9 Thinking Critically About Teaching: From Didactic to Critical Teaching

John Dewey once asked a class he visited, "What would you find if you dug a hole in the earth?" Getting no response, he repeated the question: again he obtained nothing but silence. The teacher chided Dr. Dewey, "You're asking the wrong question." Turning to the class, she asked, "What is the state of the center of the earth?" The class replied in unison, "Igneous fusion."

To begin to teach critical thinking one must critique present educational practices and the beliefs underlying them and develop a new conception of knowledge and learning. Educators must ask themselves crucial questions about the nature of knowledge, learning, and the human mind. Educators should reflect on their own thought processes, their own experiences of learning, misunderstanding, confusion, and insight. They should recall and analyze their successes and failures when attempting to teach. They should examine the conceptions and assumptions implicit in their educational practices and self-consciously develop their own theories of education through analysis, evaluation, and reconstruction of their understanding of education and what it means to learn.

Most instructional practice in most academic institutions around the world presupposes a didactic theory of knowledge, learning, and literacy ill-suited to the development of critical minds and persons. After a superficial exposure to reading, writing, and arithmetic, schooling is typically fragmented thereafter into more or less technical domains, each with a large technical vocabulary and an extensive content or propositional base. Students memorize and reiterate domain-specific details. Teachers lecture and drill. Active integration of the students' daily non-academic experiences is rare. Little time is spent stimulating student questions. Students are expected to "receive" the knowledge "given" them. Students are not typically encouraged to doubt what they are told in the classroom or what is written in their texts. Students' personal points of view or philosophies of life are considered largely irrelevant to education. Classrooms with teachers talking and students listening are the rule. Ninety percent of teacher questions require no more thought than recall. Dense and typically speedy coverage of content is typically followed by

content-specific testing. Interdisciplinary synthesis is ordinarily viewed as a personal responsibility of the student and is not routinely tested. Technical specialization is considered the natural goal of schooling and is correlated with getting a job. Few multi-logical issues or problems are discussed or assigned and even fewer teachers know how to conduct such discussions or assess student participation in them. Students are rarely expected to engage in dialogical or dialectical reasoning, and few teachers are proficient analysts of such reasoning. Knowledge is viewed as verified intra-disciplinary propositions and well-supported intra-disciplinary theories. There is little or no discussion of the nature of prejudice or bias, little or no discussion of metacognition, and little or no discussion of what a disciplined, self-directed mind or self-directed thought requires. The student is expected to develop into a literate, educated person through years of what is essentially content memorization and ritual performance.

The dominant pattern of academic instruction and learning is based on an uncritical theory of knowledge, learning, and literacy that is coming under increasing critique by theorists and researchers. Those who operate on the didactic theory in their instruction rarely formulate it explicitly. Some would deny that they hold it, even though their practice implies it. In any case, it is with the theory implicit in practice that we are concerned.

To illustrate, consider this letter from a teacher with a Master's degree in physics and mathematics, with 20 years of high school teaching experience in physics:

> After I started teaching, I realized that I had learned physics by rote and that I really did not understand all I knew about physics. My thinking students asked me questions for which I always had the standard textbook answers, but for the first time it made me start thinking for myself, and I realized that these canned answers were not justified by my own thinking and only confused my students who were showing some ability to think for themselves. To achieve my academic goals I had to memorize the thoughts of others, but I had never learned or been encouraged to learn to think for myself.

The extent and nature of "coverage" for most grade levels and subjects implies that bits and pieces of knowledge are easily attained, without any significant consideration of the basis for that knowledge. Speed coverage of content ignores the need of students to seriously consider content before accepting it. Most of us have experienced the difference between "intellectual" or merely verbal "knowledge" and true understanding — "Aha! So *that's* what that means!" Most teaching and most texts, designed to achieve the former kind of knowledge rather than the latter, are, in this sense, unrealistic. Students rarely grapple with content. As a result, standard practice tends to foster intellectual arrogance in students, particularly in those who have retentive memories and can repeat back what they have heard or read. Pretending to know is encouraged. Much standardized testing, which frames problems isolated from their real-life contexts and provides directions and hints regarding their correct solution, validates this pretense.

