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ИНСТИТУТ ФИЛОЛОГИИ

КАФЕДРА АНГЛИЙСКОГО ЯЗЫКА И ЛИТЕРАТУРЫ

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Критическое мышление в языковом образовании

Учебник по дисциплине Критическое мышление в языковом образовании

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Данный курс и учебное пособие посвящены развитию критического мышления в образовательном процессе и его интеграции в преподавание различных дисциплин. В материалах рассматриваются основные концепции критического мышления, его значение для современного образования, а также практические методы внедрения критического подхода в языковое образование, обществознание и естественные науки. Особое внимание уделяется анализу аргументации, логическим ошибкам, дедуктивному и индуктивному рассуждению, а также развитию навыков рефлексивного и творческого мышления.

Материалы будут полезны преподавателям, студентам и всем, кто заинтересован в совершенствовании аналитических навыков, развитии культуры аргументации и повышении эффективности образовательного процесса.

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INTRODUCTION

This course book, designed to help teachers remodel their own lesson plans, to demonstrate that it is possible and practical to integrate instruction for critical thinking into the teaching of all subjects. The course book thoroughly discusses the concept of critical thinking and the principles that underlie it and shows how critical thinking can be taught in language arts, social studies, and science. The book's first section contains:

(1) provide an introduction to critical thinking and its importance for education as well as an introduction to lesson remodeling;

(2) discuss making critical thinking intuitive by using drama, examples, and images;

(3) go deeply into the question of what education for critical thinking requires of teachers.

The course book also compares didactic and critical views on education, outlines the changes in curriculum required by a shift toward education for critical thought, provides practical ideas for facilitating staff development in critical thinking, presents short writings on critical thinking by teachers after a workshop on the subject, and considers the problem of defining critical thinking.

This course "Critical thinking in language education" involves the key concepts and tools of critical and creative thinking, describing the reflective thinking by giving examples in social and academic life. It deals mainly with logical argument, truths, fallacies, deductive and inductive reasoning in both an informal and formal context. It brings out the role of criticality and creativity in sciences, human communication and Innovations. On any given day, we are likely to be bombarded by all sorts of attempts to persuade us to think or act in certain ways.

In this course, we will practice the skills involved in “critical thinking”—the process by which we develop and support our beliefs and evaluate the strength of arguments. This course is to empower you to think more clearly and analytically about what you believe and be more effective in arguing for your views. You will develop your mastery of various strategies for making and evaluating arguments, and you will develop expertise in recognizing and avoiding common barriers to critical thinking—including bias, groupthink, and ideology. Throughout the semester, we will emphasize the application of course material to real-world issues.

Contents

Why Critical Thinking Is Essential to Education

If we consider some of the many complaints of classroom teachers concerning their pupils and then contrast them with what we look for in the ideal student, we will recognize that the fundamental missing element in schooling today is thinking students or, more precisely. critically thinking students. Here are some of the many complaints we hear from teachers:

"Most students aren't motivated, they don't want to study or work. They look for chances to goof off. clown arour.fi or disrupt class. They'd rather talk about music. clothes. cars. ...." or "

Students forget what they've learned. We have t.) keep going over the same points, reminding them of what they've learned. rather than building on past learning. Each class begins at square one."

"Most students are obsessed with grades and don't care about learning."

"They're impatient. They want clear simple answers and they want them fast.

"They make the same mistakes over and over again. They don't learn to correct their own mistakes."

"They don't use what they've learned."

"They need to be told every little thing. They don't even try to figure things out. They want us to do all of their thinking for them.

When I ask if there are questions, they don’t have any; but they haven't understood the lesson."

"When assigned position papers, many students just write facts. The rest simply state and repeat their feelings,"

They hate to read. (It's boring.)"

They hate to write. (It's too hard.)"

"Instead of explaining or developing their ideas, they just repeat themselves

'They can't seem to stay on topic for long without going off on tangents." The kind of students teachers would like to have are equally easy to describe

Students who are motivated to learn, get excited by ideas, don't need to be reprimanded, and pay attention by choice.

Students who remember what they learned yesterday, last month, last year who don't have to be reminded over and over again what was covered before.

Students who see grades as a by-product of learning; who put learning on a par with grades.

Students who recognize that they can't completely understand everything at once who are willing to delve; who are dissatisfied with pat answers.

Students who learn from their mistakes, correct themselves.

Students who use what they've learned.

Students who can and will try to figure things out for themselves and don't expect me to do all of the thinking.

Students who recognize when they don't understand something and can ask questions for clarification.

Students who can get beyond the facts and the surface to explore deeper meaning; students who respond thoughtfully and go beyond knee-jerk reactions and first Impressions

Students who like to read and talk about what they've read.

Students who recognize the need to write in order to develop their ideas.

Students who know the difference between explaining themselves and repeating themselves

Students who can and do stick to the point.

If we look closely at how teaching is typically structured, we will see that at the root of it are conceptions of knowledge, learning, and teaching that unwittingly take the motivation to think away from students. In most classes most of the time, teachers are talking and actively engaged, while students are listening passively. Most teachers' utterances are statements, not questions. When teachers ask questions, they typically wait only a couple of seconds before they answer their own questions. Knowledge is taken to be equivalent to recall, so that when students can repeat what the teacher or text said, they are thought to have knowledge. Attempt is continually made to reduce the complex to the simple, giving students formulas, procedures. short cuts, and algorithms to memorize and

practice in hopes that understanding will emerge at the same time.

Schoenfeld reports on an experiment in which elementary students were asked questions like this: "There are 26 sheep and 10 goats on a ship. How old is the captain?" 76 of the 97 students "solved" the problem by adding, subtracting. multiplying or dividing. (Schoenfeld. 1989.) They felt they were expected to do so as quickly and "correctly" as possible. They did not feel they were expected to make sense of the problem. Instruction and practice had not emphasized understanding the problem.

Schoenfeld cites many similar cases, including a study that demonstrated that students tend to approach "word problems" in math by using the key word algorithm, that is, when reading problems like, "John had eight apples. He gave three to Mary. How many does John have left? » they look for the words like 'left to tell them what operation to perform. As Schoenfeld puts it, "... the situation was so extreme that many students chose to subtract in a problem that began 'Mr. Left (Schoenfeld. 1982.) Giving students such short cuts as indicator words, though it seems to learning easier, actually interferes with learning in a deepest sense. Students are, in effect taught that problems can be solved by circling data and going through steps practiced before ("I'm supposed to do this, then this, then this."), that they shouldn’t slow down and think things through. They have had much more practice going through the steps than they have at thinking things through.

This tendency toward robotic, mindless responses bet mines obsessive in many students. Hence, in their minds, history class becomes a place where they hear names, dates, events, and judgments about them, and then try to repeat what they have heard on tests. Literature becomes uninteresting storks to remember along with what the teacher said is important about them, such as foreshadowing.

Consider how students are generally taught factual detail. Students are continually presented with easily retainable facts (for example, foreign countries' main exports), and merely expected to reiterate them. They do not clearly understand why they should remember these facts. These collections of facts

become merely sets of words in their heads, with no meaning, significance, or use. They can have meaning to students can become intelligible to students, when they tell students something important, something students need to know. If students are trying to understand a country's economic problems, it may become important to know its chief exports. In such a context, that fact isn't Just sitting there in the student's head as a bunch of words, it has meaning. It has a place in a broader picture, it has consequences, it helps that student understand that country's problem. it is context, not the mere fact itself, that gives it meaning, that makes it intelligible.

Values and principles tend to be treated as though they were facts. They are stated, and students are expected to reiterate them. This sort of process does not produce understanding. Principles (such as, "Write clearly!" and, "Stick to the point!") have their meaning and their justification in their application, in their use. I may know that I'm supposed to stick to the point, but this principle is little more than words to me if I don't know how to stick to the point, if I don't learn how to recognize for myself when I'm focused and when I stray. I can only learn how by practice, by thinking by trying, sometimes succeeding, sometimes failing, by seeing for myself when I succeeded when I failed, and by understanding the differences between the successes and failures.

A critical model of education reverses these pattern at every point. Students are continually asked to think about what they learn, to try to apply their new ideas, to compare their own ideas with those in their textbooks, to actively discuss what they are learning in small groups.

The underlying assumption of a present education is that knowledge consists of bits of information, concepts, and skills which students can learn through lecture and rote memorization. Educators assume that students automatically replace ignorance with knowledge, misconception with truth. This assumption is unjustified.

One main consequence of this idea is that being told something, however clear the explanation, does not guarantee understanding. If you tell me something that

contradicts or is incompatible with my present system of beliefs, I'm unlikely to replace my whole belief system with that new idea. I will often distort what you've said so that it fits my belief system. I may simply "tack it on"' to my beliefs, ignoring the incompatibility between old and new, bouncing back and forth between them, sometimes using one, sometimes the other willy-nilly; or I may simply fail to take it in at all. To really learn the new idea. I have to straggle through the problems the idea creates for me build a new mental structure or system of beliefs. This process requires me to make my present beliefs explicit (figure out what I really think), and slowly reshape the old system into a new body of thought. Hence, to understand .ne new idea, concept, or principle. I have to think my way through to it, internalize it. One way to achieve this is through extended discussion, talking and listening to others as they internalize new knowledge. Consider how this conception of learning works.

When I state my thoughts aloud. I think again about what I'm saying, realize, perhaps, that my thinking is not clear. I may think of a new example: I may put the point in a slightly better way or different way, and thus come to see new sense in it. When I have to convince others (such as classmates), I have to try to give convincing reasons for thinking as I do. The people I'm talking to respond: they understand some parts of what I've said better than others, forcing me to rephrase my point and so think it through again In a slightly different way with the result that I understand it more clearly. My audience says things in response that had never occurred to me: they ask questions, raise objections and so on. As I answer. I find myself saying things I hadn't realized I believed. Sometimes I say things I know are wrong and so I have to change my original idea somewhat. My audience may suggest new examples or expand on my ideas in a new way. In short, while I am discussing things with my classmates I am learning. By listening to me, reacting and hearing my replies, my classmates are learning. We're all thinking things through together. As a group we know more, can figure out more, and have more and better ideas than any one of us has individually. Having done our own thinking and developed our own views, we understand more deeply: what we learn

becomes part of us rather than mere words which we will soon forget.

This is at the heart of education for critical thought. Students learn to think by practicing thinking learn to learn by practicing learning, learn to judge by practicing judging and by assessing those judgments. In this way, students come to use more of the full power of their minds.

When teachers begin to integrate critical thinking into their instructional practice, they have experiences like the following:

Beth:

I teach North Carolina History and 8th grade English and I am always trying to bridge the gap and use an interdisciplinary approach. What critical thinking helps me do is go beyond the textbook and find things we can really discuss using the Socratic method to go beyond just the facts and try to analyze the situation to put ourselves in the other person's shoes to look at a lot of different components.

Here is an article on slavery which I have copied and brought with me to show how you do not have to rewrite all your lesson plans to infuse critical thinking into your curriculum. Instead, you go further and bring in other things to enhance what you're teaching and give opportunities for discussion. This article is about slavery and slave trading. I have the students become one of the slaves on the ship and write a diary about how it would feel to be a slave. Later on in English, students write an essay on whether or not the ship captains should have been tried as criminals. This asks students to look at ideas from different viewpoints. For a final activity. I asked students to assume that they were a member of the English Parliament of 1807 and to write a persuasive essay on whether or not slavery should be banned and why.

Mandy:

Since I have taken part in this project. I have become a much more critical thinker. That's helped me tremendously in my classroom.

I always explain to my students how all our subjects are overlapping; this helps them in real life. One revised science lesson we used this year was building a rain forest in our room in a terrarium. We turned it into a vivarium by adding an ankle,

a small lizard.

The students decided they wanted to write a book about the anole, and the first thing they wanted to do was go to the library to copy information. Instead of this, we brainstormed to find out what we already knew and what we could learn just by observation. All my students became motivators for others while we worked with words.

After the pre-writing exercises, I took them to the media center for research. Again, they wanted to fall into the trap of copying from the encyclopedia. But I allowed them only to write down words single words or maybe a phrase, rather than copying down sentences. It was difficult for them it was difficult for me too.

They came back from the media center with ideas rather than with things they had copied. We talked about the ideas and categorized and then I told them to write down ideas in their own words. It was amazing what happened! If I had given this assignment a year ago, a description of the anole would be only a few sentences long. My students this year wrote pages they really did and they were excited. This was their work; this was their description: it was not World Book's description. And it made it much more real to them and of course more real to me, too.

In the, first example, notice how students had to grapple again and again with the concept of slavery from different angles: What was it like? In what ways were different people partly responsible? What do I think of it? How can I convince others to agree with me? Each time students explored the issue, they were learning and using facts, probing and clarifying values, using principles, and each time they were putting these pieces together.

The second example above illustrates the difference between passive recall and active thought. Students first publicly shared their original beliefs, ideas, and suggestions. Then, when they consulted resources, they wrote only the barest bones of the information, and were thus forced to reconstruct the new knowledge. Furthermore, though this process was more difficult, the students wrote more and were more pleased with the results.

Finally, consider two more experiences of teaching students to learn deeply.

Sylvia my involvement in the Reasoning and Writing project came out because I believe the following:

l) students are faced with an explosion of information;

2) given a limited time in which to learn, students must choose what information they need and learn how to acquire it;

3) to make intelligent choices, students must exercise good judgment;

4) successful living in today's world requires high order thinking and reasoning skills;

5) writing can be used as a tool to improve thinking and reasoning skills in all curriculum areas ....

I have incorporated two new ideas this year: Socratic questioning and writing to aid concept development. I have worked primarily with one class, using questioning techniques to encourage students to think critically. The results have been encouraging: class discussions became more animated, students offered ideas freely, criticism was constructive, helpful, and resulted in better ideas. I believe that the entire class benefited.

One high school teacher tried to focus on critical thinking in a sophomore English class. This teacher designed small group and paired discussion3 only to have the students complain, "You're supposed to use the grammar book. You're supposed to start on the first page and give us the sentences to do and then check them and then we do the next sentence ...."

The students insisted that "doing the sentences" was the top priority. One of the students said, in defense of this method, "We learned about prepositions." However, when the instructor asked the class what they had learned about prepositions, the class went silent. When asked, "Do you remember what prepositions are? Can you name some?" nobody could. Though this teacher continued her emphasis on critical thinking, she also gave students "sentences to do" for part of the class time. After the fourth day. no students objected when she neglected to assign more sentences. On their final exam, these students were asked, "Why is it better for a school to teach you how to find answers than to teach you

the answers? Among their responses were the following:

So you can get in the habit of doing it yourself and not depend on someone else.

When you teach people the answer, they will never try to find the answer there self. They will look for somebody to give them the answer instead of looking for it because they don't know how to find it.

When you get a job they will expect you to find the answers yourself.

Because it makes you feel good about yourself when you can look up something by yourself and get the answer correct. You feel more independent in school.

School is not going to be with you all your life.

So you can learn how to find the answers to your problems because one day you're going to have to find the answers yourself. Nobody is going to be able to give you the answers.

Because it won't help you to know the answers and not know what they mean.

Because in the future there won't be a teacher to hold your hand or to tell you everything you should know. You should learn on your own.

As you consider the rest of the material in this book, we ask you to apply these basic ideas to each facet of the task of incorporating critical thought into instructional practice. Just as students must struggle through a process of restructuring their thought to incorporate new facts, skills and principles, so must teachers grapple with the problems of restructuring their conceptions of education and learn to apply the principles underlying it. We encourage you to work your way through our ideas reading explaining, listening, questioning, writing, applying assessing figuring out what you think about what we say.

Our Concept of Critical Thinking

Our basic concept of critical thinking is, at root, simple. We could define it as the art of taking charge of your own mind. Its value is also at root simple: if we can take charge of our own minds, we can take charge of our lives; we can improve them, bringing them under our self command and direction. Of course, this requires that we learn self-discipline and the art of self-examination. This involves becoming interested in how our minds work, how we can monitor, fine tune, and

modify their operations for the better. It involves getting into the habit of reflectively examining our impulsive and accustomed ways of thinking and acting in every dimension of our lives.

All that we do, we do on the basis of some motivations or reasons. But we rarely exam' .d our motivations to see if they make sense. We rarely scrutinize our reasons critically to see if they are rationally justified. As consumers we sometimes buy things impulsively and uncritically, without stopping to determine whether we really need what we are inclined to buy or whether we can afford it or whether it's good for our health or whether the price is competitive. As parents we often respond to our children impulsively and uncritically, without stopping to determine whether our actions are consistent with how we want to act as parents or whether we are contributing to their self esteem or whether we are discouraging them from thinking or from taking responsibility for their own behavior.

As citizens, too often we vote impulsively and uncritically, without taking the time to familiarize ourse1ve5 with the relevant issues and positions, without thinking about the long-run implications of what is being proposed, without paying attention to how politicians manipulate us by flattery or vague and empty promises. As friends, too often we become the victims of our own infantile needs, "getting involved" with people who bring out the worst in us or who stimulate us to act in ways that we have been trying to change. As husbands or wives, too often we think only of our own desires and points of view, uncritically ignoring the needs and perspectives of our mates, assuming that what we want and what we think is clearly justified and true, and that when they disagree with us they are being unreasonable and unfair.

