, perseverance, empathy, and fair-mindedness.…

Let us now consider the interdependence of these virtues, how hard it is to deeply develop any one of them without also developing the others. Consider intellectual humility. To become aware of the limits of our knowledge we need the *courage* to face our own prejudices and ignorance. To discover our own prejudices in turn we must often *empathize* with and reason within points of view toward which we are hostile. To do this, we must typically *persevere* over a period of time, for learning to empathically enter a point of view against which we are biased takes time and significant effort. That effort will not seem justified unless we have the *faith in reason* to believe we will not be "tainted" or "taken in" by whatever is false or misleading in the opposing viewpoint. Furthermore, merely believing we can survive serious consideration of an "alien" point of view is not enough to motivate most of us to consider them seriously. We must also be motivated by an *intellectual sense of justice*. We must recognize an intellectual *responsibility* to be fair to views we oppose. We must feel *obliged* to hear them in their strongest form to ensure that we do not condemn them out of our own ignorance or bias. At this point, we come full circle back to where we began: the need for *intellectual humility*.

Or let us begin at another point. Consider intellectual good faith or integrity. Intellectual integrity is clearly difficult to develop. We are often motivated — generally without admitting to or being aware of this motivation — to set up inconsistent intellectual standards. Our egocentric or sociocentric side readily believes positive information about those we like and negative information about those we dislike. We tend to believe what justifies our vested interest or validates our strongest desires. Hence, we all have some innate tendencies

to use double standards, which is of course paradigmatic of intellectual bad faith. Such thought often helps us get ahead in the world, maximize our power or advantage, and get more of what we want.

Nevertheless, we cannot easily operate *explicitly* or overtly with a double standard. We must, therefore, avoid looking at the evidence too closely. We cannot scrutinize our own inferences and interpretations too carefully. Hence, a certain amount of *intellectual arrogance* is quite useful. I may assume, for example that I know just what you're going to say (before you say it), precisely what you are really after (before the evidence demonstrates it), and what actually is going on (before I have studied the situation carefully). My intellectual arrogance makes it easier for me to avoid noticing the unjustifiable discrepancy in the standards I apply to you and those I apply to myself. Of course, if I don't have to empathize with you, that too makes it easier to avoid seeing my duplicity. I am also better off if I don't feel a keen need to be *fair* to your point of view. A little background *fear* of what I might discover if I seriously considered the consistency of my own judgments also helps. In this case, my lack of intellectual integrity is supported by my lack of intellectual humility, empathy, and fairmindedness.

Going in the other direction, it will be difficult to maintain a double standard between us if I feel a distinct responsibility to be fair to your point of view, understand this responsibility to entail that I must view things from your perspective in an empathic fashion, and conduct this inner inquiry with some humility regarding the possibility of my being wrong and your being right. The more I dislike you personally or feel wronged in the past by you or by others who share your way of thinking, the more pronounced in my character must be the trait of intellectual integrity in order to provide the countervailing impetus to think my way to a fair conclusion.

A major obstacle to developing intellectual virtues is the presence in the human egocentric mind of what Freud has called "defense mechanisms". Each represents a way to falsify, distort, misconceive, twist, or deny reality. Their presence represents, therefore, the relative weakness or absence of the intellectual virtues. Since they operate in everyone to some degree, no one embodies the intellectual virtues purely or perfectly. In other words, we each have a side of us unwilling to face unpleasant truth, willing to distort, falsify, twist, and misrepresent. We also know from a monumental mass of psychological research that this side can be *powerful*, can dominate our minds strikingly. We marvel at, and are often dumbfounded by, others whom we consider clear-cut instances of these modes of thinking. What is truly "marvelous", it seems to me, is how little we take ourselves to be victims of these falsifying thoughts, and how little we try to break them down. The vicious circle seems to be this: because we, by and large, lack the intellectual virtues, we do not have insight into them, but because we lack insight into them, we do not see ourselves as lacking them. They weren't explicitly taught to us, so we don't have to explicitly teach them to our children.

Schooling has generally ignored the need for insight or intellectual virtues. This deficiency is intimately connected with another one, the failure of schools to show students they should not only test what they "learn" in school by their own experience, but also test what they experience by what they "learn" in school. This may seem a hopeless circle, but if we can see the distinction between a critically analyzed experience and an unanalyzed one, we can see the link between the former and *insight*, and the latter and *prejudice*, and will be well on our way to seeing how to fill these needs.