This has led Alan Schoenfeld, for example, to conclude that "most instruction in mathematics is, in a very real sense, deceptive and possibly fraudulent." In "Some Thoughts on Problem-Solving Research and Mathematics Education", (Mathematical Problem Solving: Issues in Research, Frank K. Lester and Joe Garofalo, editors, © 1982 Franklin Institute Press), he cites a number of examples, including the following:

> Much instruction on how to solve word problems is based on the "key word" algorithm, where the student makes his choice of the appropriate arithmetic operation by looking for syntactic cues in the problem statement. For example, the word 'left' in the problem "John had eight apples. He gave three to Mary. How many does John have left?" ... serves to tell the students that subtraction is the appropriate operation to perform. (p. 27)

> In a widely used elementary text book series, 97 percent of the problems "solved" by the key-word method would yield (serendipitously?) the correct answer.
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> Students are drilled in the key-word algorithm so well that they will use subtraction, for example, in almost any problem containing the word 'left'. In the study from which this conclusion was drawn, problems were constructed in which the appropriate operations were addition, multiplication, and division. Each used the word 'left' conspicuously in its statement and a large percentage of the students subtracted. In fact, the situation was so extreme that many students chose to subtract in a problem that began "Mr. Left ..." (p. 27)
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> I taught a problem-solving course for junior and senior mathematics majors at Berkeley in 1976. These students had already seen some remarkably sophisticated mathematics. Linear algebra and differential equations were old hat. Topology, Fourier transforms, and measure theory were familiar to some. I gave them a straightforward theorem from plane geometry (required when I was in the tenth grade). Only two of eight students made any progress on it, some of them by using arc length integrals to measure the circumference of a circle. (Schoenfeld, 1979). Out of the context of normal course work these students could not do elementary mathematics. (pp. 28–29)
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> In sum, all too often we focus on a narrow collection of well-defined tasks and train students to execute those tasks in a routine, if not algorithmic fashion. Then we test the students on tasks that are very close to the ones they have been taught. If they succeed on those problems we and they congratulate each other on the fact that they have learned some powerful mathematical techniques. In fact, they may be able to use such techniques mechanically while lacking some rudimentary thinking skills. To allow them and ourselves to believe that they "understand" the mathematics is deceptive and fraudulent. (p. 29)

This approach to learning in math is too often paralleled in the other subject areas. Grammar texts, for example, present skills and distinctions, then drill students in their use. Thus, students, not genuinely understanding the material, do not spontaneously recognize situations calling for the skills and distinctions covered. Such "knowledge" is generally useless to them. They fail to grasp the uses of, the reasoning behind, and the meaning of the knowledge presented to them. In the rush to keep up, they turn their minds off. Since they are not expected to make sense of the bits they take in, they cease expecting what they learn, hear, read, or do to make sense to them.

Most teachers made it through their college classes mainly by "learning the standard textbook answers" and were neither given an opportunity nor encouraged to determine whether what the text or the professor said was "justified by their own thinking".

Predictable results follow. Students, on the whole, do not learn how to work by or think for themselves. They do not learn how to gather, analyze, synthesize, and assess information. They do not learn how to recognize and define problems for themselves. They do not learn how to analyze the diverse logic of the questions and problems they face and hence how to adjust their thinking to those problems. They do not learn how to enter sympathetically into the thinking of others, nor how to deal rationally with conflicting points of view. They do not learn to become critical readers, writers, speakers, or listeners. They do not learn to use their native languages clearly, precisely, or persuasively. They do not, therefore, become "literate" in the proper sense of the word. Neither do they gain much in the way of genuine knowledge, since, for the most part, they could not explain the basis for what they believe. They would be hard pressed to explain, for example, which of their beliefs were based on rational assent and which on simple conformity to what they have been told. They have little sense as to how they might critically analyze their own experience or identify national or group bias in their own thinking. They are much more apt to learn on the basis of irrational than rational modes of thought. They lack the traits of mind of a genuinely educated person: intellectual humility, courage, integrity, perseverance, and confidence in reason.

If this is a reasonable characterization of a broad scholastic effect, then instruction based on a didactic theory of knowledge, learning, and literacy is the fundamental determining cause. Administrators and teachers need to explicitly grasp the differences between instruction based

on two very different sets of assumptions, the first deeply buried in the hearts and minds of most educators, parents, and administrators; the second emerging only now as the research base for a critical theory progressively expands. We express the basic difference as follows: "Knowledge can be 'given' to one who, upon receiving it, knows it", compared to, "Knowledge must be created and, in a sense, rediscovered by each knower."

Only if we see the contrast between these views clearly, will we be empowered to move from the former conception to the latter. Now let us set out the two opposing theories systematically in terms of specific contrasting assumptions and practices.