As patients, too often we allow ourselves to become passive and uncritical in our health care, not establishing good habits of eating and exercise, not questioning what our doctor says not designing or following good plans for our own well ness. As teachers, too often we allow ourselves to uncritically teach as we have been taught, giving assignments that students can mindlessly do, inadvertently discouraging their initiative and independence, missing opportunities to cultivate

their self-discipline and thoughtfulness.

It is quite possible, and unfortunately quite 'natural", to live an unexamined life, to live in a more or less automated, uncritical way. It is possible to live, in other words, without really taking charge of the persons we are becoming, without developing, or acting upon, the skills and insights we are capable of. However, if we 1ow ourselves to become unreflective persons, or rather, to the extent that we do, we are likely to do injury to ourselves and others, and to miss many opportunities to make our own lives, and the lives of others, fuller, happier, and more productive.

On this view, as you can see, critical thinking is an eminently practical goal and value. It is focused on an ancient Greek ideal of living an examined life". It is based on the skills, the insights, and the values essential to that end. It is a way of going about living and learning that empowers us and our students in quite practical ways. When taken seriously, it can transform every dimension of school life: how we formulate and promulgate rules, how we relate to our students, how we encourage them to relate to each other, how we cultivate their reading, writing, speaking, and listening, what we model for them in and outside the classroom, and how we do each of these things.

Of course, we are likely to make critical thinking a basic value in school only insofar as we make it a basic value in our lives. Therefore, to become adept at teaching so as to foster critical thinking, we must become committed to thinking critically and reflectively about our own lives and the lives of those around us. We must become active, daily, practitioners of critical thought. We must regularly model for our students what it is to reflectively examine, critically assess, and effectively improve the way we live.

Introduction to Remodeling: Components of Remodels and Their Functions[1]

The basic idea behind lesson plan remodeling as a strategy for staff development in critical thinking is simple. Every practicing teacher works daily with lesson plans of one kind or another. To remodel lesson plans is to critique one or more lesson plans and formulate one or more new lesson plans based on that critical

process. To help teachers generalize from specific remodeling moves, and so facilitate their grasp of strong sense critical thinking and how it can be taught, we have devised a list of teaching strategies. Each strategy highlights an aspect of critical thought. Each use of it illustrates how that aspect can be encouraged in students. In the chapter, "Strategies", we explain the thirty-five strategies illustrated in the remodels. Each strategy has, two main parts: the "principle" and the "application". The principle links the strategy to the idea of strong sense critical thinking. In the application, we explain some ways the aspect of critical thought can be encouraged.

Complete remodeled lessons have three major components: an "Original Lesson", or statement of the "Standard Approach" (which describes the topic and how it is covered, including questions and activities): the "Critique" (which describes the significance of the topic and its value for the educated thinker, evaluates the original, and provides a general idea of how the lesson can be remodeled): and the "Remodeled Lesson" (which describes the new lesson, gives questions to be posed to students and student activities, and cites the critical thinking strategies by number). The strategy number generally follows the questions or activities it represents. When an entire remodel or section develops one dimension of critical thought in depth, the number appears at the top of the remodel or section. Complete remodel sets also include a list of "Objectives" which integrate the objectives of the original with the critical thinking goals: and the list of critical thinking "Strategies" applied in the remodel (listed in order of first appearance). Note the functions of these parts in the example below. Each component can serve some purpose for both the writer and the reader.

Remodeled Lesson Plan

Due to the number of ads to which students are exposed, and their degree of influence, we recommend that the class spend as much time as possible on the subject. As students learn to approach ads thoughtfully and analytically and practice applying critical insight to their lives, they develop faith in their reasoning powers and their ability to see through attempts to irrationally manipulate them.

To focus on ads and language, begin by having students give complete descriptions of what is said in a variety of television commercials. Put the quotes on the board. For each commercial, the class can evaluate the arguments presented in ads by discussing the following questions: What ideas does it give you about the product (or service) and owning or using it? Does it give reasons for buying the product? If so, what reasons? Are they good reasons? What are the key words? Do they have a clear meaning? What? What other words could have been chosen? Who made this ad? Why? Do they have reason to distort evidence about the worth of the product? How might someone who wasn't trying to sell the product describe it? How might a competitor describe it? What would you need to know in order to make a wise decision about whether to buy it? Does the commercial address these points? Why or why not? Has anyone here had experience with the product? What?

The teacher interested in developing students' critical vocabulary can have students practice while critiquing ads. Use questions like the following; What does the ad imply? Does the ad make, or lead the audience to make, any assumptions? Are the assumptions true, questionable, or false? Does the ad contain an argument? If so, what is the conclusion? Is the conclusion stated or implied? Does the ad misuse any concepts or ideas? To judge the product, what facts are relevant? Are the relevant facts presented? Does it make any irrelevant claims?

When the commercials have been discussed, have students group them by the nature of the ads (repetition, positive but empty language, etc.) or by the appeals made (to the desires to have 1un, be popular, seem older, etc.) Have students fill out the groups by naming similar commercials not previously discussed. Students could discuss why these appeals are made. "How do ads work? Why do they work? Do they work on you? On whom? Why? What are slogans for? Jingles? Why are running stories and continuing characters used? Why are the various techniques effective?"

The class could also compare different ads for the same product, aimed at different audiences (e.g., fast food ads aimed at children, and at adults). "How do

these two differ? Why? To whom is each addressed? Why are they different?" The class could compare ads for different brands of the same or similar products; compare ads to what can be read on ingredients labels; or design and conduct blind taste tests.

To gain further insight into listening critically, the class could also discuss aspects of the ads other than use of language. "What does the ad show? What effect is it designed to achieve? How? Why? What is the music like? Why is it used? Do the actors and announcers use their tone of voice to persuade? Facial expression? How? Are these things relevant to judging or understanding the product?"

The teacher may also have the class critique ads for any stereotyping (e.g., sexual stereotyping).

For further practice, if a VCR is available, watch and discuss taped commercials. Students could jot notes on critical points and share their insights.

Teaching For Intuitive Understanding

The meaning of "intuitive" we are using in this chapter makes no reference to a mysterious power of the mind, but rather to the phenomenon of "quick and ready insight" (Webster's New Collegiate Dictionary). This sense of the word is connected to the everyday fact that we can learn concepts at various levels of depth. When, for example, we memorize an abstract definition of a word and do not learn how to apply it effectively in a wide variety of situations, we end up without an intuitive foundation for our understanding. We lack the insight, in other words, into how, when, and why it applies. Children may know that the word 'democracy' means "a government in which the people rule", but may not be able to tell whether they are behaving "democratically" on the playground. They may know what the word 'cruel' means, but they may not recognize that they are being cruel in mocking a handicapped student. Helping students to develop critical thinking intuitions is, then helping them gain the practical insights necessary for a quick and ready application of concepts to cases in a large array of circumstances.

We want critical thinking principles to be "intuitive" to our students in the sense that we want those principles ready and available in their minds for immediate

translation into their everyday thought and experience. We base this goal on the assumption that concepts and ideas are truly understood only when we can effectively and insightfully use them in a wide range of circumstances, only when we have mastered their use to the point of spontaneous application. (See the chart on the next page.)

Unfortunately much of what we originally learned in school as children was abstract and unconnected to everyday life and experience. And, since it is natural to teach as one was taught, our own students are probably doing precisely what we previously did. They are "learning" in an abstract way, learning, in other words, to perform for grades and approval. They are learning robotically, not to gain knowledge, skill, and insight, not to transform their behavior in the "real world.

This, is probably the fundamental reason why so much school learning is not effectively transferred to real life. It lacks the intuitive basis, the insights, for the translation. When we were students, our own teachers rarely took pains to ensure that we intuitively understood the basic concepts we were learning. Hence their teaching did not model for us teaching that fosters intuitive learning. As a result we are rarely sufficiently aware of the similar effect of our own teaching. As long as students are performing in certain standard ways, we often uncritically assume they "understand", that they are building a basis for using what they learn, that they will eventually be able to take what they learn and put it to use in the everyday world. This assumption is rarely justified.

As a first step toward preparing to help our students develop intuitive understandings of critical thinking concepts, we must make sure that the basic concepts that underlie critical thinking are intuitive to us. To help our students internalize the understandings essential to critical thought, we must ourselves gain practice in translating those same understandings into the context of our own lives.

We must, in other words, internalize the basic concepts and principles of critical thinking so deeply that we habitually use them in all of the various dimensions of Our own lives: as parents, consumers, teachers, and citizens, so that when we teach we teach in a way that helps our students translate all fundamental and root

concepts and principles into the circumstances of their own day-to-day lives. (See the chart on the next page.)

Both we and our students, in other words, need to develop full-fledged critical thinking intuitions. This is, of course, a matter of long-term development. Neither they nor we can develop deep intuitions overnight. How, then, are we to proceed? What must we do to foster this long term development of critical thinking intuitions?

We must begin with an initial sense of what it is to develop intuitions. Then we must progressively deepen that sense as we explore a variety of ways of fostering critical thinking intuitions. The primary goal of this chapter is to lay a foundation for this understanding. The rest of the handbook will provide further examples to build upon as to the nature and importance of "intuitive" teaching.

To accomplish this end, we shall take a couple of the most fundamental distinctions that underlie critical thinking and illustrate how they can be made intuitive to children. At the same time, we will illustrate how these concepts can become more intuitive to us as teachers. Of course, we shall not attempt to cover all of the important distinctions but merely to illustrate the process of teaching for intuitive understanding. As you read, the kinds of essential "translations" required to help students ground basic concepts in basic insights should become progressively clearer.

We shall assume that you will pursue analogous strategies for the various other basic concepts in critical thinking on your own. Remember, the aim is an on-going commitment to the process of fostering an intuitive basis for all the principles of critical thinking, a commitment to the process of engaging students continually in translating back and forth between the abstract and the concrete, the general and the particular, the academic and the "real".

Using Dramatization to Foster Critical Thinking Intuitions

The Power of the Dramatic

The world that is most real to us is the world of actual persons dreaming, hoping, planning, acting out their lives, facing conflicts and problems, struggling to find

happiness, success, and meaning. Abstract concepts become much more meaningful to us when we relate them directly to a dramatized world. That is why novels, plays, television programs, and movies typically have much more appeal to and impact on us than abstract treatises do. One reason for this is that there is a direct relationship between stories and experiences. We learn about the world principally through our experiences of it and our experiences, from the beginning, are "story-like" in character.

When we talk about' ourselves we tell others the story of our lives, as it were. Furthermore, most of our real beliefs are embodied in our actions and in what our actions "mean" to us. A powerful way to make the abstract more intuitive is, therefore, to use stories and dramatized characters for that purpose. In this section, we will illustrate this point by the use of three fictional characters to illustrate three abstract concepts.

Uncritical, Selfish, and Fair minded Critical Thinkers

The distinctions between uncritical thinking and critical thinking, on the one hand, and between selfish and fair minded critical thinking on the other hand, underlie our whole approach to critical thinking. It highlights the danger of focusing on critical thinking skills alone, independent of critical thinking values. It continually calls to our attention the need to -attend to the intellectual and moral standards our students are forming as a result of the way we are cultivating their teaming.

A basic, though abstract, explanation for the differences between uncritical, selfish critical, and fair minded critical persons is given in the following brief characterizations:

1) Uncritical persons are those who have not developed intellectual skills, persons who are naive, conformist, easily manipulated, often inflexible, easily confused, typically unclear, narrow-minded, and consistently ineffective in their use of language. They may have a good heart but they are not able to skillfully analyze the problems they face so as to effectively protect their own interests.

2) Selfish critical persons are skilled thinkers who do not genuinely accept the

values of critical thinking, persons who use the intellectual skills of critical thinking selectively and self deceptively to foster and serve their vested interests (at the expense of truth). They are typically able to identify flaws in the reasoning of others and refute them and to back up their own claims with plausible reasons, but they have not learned how to reason empathically within points of view with which they disagree.

3) Fair minded critical persons are skilled thinkers who do accept and honor the values of critical thinking, persons who use the intellectual skills of critical thinking to accurately reconstruct the strongest versions of points of view in conflict with their own and to question deeply their own framework of thought. They try to find and correct flaws in their own reasoning and to be scrupulously fair to those with whom they disagree.

This is fine as far as it goes, but how are we to make these abstractions more real to our students? And how are we and our students to see the significance of these distinctions in the everyday world?

It may seem to us that these theoretical discriminations are much beyond the grasp of our students. But whether they are or are not, is not a matter of the distinctions themselves, but of the way they are introduced to students. In fact, it is important for children to begin to grasp these differences as soon as possible. Let us now examine how we might use dramatization as a strategy for making these critical thinking concepts more intuitive.

One of the ways to aid students in developing critical thinking intuitions is to create characters whose dramatic personalities illustrate abstract distinctions. For example, we have created three imaginary children whose characters and personalities illustrate the contrast between the uncritical thinker, the selfish critical thinker, and the fair-minded critical thinker. We can get some insight into the distinction by imagining what each of these characters might say about themselves if they had a clear sense of the person they were becoming and a willingness to be candid and forthright. Children who were actually developing these contrasting behavior patterns and traits would probably not, of course, have

the insight suggested by these hypothetical self-descriptions.

Visualization: Using Visuals to Make Critical ThinkingPrinciples More Intuitive

One of the most powerful ways to make abstractions more intuitive is through the process of visualization and imagination. We are sensual beings. Our senses play a powerful role in our learning. The power of sight, for example, sometimes enables us to grasp in a moment what would be very difficult otherwise "A picture is worth a thousand words.- (and there is no sense more powerful than sight).

Of course we must be careful in using images and pictures to represent abstract ideas. For one thing, pictures require interpretation and one picture can always be interpreted many ways. To put the point in other words, different people give different meanings to the same image or picture. We don't simply "see" what is there. We "read into", that is, make inferences about, what we see.

So though it is important to develop visuals that help our students develop critical intuition, we must be ever watchful of the interpretations that accompany visualization. We must be careful to distinguish, for example, "intuition" from "stereotype', simplification from oversimplification.

One principle of critical thinking in the strong sense is the principle of fairness to the views of others. We have already dramatized this principle of thought in the character of Fair minded Fran, but suppose we try to use a visual to reinforce the concept. Consider what we might use. We might try a representation of the scales of justice.

Some discussion would be necessary before the students could begin to use this image in fruitful way. Since the scales appear Upped in favor of "Justice for Ourselves". W Socratic discussion would be necessary to facilitate the students' recognition of our common tendency to be more sensitive to injustice toward ourselves than we are of injustice toward others, especially if we happen to be the perpetrators of the injustice.

We might introduce a second image of the scales.

We might have the students discuss the implications of the two different

drawings. This would help make both images more intelligible. Our discussion should result in the students giving examples of experiences of their own, both of the sort in which others failed to treat them justly and in which they failed to treat others justly. Sibling rivalries are a fruitful area to discuss here, for at the bottom of them is often a perceived sense of unequal treatment. Through a discussion rich in examples which we should draw out from the students, the visual would begin to link up with vivid experiences, strengthening both the meaningfulness of the visual and the perceived implications of the experiences. This combination of visual and analyzed experiences is an excellent way to build critical thinking intuitions.

Critical thinking requires an extensive use of the student's imagination. Whenever we think about abstract meanings, whenever we try to understand or assess a statement or belief, whenever we attempt to predict a consequence, or determine the implications of an action, we need to use our imaginations effectively. Most students are not practiced in this use of their imaginations. They often find it difficult to conjure up circumstances that exemplify all the meanings. For example, suppose we ask students to describe a circumstance in which some person was behaving in an unquestionably honest way. Most students find it difficult to imagine a case when called upon to do so. Very few would say something like: Well. if I found your wallet on the playground and nobody knew I found it, but I still turned it to you that would be being honest." They recognize the case when someone else thinks it up, but they often have difficulty in thinking them up imagining them, on their own.

One of the reasons for this deficiency is the failure at all levels of education to teach in a way that fosters intuitive learning. If we focused attention, as we should, on the ability of students to move back and forth comfortably and insightfully between the abstract and the concrete, they would soon develop and discipline their imaginations so as to be able to generate cases that exemplify abstractions. All students have, as a matter of fact, experienced hundreds of situations that exemplify any number of important abstract truths and principles. But they are

virtually never asked to dig into their experience to find examples, to imagin cases, which illustrate this or that principle, this or that abstract concept.

The result is an undisciplined and underdeveloped imagination combined with vague, indeed muddled, concepts and principles. They are left with experiences that are blind, experiences from which they learn few truths, ideas that are empty, that they cannot relate perceptively to their experience. What is missing is the intuitive synthesis between concept and percept, between idea and experience, between image and reality.

Some people erroneously believe that critical thinking and intuitive thinking are incompatible opposites. If one means by intuitive thinking a form of inexplicable, non-rational thought, the claim is correct, for critical thinking is always both intelligible and rational. But if one means by intuition the process by which one translates the abstract into the concrete, based on insight into the principles upon the basis of which one is thinking, then not only are critical and intuitive thinking compatible, they are necessarily conjoined. Solid critical thinking always requires fundamental insights, fundamental intuitions, to guide it.

If this is true, then teachers committed to fostering the critical thinking of their students must interest themselves in the means by which critical thinking intuitions are formed and developed. The dramatic the concrete, and the highly visual and imaginative, are crucial instrumentalities for this purpose. Properly used they inevitably foster reflective intuition and insight. Whatever we are teaching, we should therefore continually ask ourselves, "What are the intuitions and insights essential to this mode of knowledge and thought?" and "How can I most effectively foster them with these students?"