We subject little of our experience to critical analysis. We seldom take our experiences apart to judge their epistemological worth. We rarely sort the "lived" integrated experience into its component parts, *raw data*, *our interpretation* of the data, or ask ourselves how the interests, goals, and desires we brought to those data shaped and structured that interpretation. Similarly, we rarely seriously consider the possibility that our interpretation (and hence our experience) might be selective, biased, or misleading.

This is not to say that our unanalyzed experiences lack meaning or significance. Quite the contrary, in some sense we assess *all* experience. Our egocentric side never ceases to catalogue experiences in accord with

its common and idiosyncratic fears, desires, prejudices, stereotypes, caricatures, hopes, dreams, and assorted irrational drives. We shouldn't assume *a priori* that our rational side dominates the shaping of our experience. Our unanalyzed experiences are some combination of these dual contributors to thought, action, and being. Only through critical analysis can we hope to isolate the irrational dimensions of our experience. The ability to do so grows as we analyze more and more of our experience.

Of course, more important than the sheer *number* of analyzed experiences is their *quality* and *significance*. This quality and significance depends on how much our analyses embody the intellectual virtues. At the same time, the degree of our virtue depends upon the number and quality of experiences we have successfully critically analyzed. What links the virtues, as perfections of the mind, and the experiences, as analyzed products of the mind, is *insight*. Every critically analyzed experience to some extent produces one or more intellectual virtues. To become more rational it is not enough to have experiences nor even for those experiences to have meanings. Many experiences are more or less charged with *irrational* meanings. These important meanings produce stereotypes, prejudices, narrow-mindedness, delusions, and illusions of various kinds.

The process of developing intellectual virtues and insights is part and parcel of our developing an interest in taking apart our experiences to separate their rational from their irrational dimensions. These meta-experiences become important benchmarks and guides for future thought. They make possible modes of thinking and maneuvers in thinking closed to the irrational mind.

To teach for the intellectual virtues, one must recognize the significant differences between the higher order critical thinking of a fair-minded critical thinker and that of a self-serving critical thinker. Though both share a certain command of the micro-skills of critical thinking,…they are not equally good at tasks which presuppose the intellectual virtues. The self-serving (weak sense) critical thinker would lack the insights that underlie and support these virtues.

I can reason well in domains in which I am prejudiced — hence, eventually, reason my way out of prejudices — only if I develop mental benchmarks for such reasoning. Of course one insight I need is that when I am prejudiced it will seem to me that I am not, and similarly, that those who are not prejudiced as I am will seem to me to be prejudiced. (To a prejudiced person, an unprejudiced person seems prejudiced.) I will come to this insight only insofar as I have analyzed experiences in which I was intensely convinced I was correct on an issue, judgment, or point of view, only to find, after a series of challenges, reconsiderations, and new reasonings, that my previous conviction was in fact prejudiced. I must take this experience apart in my mind, clearly understand its elements and how they fit together (how I became prejudiced; how I inwardly experienced that prejudice; how intensely that prejudice seemed true and insightful; how I progressively broke that prejudice down through serious consideration of opposing lines of reasoning; how I slowly came to new assumptions, new information, and ultimately new conceptualizations).

Only when one gains analyzed experiences of working and reasoning one's way out of prejudice can one gain the higher order abilities of a fair-minded critical thinker. What one gains is somewhat "procedural" or sequential in that there is a *process* one must go through; but one also sees that the process cannot be followed out formulaically or algorithmically, it depends on principles. The somewhat abstract articulation of the intellectual virtues above will take on concrete meaning in the light of these *analyzed experiences*. Their true meaning to us will be given in and by these experiences. We will often return to them to recapture and rekindle the insights upon which the intellectual virtues depend.

Generally, to develop intellectual virtues, we must create a collection of analyzed experiences that represent to us intuitive models, not only of the pitfalls of our own previous thinking and experiencing but also processes for reasoning our way out of or around them. These model experiences must be charged with meaning for us. We cannot be *indifferent* to them. We must sustain them in our minds by our sense of their importance as they sustain and guide us in our thinking.