Two Conflicting Theories of Knowledge, Learning, and Literacy: The Didactic and the Critical

The Scholastically Dominant Theory of Knowledge, Learning and Literacy assumes:

1) That the fundamental need of students is to be taught more or less directly *what* to think, not *how* to think. (That students will learn *how* to think if only they know *what* to think.) • Thus, students are *given* or told details, definitions, explanation, rules, guidelines, and reasons to learn.

2) That knowledge is independent of the thinking that generates, organizes, and applies it. • Thus, students are said to know when they can repeat what has been covered. Students are given the finished products of others' thoughts.

3) That educated, literate people are fundamentally repositories of content analogous to an encyclopedia or a data bank, directly comparing situations in the world with "facts" that they carry about fully formed as a result of an absorptive process. That an educated, literate person is fundamentally a true believer, that is, a possessor of truth, and therefore claims much knowledge. • Thus, texts, assignments, lectures, discussions, and tests are detail-oriented and content-dense.

The Emerging Critical Theory of Knowledge, Learning, and Literacy assumes:

1) That the fundamental need of students is to be taught *how*, not *what*, to think. • Thus, significant content should be taught by raising live issues that stimulate students to gather, analyze and assess that content.

2) That all knowledge or content is generated, organized, applied, analyzed, synthesized, and assessed by thinking; that gaining knowledge is unintelligible without engagement in such thinking. (It is *not* assumed that one can think without something, some content, to think about.) • Thus, students should be given opportunities to puzzle their way through to knowledge and explore its justification, as part of the process of learning.

3) That an educated, literate person is fundamentally a repository of strategies, principles, concepts, and insights embedded in processes of thought rather than atomic facts. Experiences analyzed and organized by critical thought, not facts picked up one-by-one, characterize the educated person. Much of what is "known" is constructed by the thinker *as needed* from context to context, not *prefabricated* in sets of true statements about the world. That an educated, literate person is fundamentally a seeker and questioner rather than a true believer, and is therefore cautious in claiming knowledge. • Thus, classroom activities should consist of questions and problems for students to discuss and discover how to solve. Teachers should model insightful consideration of questions and problems, and facilitate fruitful discussions.

4) That knowledge, truth, and understanding can be transmitted from one person to another by verbal statements in the form of lectures or didactic writing. • Thus, for example, social studies texts present principles of geography and historical explanations. Questions at the end of the chapter are framed in identical language and can be answered by repeating the texts. "The correct answer" is often in bold type or otherwise emphasized.

4) That knowledge and truth can rarely, and insight never, be transmitted from one person to another by the transmitter's verbal statements alone. That one person cannot directly give another what he or she has learned; one can only facilitate the conditions under which people learn for themselves by figuring out or thinking things through. • Thus, students offer their own ideas, and explore ideas given in the texts, providing their own examples and reasons. Students come to conclusions by practicing reasoning historically, geographically, scientifically, etc.

5) That students do not need to be taught skills of listening in order to learn from others; they only need to learn to pay attention, which requires self-discipline or will power. Students should therefore be able to listen on command by the teacher. • Thus, students are told to listen carefully and are tested on their abilities to remember and to follow directions.

5) That students need to be taught how to listen critically, an active and skilled process that can be learned by degrees with various levels of proficiency. Learning what others mean by what they say requires questioning, trying on, and testing; hence, engaging in public or private debates with them. • Thus, teachers would continually model active critical listening, asking probing and insightful questions of the speaker.

6) That the basic skills of reading and writing can be taught without emphasis on higher-order critical thinking skills. • Thus, reading texts provide comprehension questions requiring recall of random details. Occasionally, "main point," "plot," and "theme" lessons cover these concepts. Literal comprehension is distinguished from "extras" such as inferring, evaluating, and thinking beyond. Only after basic literal comprehension has been established is the deeper meaning probed.

6) That the basic skills of reading and writing are inferential skills that require critical thinking, that students who cannot read and write critically are defective readers and writers, and that critical reading and writing involve dialogical processes in which probing critical questions are raised and answered. (What is the fundamental issue? What reasons, what evidence is relevant? Is this authority credible? Are these reasons adequate? Is this evidence accurate and sufficient? Does this contradict that? Does this conclusion follow? Should another point of view be considered?) • Thus, teachers should routinely require students to *explain* what they have read, to reconstruct the ideas, and to evaluate written material. Students should construct and compare interpretations, reasoning their way to the most plausible interpretations. Discussion moves back and forth between what was said and what it means.

7) That students who have no questions typically are learning well, while students with many questions are experiencing difficulty in learning; that doubt and questioning weaken belief.