The Role of the Teacher

A teacher committed to teaching for critical thinking must think beyond compartmentalized subject matter, teaching toward ends and objectives that transcend subject matter classification. To teach for critical thinking is, first of all, to create an environment in the class and in the school that is conducive to critical thinking. It is to help make the classroom and school environment a mini-critical

society, a place where the values of critical thinking (truth, openmindedness, empathy, autonomy, rationality, and self-criticism) are encouraged and rewarded. In such an environment, students learn to believe in the power of their own minds to identify and solve problems. They learn to believe in the efficacy of their own thinking. Thinking for themselves is not something they fear. Authorities are not those who tell them the "right" answers, but those who encourage and help them to figure out answers for themselves, who encourage them to discover the powerful resources of their own minds.

The teacher is much more a questioner than a preacher in this model. The teacher learns how to ask questions that probe meanings, that request reasons and evidence, that facilitate elaboration, that keep discussions from becoming confusing, that provide incentive for listening to what others have to say, that lead to fruitful comparisons and contrasts, that highlight contradictions and inconsistencies, and that elicit implications and consequences. Teachers committed to critical thinking realize that the primary purpose of all education is to teach students how to learn. Since there are more details than can be taught and no way to predict which the student will use, teachers emphasize thinking about basic issues and problems. Thus, details are learned as a necessary part of the process of settling such questions, and so are functional and relevant.

The teacher who teaches students how to learn and think about many issues gives them knowledge they can use the rest of their lives. This teacher realizes that subject matter divisions are arbitrary and are a matter of convenience, that the most important problems of everyday life rarely fall-neatly into subject matter divisions, that understanding a situation fully usually requires a synthesis of knowledge and insight from several subjects. An in-depth understanding of one subject requires an understanding of others. (One cannot answer questions in history, for example, without asking and answering related questions in psychology, sociology, etc.) Students must discover the value of knowledge, evidence, and reasoning by finding significant payoffs in dealing with their everyday life problems outside of school. Recognizing the universal problems we all face, the teacher should

encourage each student to find personal solutions through self-reflective experiences and thought processes:

Who am I? What is the world really like? What are my parents, my friends, and other people like? How have I become the way I am? What should I believe in? Why should I believe in it? What real options do I have? Who are my real friends? Whom should I trust? Who are my enemies? Need they be my enemies? How did the world become the way it is? How do people become the way they are? Are there any really bad people in the world? Are there any really good people in the world? What is good and bad? What is right and wrong? How should I decide? How can I decide what is fair and what is unfair? How can I be fair to others? Do I have to be fair to my enemies? How should I live my life? What rights do I have? What responsibilities?

The teacher who believes in personal freedom and thinking for oneself does not spoon-feed students with predigested answers to those questions. Nor should students be encouraged to believe that the answers to them are arbitrary and a matter of sheer opinion. Raising probing questions whenever they are natural to a subject under discussion, the teacher realizes that, in finding the way to answers, the student forges an overall perspective into which subject matter discoveries will be fit. Neither the discussion nor the student should be forced to conclusions that do not seem reasonable to the student.

Thus, such teachers reflect upon the subjects they teach, asking themselves, "What ideas and skills are the most basic and crucial in this subject? What do practitioners in this field do? How do they think? Why should students be familiar with this subject? What use does a well-educated person and citizen of a republic make of this subject? How can these uses be made apparent to and real for my students? Where do the various subject areas overlap? How should the tools and insights of each subject inform one's understanding of the others? Of one's place in the world?"

The teacher committed to teaching for critical thinking realizes that the child has two sources of belief. beliefs that the child forms as a result of personal experience,

inward thinking, and interaction with peers and environment; and beliefs that the child learns through instruction by adults. The first could be called "real" or 'operational" beliefs. They are what define the child's real world, the foundation for action, the source of acted-upon values. They are a result of the child making sense of or figuring out the world. They are heavily influenced by what has been called "pleasure principle thinking'. They are in large measure egocentric, unreflective, and unarticulated.

People believe in many things for egocentric, irrational reasons: because others hull the belief, because certain desires may be justified by the belief, because they feel more comfortable with the belief, because they are rewarded for the belief, because they ego-identify with the belief, because others reject them for not acting on the belief, because the belief helps to justify feelings of like or dislike toward others.

Students, of course, also have spontaneously formed reasonable beliefs. Some of those are inconsistent with the expressed beliefs of parents and teachers. As a result of this contradiction with authority, students rarely raise these beliefs to what Piaget calls "conscious realization". Students have also developed their own theories about psychology, sociology, science, language, and so on, covering most subjects. The totality of these real beliefs is unsynthesized and contains many contradictions which students will discover only if encouraged to freely express them in an atmosphere that is mutually supportive and student-centered.

The other source of belief, didactic instruction from adult authority figures, is an authority's interpretation of reality, not the students'. The students learn to verbalize it but do not synthesize it with operational beliefs. Therefore, they rarely recognize contradictions between these two belief systems. A student's own theories and beliefs are not necessarily replaced with the knowledge offered in school.

The teacher concerned with this problem, then, provides an environment in which students can discover and explore their beliefs. Such teachers refrain from rushing students who are struggling to express their beliefs, allow time for

thoughtful discussion, refuse to allow anyone to attack students for their beliefs, reward students for questioning their own beliefs, and support students when they consider many points of view.

Unless the teacher provides conditions in which students can discover operational beliefs through reflective thinking, these two systems of beliefs will exist in separate dimensions of their lives. The first will control their deeds, especially private deeds; the second will control their words, especially public words. The first will be used when acting for themselves; the second when performing for others. Neither, in a sense, will be taken seriously. Neither will be subjected to rational scrutiny: the first because it isn't openly expressed and challenged verbally; the second because It is not tested in the crucible of action and practical decision-making. This dichotomy, when embedded in an individual's life, creates a barrier to living an "examined life". Students lack the wherewithal to explore contradictions. double standards, and hypocrisies. They will use critical thinking skills, if at all, as weapons in a struggle to protect themselves from exposure. In addition, to lay bare the contradictions of the "other", the 'enemy". When they integrate critical thinking skills into this dichotomous thinking, they become self-serving, not fair minded critical thinkers.

The role of the teacher could be summarized as follows:

- help break big questions or tasks into smaller, more manageable parts -
- create meaningful contexts in which learning is valued by the students
- help students clarify their thoughts by rephrasing or asking questions
- pose thought-provoking questions
- help keep the discussion focused
- encourage students to explain things to each other
- help students find what they need to know by suggesting and showing students how to use resources
- ensure that students do justice to each view, that no views are cut off, ignored, or unfairly dismissed

Teaching the Distinction Between Fact, Opinion, and Reasoned Judgment

Many texts claim to foster critical thinking by teaching students to divide all statements into facts and opinions. When they do so, students fail to grasp the significance of dialogical thinking and reasoned judgment. When an issue is fundamentally a matter of fact (for example, "What is the weight of this block of wood?" or "What are the dimensions of this figurer), there is no reason to argue about the answer: one should carry out the process that yields the correct answer. Sometimes this might require following complex procedures. In any case, weighing and measuring, the processes needed for the questions above, are not typically matters of debate.

On the other hand, questions that raise matters of mere opinion, such as, -What sweater do you like better?" -What is your favorite color or 'Where would you like to spend your vacation? Do not have any one contact answer since they ask us merely to express our personal preferences.

But most of the important issues we face in our lives are not exclusively matters of fact or matters of preference. Many require a new element: that we reason our way to conclusions while we take the reasoned perspectives of others into account. As teachers, we should be clear in encouraging students to distinguish these three different situations: the ones that call for facts alone, the ones that call for preference alone, and the ones that call for reasoned judgment. When, as members of a jury, we are called upon to come to a judgment of innocence or guilt, we do not settle questions of pure fact, and we are certainly not expected to express our subjective preferences.

Students definitely need to learn procedures for gathering facts, and they doubtless need to have opportunities to express their preferences, but their most important need is to develop their capacities for reasoned judgment. They need to know how to come to conclusions of their own based on evidence and reasoning of their own within the framework of their own perspectives. Their values and preferences will, of course, play a role in their perspectives and reasoning, but their

perspectives should not be a matter of pure opinion or sheer preference. I should not believe in things or people just because I want to. I should have good reasons for my beliefs, except, of course, where it makes sense to have pure preferences. It does make sense to prefer butterscotch to chocolate pudding, but it does not make sense to prefer taking advantage of people rather than respecting their rights. Over time, students need to distinguish fact, opinion, and reasoned judgment, since they will never be good thinkers if they commonly confuse them as most students now do.

In passing, be sure not to confuse this distinction with that of convergent and divergent questions. Questions of opinion and questions of reasoned judgment are both divergent, but the first does not involve the question of truth or accuracy (because it calls for expression of preference), while the second does (since reasoned judgment can be more or less reasonable, more or less prejudiced, more or less justified).

We have put this distinction into the "Global Strategies" chapter to underscore its importance as a pervasive emphasis in all instruction. In any event, we should always keep in mind global, as well as more specific, strategies for fostering critical thinking. When we habitually reflect on our role as teachers, play the role of Socratic questioner, seek opportunities to have students reconstruct and role play pie thinking of others, and habitually encourage students to distinguish preference from reasoned judgment, we will discover new possibilities for critical thinking instruction and will develop global insights that help guide us in understanding and applying the strategies illustrated more specifically in the lesson remodels that follow.

Evaluative Thinking

Objectives of the remodeled lesson

The students will:

- practice evaluating actions through role-play
- explore the relationship between a person's thoughts and feelings in particular situations

- develop criteria for evaluating people's behavior

Original Lesson Plan

The students are put in groups of two or three and assigned -a role-playing situation to act out while the rest of the class observes. A discussion follows which includes imagining what would have happened if any part of the situation had been changed, how the students felt about the situation, and whether they have had any similar experiences. The suggested role-play situations included these: a child who is nervous being in front of the class forgets the answer and another child laughs, two children agree to share a toy, and a student shouts a warning as another child starts to run into the street without looking.

Critique

This lesson is a confusing introduction to evaluative thinking because none of the questions asked call upon the students to evaluate anything. To evaluate accurately and fairly, students should understand what they are evaluating, and why. Critical thinkers are conscious of the standards they use when evaluating so that these, too, become objects of evaluation. Although reasonable people can disagree, making standards or principals themselves objects of evaluation makes rational discussion and agreement more likely.

Although the stories in the original lesson clearly suggest evaluative conclusions, neither the process of evaluation, standards of evaluation, or evaluative conclusions are elicited by the questions. Furthermore, this lesson encourages absolutistic (that is, "all or nothing") thinking, by using stories which describe cases of "all right* or "all wrong" whereas most real-life cases involve at least some degree of shared blame. The value of these exercises, as they stand, lies in showing how our behavior has consequences, and that changing our behavior can change the situation we are in.

Strategies used to remodel

- analyzing or evaluating action or policies
- exploring thoughts underlying feelings and feelings underlying thoughts
- developing criteria for evaluation: clarifying values and standards 8-35

- exploring implications and consequences

Remodelled Lesson Plan

The questions used in the original lesson can be used to elicit situations that the children are familiar with. However;-since they don't require students to evaluate, we suggest that they be followed by questions which first call for an evaluation, then clarify what is being evaluated and why.

You might begin discussion of each situation by having students discuss what the characters felt and thought and why. "What happened? How did he feel about it? Why? What was each thinking? Why? What makes you think so?"

To elicit and probe evaluations in the first situation, the teacher could ask, "Was it better for the second child to have laughed, or to have looked encouragingly? Why? What are we evaluating in this situation? Why is this important?" The teacher could point out any standards of evaluation the students use. For example, if a student states "It was mean because it hurt his feelings," the teacher could say, 'You used the standard of not hurting other people's feelings to conclude that this was wrong."

If a variation is introduced, such as, "He wrote a funny answer on purpose when he forgot the right answer, the teacher can say, "Now we have a different story. How is this story different, and what do we want to say about it? Does this change make you think differently about this? Why or why not?"

Listening Ears

Objectives of the remodeled lesson

The students will:

- begin to develop insight into the importance and difficulty of listening to understand
- practice critical listening by restating other students' positions
- discuss how egocentricity can interfere with listening

Original Lesson Plan

This lesson introduces the idea of listening by first asking-students to sit quietly and listen to-the sounds they hear and then to discuss what they heard, Next, the

children look at pictures of a mother rabbit with her babies (ears up and listening), a boy talking to his dog (ears up and listening), and students listening to a crossing guard. The teacher asks questions about who is listening and why, and why it's important to listen,

This is followed by a discussion in which students recall personal experiences of times it was important to listen. Finally, the teacher conducts a listening game of giving directions, and asking a student to follow them.

Critique

Although the objective of "Listening Ears" is to learn the importance of listening carefully, discussion is limited to the importance of listening to authorities for instruction and safety. Acritical education requires that students be encouraged to listen to new ideas, and other points of view. Unless we understand a position well enough to present it ourselves, we cannot rationally agree or disagree with it. Since no one person can know everything, we should listen to others, distinguish what they know from what they don't know, and adjust our beliefs to accommodate what we have learned.

The original lesson doesn't distinguish listening as hearing from listening as understanding, and therefore ignores the difficulties of listening to understand. Children should begin to develop the insight that listening requires more than just hearing; it requires a sincere attempt to grasp what is said; 1istening is active, The biggest difficulties of listening arise from the complexity of the process of understanding, and our natural resistance to ideas different from our own. Listening is hardest when we don't want to listen.

Strategies used to remodel

- listening ctitically: the art of silent 'dialogue
- exercising fairmindedness
- developing intellectual good faith or integrity
- developing insight into egocentricity or socio centricity

Remodelled Lesson Plan

We believe that it is crucial to practice incorporating Thea fore mentioned

insights- about listening into the solutions of genuine problems that arise at school. We encourage teachers to take advantage of as many problems, decisions, and disputes as possible. When students claim to disagree with each other, have them state each other's views fairly and accurately. Ask questions of clarification to elicit points overlooked. Later, you could facilitate a discussion in which students describe any problems they had in trying to listen, and why it was important to listen.

Following is a list of questions the teacher can ask to further encourage students to think about the importance and difficulty of listening:

- why should ‘we listen to other people? Has anything bad happened to you because you didn't listen? When? Why should we listen to friends? Family? Classmates? Teachers? etc.

When is it hard to listen? Why? Can you think of a time when you weren't listening to someone? Who was trying to talk to you? Why didn't you listen? What were you thinking? Why?

Do you ever act as though you are listening when you aren't? What's the difference between listening and pretending to listen?

How do you feel when people don't listen carefully to you?

Is it easy or hard to listen

a) when you are angry, scared, or excited?

b) to someone you like?

c) to someone you don't like?

d) when someone says something that sounds dumb or crazy to you?

e) when someone says something that you think makes sense or is similar to what you think

f) when you don't understand?

How can you tell if someone is listening? What are the differences between being a good listener and not being a good listener?

How Is My School Like My Home?

Objectives of the remodeled lesson

The students will:

- begin to develop intellectual humility by distinguishing what they can reasonably conclude from what they cannot
- give reasons and examine evidence for concluding whether or not pictures depict home scenes or school scenes
- develop confidence in their abilities to figure things out
- *Original Lesson Plan* Students discuss some of their basic needs, such as love, food, shelter, clothing and how they meet those needs and need is being met in each. Then they are given twelve pictures of children at home or school having these needs met. Students are asked what needs met at home; needs met at school. Finally, they sort the pictures into two groups:

Critique

This lesson mixes two concepts together: where needs are met and how to identify school versus home in photographs. This lesson should be introduced by telling the children that they get their needs met both at home and at school. Then the lesson should be divided into two lessons, one, focusing on needs and the other on home versus school. The rest of the critique and the remodel addresses the later.

Young children have an especially hard time saying they don't know. They need practice distinguishing cases in which they do have enough information to know, from cases in which they don’t. This lesson misses the opportunity to have them do so.

Strategies used to remodel

- developing intellectual humility and suspending judgment
- giving reasons and evaluating evidence and alleged facts
- developing confidence in reason

Remodelled Lesson Plan

We suggest that the teacher encourage suspension of judgment by adding pictures that aren't clearly home or school, such as two children playing on a swing-set. The teacher could ask of each picture "Can you infer or tell if this is at school or at home? Why do you say so?" If the cases aren't clear cases, but there

are some clues that point to the likelihood of it being a school or a home, have students give the reasons that they inferred that it was at home or school and help them evaluate their reasons to see if they are solid. For example, suppose a student responds, 'The reason I think it is a school, is because there are five children working on a project, and that happens more often at school _ than at home." The teacher could ask the rest of the class if they agree. If necessary, the teacher could say that the reason given was a good one because it makes sense one would normally see five children working together at school rather than at home. On the other hand, if a student were to say, "I think this is a school because it has a swing-set in it.", and the other children don't question the conclusion, the teacher could point out that some children have swing-sets at their houses. Then the teacher might ask the student if there is anything else in the picture that might give a clue or evidence that shows whether it is at home or at school.

Even if the picture is clear, the children could be asked to point out other clues in it that support the conclusion. "What else makes you think it's ...? Why?"

After doing this, the teacher can point out to the students that they can often figure things out by thinking carefully. The students could look at family photographs and try to figure out whether they were taken at home or away from home, and explain why.