What does this imply for teaching? It implies a somewhat different content or material focus. Our own minds and experiences must become the subject of our study and learning. Indeed, only to the extent that the content of our own experiences becomes an essential part of study will the usual subject matter truly be learned. By the same token, the experiences of others must become part of what we study. But experiences of any kind should always be critically analyzed, and students must do their own analyses and clearly recognize what they are doing.

This entails that students become explicitly aware of the logic of experience. All experiences have three elements, each of which may require some special scrutiny in the analytic process: *1)* something to be experienced (some actual situation or other); *2)* an experiencing subject (with a point of view, framework of beliefs, attitudes, desires, and values); and *3)* some interpretation or conceptualization of the situation. To take any experience apart, then, students must be sensitive to three distinctive sets of questions:

1) What are the raw facts, what is the most neutral description of the situation? If one describes the experience this way, and another disagrees, on what description *can* they agree?
2) What interests, attitudes, desires, or concerns do I bring to the situation? Am I always aware of them? Why or why not?
3) How am I conceptualizing or interpreting the situation in light of my point of view? How else might it be interpreted?

Students must also explore the interrelationships of these parts: How did my point of view, values, desires, etc., affect what I noticed about the situation? How did they prevent me from noticing other things? How would I have interpreted the situation had I noticed those other things? How did my point of view, desires, etc., affect my interpretation? How *should* I interpret the situation?

If students have many assignments that require them to analyze their experiences and the experiences of others along these lines, with ample opportunity to argue among themselves about which interpretations make the most sense and why, then they will begin to amass a catalogue of critically analyzed experiences. If the experiences illuminate the pitfalls of thought, the analysis and the models of thinking they suggest will be the foundation for their intellectual traits and character. They will develop intellectual virtues because they had thought their way to them and internalized them as concrete understandings and insights, not because they took them on as slogans. Their basic values and their thinking processes will be in a symbiotic relationship to each other. Their intellectual and affective lives will become more integrated. Their standards for thinking will be implicit in their own thinking, rather than in texts, teachers, or the authority of a peer group.

We do not now teach for the intellectual virtues. If we did, not only would we have a basis for integrating the curriculum, we would also have a basis for integrating the cognitive and affective lives of students. Such integration is the basis for strong sense critical thinking, for moral development, and for citizenship. The moral, social, and political issues we face in everyday life are increasingly intellectually complex. Their settlement relies on circumstances and events that are interpreted in a variety of (often conflicting) ways.…The response of the citizenry to such issues defines the moral character of society. These issues challenge our intellectual honesty, courage, integrity, empathy, and fair-mindedness. Given their complexity, they require perseverance and confidence in reason. People easily become cynical, intellectually lazy, or retreat into simplistic models of learning and the world they learned in school and see and hear on TV. On the other hand, it is doubtful that the fundamental conflicts and antagonisms in the world can be solved or resolved by sheer power or abstract good will. Good-heartedness and power are insufficient for creating a just world. Some modest development of the intellectual virtues seems essential for future human survival and well-being. Whether the energy, the resources, and the insights necessary for this development can be significantly mustered remains open. This is certain: we will never succeed in cultivating traits whose roots we do not understand and whose development we do not foster.

TRAITS OF MIND AND MORAL CHARACTER: INTELLECTUAL VIRTUES DEFINED

[**SOURCE Adapted from**: Paul, Richard, with A. J. A. Binker. (1995). "Glossary: A guide to critical thinking terms and concepts;" in ***Critical thinking: How to prepare students for a rapidly changing world*** (edited by Jane Willsen and A. J. A. Binker). Santa Rosa: Foundation for Critical Thinking (pp. 534-537).]

INTELLECTUAL VIRTUES: The traits of mind and character necessary for right action and thinking; the traits of mind and character essential for fair-minded rationality; the traits that distinguish the narrow-minded, self-serving critical thinker from the open-minded, truth-seeking critical thinker. These *intellectual traits are interdependent*. Each is best developed while developing the others as well. They cannot be imposed from without; they must be cultivated by encouragement and example. People can come to deeply understand and accept these principles by analyzing their experiences of them: learning from an unfamiliar perspective, discovering you don't know as much as you thought, and so on. They include: intellectual sense of justice, intellectual perseverance, intellectual integrity, intellectual humility, intellectual empathy, intellectual courage, (intellectual) confidence in reason, and intellectual autonomy.