7) That students who have no questions typically are not learning, while those who have pointed and specific questions are. Doubt and questioning, by deepening understanding, strengthen belief by putting it on more solid ground. • Thus, teachers can evaluate their teaching by asking themselves: Are my students asking better questions — insightful questions, questions which extend and apply what they have learned? ("Is that why...?" Does this mean that ...?" "Then what if ...?")

8) That quiet classes with little student talk are typically reflective of students learning, while classes with much student talk are typically disadvantaged in learning.

8) That quiet classes with little student talk are typically classes with little learning, while student talk, focused on live issues, is a sign of learning (provided students learn dialogical and dialectical skills).

9) That knowledge and truth can typically be learned best by being broken down into elements and the elements into sub-elements, each taught sequentially and atomistically. Knowledge is additive. • Thus, texts provide basic definitions and masses of details, but have little back-and-forth movement between them. They break knowledge into pieces, each of which is to be mastered one-by-one: subjects are taught separately. Each aspect is further broken down: each part of speech is covered separately; social studies texts are organized chronologically, geographically, etc.

9) That knowledge and truth are heavily systemic and holistic and can be learned only by continual synthesis, movement back and forth between wholes and parts, tentative graspings of a whole guiding us in understanding its parts, periodic focus on the parts (in relation to each other) shedding light upon the whole, and that the *wholes* that we learn have important relations to other wholes as well as to their own parts and hence need to be frequently canvassed in learning any whole. (This assumption implies that we cannot achieve in-depth learning in any given domain of knowledge unless we grasp its relation to *other* domains of knowledge.) • Thus, education should be organized around issues, problems, and basic concepts which are pursued and explored through all relevant subjects. Teachers should routinely require students to relate knowledge from various fields. Students should compare analogous events or situations, propose examples, and apply new concepts to other situations.

10) That people can gain significant knowledge without seeking or valuing it, and hence that education can take place without a significant transformation of values for the learner. • Thus, for example, texts tend to inform students of the importance of studying the subject or topic covered, rather than proving it by showing its immediate usefulness.

10) That people gain only the knowledge that they seek and value. All other learning is superficial and transitory. All genuine education transforms the basic values of the person educated, resulting in persons becoming life-long learners and rational persons. • Thus, instruction poses problems meaningful to students, requiring them to use the tools of each academic domain.

11) That understanding the mind and how it functions, its epistemological health and pathology, are not important or necessary parts of learning. To learn the basic subject matter of the schools, one need not focus on such matters, except perhaps with certain disadvantaged learners.

11) That understanding the mind and how it functions, its health and pathology, are important, are necessary parts of learning. To learn the basic subject matter of the schools in depth requires that we see how we as thinkers and learners process that subject matter.

12) That ignorance is a vacuum or simple lack, and that student prejudices, biases, misconceptions, and ignorance are automatically replaced by the knowledge given them. • Thus, little if any attention is given to students' beliefs. Material is presented from the point of view of the authority, the one who knows.

12) That prejudices, biases, and misconceptions are built up through actively constructed inferences embedded in experience and must be broken down through a similar process, hence, that students must reason their way out of them. • Thus, students need many opportunities to express their views, however biased and prejudiced, in a non-threatening environment, to argue their way

out of their internalized misconceptions. Teachers should cultivate in themselves a genuine curiosity about how students look at things, why they think as they do, and the structure of students' thought. The educational process starts where the students are, and walks them through to insight.

13) That students need not understand the rational ground or deeper logic of what they learn in order to absorb knowledge. Extensive but superficial learning can later be deepened. • Thus, for example, historical and scientific explanations are presented to students as given, not as having been reasoned to. In language arts, skills and distinctions are rarely explicitly linked to such basic concepts as 'good writing' or 'clear expression'.

13) That rational assent is essential for all genuine learning; that an in-depth understanding of basic concepts and principles is essential for rational assent to non-foundational concepts and facts. That in-depth understanding of root concepts and principles should organize learning within and across subject matter domains. • Thus, students are encouraged to discover how the details relate to basic concepts. Details are traced back to the foundational purposes, concepts, and insights.

14) That it is more important to cover a great deal of knowledge or information superficially than a small amount in depth. That only after the facts are understood, can students discuss their meaning; that higher order thinking can and should only be practiced by students who have "mastered" the material. That thought-provoking discussions are for the gifted and advanced, only.

14) That it is more important to cover a small amount of knowledge or information in-depth (deeply probing its foundation, meaning, and worth) than a great deal of knowledge superficially. That the "slowest," as well as the brightest, students can and must probe the significance and justification of what they learn.

15) That the roles of teacher and learner are distinct and should not be blurred.