Thinking Critically About Teaching: From Didactic to Critical Teaching

To begin to teach critical thinking one must critique 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 nonacademic 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 tester’s. 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. S8me 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.

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 bias 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. 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", 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.

In a widely used elementary text book series, 97 percent of the problems "solved" by the key-word method would yield the correct answer.

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 ..."

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.

In sum, all too often we focus on a narrow collection of well-deemed 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.

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 acritical theory progressively expands. We express the basic difference as follows:

"Knowledge canbe '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, Learniug, 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, 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 insets of true statements about the world. That an educated, literate person is fundamentally 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.

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.

6) That the basic skills of reading and writing can be taught without emphasis on high reorder 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.

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.

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.

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 atomistic ally. 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.

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.

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.

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.

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 linkm1 to such basic concepts as 'good writing' or 'clear expression'.

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.

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

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

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

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.

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

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 useless, students do not come to see the usefulness of the concept and fail to use it spontaneously 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.

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 ransom facts. The world, after all, is filled with an infinite number of facts. No one nan 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 comprehend 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 wa.at 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 fair minded 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 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 (insome contexts). A particular word or phrase within a vague statement may be the culprit requiting 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 fair minded understanding of the opposition, with its formal structure and artificial limits, rarely provides for the serious, honest, fair minded 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: /) 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 isnot 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 open-mindedly 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, awl 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 fair minded 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?

What Critical Thinking Means to Me:

The Views of Teachers

1. Critical thinking is a process through which one solves problems and makes decisions. It is a process that can be improved through practice, though never

perfected. It involves self-discipline and structure. Sometimes it can make your head hurt, but sometimes it comes naturally. I believe for critical thinking to be its most successful, it must be intertwined with creative thinking.

2. Thinking critically gives me an organized way of questioning what I hear and read in a manner that goes beyond the surface or literal thought. It assists me in structuring my own thoughts such that I gain greater insight into how I feel and appreciation for the thoughts of others, even those with which I disagree. It further enables me to be less judgmental in a negative way and to be more willing to take risks.

3. Critical thinking is being able and willing to examine all sides of an issue or topic, having first clarified it; supporting or refuting it with either facts or reasoned judgment; and in this light, exploring the consequences or effects of any decision or action it is possible to take.

4. All of us think, but critical thinking has to do with becoming more aware of how we think and finding ways to facilitate clear, reasoned, logical. and better-informed thinking. Only when our thoughts are backed with reason and logic, and are based on a process of careful examination of ideas and evidence, do they become critical and lead us in the direction of finding what is true. In order to do this, it seems of major importance to maintain an open-minded willingness to look at other points of view. In addition, we can utilize various skills which will enable us to become more proficient at thinking for ourselves.

5. Critical thinking is a necessary access to a happy and full life. It provides me the opportunity to analyze and evaluate my thoughts, beliefs, ideas, reasons, and feelings as well as those of other individuals. Utilizing this process, it helps me to understand and respect others as total persons. It helps me in instructing my students and in my personal life. Critical thinking extends beyond the classroom setting and has proven to be valid in life other than the school world.

6. Critical thinking is the ability to analyze and evaluate feelings and ideas in an independent, fair minded, rational manner. If action is needed on these feelings or ideas, this evaluation motivates meaningfully positive and useful actions. Applying

critical thinking to everyday situations and classroom situations is much like Christian growth. If we habitually evaluate our feelings and ideas based on a reasonable criteria, we will become less likely to be easily offended and more likely to promote a positive approach as a solution to a problem. Critical thinking, like Christian growth, promotes confidence, creativity, and personal growth.

7. Critical thinking is a blend of many things, of which I shall discuss three: independent thinking; clear thinking; and organized Socratic questioning.

As for the first characteristic mentioned above, a critical thinker is an independent thinker. He doesn’t Just accept something as true or believe it because he was taught it as a child. He analyzes it, breaking it down into its elements; he checks on the author of the information and delves into his or her background; he questions the material and evaluates it; and then he makes up his own mind about its validity. In other words, he thinks independently.

A second criterion of critical thinking is clarity. If a person is not a clear thinker, he can't be acritical thinker. I can't say that I agree or disagree with you if I can't understand you. A critical thinker has to get very particular, because people are inclined to throw words around. For example, they misuse the word 'selfish.' A person might say: "You're selfish, but I'm motivated!" A selfish person is one who systematically ignores the rights of others and pursues his own desires. An unselfish one is a person who systematically considers the rights of others while he pursues his own desires. Thus, clarity is important. We have to be clear about the meanings of words.

The most important aspect of critical thinking is its spirit of Socratic questioning. However, it is important to have the questioning organized in one's mind and to know in general the underlying goals of the discussion. If you want students to retain the content of your lesson, you must organize it and help them to see that ideas are connected. Some ideas are derived from basic ideas. We need to help students to organize their thinking around basic ideas and to question. To be a good questioner, you must be a wonderer wonder aloud about meaning and truth. For example, "I wonder what Jack means." "I wonder what this word means?" 1

wonder if anyone can think of an example?" "Does this make sense?" "I wonder how true that is?" "Can anyone think of an experience when that was true?" The critical thinker must have the ability to probe deeply, to get down to basic ideas, to get beneath the mere appearance of things. We need to get into the very spirit, the "wonderment" of the situation being discussed. The students need to feel, "My teacher really wonders; and really wants to know what we think." We should wonder aloud. A good way to stimulate thinking is to use a variety of types of questions. We can ask questions to get the students to elaborate, to explain, to give reasons, to cite evidence, to identify their points of view, to focus on central ideas, and to raise problems. Socratic questioning is certainly vital to critical thinking. Thus, critical thinking is a blend of many characteristics, especially independent thinking, clear thinking, and Socratic questioning. We all need to strive to be better critical thinkers.

8. Critical thinking is taking the information you have experienced, and applying it to questions, techniques, and reasoning to solve everyday life situations and problems that arise.

9. What is critical thinking? It is the ability to think at a higher level; the ability to discriminate between knowledge known and not known, so that known knowledge can be reinterpreted in different frameworks. For example, Einstein, Darwin, and Newton originated world-changing theories by discrimination of knowledge and reinterpretation of it.

10. Critical thinking is using strategies of thinking to enable one to make life decisions in such a way that one feels competent and confident after the decisions are made.

Regarding a Definition of Critical Thinking

Many people who feel that they don't know what critical thinking is, or means, request , a definition, When they realize there is no one definition of critical thinking given by all theorists, many people feel frustrated and confused. "Even the experts can't agree about what they're talking about. How can I teach it if I don't know what it is, and no one else can tell me?" This reaction, though

understandable, is somewhat mistaken. Although theorists provide a variety of definitions, they do not necessarily reject each others' definitions. They feel that their own definitions most usefully convey the basic concept, highlighting what they take to be its most crucial aspects, but they do not necessarily hold that other definitions are "wrong" or worthless. Novices, on the other hand, often get caught up in the wording of definitions and do not probe into them to see how compatible their meanings are. The various proposed definitions, when examined, are in fact much more similar than they are different.

Furthermore, because of the complexity of critical thinking, its relationship to an unlimited number of behaviors in an unlimited number of situations, its conceptual interdependence with other concepts (such as the critical person, the reasonable person, the critical society, a critical threw of knowledge, learning, literacy, and rationality, not to mention the opposites of these concepts), it is important not to put too much weight on any one definition. A variety of useful definitions have been formulated by distinguished theoreticians, and we should value these diverse formulations as helping to make important features of critical thought more apparent.

Harvey Siegel, for example, has defined critical thinking as "thinking appropriately moved by reasons". This definition helps us remember that our minds are often inappropriately moved by forces other than reason; by desires, fears, social rewards and punishments, etc. It points out the connection between critical thinking and the classic philosophical ideal of rationality. Yet, clearly, the ideal of rationality is itself open to multiple explications. Similar points can be made about Robert Ennis' and Matthew Lipman's definitions.

Robert Ennis defines critical thinking as "rational reflective thinking concerned with what to do or believe." This definition usefully calls attention to the wide role that critical thinking plays in everyday life, for, since all behavior is based on what we believe, all human action is based upon what we In some sense decide to do. However, like Siegel's definition, it assumes that the reader has a clear concept of rationality and of the conditions under which a decision can be said to be a

"reflective" one. There is also a possible ambiguity in Ennis' use of 'reflective'. As a person internalizes critical standards sensitivity to reasons, evidence, relevance, consistency, and so forth the application of these standards to action becomes more automatic, less a matter of conscious effort and, hence, less a matter of overt "reflection" (assuming that Ennis means to imply by 'reflection' a special consciousness or deliberateness).

Matthew Lipman defines critical thinking as "skillful, responsible thinking that is conducive to judgment because it relies on criteria, is self-correcting, and is sensitive to context." This definition is useful insofar as one has a clear sense of the difference between responsible and irresponsible thinking, as well as what to encompass in the appropriate self-correction of thought, the appropriate use of criteria, and appropriate sensitivity to context. Of course, it would not be difficult to find instances of thinking that were self-correcting, used criteria, and responded to context in one sense but nevertheless were uncritical in some other sense. For example. one's particular criteria might be uncritically chosen or the manner of responding to context might be critically deficient in a variety of ways.

We make these points not to underestimate the usefulness of these definitions but to point out limitations in the process of definition itself when dealing with a complex concept such as critical thinking. Rather than working solely with one definition of critical thinking, it is more desirable to retain a host of definitions, and this for two reasons: 1) in order to maintain insight into the various dimensions of critical thinking that alternative definitions highlight, and 2) to help oneself escape the limitations of any given definition. In this spirit, we will present a number of definitions which we have formulated. Before reading these definitions, you might review the array of teachers' formulations in the chapter "What Critical Thinking Means to Me". You will find that virtually all the teachers' definitions are compatible with each other, even though they are all formulated individually. Or consider the following list of definitions.

Critical Thinking is:

a) skilled thinking which meets epistemological demands irrespective of the

vested interests or ideological commitments of the thinker:

b) skilled thinking characterized by empathy into diverse opposing points of view and devotion to truth as against self-interest:

c) skilled thinking that is consistent in the application of intellectual standards, holding oneself to the same rigorous standards of evidence and proof to which one holds one's antagonists;

d) 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;

e) 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:

f) the art of constructive skepticism;

g) the art of identifying and removing bias, prejudice, and one-sidedness of thought:

h) the art of self-directed, in-depth, rational learning;

i) thinking that rationally certifies what we know and makes clear wherein we are ignorant;

j) the art of thinking for one's self with clarity, accuracy. insight, commitment, and fairness

The Spirit of Critical Thinking

To tie all of the above together, consider how the concept of critical thinking can be unpacked. The term 'critical as we use it does not mean thinking which is negative or finds fault, but rather thinking which evaluates reasons and brings thought and action in line with our evaluations, our best sense of what is true. The ideal of the critical thinker could be roughly expressed in the phrase 'reasonable person. Our use of the term 'critical is intended to highlight the intellectual autonomy of the critical thinker. That is, as a critical thinker. I do not simply accept conclusions (uncritically). I evaluate or critique reasons. My critique enables me to distinguish poor from strong reasoning. To do so to the greatest

extent possible. I make use of a number of identifiable and learnable skills. I analyze and evaluate reasons and evidence; make assumptions explicit and evaluate them, reject unwarranted inferences or "leaps of logic"; use the best and most complete evidence available to me; make relevant distinctions, clarify; avoid inconsistency and contradiction, reconcile apparent contradictions; and distinguish what I know from what I merely suspect to be true.

The uncritical thinker, on the other hand, doesn't reflect on or evaluate reasons for a particular set of beliefs. By simply agreeing or disagreeing, the uncritical thinker accepts or rejects con elusions, often without understanding them, and often on the basis of egocentric attachment or unassessed desire. Lacking skills to analyze and evaluate, this person allows irrelevant reasons to influence conclusions, doesn't notice assumptions and therefore fails to evaluate them accepts any inference that "sounds good": is unconcerned with the strength and completeness of evidence, can't sort out ideas, confuses different concepts. Is an unclear thinker. is oblivious to contradictions, and feels certain, even when not in a position to know. The classic uncritical thinker says. "I've made up my mind! Don't confuse me with the facts." Yet, critical thinking is more than evaluation of simple lines of thought.

As I evaluate beliefs by evaluating the evidence or reasoning that supports them (that is. the «arguments" for them). I notice certain things. I learn that sometimes I must go beyond evaluating small lines of reasoning. To understand an issue. I may have to think about it for a long time, weigh many reasons, and clarify basic ideas. see that evaluating a particular line of thought often forces me to re-evaluate another. A conclusion about one case forces me to come to a certain conclusion about another. I find that often my evaluation of someone's thinking pivots around the meaning of a concept which I must clear. Such clarification affects my understanding of other issues. I notice previously hidden relationships between beliefs about different issues. I see that some beliefs and ideas are more fundamental than others. As I think my way through my beliefs. I find I must orchestrate the skills I have learned into a longer series of moves. As I strive for

consistency and understanding. I discover opposing sets of basic assumptions which underlie those conclusions. I find that, to make my beliefs reasonable. I must evaluate not individual beliefs but, rather, large sets of beliefs. Analysis of an issue requires more work, a more extended process than that required for a short line of reasoning. I must learn to use my skills, not in separate little moves but together coordinated into a long sequence of thought.

Sometimes, two apparently equally strong arguments or lines of reasoning about the same issue come to contradictory conclusions. That is when I listen to one side, the case seems strong. Yet when I listen to the other side, that case seems equally strong. Since they contradict each other, they cannot both be right. Sometimes it seems that the two sides are talking about different situations or speaking different languages, even living in different 'worlds I find that the skills which enable me to evaluate a short bit of reasoning do not offer much help here.

Suppose I decide to question two people who hold contradictory conclusions on an issue. They may use concepts or terms differently, disagree about what terms apply to what situations and what inferences can then be made, or state the issue differently. I may find that the differences in their conclusions rest, not so much on a particular piece of evidence or on one inference, as much as on vastly different perspectives, different ways of seeing the world, or different conceptions of such basic ideas as, say, horns nature. As their conclusions arise from different perspectives, each, to the other, seems deluded, prejudiced, or naive. How am I to decide who is right? My evaluations of their inferences, uses of terms, evidence, etc. also depend on perspective. In a sense. I discover that I have a perspective.

I could simply agree with the one whose overall perspective is most like my own. But how do I know I'm right? If I'm sincerely interested in evaluating beliefs. should I not also consider things from other perspectives?

As I reflect on this discovery. I may also leali4e that my perspective has changed. Perhaps I recall learning a new idea or even a system of thought that changed the way I see myself and the world around me in fundamental ways, which even thanked my life. I may remember how pervasive this change was how

I began to interpret a whole range of situations differently, continually used a new word, concept or phrase, paid attention to previously ignored facts I realize that I now have a new choice regarding the issue under scrutiny.

I could simply accept the view that note closely resembles my own. But I realize that I cannot reasonably reject the other perspective unless I understand it. To do so would be to say 1 don't know what you think, but whatever it is it's false." The other perspective, however strange it seems to me now may have something both important and true which I have overlooked and without which my understanding is incomplete. Thinking along these lines. I open my mind to the possibility of change of perspective. I make sure that I don't subtly ignore or dismiss these new ideas; I realize I can make my point of view richer, so it encompasses more. As I think within another perspective. I begin to see ways in which it is right. It points out complicating factors I had previously ignored makes useful distinctions I had missed, offers plausible interpretations of events I had never considered, and so on. I become able to move between various perspectives. Freed from the limitations of my earlier thought.

One of the most important stages in my development as a thinker, then, is a clear recognition that I have a perspective, one that I must work on and change as I learn and grow. To do this. I can't be inflexibly attached to any particular beliefs. I strive for a consistent "big picture". I approach other perspectives differently. I ask how I can reconcile the points of view. I use principles and insights flexibly and do not approach analysis as a mechanical "step one, step two" process. I pursue new ideas in depth trying to understand the perspectives from which they come. I am willing to say. "This view sounds new and different; I don't yet understand it. There's more to this idea than I realized; I can't just dismiss it."

Looked at another way suppose I'm rethinking my stand on an issue. I re-examine my evidence. Yet. I cannot evaluate my evidence for its completeness unless I consider evidence cited by those who disagree with me. Similarly. I find I can discover my basic assumptions by considering alternative assumptions, alternative perspectives. I can examine my own interpretation of situations and

principles by considering alternative interpretations. I learn to use fairmindedness to clarify enhance, and improve my perspective.

A narrow-minded critical thinker, lacking this insight, says not. 'This is how I see it" but. "This is how I it is.” While working on pieces of reasoning, separate arguments and individual beliefs this person tends to overlook the development of perspective as such. Such thinking consists of separate or fragmented ideas and the examination of beliefs one at a time without appreciation for connections between them. While conscious and reflective about particular conclusions, this type of thinker is unreflective about his or her own point of view, how it affects his or her evaluations of reasoning and how it is limited. When confronted with alternative perspectives or points of vim this person assesses them by their degree of agreement with his or her own view. Such an individual is given to sweeping acceptance or sweeping rejection of points of view and is tyrannized by the words he or she uses. Rather than trying to understand why others think as they do such people dismiss new ideas assuming the objectivity and correctness of their own beliefs and responses.