INTELLECTUAL CURIOSITY: A strong desire to deeply understand, to figure things out, to propose and assess useful and plausible hypotheses and explanations, to learn, to find out. People do not learn well, do not gain knowledge, unless they *want* knowledge — deep, accurate, complete understanding. When people lack passion for figuring things out (suffer from intellectual apathy), they tend to settle for an incomplete, incoherent, sketchy "sense" of things incompatible with a critically developed, richer, fuller conception. This trait can flourish only when it is allowed and encouraged, when people are allowed to pose and pursue questions of interest to them and when their intellectual curiosity pays off in increasing understanding.

(INTELLECTUAL) CONFIDENCE OR FAITH IN REASON: Confidence that in the long run one's own higher interests and those of humankind at large will best be served by giving the freest play to reason — by encouraging people to come to their own conclusions through a process of developing their own rational faculties; faith that (with proper encouragement and cultivation) people can learn to think for themselves, form rational viewpoints, draw reasonable conclusions, think coherently and logically, persuade each other by reason, and become reasonable, despite the deep-seated obstacles in the native character of the human mind and in society. Confidence in reason is developed through experiences in which one reasons one's way to insight, solves problems through reason, uses reason to persuade, is persuaded by reason. Confidence in reason is undermined when one is expected to perform tasks without understanding why, to repeat statements without having verified or justified them, to accept beliefs on the sole basis of authority or social pressure.

INTELLECTUAL EMPATHY: Understanding the need to imaginatively put oneself in the place of others to genuinely understand them. We must recognize our egocentric tendency to identify truth with our immediate perceptions or longstanding beliefs. Intellectual empathy correlates with the ability to accurately reconstruct the viewpoints and reasoning of others and to *reason from premises, assumptions, and ideas other than our own*. This trait also requires that we remember occasions when we were wrong, despite an intense conviction that we were right, and consider that we might be similarly deceived in a case at hand.

INTELLECTUAL COURAGE: The willingness to face and fairly assess ideas, beliefs, or viewpoints to which we have not given a serious hearing, regardless of our strong negative reactions to them. This courage arises from the recognition that *ideas considered dangerous or absurd are sometimes rationally justified* (in whole or in part), and that *conclusions or beliefs espoused by those around us or 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 some distortion or falsity in some ideas strongly held in our social group. It takes courage to be true to our own thinking in such circumstances. Examining cherished beliefs is difficult, and the penalties for non-conformity are often severe.

INTELLECTUAL AUTONOMY: Having rational control of ones beliefs, values and inferences. The ideal of critical thinking is to learn to think for oneself, to gain command over one's thought processes. Intellectual autonomy does not entail willfulness, stubbornness, or rebellion. 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 CIVILITY: A commitment to take others seriously as thinkers, to treat them as intellectual equals, to grant respect and full attention to their views — a commitment to persuade rather than browbeat. It is distinguished from intellectual rudeness: verbally attacking others, dismissing them, stereotyping their views. Intellectual civility is not a matter of mere courtesy, but arises from a sense that communication itself requires honoring others' views and their capacity to reason.

INTELLECTUAL HUMILITY: Awareness of the limits of one's knowledge, including sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias and prejudice in, and limitations of one's viewpoint. Intellectual humility is based on the recognition that *no one should claim more than he or she actually knows*. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness, or conceit, combined with insight into the strengths or weaknesses of the logical foundations of one's beliefs.

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 oneself 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. This trait develops best in a supportive atmosphere in which people feel secure and free enough to honestly acknowledge their inconsistencies, and can develop and share realistic ways of ameliorating them. It requires honest acknowledgment of the difficulties of achieving greater consistency.

INTELLECTUAL DISCIPLINE: The trait of thinking in accordance with intellectual standards, intellectual rigor, carefulness, order, conscious control. The undisciplined thinker neither knows nor cares when he or she comes to unwarranted conclusions, confuses distinct ideas, fails to consider pertinent evidence, and so on. Thus, intellectual discipline is at the very heart of becoming a critical person. It takes discipline of mind to keep oneself focused on the intellectual task at hand, to locate and carefully assess needed evidence, to systematically analyze and address questions and problems, to hold one's thinking to sufficiently high standards of clarity, precision, completeness, consistency, etc. Such discipline is achieved slowly, bit by bit, only in an atmosphere of intellectual rigor and is acquired only to the degree that one develops insight into elements and standards of reasoning.