15) That we learn best by teaching or explaining to others what we know. Students need many opportunities to teach what they know and formulate their understandings in different ways, and to respond to diverse questions from other learners.

16) That the teacher should correct the learners' ignorance by telling them what they don't know and correcting their mistakes.

16) That students need to learn to distinguish for themselves what they know from what they don't know. Students should recognize that they do not genuinely know or comprehend what they have merely memorized. Self-directed learning requires recognition of ignorance. • Thus, teachers respond to mistakes and confusion by probing with questions, allowing students to correct themselves and each other. Teachers routinely allow students the opportunity to supply their own ideas on a subject before reading their texts.

17) That the teacher has the fundamental responsibility for student learning. • Thus, teachers and texts provide knowledge, questions, and drill.

17) That students should have increasing responsibility for their own learning. Students should see that only they can learn for themselves and actively and willingly engage themselves in the process. • Thus, the

teacher provides opportunities for students to decide what they need to know and helps them develop strategies for finding or figuring it out.

18) That students will automatically transfer what they learn in didactically taught courses to relevant real-life situations. • Thus, for example, students are told to perform a given skill on a given group of items. The text will *tell* students when, how, and why to use that skill.

18) That most of what students memorize in didactically taught courses is either forgotten or inert, and that the most significant transfer requires in-depth learning which focuses on experiences meaningful to the student. Transfer must be directly taught.

19) That the personal experience of the student has no essential role to play in education.

19) That the personal experience of the student is essential to all schooling at all levels and in all subjects, that it is a crucial part of the content to be processed (applied, analyzed, synthesized, and assessed) by the students.

20) That students who can correctly answer questions, provide definitions, and apply formulae while taking tests have proven their knowledge or understanding of those details. Since the didactic approach tends to assume, for example, that knowing a word is knowing its definition (and an example), didactic instruction tends to overemphasize definitions. By merely supplementing definitions with assignments that say "Which of these twelve items are X?", students do not come to see the usefulness of the concept and fail to use it spontaneously when appropriate.

20) That students can often provide correct answers, repeat definitions, and apply formulae while yet not understanding those questions, definitions, or formulae. That proof of knowledge and understanding are found in the students' ability to explain in their own words, with examples, the meaning and significance of the knowledge, why it is so, to *spontaneously* use it when appropriate.

21) That learning is essentially a private monological process in which learners can proceed more or less directly to established truth, under the guidance of an expert in such truth. The authoritative answers that teachers have are the fundamental standards for assessing students' learning.

21) That learning is essentially a public, communal dialogical and dialectical process in which learners can only proceed indirectly to truth, with much zigging and zagging, backtracking, misconception, self-contradiction, and frustration along the way. Not authoritative answers, but authoritative standards are the criteria for engagement in the communal, dialogical process of enquiry.

Common Problems with Texts

When one examines textbooks from the perspective of the critical theory of knowledge, one is in a better position to restructure how one uses them. The single biggest problem, from this perspective, is that texts, primarily presupposing a didactic view of knowledge, are not designed to allow students to process or integrate what they "cover".

The object behind many lesson plans seems to be to expose students to a wide variety of unassessed "facts," on the assumption that, since this constitutes new information for them, it is good in itself. We, however, feel that school time is too precious to spend any sizeable portion of it covering *random* facts. The world, after all, is filled with an infinite number of facts. No one can learn more than an infinitesimal portion of them. Random fact-collecting is therefore pointless. True, we need facts and information, but there is no reason why we cannot gain facts *as part of the process* of learning how to think, as part of broader cognitive-affective objectives. Problem-solving or exploring basic ideas or issues are effective ways to find and use facts and to discover why facts interest us in the first place. We ought not to overburden students' minds with facts that they cannot put to use in their thinking. If we don't apprehend the relevance and significance of facts, we tend to forget them rather quickly. We encourage the reader therefore to develop a skeptical eye for lesson plans, activities, and questions that fall into the category of trivial pursuit or "fact-for-fact's-sake". Keep a wastebasket handy.

Often, though the lesson as a whole covers significant material, parts of it are trivial. The student's text provides insignificant details, and the teacher's edition suggests trivial activities which interrupt discussion of significant material. As a rule, texts fail to properly distinguish the trivial from the significant. Useless details and basic concepts receive equal time. End-of-chapter review questions especially confuse major with minor points. Structuring instruction around basic ideas and issues highlights crucial details.