As I strive to think fairmindedly. I discover resistance to questioning my beliefs and considering those of others. I find a conflict between my desire to be fair minded and my desire to feel sure of what I think. It sometimes seems a lot easier to avoid the confusion, frustration, and embarrassment that I feel when re assessing my beliefs. Simply trying to ignore these feelings doesn’t t make them go away. I realize that unless I directly address these obstacles to fair minded critical thought. I tend to seek its appearance rather than its reality that I tend to accept rhetoric rather than fact that without noticing it. I hide my own hypocrisy, even from myself.

By contrast the critical thinker who lacks this insight though a good arguer is not a truly reasonable person. Giving good sounding reasons, this person can find and explain flaws in opposing views and has well thought out ideas, but this thinker never subjects his or her own ideas to security. Though giving lip service to fairmindedness and describing views opposed to his or her own, this thinker

doesn't truly understand or seriously consider them. One who often uses reasoning to get his or her way cover up hidden motives, or make others look stupid or deluded is merely using skills to reinforce his or her own views and desires, without subjecting them to scrutiny. Such people are not truly reasonable. By cutting themselves off from honestly assessing their own perspectives or seriously considering other perspectives, these people are not using their mental capacities to their fullest extent.

To sum up the fully reasonable person, the kind of critical thinker we want to foster, contrasts with at least two other kinds of thinkers. The first kind has few intellectual skills of any kind and tends to be naive, easily confused, manipulated, and controlled, and therefore easily defeated or taken in. The second has skills, but only of a restricted type, which enable pursuit of narrow, selfish interests and effective manipulation of the naive and unsuspecting. The first we call -uncritical thinkers- and the second -weak sense, or selfish, critical thinkers. What we aim at, therefore, are -strong sense" critical thinkers, those who use the fullest powers of their minds in the service of sincere, fair-minded understanding and evaluation of their beliefs.

Glossary: An educator's guide to critical thinking terms and concepts

accurate: Free from errors, mistakes, or distortion. Correct connotes little more than absence of error; accurate implies a positive exercise of one to obtain conformity with fact or truth; exact stresses perfect conformity to fact, truth, or some standard; precise suggests minute accuracy of detail. Accuracy is an important goal in critical thinking, though it is almost always a matter of degree. It is also important to recognize that making mistakes is an essential part of learning and that it is far better that students make their own mistakes, than that they parrot the thinking of the text. It should also be recognized that some distortion usually results whenever we think within a point of view or frame of reference. Students should think with this awareness in mind, with some sense of the limitations of their own, the text's, the teacher's, the subject's perspective. See perfections of thought.

ambiguous: A sentence having two or more possible meanings. Sensitivity to ambiguity and vagueness in writing and speech is essential to good thinking. A continual effort to be clear and precise in language usage is fundamental to education. Ambiguity is a problem more of sentences than of individual words. Furthermore, not every sentence- that can be construed in more than one way is problematic and deserving of analysis. Many sentences are clearly intended one way; any other construal is obviously absurd and not meant. For example, "Make me a sandwich." is never seriously intended to request metamorphic change. It is a poor example for teaching genuine insight into critical thinking. For an example of a problematic ambiguity, consider the statement, "Welfare is corrupt." Among the possible meanings of this sentence are the following. Those who administer welfare programs take bribes to administer welfare policy unfairly, Welfare policies are written in such a way that much of the money goes to people who don't deserve it rather than to those who do, A government that gives money to people who haven't earned it corrupts both the giver and the recipient. If two people are arguing about whether or not welfare is corrupt, but interpret the claim differently, they can make little or no progress; they aren't arguing about the same point. Evidence and considerations relevant to one interpretation may be irrelevant to others.

analyze: To break up a whole into its parts, to examine in detail so as to determine the nature of, to look more deeply into an issue or situation. All learning presupposes some analysis of what we are learning, if only by categorizing or labelling things in one way rather than another. Students should continually be asked to analyze their ideas, claims, experiences, interpretations, judgments, and theories and those they hear and read. See elements of thought.

argue: There are two meanings of this word that need to be distinguished: 1) to argue in the sense of to fight or to emotionally disagree; and 2) to give reasons for or against a proposal or proposition. In emphasizing critical thinking, we continually try to get our students to move from the first sense of the word to the second: that is, we try to get them to see the importance of giving reasons to

support their views without getting their egos involved in what they are saying. This is a fundamental problem in human life. To argue in the critical thinking sense is to use logic and reason, and to bring forth facts to support or refute a point. It is done in a spirit of cooperation and good will.

argument: A reason or reasons offered for or against something, the offering of such reasons. This term refers to a discussion in which there is disagreement and suggests the use of logic and bringing forth of facts to support or refute a point. See argue.

to assume: To take for granted or to presuppose. Critical thinkers can and do make their assumptions explicit, assess them, and correct them. Assumptions can vary from the mundane to the problematic: I heard a scratch at the door. I got up to let the cat in. I assumed that only the cat makes that noise, and that he makes it only when he wants to be let in. Someone speaks gruffly to me. I feel guilty and hurt. I assume he is angry at me, that he is only angry at me when I do something bad, and that if he's angry at me, he dislikes me. Notice that people often equate making assumptions with making false assumptions. When people say, "Don't assume", this is what they mean. In fact, we cannot avoid making assumptions and some are justifiable. (For instance, we have assumed that people who buy this book can read English.) Rather than saying "Never assume", we say, "Be aware of and careful about the assumptions you make, and be ready to examine and critique them." See assumption, elements of thought.

assumption: A statement accepted or supposed as true without proof or demonstration; an unstated premise or belief. All human thought and experience is based on assumptions. Our thought must begin with something we take to be true in a particular context. We are typically unaware of what we assume and therefore rarely question our assumptions. Much of what is wrong with human thought can be found in the uncritical or unexamined assumptions that underlie it. For example, we often experience the world in such away as to assume that we are observing things Just as they are, as though we were seeing the world without the filter of a point of view. People we disagree with, of course, we recognize as having a point

of view. One of the key dispositions of critical thinking is the on-going sense that as humans we always think within a perspective, that we virtually never experience things totally and absolutistically. There is a connection, therefore, between thinking so as to be aware of our assumptions and being intellectually humble. ***authority:*** I) The power or supposed right to give commands, enforce obedience, take action, or make final decisions. 2) A person with much knowledge and expertise in a field, hence reliable. Critical thinkers recognize that ultimate authority rests with reason and evidence, since it is only on the assumption that purported experts have the backing of reason and evidence that they rightfully gain authority. Much instruction discourages critical thinking by encouraging students to believe that whatever the text or teacher says is true. As a result, students do not learn how to assess authority. See knowledge.

bias: A mental leaning or inclination. We must clearly distinguish two different senses of the word 'bias'. One is neutral, the other negative. In the neutral sense we are referring simply to the fact that, because of one's point of view, one notices some things rather than others, emphasizes some points rather than others, and thinks in one direction rather than others. This is not in itself a criticism because thinking within a point of view is unavoidable. In the negative sense, we are implying blindness or irrational resistance to weaknesses within one's own point of view or to the strength or insight within a point of view one opposes. Fair-minded critical thinkers try to be aware of their bias (in sense one) and try hard to avoid bias (in sense two). Many people confuse these two senses. Many confuse bias with emotion or with evaluation, perceiving any expression of emotion or any use of evaluative words to be biased (sense two). Evaluative words that can be justified by reason and evidence are not biased in the negative sense. See criteria, evaluation, judgment, opinion.

clarify: To make easier to understand, to free from confusion or ambiguity, to remove obscurities. Clarity is a fundamental perfection of thought and clarification a fundamental aim in critical thinking. Students often do not see why it is important to write and speak clearly, why it is important to say what you mean and

mean what you say. The key to clarification is concrete, specific examples. See accurate, ambiguous, logic of language, vague.

concept: An idea or thought, especially a generalized idea of a thing or of a class of things. Humans think within concepts or ideas. We can never achieve command over our thoughts unless we learn how to achieve command over our concepts or ideas, Thus we must learn how to identify the concepts or ideas we are using, contrast them with alternative concepts or ideas, and clarify what we include and exclude by means of them. For example, most people say they believe strongly in democracy, but few can clarify with examples what that word does and does not imply. Most people confuse the meaning of words with cultural associations, with the result that 'democracy' means to people whatever we do in running our government any country that is different is undemocratic. We must distinguish the concepts implicit in the English language from the psychological associations surrounding that concept in a given social group or culture. The failure to develop this ability is a major cause of uncritical thought and selfish critical thought. See logic of language.

conclude/conclusion: To decide by reasoning, to infer, to deduce, the last step in a reasoning process; a judgment, decision, or belief formed after investigation or reasoning. All beliefs, decisions, or actions are based on human thought but rarely as the result of conscious reasoning or deliberation. All that we believe is one way or another, based on conclusions that we have come to during our lifetime. Yet, we rarely monitor our thought processes we don't critically assess the conclusions we come to, to determine whether we have sufficient grounds or reasons for accepting them. People seldom recognize when they have come to a conclusion. They confuse their conclusions with evidence, and so cannot assess the reasoning that took them from evidence to conclusion. Recognizing that human life is inferential, that we continually come to conclusions about ourselves and the things and persons around us is essential to thinking critically and reflectively.

consistency: To think, act or speak in agreement with what has already been thought done, or expressed; to have intellectual or moral integrity. Human life and

thought is filled with inconsistency, hypocrisy, and contradiction. We often say one thing and do another, judge ourselves and our friends by one standard and our antagonists by another lean over backwards to justify what we want or negate what does not serve our interests. Similarly, we often confuse desires with needs, treating our desires as equivalent to needs, putting what we want above the basic needs of others. Logical and moral consistency are fundamental values of fair-minded critical thinking. Social conditioning and native egocentrism often obscure social contradictions inconsistency, and hypocrisy. See personal contradiction, social contradiction, intellectual integrity, human nature.

contradict/contradiction: To assert the opposite of; to be contrary to, go against; a statement in opposition to another: a condition in which things tend to be contrary to each other; inconsistency; discrepancy; a person or thing containing or composed of contradictory elements. See personal contradiction, social contradiction.

criterion (criteria): A standard, rule or test by which something can be judged or measured. Human life thought and action are based on human values. The standards by which we determine whether those values are achieved in any situation represent criteria. Critical thinking depends upon making explicit the standards or criteria for rational or justifiable thinking and behavior. See evaluation.

critical listening*:* A mode of monitoring how we are listening so as to maximize our accurate understanding of what another person is saying. By understanding the logic of human communication that everything spoken expresses point of view, uses some ideas and not others, has implications etc. critical thinkers can listen so as to enter sympathetically and analytically into the perspective of others. See critical speaking, critical reading, critical writing, elements of thought, intellectual empathy.

critical person: One who has mastered a range of intellectual skills and abilities. If that person generally uses those skills to advance his or her own selfish interests, that person is acritical thinker only in a weak or qualified sense. If that person

generally uses those skills fairmindedly, entering empathically into the points of view of others, he or she is acritical thinker in the strong or fullest sense. See critical thinking.

critical reading: Critical reading is an act we, intellectually engaged process in which the reader participates in an inner dialogue with the writer. Most people read uncritically and so miss some part of what is expressed while distorting other parts. A critical reader realizes the way in which reading, by its very nature, means entering into a point of view other than our own, the point of view of the writer. A critical reader actively looks for assumptions, key concepts and ideas, reasons and justifications, supporting examples, parallel experiences, implications and consequences, and any other structural features of the written text, to interpret and assess it accurately and fairly. See elements of thought.

critical society: A society which rewards adherence to the values of critical thinking and hence does not use indoctrination and inculcation as basic modes of learning (rewards reflective questioning, intellectual independence, and reasoned dissent). Socrates is not the only thinker to imagine a society in which independent critical thought became embodied in the concrete day-to-day lives of individuals: William Graham Sumner, North America's distinguished anthropologist; explicitly formulated the ideal: The critical habit of thought, if usual in a society, will pervade all its mores, because it is a way of taking up the problems of life. Men educated in it cannot be stampeded by stump orators and are never deceived by dithyrambic oratory. They are slow to believe. They can hold things as possible or probable in all degrees, without certainty and without pain. They can wait for evidence and weigh evidence, uninfluenced by the emphasis or confidence with which assertions are made on one side or the other. They can resist appeals to their dearest prejudices and all kinds of cajolery. Education in the critical faculty is the only education of which it can be truly said that it makes good citizens. (Folkways, 1906) Until critical habits of thought pervade our society, however, there will be a tendency for schools as social institutions to transmit the prevailing world view more or less uncritically, to transmit it as reality, not as a picture of reality.

Education for critical thinking, then, requires that the school or classroom become a microcosm of a critical society. See didactic instruction, dialogical instruction, intellectual virtues, knowledge.

critical thinking: 1) Disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking. 2) Thinking that displays mastery of intellectual skills and abilities. 3) The art of thinking about your thinking while you are thinking in order to make your thinking better: more clear, more accurate, or more defensible. Critical thinking can be distinguished into two forms: "selfish" or "sophistic", on the one hand, and "fair-minded", on the other. In thinking critically, we use our command of the elements of thinking to adjust our thinking successfully to the logical demands of a type or mode of thinking. See critical person, critical society, critical reading, critical listening, critical writing, perfections of thought, elements of thought, domains of thought, intellectual virtues.

critical writing: To express ourselves in language requires that we arrange our ideas in some relationships to each other. When accuracy and truth are at issue, then we must understand what our thesis is, how we can support it, how we can elaborate it to make it intelligible to others, what objections can be raised to it from other points of view, what the limitations are to our point of view, and so forth. Disciplined writing requires disciplined thinking; disciplined thinking is achieved through disciplined writing. See critical listening, critical reading, logic of language.

critique: An objective judging, analysis, or evaluation of something. The purpose of critique is the same as the purpose of critical thinking: to appreciate strengths as well as weaknesses, virtues as well as failings. Critical thinkers critique in order to redesign, remodel, and make better.

cultural association: Undisciplined thinking often reflects associations, personal and cultural absorbed or uncritically formed. If a person who was cruel to me as a child had a particular tone of voice. I may find myself disliking a person who has the same tone of voice. Media advertising juxtaposes and joins logically unrelated

things to influence our buying habits. Raised in a particular country or within a ‘particular group within it, we form any number of mental links which if they remain unexamined, unduly influence our thinking. See concept, critical society.

cultural assumption: Unassessed (often implicit) belief adopted by virtue of upbringing in a society. Raised in a society, we unconsciously take on its point of view, values, beliefs, and practices. At the root of each of these are many kinds of assumptions. Not knowing that we perceive, conceive, think, and experience within assumptions we have taken in, we take ourselves to be perceiving "things as they are" not "things as they appear from a cultural vantage point". Becoming aware of our cultural assumptions so that we might critically examine them is a crucial dimension of critical thinking. It is, however a dimension almost totally absent from schooling. Lip service to this ideal is common enough; a realistic emphasis is virtually unheard of. See ethnocentricity, prejudice, social contradiction.

data: Facts, figures, or information from which conclusions can be inferred, or upon which interpretations or theories can be based. As critical thinkers we must make certain to distinguish hard data from the inferences or conclusions we draw from them.

dialectical thinking: Dialogical thinking (thinking within more than one perspective) conducted to test the strengths and weaknesses of opposing points of view. (Court trials and debates are. in a sense. dialectical.) When thinking dialectically, reasons pit two or more opposing points of view in competition with each other developing each by providing support raising objections countering those objections, raising further objections, and so on. Dialectical thinking or discussion can be conducted so as to "win" by defeating the positions one disagrees with using critical insight to support one's own view and point out flaws in other views (associated with critical thinking in the restricted or weak sense), or fairmindedly. by conceding points that don't stand up to critique, flying to integrate or incorporate strong points found in other views, and using critical insight to develop a fuller and more accurate view (associated with critical thinking in the

fuller or strong sense). See monological problems.

dialogical instruction: Instruction that fosters dialogical or dialectic thinking. Thus, when considering a question the class brings all relevant subjects to bear and considers the perspectives of groups whose views are not canvassed in their texts for example. "What did King George think of the Declaration of Independence the Revolutionary War, the Continental Congress, Jefferson and Washington. etc.?" or. "How would an economist analyze this situation? A historian? A psychologist? A geographer?" See critical society, didactic instruction higher order learning, lower order learning.

dialogical thinking: Thinking that Involves a dialogue or extended exchange between different points of view or frames of reference. Students learn best in dialogical situations in circumstances in which they continually express their views to others and try to fit other's views into their own. See Socratic questioning, monological thinking, multilogical thinking, dialectical thinking.

didactic instruction: Teaching by telling. In didactic instruction, the teacher directly tells the student what to believe and think about a subject. The student's task is to remember what the teacher said and reproduce it on demand. In its most common form, this mode of teaching falsely assumes that one can directly give a person knowledge without that person having to think his or her way to it. It falsely assumes that knowledge can be separated from understanding and justification. It confuses the ability to state a principle with understanding it the ability to supply a definition with knowing a new word, and the act of saying that something is important with recognizing its importance. See critical society, knowledge.

domains of thought: Thinking can be oriented or structured with different issues or purposes in view, Thinking varies in accordance with purpose and issue. Critical thinkers learn to discipline their thinking to take into account the nature of the issue or domain. We see this most clearly, when we consider the difference between issues and thinking within different academic disciplines or subject areas. Hence mathematical thinking is quite different from, say historical thinking.

Mathematics and history we can say then represent different domains of thought. See the logic of questions.