INTELLECTUAL PERSEVERANCE: Willingness and consciousness of the need to pursue intellectual insights and truths despite difficulties, obstacles, and frustrations; firm adherence to rational principles despite irrational opposition of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time in order to achieve deeper understanding or insight. This trait is undermined when teachers and others continually provide the answers, do students' thinking for them or substitute easy tricks, algorithms, and short cuts for careful, independent thought.

INTELLECTUAL RESPONSIBILITY: The responsible person keenly feels the obligation to fulfill his or her duties; intellectual responsibility is the application of this trait to intellectual matters. Hence, the intellectually responsible person feels strongly obliged to achieve a high degree of precision and accuracy in his or her reasoning, is deeply committed to gathering complete, relevant, adequate evidence, etc. This sense of obligation arises when people recognize the need for meeting the intellectual standards required by rational, fair-minded thought.

INTELLECTUAL SENSE OF JUSTICE: Willingness and consciousness of the need to entertain all viewpoints sympathetically and to assess them with the same intellectual standards, 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.

POSSIBLE REASONS FOR NOT COMPLETING OR WORKING HARD ON ASSIGNMENTS

[**SOURCE**: Keeley, Stuart M. (1995). "Coping with student resistance to critical thinking." Paper presented at ***The Fourteenth Annual International Conference on Critical Thinking and Educational Reform***, sponsored by the Foundation for Critical Thinking, The National Council for Excellence in Critical Thinking, and the Center for the Critical Thinking and Moral Critique, Sonoma State University, Rohnert Park, California, July 31-August 3, 1994.]

Many students find themselves resisting completing or working hard on assignments. Your progress as a learner depends on the effort that you put into assignments, because working on assignments gives you the practice and feedback necessary for your becoming a successful learner. When you struggle with putting good effort into assignments, becoming aware of the reasons for the struggle can be a helpful step in overcoming it. Thus, you may find it very helpful to your learning to try to pinpoint any reasons that you may have for resisting working hard on your assignments. The following is a list of reasons that students have given either for not completing or for not working as hard as is desirable on their assignments. Completing the list should be a helpful initial step for you in overcoming such resistance.

○ 1. I really can't see the point of what the teacher has asked me to do.
○ 2. If I do all this stuff, people will think I'm a nerd or a geek.
○ 3. Other students don't have to work this hard; why should I?
○ 4. Getting good grades just isn't important to me.
○ 5. I've gotten good grades in the past without all this effort. Why should I change now?
○ 6. I feel that this particular assignment will not be helpful. It doesn't really make good sound sense to me.
○ 7. The work is too hard; the teacher is being unfair.
○ 8. If I work hard on this, I will have to give up other commitments that are important to me.
○ 9. I easily get frustrated when I can't quickly complete tasks to my satisfaction.
○ 10. I do not have enough time to do these assignments. I am too busy.
○ 11. I have the feeling that the teacher is trying to boss me around or control me.
○ 12. I just don't feel like cooperating with the teacher.
○ 13. I fear the teacher's disapproval or criticism of my work. I believe that what I do just won't be good enough for her or him.
○ 14. I feel too bad, sad, nervous, upset (underline appropriate words) to do it now.
○ 15. I am feeling good now and I don't want to spoil it by working on the assignment.
○ 16. I can't concentrate because I am worried about personal issues.
○ 17. I don't understand exactly what I am supposed to do.

THE LESSON

by an insightful anonymous author

Then Jesus took his disciples up the mountain and, gathering them around him, he taught them saying:

Blessed are the poor in spirit for theirs is the Kingdom of Heaven.

Blessed are the meek.

Blessed are they that mourn.

Blessed are they who thirst for justice.

Blessed are you when persecuted.

Blessed are you when you suffer.

Be glad and rejoice for your reward is great in heaven…

Then Simon Peter said, "Do we have to write this down?"

and Andrew said, "Are we supposed to know this?"

and James said, "Will this be on the test?"

and Philip said, "What if we don't remember this?"

and John said "The other disciples didn't have to learn this."

and Matthew said, "When do we get out of here?"

and Judas said, "What does this have to do with the real world?"

Then one of the Pharisees present asked to see Jesus' lesson plan and inquired of Jesus' terminal objectives in both the cognitive and behavioral domains…

Jesus wept.