Beyond the lessons and activities that need to be abandoned for their triviality, there are also lesson plans and activities that drill students — reading or filling out graphs, time-lines, and charts, generalizing, categorizing, researching, experimenting, problem-solving, and comparing. Such lessons turn skills of thought and crucial insights into mechanical procedures, or vague slogans. Students practice the skills for practice itself, seldom in a context in which the skill promotes understanding; thus, students fail to learn when to apply this or that procedure and so need to be told when to use it. The application of the skill is often merely memorized (and so easily forgotten), rather than understood. Students look for "indicator words", verbal cues, and shortcuts, rather than recognizing the logic of situations requiring use of the skill. Thus they can use the skill *only on request*, that is, when given directions to do so. They do not learn to recognize contexts in which the skill is needed. Students read maps, charts, graphs, etc., at the most basic level, rattling off facts; they do not discuss the meaning, significance, or implications of what they find. They copy charts and graphs, or formats for them, fill in graphs and time-lines, but do not then *use* them as helpful displays to organize information. The purposes of skills, the contexts within which they are needed, and the reasons for applying them in certain ways, should be discussed or discovered by students. Students should interpret the details they find and then explore their implications or significance.

This integration should be viewed, not as slowing down, but as deepening the understanding of the material. We should view the critical thinking that students practice as providing them with powerful concepts which they can use in a host of circumstances thereafter, and as laying

the foundation for the "I-can-figure-things-out-for-myself" attitude essential for education. Standard practice and testing methods, whenever possible, should be replaced with those requiring skill, insight, and information. They should be presented to students with minimal direction given beforehand and minimal guidance given only when students are hopelessly bogged down.

Standard Treatment of Critical Thinking, Reasoning, and Argumentation

Finally, we recommend that the teacher keep an eye out for texts, questions, and activities that claim to emphasize or teach critical thinking, logic, reasoning, or argumentation. Often what is taught, or the way it is taught, discourages clear and fairminded thought.

Texts generally lack an integrated theory of critical thinking or the critical person. Lessons fail to clarify the relationship of specific critical skills and insights to the concept of the critical thinker. Critical thinking should not be conceived merely as a set of discrete skills and ideas, but should be unified and grounded in a consistent, complete, and accurate theory of thought and reason. This theory should be related to the practical problem of deciding what to believe, question, or reject, understood in terms of the distinction between the reasonable and the unreasonable person. Particular distinctions and insights should be connected to that theory, and specific skills should be placed within it. A unified conception of reasoning includes a unified conception of poor reasoning. Thus, each flaw in reasoning should be understood in terms of the underlying principles of good reasoning such as consistency, completeness, clarity, and relevance, as well as being tied into a well developed conception of why we reason poorly and why we are often influenced by poor reasoning.

The following problems are among the most common:

- Instruction in critical thinking should be integrated into the rest of the subjects whenever useful, rather than appearing occasionally in separate lessons. Instead of consistently using such terms as conclusion, inference, assumption, interpretation, and reasons whenever they are applicable, texts often restrict their use to too narrow contexts. Aspects of critical thinking are generally tacked on — taught in separate lessons and taught as drill, rather than brought in whenever relevant. Lacking a complete and explicit theory of reasoning and the rational person, text writers limit the use of critical skills and insights, failing to bring them in when interpretation, exploration, organization, analysis, synthesis, or evaluation are discussed or most needed.
- Some texts give checklists for evaluating reasoning. They rarely mention looking at or evaluating the argument as a whole. Students are asked to spot strengths and weaknesses in arguments but are given little guidance in figuring out how the points add up. Critical thinking lessons in texts have an overall lack of context when discussing arguments or conclusions. They use snippets rather than complete arguments, and ignore the larger context of the issue itself. Texts often seem to assume that students' final conclusions can be based solely on the analysis and evaluation of one argument. Critical insight should lead to clearer and richer understanding, more rationally informed beliefs about the issue — not merely a critique of a particular argument.
- A common misconception found in texts is the problem of vagueness. Texts typically misunderstand the nature of the problem. Usually texts mistakenly claim that some words are "vague" because "people have their own definitions". The cure is to provide your own definition. We, on the other hand, claim that words themselves are not vague. Sentences are vague (in some contexts). A particular word or phrase within a vague statement may be the culprit requiring clarification *in the context of that issue* — the word itself is not vague in and of itself (nor are the words making up the phrase) but only in some contexts. Definitions, since they

are worded abstractly, rarely usefully clarify a word used vaguely. We recommend discussions like those mentioned in the strategy "clarifying and analyzing the meanings of words or phrases" and "clarifying issues, conclusions, or beliefs".