Egocentricity: A tendency to view everything in relationship to oneself; to confuse immediate perception (how things seem) with reality. One's desires, values, and beliefs (seeming to be self-evidently correct or superior to those of others) are often uncritically used as the norm of all judgment and experience. Egocentricity is one of the fundamental impediments to critical thinking. As one learns to think critically in a strong sense, one learns to become more rational, and less egocentric. See human nature, strong sense critical thinker, ethnocentrism, sociocentrism, personal contradiction.

elements of thought: All thought has a universal set of elements, each of which can be monitored for possible problems: Are we clear about our purpose or good about the problem or question, at issue about our point of view or frame of reference, about our assumptions and about the claims we are making, about the reasons or evidence upon which we are basing our claims about our inferences and line of reasoning, about the implications and consequences that follow from our reasoning. Critical thinkers develop skills of identifying and assessing these elements in their thinking and in the thinking of others.

emotion: A feeling aroused to the point of awareness, often a strong feeling or state of excitement. When our egocentric emotions or feelings get involved, when we are excited by infantile anger, fear, jealousy, etc., our objectivity often decreases. Critical thinkers need to be able to monitor their egocentric feelings and use their rational passions to reason themselves into feelings appropriate to the situation as it really is, rather than to how it seems to their infantile ego. Emotions and feelings themselves are not irrational; however, it is common for people to feel strongly when their ego is stimulated. One way to understand the goal of strong sense critical thinking is as the attempt to develop rational feelings and emotions at the expense of irrational, egocentric ones. See rational passions, intellectual virtues.

empirical: Relying or based on experiment, observation, or experience rather than

on theory or meaning. It is important to continually distinguish those considerations based on experiment, observation, or evidence from those based on the meaning of a word or concept or the implications of a theory. One common form of uncritical or selfish critical thinking involves distorting acts or experience in order to preserve a preconceived meaning or theory. For example, a conservative may distort the facts that support a liberal perspective to prevent empirical evidence from counting against a theory of the world that he or she holds rigidly. Indeed, within all perspectives and belief systems many will distort the facts before they will admit to a weakness in their favorite theory or belief. See data. fact. evidence.

empirical implication: That which follows from a situation or fact, not due to the logic of language, but from experience or scientific law. The redness of the coil on the stove empirically implies dangerous heat.

ethnocentricity: A tendency to view one's own race or culture as central, based on the deep-seated belief that one's own group is superior to all others. Ethnocentrism is a form of egocentrism extended from the self to the group. Much uncritical or selfish critical thinking is either egocentric or ethnocentric in nature. (Ethnocentrism' and 'sociocentrism' are used synonymously, for the most part. though 'sociocentricity is broader, relating to any group. including, for example, sociocentricity regarding one's profession.) The "cure" for ethnocentrism or sociocentrism is empathic thought within the perspective of opposing groups and cultures. Such empathic thought is rarely cultivated in the societies and schools of today. Instead, many people develop an empty rhetoric of tolerance, saying that others have different beliefs and ways, but without seriously considering those beliefs and ways, what they mean to those others, and their reasons for maintaining them.

evaluation: To judge or determine the worth or quality of. Evaluation has a logic and should be carefully distinguished from mere subjective preference. The elements of its logic may be put in the form of questions which may be asked whenever an evaluation is to be carried out: I) Are we clear about what precisely

we are evaluating?: 2) Are we clear about our purpose? Is our purpose legitimate?: 3) Given our purpose, what are the relevant criteria or standards for evaluation?: 4) Do we have sufficient information about that which we are evaluating? Is that information relevant to the purpose and 5) Have we applied our criteria accurately and fairly to the facts as we know them? Uncritical thinkers often treat evaluation as mere preference or treat their evaluative judgments as direct observations not admitting of error.

evidence: The data on which a Judgment or conclusion might be based or by which proof or probability might be established. Critical thinkers distinguish the evidence or raw data upon which they base their interpretations or conclusions from the inferences and assumptions that connect data to conclusions. Uncritical thinkers treat their conclusions as something given to them in experience, as something they directly observe in the world. As a result, they find it difficult to see why anyone might disagree with their conclusions. After all, the truth of their views is, they believe; right there for everyone to see such people find it difficult or even impossible to describe the evidence or experience without coloring that description with their interpretation.

explicit: Clearly stated and leaving nothing implied: explicit is applied to that which is so clearly stated or distinctly set forth that there should be no doubt as to the meaning; exact and precise in this connection both suggest that which is strictly defined, accurately stated, or made unmistakably dear; definite implies precise limitations as to the nature, character, meaning. etc, of something: specific implies the pointing up of details or the particularizing of references. Critical thinking often requires the ability to be explicit, exact, definite, and specific. Most students cannot make what is implicit in their thinking explicit. This deficiency hampers their ability to monitor and assess their thinking.

fact: What actually happened, what is true: verifiable by empirical means; distinguished from interpretation, inference, judgment, or conclusion: the raw data. There are distinct senses of the word 'factual: 'True" (as opposed to "claimed to be true"); and "empirical (as opposed to conceptual or evaluative). You may make

many factual claims" in one sense, that is, claims which can be verified or disproven by observation or empirical study but I must evaluate those claims to determine if they are true. People often confuse these two senses, even to the point of accepting as true, statements which merely "seem factual", for example. '29.23 % of Americans suffer from depression." Before I accept this as true. I should assess it. I should ask such questions as "How do you know? How could this be known? Did you merely ask people if they were depressed and extrapolate those results? How exactly did you arrive at this figurer Purported facts should be assessed for their accuracy, completeness, and relevance to the issue. Sources of purported facts should be assess,-.1 for their qualifications, track records and impartiality. Education which stresses retention and repetition of factual claims stunts students' desire and ability to assess alleged facts, leaving them open to manipulation. Activities in which students are asked to "distinguish fact from opinion" often confuse these two senses. They encourage students to accept as true statements which merely look like facts. See intellectual humility knowledge.

fair: Treating both or all sides alike without reference to one's own feelings or interests: just implies adherence to a standard of rightness or lawfulness without reference to one's own inclinations; impartial and unbiased both imply freedom from prejudice for or against any side: passionate implies the absence of passion or strong emotion, hence, connotes cool, disinterested judgment: objective implies a viewing of persons or things without reference to oneself, one's interests, etc.

faith: I) Unquestioning belief in anything. 2) Confidence, trust, or reliance. A critical thinker does not accept faith in the first sense, for every belief is reached on the basis of some thinking, which may or may not be justified. Even In religion one believes in one religion rather than another, and in doing so implies that there are good reasons for accepting one rather than another. A Christian, for example, believes that there are good reasons for not being an atheist and Christians often attempt to persuade non-Christians to change their beliefs. In some sense, then, everyone has confidence in the capacity of his or her own mind to judge rightly on the basis of good reasons, and does not believe simply on the basis of blind faith.

fallacy/fallacious*:* An error in reasoning: flaw or defect in argument: an argument which doesn't conform to rules of good reasoning (especially one that appears to be sound). Containing or based on a fallacy: deceptive in appearance or meaning: misleading: delusive.

higher order learning*:* Learning through exploring the foundations justification. implications and value of a fact, principle skill, or concept. Learning so as to deeply understand. One can learn in keeping With the rational capacities of the human mind or in keeping with its irrational propensities. cultivating the capacity of the human mind to discipline and direct its thought through commitment to intellectual standards, or one can learn through mere association. Education for critical thought produces higher order learning by helping students actively think their way to conclusions: discuss their thinking with other students and the teacher entertain a variety of points of view; analyze concepts theories, and explanations in their own terms: actively question the meaning and implications of what they learn: compare what they learn to what they have experienced: take what they read and write seriously: solve non-routine problems: examine assumptions: and gather and assess evidence. Students should learn each subject by engaging in thought within that subject. They should learn history by thinking historically, mathematics by thinking mathematically. etc. See dialogical instruction, lower order learning critical society, knowledge principle, domains of thought.

human nature: The common qualities of all human beings. People have both a primary and a secondary nature. Our primary nature is spontaneous egocentric, and strongly prone to irrational belief formation. It is the basis for our instinctual thought. People need no training to believe what they want to believe: what serves their immediate interests, what preserves their sense of personal comfort and righteousness, what minimizes their sense of inconsistency and what presupposes their own correctness. People need no special training to believe what those around them believe: what their parents and friends believe, what is taught to them by religious and school authorities, what is repeated often by the media, and what is commonly believed in the nation in which they are raised. People need no training

to think that those who disagree with them are wrong and probably prejudiced. People need no training to assume that their own most fundamental beliefs are self-evidently true or easily justified by evidence. People naturally and spontaneously identify with their own beliefs. They experience most disagreement as personal attack. The resulting defensiveness interferes with their capacity to empathize with or enter into other points of view. On the other hand people need extensive and systematic practice to develop their secondary nature, their implicit capacity to function as rational persons. They need extensive and systematic practice to recognize the tendencies they have to form irrational beliefs. They need extensive practice to develop a dislike of inconsistency, a love of clarity, a passion to seek reasons and evidence and to be fair to points of view other than their own. People need extensive practice to recognize that they indeed have a point of view, that they live inferentially, that they do not have a direct pipeline to reality, that it is perfectly possible to have an overwhelming inner sense of the correctness of one's views and still be wrong. See intellectual virtues.

idea: Anything existing ln the mind as an object of knowledge or thought: concept refers to generalized idea of a class of objects based on knowledge of particular instances of the class: conception, often equivalent to concept, specifically refers to something conceived in the mind or imagined; thought refers to any idea, whether or not expressed, that occurs to the mind in reasoning or contemplation; notion implies vagueness or incomplete intention; impression also implies vagueness of an idea provoked by some external stimulus. Critical thinkers are aware of what ideas they are using in their thinking, where those ideas came from, and how to assess them. See clarify, concept, logic, logic of language.

imply/implication: A claim or truth, which follows from other claims or truths. One of the most important skills of critical thinking is the ability to distinguish between what is actually implied by a statement or situation from what may be carelessly inferred by people. Critical thinkers try to monitor their inferences to keep them in line with what is actually implied by what they know. When speaking, critical thinkers try to use words that imply only what they can

legitimately justify. They recognize that there are established word usages which generate established implications. To say of an act that it is murder, for example is to imply that it is intentional and unjustified. See clarify, precision, logic of language, critical listening, critical reading, elements of thought.

Infer/inference: An inference is a step of the mind, an intellectual act by which one concludes that something is so in light of something else's being so, or seeming to be so. If you come at me with a knife in your hand. I would probably infer that you mean to do me harm. Inferences can be strong or weak, justified or unjustified. Inferences are based upon assumptions. See imply/implication.

Insight: The ability to see and clearly and deeply understand the inner nature of things. Instruction for critical thinking fosters insight rather than mere performance; it cultivates the achievement of deeper knowledge and understanding through insight. Thinking one's way into and through a subject leads to insights as one synthesizes what one is learning, relating one subject to other subjects and all subjects to personal experience. Rarely is insight formulated as a goal in present curricula and texts. See dialogical instruction, higher order learning, lower order learning, didactic instruction, intellectual humility.

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. See know, knowledge.

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 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 we sometimes rationally justyfied (in whole or in part), and that conclusions or beliefs espoused by those wound 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 rue to our own thinking in such circumstances. Examining beliefs is difficult, and the penalties for non-conformity are often severe.

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 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 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 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.

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.

Interpret / interpretation: To give one's own conception of, to place in the context of one's own experience, perspective, point of view, or philosophy. Interpretations should be distinguished from the facts, the evidence, and the situation. (I may interpret someone's silence as an expression of hostility toward me. Such an interpretation may or may not be correct. I may have projected my patterns of motivation and behavior onto that person or I may have accurately noticed this pattern in the other.) The best interpretations take the most evidence into account. Critical thinkers recognize their interpretations, distinguish them from evidence, consider alternative interpretations, and reconsider their interpretations in the light of new evidence. All learning involves personal interpretation, since whatever we learn we must integrate into our own thinking and action. What we learn must be given a meaning by us, must be meaningful to us, and hence involves interpretive acts on our part. Didactic instruction, in attempting to directly implant knowledge in students' minds, typically ignores the role of personal interpretation in learning.

intuition: The direct knowing or learning of something without the conscious use of reasoning. We sometimes seem to know or learn things without recognizing how we came to that knowledge. When this occurs, we experience an inner sense that what we believe is true. The problem is that sometimes we are correct (and have genuinely experienced an intuition) and sometimes we are incorrect (having fallen victim to one of our prejudices). A critical thinker does not blindly accept

that what he or she thinks or believes but cannot account for is necessarily true. A critical thinker realizes how easily we confuse intuitions and prejudices. Critical thinkers may follow their inner sense that something is so, but only with a healthy sense of intellectual humility. There is a second sense of 'intuition' that is important for critical thinking, and that is the meaning suggested in the following sentence: 'To develop your critical thinking abilities, it is important to develop your critical thinking intuitions." This sense of the word is connected to the fact that we can learn concepts at various levels of depth. If we learn nothing more than an abstract definition for a word and do not learn how to apply it effectively in a wide variety of situations, one might say that we end up with no intuitive basis for applying it. We lack the insight into how, when, and why it applies. Helping students to develop critical thinking intuitions is helping them gain the practical insights necessary for a ready and swift application of concepts to cases in a large array of circumstances. We want critical thinking to be "intuitive" to our students, ready and available for immediate translation into their everyday thought and experience.

irrational/irrationality: 1) Lacking the power to reason. 2) Contrary to reason or logic. 3) Senseless, absurd. Uncritical thinkers have failed to develop the ability or power to reason well. Their beliefs and practices, then, are often contrary to reason and logic, and are sometimes senseless or absurd. It is important to recognize, however, that in societies with irrational beliefs and practices, it is not clear whether challenging those beliefs and practices and therefore possibly endangering oneself is rational or irrational. Furthermore, suppose one's vested interests are best advanced by adopting beliefs and practices that are contrary to reason. Is it then rational to follow reason and negate one’s vested interests or follow one's interests and ignore reason? These very real dilemmas of everyday life represent on-going problems for critical thinkers. Selfish critical thinkers, of course, face no dilemma here because of their consistent commitment to advance their narrow stakes. Fair-minded critical thinkers make these decisions self-consciously and honestly assess the results.

irrational learning: All rational learning presupposes rational assent. In addition, though we sometimes forget it, not all learning is automatically or even commonly rational. Much that we learn in everyday life is quite distinctively irrational. It is quite possible and indeed the bulk of human learning is unfortunately of this character to come to believe any number of things without knowing how or why. It is quite possible, in other words, to believe for irrational reasons: because those around us believe, because we are rewarded for believing, because we are afraid to disbelieve, because our vested interest is served by belief, because we are more comfortable with belief, or because we have ego identified ourselves, our image, or our personal being with belief. In all of these cares, our beliefs are without rational grounding, without good reason and evidence, without the foundation a rational person demands. We become rational, on the other hand, to the extent that our beliefs and actions are grounded in good reasons and evidence; to the extent that we recognize and critique our own irrationality; to the extent that we are not moved by bad reasons and a multiplicity of irrational motives, fears, and desires; to the extent that we have cultivated a passion for clarity, accuracy, and fairmindedness. These global skills, passions, and dispositions, integrated into behavior and thought, characterize the rational, the educated, and the critical person. See higher and lower order learning, knowledge, didactic instruction.

judgment: 1) The act of judging or deciding. 2) Understanding and good sense. A person has good judgment when they typically judge and decide on the basis of understanding and good sense. Whenever we form a belief or opinion, make a decision, or act, we do so on the basis of implicit or explicit judgments. All thought presupposes making judgments concerning what is so and what is not so, what is true and what is not. To cultivate people's ability to think critically is to foster their judgment, to help them to develop the habit of judging on the basis of reason, evidence, logic, and good sense. Good judgment is developed, not by merely learning about principles of good judgment, but by frequent practice judging and assessing judgments.

justify/justification: The act of showing a belief, opinion, action, or policy to be in

accord with reason and evidence, to be ethically acceptable, or both. Education should foster reasonability in students. This requires that both teachers and students develop the disposition to ask for and give justifications for beliefs, opinions, actions, and policies. Asking for' a justification should not, then, be viewed as an insult or attack, but rather as a normal act of a rational person. Didactic modes of teaching that do not encourage students to question the justification for what is asserted fail to develop a thoughtful environment conducive to education.

know: To have a clear perception or understanding of, to be sure of, to have a firm mental grasp of: information applies to data that are gathered in any way, as by reading, observation, hearsay, etc. and does not necessarily connote validity; knowledge applies to any body of facts gathered by study, observation, etc. and to the ideas inferred from these facts, and connotes an understanding of what is !mown. Critical thinkers need to distinguish knowledge from opinion and belief. See knowledge.

knowledge: The act of having a clear and justifiable grasp of what is so or of how to do something. Knowledge is based on understanding or skill, which in turn are based on thought, study, and experience. Thoughtless knowledge' is a contradiction. 'Blind knowledge' is a contradiction. 'Unjustifiable knowledge' is a contradiction. Knowledge implies justifiable belief or skilled action. Hence, when students blindly memorize& and are tested for recall, they are not being tested for knowledge. Knowledge is continually contused with recall in present-day schooling. This confusion is a deep-seated impediment to the integration of critical thinking into schooling. Genuine knowledge is inseparable from thinking minds. We often wrongly talk of knowledge as though it could be divorced from thinking, as though it could be gathered up by one person and given to another in the form of a collection of sentences to remember. When we talk in this way, we forget that knowledge, by its very nature, depends on thought. Knowledge is produced by thought, analyzed by thought, comprehended by thought, organized, evaluated, maintained, and transformed by thought. Knowledge can be acquired only through

thought. Knowledge exists, properly speaking, only in minds that have comprehended and justified it through thought. Knowledge is not to be confused with belief nor with symbolic representation of belief. Humans easily and frequently believe things that are false or believe things to be true without knowing them to be so. A book contains knowledge only in a derivative sense, only because minds can thoughtfully read it and through that process gain knowledge.