- Many texts emphasize micro-skills. Yet they seldom attempt to teach critical vocabulary to students. Perhaps this is fortunate, since they often misuse the vocabulary of critical thinking or logic. Many texts use the words 'infer' or 'conclude' when requiring students to recall, describe, or guess. Micro-skills (like many other skills) are treated as independent items, rather than as tools which assist understanding. "Analysis of arguments" too often consists of "separating fact from opinion" or simply agreeing or disagreeing, rather than clarifying or evaluating arguments.
- Teachers' notes often suggest debates. Yet traditional debate, with its emphasis on winning and lack of emphasis on rationality or fairminded understanding of the opposition, with its formal structure and artificial limits, rarely provides for the serious, honest, fairminded analysis and evaluation of ideas and arguments we want to foster. If afterward students merely vote on the issue, they need not rationally evaluate the views or justify their evaluations. Ultimately, such activities may encourage treatment of questions calling for reasoned judgment as though they were questions of preference. Debates can be useful if students are required to sympathetically consider both sides of an issue, not just defend their side, and to assess arguments for their rational persuasiveness rather than for mere cleverness.
- Many texts tend to simply ask students to agree or disagree with conclusions. They fail to require that students show they understand or have rationally evaluated what they agree or disagree with. Discussion is limited. Micro-skills are rarely practiced or orchestrated in these contexts which most require them. Argument evaluation is further oversimplified, since only two choices are presented: agreement or disagreement. Students are not asked "To what extent do you agree with this claim, or with what part of it?"

"Fact/Opinion," "Emotive Language," Value, and Bias

By far, the most all-pervasive, confused, and distorted ideas about critical thinking are found in the manner in which students are encouraged to "distinguish fact from opinion," and in the treatment of "emotive language", values, and bias. Texts generally set up or presuppose a false dichotomy with facts, rationality, and critical thinking on one side and values, emotions, opinions, bias, and irrationality on the other.

Texts give one or more of the following explanations of "the fact/opinion distinction": Facts are true; can be proven; are the most reliable source of information. Opinions are what someone thinks is true; are not necessarily true for everyone; are disputed; are judgments. Opinions are not necessarily either right or wrong. Often opinion is treated as equivalent to bias; *any* writing which expresses opinion, feeling, or judgment is labeled biased.

Among our criticisms of the uses of "the fact/opinion distinction" are the following: *1)* Students are usually asked to judge the truth of claims they are not in a position to know; *2)* the way the distinction is drawn in examples and exercises promotes uncritical thought, for example, the distinction often unhelpfully lumps together significantly different types of claims; *3)* often neither category is presented so as to allow for rational assessment. (Facts are presented as true, and therefore need no debate; opinions are just opinions, so there is no "truth of the matter". Texts generally speak of exchanging opinions, but rarely of assessing them.)

When asked to make this "distinction", students are typically given two or more statements. They are asked to read them and determine into which of the two categories each fits. Since the statements lack context, their truth or *reasonableness* typically cannot be rationally judged. Hence, as a rule, students are forced to make their judgments on a superficial basis. In place of

some reasoned assessment, students are given "indicators of fact". For example, statements judged to be facts are those which contain numbers, or observations, or are phrased in "neutral" language. Statements judged to be opinions are those which contain such expressions as, 'I think', 'good', 'worst', 'should', 'I like', or any evaluative term.

Since facts are defined as true, in effect, texts typically teach students to accept any statement with numbers, descriptions, etc., in it. Fact/opinion exercises typically teach students that every statement that "sounds like a fact" is *true* and *should be accepted.* Claims which seem factual are not open to question. Students are rarely in a position to know whether or not the claim is true, but, since they need only look at the form of the statement and not its content, they can "get the right answers" to the exercises.

Students are often told that history is fact. (The evaluations and interpretations that appear in students' history books are forgotten.) Thus, if they read that a certain condition caused a historical event, they are in effect encouraged to believe it is fact and therefore true. But causes of historical events must be reasoned to. They are not written on the events for all to see. The interpretation, inextricably part of any historical account, is ignored.

This "distinction" between fact and opinion has no single, clear purpose. Sometimes text writers seem to intend to teach students to distinguish acceptable from questionable claims, and at other times, statements which are empirically verifiable from those which are not (that is, whether evidence or observation alone verifies the claim). In effect, many texts confuse these two distinctions by shifting from one to the other. Given the way texts usually teach the distinction, the claim, "I think there are four chairs in that room", would be categorized as opinion, since it begins with "I think", (an opinion indicator) and, since the speaker is unsure, the claim cannot be counted as true. Yet, by the second sense of the distinction, the claim is factual — that is, we need only look in the room and count chairs to verify it. It requires no interpretation, analysis, evaluation, judgment; it expresses no preference.