logic: 1) Correct reasoning or the study of correct reasoning and its foundations. 2) The relationships between propositions (supports, assumes, implies, contradicts, counts against, and is relevant to ...). 3) The system of principles, concepts, and assumptions that underlie any discipline, activity, or practice. 4) The set of rational considerations that bear upon the truth or justification of any belief or set of beliefs. 5) The set of rational considerations that bear upon the settlement of any question or set of questions. The word 'logic' covers a range of related concerns all bearing upon the question of rational justification and explanation. All human thought and behavior is to some extent based on logic rather than instinct. Humans try to figure things out using ideas, meanings, and thought. Such intellectual behavior inevitably involves logic" or considerations of a logical sort: some sense of what is relevant and irrelevant, of what supports and what counts against a belief, of what we should and should not assume, of what we should and should not claim, of what we do and do not know, of what is and is not implied, of what does and does not contradict, of what we should or should not do or believe. Concepts have a logic in that we can investigate the conditions under which they do and do not apply, of what is relevant or irrelevant to them, of what they do or don't imply, etc. Questions have logic in that we can investigate the conditions under which they can be settled. Disciplines have a logic in that they have purposes and a set of logical structures that bear upon those purposes: assumptions, concepts, issues, data, theories, claims, implications, consequences, etc. The concept of logic is a seminal notion in critical thinking. Unfortunately, it takes a considerable length of time before most people become comfortable with its multiple uses. In part, this is due to people’s failure to monitor their own

thinking in keeping with the standards of reason and logic. This is not to deny, of course, that logic is involved in all human thinking. It is rather to say that the logic we use is often implicit, unexpressed, and sometimes contradictory. See knowledge, higher and lower order learning, the logic of a discipline, the logic of language, the logic of questions.

the logic of a discipline: The notion that every technical term has logical relationships with other technical terms, that some terms are logically more basic than others do, and that every discipline relies on concepts, assumptions, and theories, makes claims, gives reasons and evidence, avoids contradictions and inconsistencies, has implications and consequences, etc. Though all students study disciplines, most are ignorant of the logic of the disciplines they study. This severely limits their ability to grasp the discipline as a whole, to think independently within it, to compare and contrast it with other disciplines, and to apply it outside the context of academic assignments typically now, students do not look for seminal terms as they study an area. They do not strive to translate technical terms into analogies and ordinary words they understand or distinguish technical from ordinary uses of terms. They do not look for the basic assumptions of the disciplines they study. Indeed, on the whole, they do not know what assumptions are nor why it is important to examine them. What they have in their heads exists like so many BB's in a bag. Whether one thought supports or follows from another, whether one thought elaborates another, exemplifies, presupposes, or contradicts another, are matters students have not learned to think about. They have not learned to use thought to understand thought, which is another way of saying that they have not learned how to use thought to gain knowledge. Instruction for critical thinking cultivates the students' ability to make explicit the logic of what they study. This emphasis gives depth and breadth to study and learning. It lies at the heart of the differences between lower order and higher order learning. See knowledge.

the logic of language: For a language to exist and be learnable by persons from a variety of cultures, it is necessary that words have definite uses and defined

concepts that particular cultures. The English language, for example, is learned by many peoples of the world unfamiliar with English or North American cultures. Critical thinkers must learn to use their native language with precision, in keeping with educated usage. Unfortunately, many students do not understand the significant relationship between precision in language usage and precision in thought. Consider, for example, how most students relate to their native language. If one questions them about the meanings of words, their account is typically incoherent. They often say that people have their own meanings for all the words they use, not noticing that, were this true, we could not understand each other. Students speak and write in vague sentences because they have no rational criteria for choosing words they simply write whatever words pop into their heads. They do not realize that every language has a highly refined logic one must learn in order to express oneself precisely. They do not realize that even words similar in meaning typically have different implications. Consider, for example, the words explain, expound, explicate, elucidate, interpret, and construe. Explain implies the process of making clear and intelligible something not understood or known. Expound implies a systematic and thorough explanation, often by an expert. Explicate implies a scholarly analysis developed-in detail. Elucidate implies a shedding of light upon by clear and specific illustration or explanation. Interpret implies the bringing out of meanings not immediately apparent. Construe implies a particular interpretation of something whose meaning is ambiguous. See clarify, concept.

the logic of questions: The range of rational considerations that bear upon the settlement of a given question or group of questions. A critical thinker is adept at analyzing questions to determine what, precisely, a question asks and how to go about rationally settling it. A critical thinker recognizes that different kinds of questions often call for different modes of thinking, different kinds of considerations, and different procedures and techniques uncritical thinkers often confuse distinct questions and use considerations irrelevant to an issue while ignoring relevant ones.

lower order learning: Learning by rote memorization, association, and drill. There are a variety of forms, of lower order learning in the schools which we can identify by understanding the relative lack of logic informing them. Paradigmatically, lower order learning is learning by sheer association or rote. Hence students come to think of history class, for example, as a place where you hear names, dates, places, events, and outcomes: where you try to remember them and state them on tests. Math comes to be thought of as numbers, symbols, and formulas mysterious things you mechanically manipulate as the teacher told you in order to get the right answer. Literature is often thought of as uninteresting stories to remember along with what the teacher said is important about them. Consequently, students leave with a jumble of undigested fragments, scraps left over after they have forgotten most of what they stored in their short-term memories for tests. Virtually never do they grasp the logic of what they learn. Rarely do they relate what they learn to their own experience or critique each by means of the other. Rarely do they try to test what they learn in everyday life. Rarely do they ask, "Why is this-so? How does this relate to what I already know? How does this relate to what I am learning in other classes?" To put the point briefly, very few students think of what they are learning as worthy of being arranged logically in their minds or have the slightest idea of how to do so. See didactic instruction, monological and multilogical problems and thinking. ***monological (one-dimensional) problems:*** Problems that can be solved by reasoning exclusively within one point of view or frame of reference. For example, consider the following problems: 1) Ten full crates of walnuts weigh 410 pounds whereas an empty crate weighs 10 pounds. How much do the walnuts alone weight: and 2) In how many days of the week does the third letter of the day's name immediately follow the first letter of the days name in the alphabet? I call these problems and the means by which they are solved "monological". They are settled within one frame of reference with a definite set of logical moves. When the right set of moves is performed, the problem is settled. The answer or solution proposed can be shown by standards implicit in the frame of reference to be the ‘Tight" answer or solution. Most important human problems

are multilogical rather than rnonological, monatomic problems inextricably joined to other problems, with some conceptual messiness to them and very often with important values lurking in the background. When the problems have an empirical dimension, that dimension tends to have a controversial scope. In multilogical problems, it is often arguable how some facts should be considered and interpreted, and how their significance should be determined. When they have a conceptual dimension, there tend to be arguably different ways to pin the concepts down. Though life presents us with predominantly multilogical problems, schooling today over-emphasizes monological problems. Worse, and more frequently, present instructional practices treat multilogical problems as though they were monological. The posing of multilogical problems, and their consideration from multiple points of view, play an important role in the cultivation of critical thinking and higher order learning.

monological (one-dimensional) thinking: Thinking that is conducted exclusively within one point of view or frame of reference: figuring our how much this $67.49 pair of shoes with a 25% discount will cost me; learning what signing this contract obliges me to do; finding out when Kennedy was elected President. A person can think monologically whether or not the question is genuinely monological. (For example, if one consolers the question, 'Who caused the Civil War?" only from a Northerners perspective, one is thinking monologically about a multilogical question.) The strong sense critical thinker avoids monological thinking when the question is multi-logical. Moreover, higher order learning requires multi-logical thought, even when the problem is monological (for example, learning a concept in chemistry), since students must explore and assess their original beliefs to develop insight into new ideas.

multilogical (multi-dimensional) problems: Problems that can be analyzed and approached from more than one, often from conflicting, points of view or frames of reference. For example, many ecological problems have a variety of dimensions to them: historical, social, economic, biological, chemical, moral, political, etc. A person comfortable thinking about multilogical problems is comfortable thinking

within multiple perspectives, in engaging in dialogical and dialectical thinking, in practicing intellectual empathy, in thinking across disciplines and domains. See monological problems, the logic of questions, the logic of disciplines, intellectual empathy, dialogical instruction.

multilogical thinking: Thinking that sympathetically enters, considers, and reasons within multiple points of view. See multtlogical problems, dialectical thinking, dialogical instruction.

national bias: Prejudice in favor of one's country, it's beliefs, traditions, practices, image, and world view; a form of sociocentrism or ethnocentrism. It is natural, if not inevitable, for people to be favorably disposed toward the beliefs, traditions, practices, and worldview within which they were raised. Unfortunately, this favorable inclination commonly becomes a form of prejudice: a more or less rigid, irrational ego-identification, which significantly distorts one's view of one's own nation and the world at large. It is manifested in a tendency to mindlessly take the side of one's own government, to uncritically accept governmental accounts of the nature of disputes with other nations, to uncritically exaggerate the virtues of one's own nation while playing down the virtues of "enemy" nations. National bias is reflected in the press and media coverage of every nation of the world. Events are included or excluded according to what appears significant within the dominant world view of the nation, and are shaped into stories to validate that view. Though constructed to fit into a particular view of the world, the stories in the news are presented as neutral, objective accounts, and uncritically accepted as such because people tend to uncritically assume that their own view of things is the way things really are. To become responsible critically thinking citizens and fair-minded people, students must practice identifying national bias in the news and in their texts, and to broaden their perspective beyond that of uncritical nationalism. See ethnocentrism, sociocentrisrn, bias, prejudice, worldview, intellectual empathy, critical society, dialogical instruction, knowledge.

opinion: A belief, typically one open to dispute. Sheer unreasoned opinion should be distinguished from reasoned judgment beliefs formed on the basis of careful

reasoning. See evaluation, judgment, justify, know, knowledge, reasoned judgment

the perfections of thought: Thinking, as an attempt to understand the world as it is, has a natural excellence or fitness to it. This excellence is manifest in its clarity, precision, specificity, accuracy, relevance, consistency, logicalness, depth, completeness, significance, fairness, and adequacy. These perfections are general canons for thought; they represent legitimate concerns irrespective of the discipline or domain of thought. To develop one's mind and discipline one is thinking with respect to these standards requires extensive practice and long-term cultivation. Of course, achieving these standards is a relative matter and varies somewhat among domains of thought. Being precise while doing mathematics is not the same as being precise while writing a poem, describing an experience, or explaining a historical event. Furthermore, one perfection of thought may be periodically incompatible with the others: adequacy to purpose. Time and resources sufficient to thoroughly analyze a question or problem is all too often an unaffordable luxury. Also, since the social world is often irrational and unjust, because people are often manipulated to act against their interests, and because skilled thought often serves vested interest, thought adequate to these manipulative purposes may require skilled violation of the common standards for good thinking. Skilled propaganda, skilled political debate, skilled defense of a group's interests, skilled deception of one's enemy may require the violation or selective application of any of the above standards. Perfecting one's thought as an instrument for success in a world based on power and advantage differs from perfecting one's thought for the apprehension and defense of fairminded truth. To develop one's critical thinking skills merely to the level of adequacy for social success is to develop those skills in a lower or weaker sense.

personal contradiction: An inconsistency in one's personal life, wherein one says one thing and does another, or uses a double standard, judging oneself and one's friends by an easier standard than that used for people one doesn't like; typically a form of hypocrisy accompanied by self-deception. Most personal contradictions remain unconscious. People too often ignore the difficulty of becoming

intellectually and morally consistent, preferring instead to merely admonish others. Personal contradictions are more likely to be discovered, analyzed, and reduced in an atmosphere in which they can be openly admitted and realistically considered without excessive penalty. See egocentricity, intellectual integrity.

perspective (point of view): Human thought is relational and selective. It is impossible to understand any person, event, or phenomenon from every vantage point simultaneously. Our purposes often control how we see things. Critical thinking requires that this fact be taken into account when analyzing and assessing thinking. This is not to say that human thought is incapable of truth and objectivity, but only that human truth, objectivity, and insight is virtually always limited and partial, virtually never total and absolute. The hard sciences are themselves a good example of this point, since qualitative realities are systematically ignored in favor of quantifiable realities.

precision: The quality of being accurate, definite, and exact. The standards and modes of precision vary according to subject and context. See the logic of language, elements of thought.

prejudice: A judgment, belief, opinion, point of view favorable or unfavorable formed before the facts are known, resistant to evidence and reason, or in disregard of facts which contradict it. Self-announced prejudice is rare. Prejudice almost always exists in obscured, rationalized, socially validated, functional forms. It enables people to sleep peacefully at night even while flagrantly abusing the rights of others. It enables people to get more of what they want, or to get it more easily. It is often sanctioned with a superabundance of pomp and self-righteousness. Unless we recognize these powerful tendencies toward selfish thought in our social institutions, even in what appear to be lofty actions and moralistic rhetoric, we will not face squarely the problem of prejudice in human thought and action. Uncritical and selfishly critical thought are often prejudiced. Most instruction in schools today, because students do not think their way to what they accept as true, tends to give students prejudices rather than knowledge. For example, partly as a result of schooling, people often accept as authorities those who liberally sprinkle their

statements with numbers and intellectual-sounding language, however irrational or unjust their positions. This prejudice toward pseudo-authority impedes rational assessment. See insight, knowledge.

premise: A proposition upon which an argument is based or from which a conclusion Is drawn. A starting point of reasoning. For example, one might say, in commenting on someone's reasoning, 'You seem to be reasoning from the premise that everyone is selfish in everything they do. Do you hold this belief?"

principle: A fundamental truth, law, doctrine, value, or commitment, upon which others are based. Rules, which are more specific, and often superficial and arbitrary are based on principles. Rules are more algorithmic: they needn't be understood to be followed. Principles must be understood to be appropriately applied or followed. Principles go to the heart of the matter. Critical thinking is dependent on principles, not rules and procedures. Critical thinking is principled, not procedural, thinking. Principles cannot be truly grasped through didactic instruction; they must be practiced and applied to be internalized. See higher order learning, lower order learning, judgment.

problem: A question, matter, situation, or person that is perplexing or difficult to figure out, handle, or resolve. Problems, like questions, can be divided into many types. Each has a (particular) logic. See logic of questions, monological problems, multilogical problems.

problem-solving: Whenever a problem cannot be solved formulaically or robotically, critical thinking is required: first, to determine the nature and dimensions of the problem, and then, in the light of the first, to determine the considerations, points of view, concepts, theories, data, and reasoning relevant to its solution. Extensive practice in independent problem-solving is essential to developing critical thought. Problem-solving is rarely best approached procedurally or as a series of rigidly followed steps. For example, problem-solving schemas typically begin, "State the problem." Rarely can problems be precisely and fairly stated prior to analysis, gathering of evidence, and dialogical or dialectical thought wherein several provisional descriptions of the problem are

proposed, assessed, and revised.

proof (prove): Evidence or reasoning so strong or certain as to demonstrate the truth or acceptability of a conclusion beyond a reasonable doubt. How strong evidence or reasoning have to be to demonstrate what they purport to prove varies from context to context, depending on the significance of the conclusion or the seriousness of the implications following from it. See domain of thought.

rational/rationality: That which conforms to principles of good reasoning, is sensible, shows good judgment, is consistent, logical, complete, and relevant. Rationality is a summary term like 'virtue' or 'goodness'. It is manifested in an unlimited number of ways and depends on a host of principles. There is some ambiguity in it, depending on whether one considers only the logicalness and effectiveness by which one pursues one's ends, or whether it includes the assessment of ends themselves. There is also ambiguity in whether one considers its ends to be rational, even when they conflict with what is just. Does a rational person have to be just or only skilled in pursuing his or her interests? Is it rational to be rational in an irrational world? See perfections of thought, irrational/irrationality, logic, intellectual virtues, weak sense critical thinking, strung sense critical thinking,

rational emotions/passions: R. S. Peters has explained the significance of the affective side of reason and critical thought in his defense of the necessity of "rational passions": There is, for instance, the hatred of contradictions and inconsistencies, together with the love of clarity and hatred of confusion without which words could not be held to relatively constant meanings and testable rules and generalizations stated. A reasonable man cannot, without some special explanation, slap his sides with delight or express indifference if he is told that what he says is confused, incoherent, and perhaps riddled with contradictions. Reason is the antithesis of arbitrariness. In its operation it is supported by the appropriate passions which are mainly negative in character the hatred of irrelevance, special pleading, and arbitrary fiat. The more developed emotion of indignation is aroused when excess of arbitrariness is perpetuated in a situation

where people's interests and claims are at stake. The positive side of this is the passion for fairness and impartial consideration of claims .... A man who is prepared to reason must feel strongly that he must follow the arguments and decide things in terms of where they lead. He must have a sense if the giveness of the impersonality of such considerations. In so far as thoughts about persons enter his head they should be tinged with the respect with this due to another who, like himself, may have a point of view which is worth considering, who may have a glimmering of the truth which has so far eluded himself. A person who proceeds in this way, who is influenced by such passions, is what we call a reasonable man.