Texts virtually never address claims that are certainly true, but are not empirical, for example: "Murder is wrong." or "A diet of potato chips and ice cream is bad for you." Students following the "indicator word" method of drawing the distinction, are forced to call these claims opinion. They are then forced to say that, although they agree with them, they may not be true for everybody; the opposite opinion is just as valid; no objective support can be marshalled for them or objective criteria or standards used to evaluate them. Students who look at the contents of the claims would call them "facts", because they are unquestionably true. These students would miss the distinction between these claims and claims that can be tested by experiment or observation.

The distinction between fact and opinion is often drawn in such other guises as the distinction between accurate and biased or slanted accounts, news and editorials, history and historical fiction, knowledge and information, and belief and value. Thus, on the criterion above, a passage, selection, article or book which contains nothing but "facts" could not possibly be biased or untrustworthy. Yet in reality, a "purely factual" account could well be biased. What the writer claims as facts could simply be false, or without basis — that is, I could simply say it without verifying it. (When I claim that there are four chairs in that room, I may have pulled that number out of the sky.) Crucial facts which could influence one's interpretation of the given facts could have been left out. Interpretations or inferences can be implied.

The distinction, as typically covered, lumps together too many completely different kinds of statements. Among the "opinions" we found were the following: "I detest that TV show." "Youth is not just a time, it is an age." "Jon is my best student." "Most children in Gail's class do not like

her." Thus, expressions of preference, evocative statements, evaluations, and descriptions of people's attitudes are put in the same category, given the same status.

Many of the distinctions covered in a confused way could be covered so as to foster critical thinking. Unfortunately, as texts are presently written, this end is seldom achieved. We recommend that students distinguish acceptable from questionable claims and evidence from interpretation, and that the teacher use the applications such as those given in the strategy "clarifying issues, conclusions, or beliefs".

Texts often seem to assume that evaluation and emotion are antithetical to reason, always irrational or a-rational; that all beliefs, except belief in facts, are irrational or mere whims. Values (like emotions) are "just there"; they cannot be analyzed, clarified, assessed, or restructured. Judging another's opinions amounts to checking them against your own, rather than openmindedly considering their support. Evaluative terms are often described as "emotive language" and are linked to the concepts of opinion and bias. Students are cautioned to look out for such terms and to not allow their beliefs to be influenced by them. We recommend these points be replaced with the more pertinent distinction of *rationally justified* use of evaluative terms from *unjustified* use, or *supported* from *unsupported* use of evaluative language, and that students analyze and assess values and discuss standards or criteria. Students can then share their views regarding the status of such claims and the significance of their disagreements. Students should be encouraged, not to abandon evaluative language, but to use it appropriately, when its use is justified; not to discount it, but to assess it. They should learn to analyze terms and determine what kinds of facts are required to back them up; set reasonable standards and apply them fairmindedly.

Texts are correct in distinguishing communications that attempt to influence belief from other kinds of writing and speech (as a basic distinction of critical thinking), but then they fall. They lump together what should be made separate: attempts to persuade, convince, or influence *by reason*, from other attempts to influence (such as by force, repetition, or irrelevant association). Not all appeals to emotion are equivalent; they can be relevant or irrelevant, well-supported or unsupported.

According to texts, bias occurs when a writer or speaker expresses a feeling on a topic. However developed the explanations of bias are, students' practice invariably consists of examining single sentences and underlining words that "show bias", that is, "emotive" or evaluative words. Students do not evaluate passages for bias. Students do not distinguish contexts in which writers' conclusions and evaluations are appropriately expressed from when they are not, or when the feelings or opinions have rational grounds from when they reflect mere whim, impression, or prejudice, or when evaluations are *supported* from when they are merely *asserted*. Nor do students discuss *how* they should take bias into consideration — for example, by considering other views. The practical effect of the standard approach is to teach students to notice when someone uses evaluative terms, and then measure that use against their own beliefs. We suggest that instead, students consider questions like the following: What is wrong with bias? Why? How can I detect it? How does that fit in with the ideal of the fairminded critical thinker? What should I do when I realize the author is biased? What does the text mean by warning me against being "unduly influenced" by bias?

"Be aware of the hidden curriculum in all schools. If teachers ask only factual questions that test memory and recall, students assume that this is the most important aspect of learning. If principals spend more time focusing on administrative concerns, discipline, or standardized test scores, teachers also assume these aspects of school are the most important." Greensboro Handbook