ralonal self,: Our character and nature to the extent that we seek to base our beliefs and actions on good reasoning and evidence. Who we are, what our true character b, or our predominant qualities are, is always somewhat or even greatly different from who we think we are. Human egocentrism and accompanying self-deception often stand in the way of sur gaining more insight into ourselves. We can develop a rational self, become a person who gains significant insight into what our true character is, only by reducing our egocentrism and self-deception. Critical thinking is essential to this process.

rational society: See critical society.

reasoned judgment: Any belief or conclusion reached on the basis of careful thought and reflection, distinguished from mere or unreasoned opinion on the one hand, and from sheer fact on the other. Few people have a clear sense of which of their beliefs are based on reasoned judgment and which on mere opinion. Moral or ethical questions, for example, are questions requiring reasoned judgment. One way of conceiving of subject-matter education is as developing students' ability to engage in reasoned judgment in accordance with the standards of each subject.

reasoning: The mental processes of those who reason; especially the drawing of conclusions or inferences from observations, facts or hypotheses; the evidence or arguments used in this procedure. A critical thinker tries to develop the capacity to transform thought into reasoning at will, or rather, the ability to make his or her inferences explicit, along with the assumptions or premises upon which those

inferences are based. Reasoning is a form of explicit inferring, usually involving multiple steps. When students write a persuasive paper, for example, we want them to be clear about their reasoning.

reciprocity: The act of entering empathically into the point of view or line of reasoning of others: learning to think as others do and by that means sympathetically assessing that thinking. (Reciprocity requires creative imagination as well as intellectual skill and a commitment to fairmindedness.)

relevant: Bearing upon or relating to the matter at hand: relevant implies close logical relationship with, and importance to, the matter under consideration; germane implies such close natural connection as to be highly appropriate or fit; pertinent implies an immediate and direct bearing on, the matter at hand (a pertinent suggestion); apposite applies to that which is both relevant and happily suitable or appropriate; applicable refers to that which can be brought to bear upon a particular matter or problem. Students often have problems sticking to an issue and distinguishing information that bears upon a problem from information that does not. Merely reminding students to limit themselves to relevant considerations fails to solve this problem. The usual way of teaching students the term 'relevant' is to mention only clear-cut cases of relevance and irrelevance. Consequently, students do not learn that not everything that seems relevant is, or that some things which do not seem relevant are. Sensitivity to (ability to judge) relevance can only be developed with continual practice distinguishing relevant from irrelevant data, evaluating or judging relevance, arguing for and against the relevance of facts and considerations.

self-deception: Deceiving ones self about one's true motivations, character, identity. etc. One possible definition of the human species is 'The Self-Deceiving Animal". Self-deception is a fundamental problem in human life and the cause of much human suffering. Overcoming self-deception through self-critical thinking is a fundamental goal of strong sense critical thinking. See egocentric, rational self, personal contradiction, social contradiction, and intellectual virtues.

social contradictor: An inconsistency between what a society preaches and what

it practices. In every society there is some degree of inconsistency between its image of itself and its actual character. Social contradiction typically correlates with human self-deception on the social or cultural level. Critical thinking is essential for the recognition of inconsistencies, and recognition is essential for reform and eventual integrity.

sociocentricity: The assumption that one's own social group is inherently and self-evidently superior to all others. When a group or society sees itself as superior, and so considers its views as correct or as the only reasonable or justifiable views, and all its actions as justified, there is a tendency to presuppose this superiority in all of its thinking and thus, to think closedmindedly. All dissent and doubt are considered disloyal and rejected without consideration. Few people recognize the sociocentric nature of much of their thought.

socratic questioning: A mode of questioning that deeply probes the meaning, justification, or logical strength of a claim, position, or line of reasoning. Socratic questioning can be carried out in a variety of ways and adapted to many levels of ability and understanding. See elements of thought, dialogical instruction, knowledge.

specify/specific: To mention, describe, or define in detail; limiting or limited; specifying or specified; precise; definite. Student thinking, speech, and writing tend to be vague, abstract, and ambiguous rather than specific, concrete, and clear. Learning how to state one's views specifically is essential to learning how to think clearly, precisely, and accurately. See perfections of thought.

strong sense critical thinker: One who is predominantly characterized by the following traits: 1) an ability to question deeply one's own framework of thought; 2) an ability to reconstruct sympathetically and imaginatively the strongest versions of points of view and frameworks of thought opposed to one's own; and 3) an ability to reason dialectically (multilogically) in such a way as to determine when one's own point of view is at its weakest and when an opposing point of view is at its strongest. Strong sense critical thinkers are not routinely blinded by their own points of view. They know they have points of view and therefore

recognize on what framework of assumptions and ideas their own thinking is based. They realize the necessity of putting their own assumptions and ideas to the test of the strongest objections that can be leveled against them. Teaching for critical thinking in the strong sense is teaching so that students explicate, understand, and critique their own deepest prejudices, biases, and misconceptions, thereby discovering and contesting their own egocentric and sociocentric tendencies. Only if we contest our inevitable egocentric and sociocentric habits of thought, can we hope to think in a genuinely rational fashion. Only dialogical thinking about basic issues that genuinely matter to the individual provides the kind of practice and skill essential to strong sense critical thinking. Students need to develop all critical thinking skills in dialogical settings to achieve ethically rational development, that is, genuine fairmindedness. If critical thinking is taught simply as atomic skills separate from the empathic practice of entering into points of view that students are fearful of or hostile toward, they will simply find additional means of rationalizing prejudices and preconceptions, or convincing people that their point of view is the correct one. They will be transformed from vulgar to sophisticated (but not to strong sense) critical thinkers.

teach: The basic inclusive word for the imparting of knowledge or skills. It usually connotes some individual attention to the learner: instruct implies systematized teaching, usually in some particular subject: educate stresses the development of latent faculties and powers by formal, systematic teaching. especially in institutions of higher learning: train implies the development of a particular faculty or skill or instruction toward a particular occupation, as by methodical discipline, exercise, etc. See knowledge.

theory: A systematic statement of principles involved in a subject: a formulation of apparent relationships or underlying principles of certain observed phenomena which has been verified to some degree. Often without realizing it, we form theories that help us make sense of the people, events, and problems in our lives. Critical thinkers put their theories to the test of experience and give due consideration to the theories of others. Critical thinkers do not take their theories to

be facts.

think.: The general word meaning to exercise the mental faculties so as to form ideas, arrive at conclusions, etc.; reason implies a logical sequence of thought, starting with what is known or assumed and advancing to a definite conclusion through the inferences drawn; reflect implies a turning of one's thoughts back on a subject and connotes deep or quiet continued thought: speculate implies a reasoning on the basis of incomplete or uncertain evidence and therefore stresses the conjectural character of the opinions formed: deliberate implies careful and thorough consideration of a matter in order to arrive at a conclusion. Though everyone thinks, few people think critically. We don't need instruction to think: we think spontaneously. We need instruction to learn how to discipline and direct our thinking on the basis of sound intellectual standards. See elements of thought, perfections of thought.

truth: Conformity to knowledge, fact, actuality, or logic: a statement proven to be or accepted as true, not false or erroneous. Most people uncritically assume their views to be correct and true. Most people, in other words, assume themselves to possess the truth. Critical thinking is essential to avoid this, if for no other reason.

uncritical person: One who has not developed intellectual skills (naive, conformist, easily manipulated, dogmatic, easily confused, unclear, closedminded, narrow-minded, careless in word choice, inconsistent, unable to distinguish evidence from interpretation). Uncriticalness is a fundamental problem in human life, for when we are uncritical we nevertheless think of ourselves as critical. The first step in becoming a critical thinker consists in recognizing that we are uncritical. Teaching for insight into uncriticalness is an important part of teaching for criticalness.

vague: Not clearly, precisely, or definitely expressed or stated; not sharp, certain, or precise in thought, feeling, or expression. Vagueness of thought and expression is a major obstacle to the development of critical thinking. We cannot begin to test our beliefs until we recognize clearly what they are. We cannot disagree with what someone says until we are clear about what they mean. Students need much

practice in transforming vague thoughts into clear ones. See ambiguous, clarify, concept, logic, logic of questions, logic of language.

verbal implication: That which follows, according to the logic of the language. If I say for example, that someone used flattery on me. I imply that the compliments were insincere and given only to make me feel positively toward that person, to manipulate me against my reason or interest for some end. See imply, infer; empirical implication, elements of thought.

weak sense critical thinkers: 1) Those who do not hold themselves or those with whom they - ego-identify to the same intellectual standards to which they hold "opponents". 2) Those who have not learned how to reason empathically within points of view or frames of reference with which they disagree. 3) Those who tend to think monologically. 4) Those who do not genuinely accept, though they may verbally espouse the values of critical thinking. 5) Those who use the intellectual skills of critical thinking selectively and self-deceptively to foster and serve their vested interests (at the expense of truth); able to identify flaws in the reasoning of others and refute them: able to shore up their own beliefs with reasons.

world view: All human action takes place within a way of looking at and interpreting the world. As schooling now stands, very little is done to help students to grasp how they are viewing the world and how those views determine the character of their experience, their interpretations, their conclusions about events and persons, etc. In teaching for critical thinking in a strong sense, we make the discovery of ones own world view and the experience of other people's world views a fundamental priority. See bias, interpret.

Tasks for practice

Task-1

Language aim: to raise awareness of the importance of critical thinking

1. *Choose the response (a–f) that most honestly matches your initial reaction to this statement:*

   People these days spend so much time recording their experiences on digital media that they forget to enjoy the experience itself.

a. I’m not interested in this topic.

b. I agree that it’s true.

c. I disagree. It’s false.

d. I agree/disagree because …

e. I’m not sure. I need to think more about it. Who said this, for example? f. I agree/disagree because ... However, I’d like more evidence to see if my initial reaction is a reasonable one.

2. Now look at what your response might mean in terms of how critically you are thinking about this question:

a. How can you be sure you are not interested in this topic until you examine it in some way?

b, c. You have an opinion, but what informed that opinion?

d. You have an opinion and you have reasons for it. But are you sure that your reasons are not prejudiced in some way?

e. It’s encouraging that you want to reflect on this more deeply.

f. Great! You have reasons for your opinion, and you want to test them to see if they are well-founded.

Task-2

Language aim: to teach phrases related to sports and free-time activities using the verbs go, play, do

1. ***Make up sentences with the words***.

play soccer do yoga go fishing go swimming do ballet play chess play golf

2. Complete each sentence with the correct form of the verbs go, play, or do.

a. I don’t like golf. It’s a sport for old people.

b. We swimming yesterday at the new pool at the park.

c. My mother yoga. She says it helps her relax.

d. Shall we fishing at the weekend?

e. I can chess, but not very well.

f. I ballet when I was younger, but I gave it up.

g. Do you soccer every weekend?

3. Work in pairs. Tell your partner about an exercise or sport that you like to do.

Task-3

Language aim: to guide students to a discovery about how go, play, and do are used when talking about sports and exercise

1. ***Work in pairs. Answer the questions about these sports and activities. Then make a rule about when we use go, play, and do.***

   play soccer do yoga go fishing go swimming do ballet play chess play golf

   Which sports or activities:

   a. are between two teams or two individuals trying to win?

   b. end in -ing?

   c. are not team activities and do not use a ball?

   2. Think of five other sports and activities. What verb would you use with each one? Do they all follow the rules you made?

Task-4

Language aim: to enable students to think critically about sports and exercise and express their views using the verbs play, go, and do

Complete these statements with the correct verbs. Then say which statement you agree with. Give reasons.

a. I to win. That's the point of sport.

b. I exercise to keep fit, not because I enjoy it.

c. Exercise should be a social activity. I only team sports.

d. biking, swimming, hiking. But don't to the gym. It's not natural.

Task-5

Language aim: to analyze a book review and its structure with a view to students writing their own review

1. Read the review and answer the questions.

a. What kind of book is being reviewed?

b. What is the book about?

c. What does the reviewer like or dislike about the book?

The Bridge of San Luis Rey by Thornton Wilder

In 1714, a rope suspension bridge in Peru snaps and the five people on the bridge fall to their deaths. By chance Brother Juniper, a Franciscan monk, witnesses this tragedy. He is not only troubled by what he has seen but also troubled by why this should have happened. Why at this precise moment? Why these five people? Accordingly, he sets out to find out something about the lives of each person in order to make sense of the tragedy.

This short novel is a beautiful reflection on the subject of destiny. It is not a true story, but some of the characters are based on real people. Written in elegant prose, each chapter describes the life of one of the five people on the bridge: from the aristocratic Marquesa de Montemayor, who longs to be back in her native Spain; to the wise Uncle Pio, whose lifelong ambition to make a star of a young actress is in the end frustrated. Our interest is not kept alive by the mystery of their deaths, but by the compelling characters that Wilder has drawn so vividly: each eccentric in their own way, and each very human in their virtues and in their faults. I cannot recommend this book highly enough.

2. Answer these questions:

a. Did the review make you want to read the book? Was this the author's aim?

b. What techniques does the author use to stimulate your interest in the book (e.g., language, organization)?

3. Work in pairs. Discuss two other ways that you could write a book review to make it interesting to the reader. Then present these ideas to the class.

4. Write a review of a book you have read and enjoyed, using your preferred structure.

Task-6

Open a course book to any page, or look at a lesson plan you have recently

taught. Identify which parts of the material or the plan focus on:

- Basic comprehension
- Critical thinking
- Creative thinking

Now reflect on the following questions. Compare your answers with those in Appendix

1. How would you describe the balance between basic comprehension, critical thinking, and creative thinking in the material you chose?

2. If more time and space on the page is dedicated to one stage over another, what might be the reasons for this?

3. Do you see opportunities for critical thinking questions or activities that might have improved the lesson?

Task-7

Assign substantial, challenging and integrated macro tasks that entail research, reading, discussion and presentation in spoken and written form. For example:

- create an online magazine, examining issues of current importance
- organise a mini-conference
- organise a debating competition with students from another class
- create a podcast on a topical issue (in the students' own field of interest).

Task-8

Let your students choose their own topics for research, design their own critical questions and locate their own source materials (with support from their teacher).

Task-9

Get in touch with similar students in a different country for a Skype debate on an issue of current significance. Questions can be prepared beforehand, on the basis of critical reading and discussion. Follow up with letters and reports, or an essay on the topic.

Task-10

Analyse the use of academic referencing in two different disciplines using authentic student essays (or journal articles, if you are working at an advanced level). Discuss why references are used in different ways, not just how the form differs.

Task-11

Compare the way in which the same topic is presented in different genres, for example, health advice on exercise regimes presented in a teen magazine, on a government health website and in an academic journal article. Note the differences, discuss why these differences occur and evaluate the reliability of the information. Then, create a flyer for first year university students.

Task-12

Find contrasting articles on a topic of interest to your students (or a single article embodying different points of view). Have them identify arguments for and against by taking notes, evaluate those arguments and add more of their own. Divide them into groups for and against the topic and let them rehearse their arguments. In facing rows, have one student put forward an argument from their team. The next student from the opposite team must refute the argument and present a new point from their side, and so on. Later, with further scaffolding, the students can develop a for-and-against essay.

Task-10

Watch a short documentary on a topic of interest to your students. Analyse the purpose of the documentary, the assumptions made by it, the point of view expressed, the kind of evidence presented and any biases underpinning the presentation. Follow up with further reading and research. Have students write a position paper as a result.

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37. Academic Resource Center http://ldss.georgetown.edu Leavey Center 335; email: arc@georgetown.edu Accommodations for students with disabilities and assistance with study skills

38. Writing Center http://writingcenter.georgetown.edu 217A Lauinger Library; email: writingcenter@georgetown.edu One-on-one assistance with academic writing skills (the website also lists many helpful links)

39. Scholarly Research and Academic Integrity Resources and links: http://www.library.georgetown.edu/tutorials/academicintegrity/refresher-tipsheet

40. The Counseling and Psychiatric Service http://caps.georgetown.edu Eastern

side of Darnall Hall; phone: (202) 687-6985; 24-hour doctor on call: (202) 444-PAGE Primary mental health resource assisting students in overcoming difficulties that interfere with the attainment of their personal and educational goals

41. Health Education Services http://healthed.georgetown.edu/ 207 Village C West; phone: (202) 687-8949 Health professionals available to help students deal with a range of personal health topics, including pregnancy, alcohol and drug use and abuse, adult children of alcoholics, nutrition, eating disorders, sexual assault, relationship violence, stalking and general health promotion. All services are individualized, confidential, and free for students.
42. Student Health Center http://shc.georgetown.edu/ Darnall Hall (ground floor); Appointments: (202) 687-2200; General info: (202) 687-4500
43. LGBTQ Resource Center http://lgbtq.georgetown.edu/ 325 Leavey Center; phone: (202) 687-3546, email: lgbtq@georgetown.edu
44. The Women's Center http://womenscenter.georgetown.edu 327 Leavy Center; phone: (202) 687-6359; email: womenscenter@georgetown.edu
45. Campus Ministry http://campusministry.georgetown.edu Serving Roman Catholic, Protestant, Jewish, Muslim and Orthodox Christian students, providing links to resources for Baha'i, Buddhist, Hindu, LDS and Sikh students.
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