Reading & Writing for Critical Thinking

in

Higher Education:

Critical Thinking Across the Curriculum

Prepared by

Charles Temple, Ph.D.

Open Society Institute, New York / RWCT Project

June, 2001

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Introduction

The modern university is squeezed between its traditional mission of providing detached and scholarly reflection on the world, and its obligation to prepare young people to navigate their way through a future whose dangers may be its most discernible features. The imperative for reforming teaching is felt at all levels. Distinguished universities are called to provide distinguished teaching as well as scholarship and research. While good teaching without good scholarship may be an empty exercise, sharing scholarship without empowering students to think productively within the disciplines falls short of what is needed to prepare the next generation to face new challenges.

Reading and Writing for Critical Thinking is a teacher training project that has helped teachers teach in new ways in classrooms at all levels, from primary school through secondary school to the university. Much of the impetus for the project and many of its methods came from movements to reform university level teaching, especially from the Harvard Assessment Seminars of the 1990's. The staff of the project are happy to offer a selection of RWCT teaching methods for the use of faculty in universities. This guidebook is devoted to promoting active learning and critical thinking across the university curriculum.

Part I

What Are the Arguments for Active Learning in Higher Education?

A. Four Reasons Why Active Learning Has a Place in the University Classroom

1. Active learning and critical thinking lead to usable knowledge

As the philosopher Alfred North Whitehead (1910/1957) wrote many years ago, and the psychologist Howard Gardner (1991) has demonstrated more recently, a distinction can be made among passively acquired knowledge (school knowledge), knowledge derived unreflectively from experience (intuitive knowledge), and scientifically validated concepts and thought processes that provide informed ways of understanding the world and solving problems (disciplinary knowledge and thinking). Disciplinary thinking is acquired by active means. Indeed, unless it is acquired, we are likely to do our day-to-day thinking with our intuitive knowledge (which is often flawed) and use our school knowledge to pass tests and impress strangers at social gatherings. Disciplinary knowledge and thinking--the kind of thinking that is used by scientists, literary critics, and social philosophers--is arguably a more fitting goal of higher education. We want our students not only to know the core concepts that have come down to us through the disciplines, but also to be able to practice the systematic and informed habits of thought that created those insights, and that will lead our students to create more knowledge, and solutions to problems, even problems their professors cannot foresee.

2. Active learning promotes habits of life-long learning

An education that includes learning to learn does not start becoming outdated upon graduation, but rather prepares students to keep up an intellectual conversation with the world that continues to help their minds to grow.

3. Active learning leads to tolerant and inter-dependent social behavior

In truth, some of the most valuable lessons from university are social ones. As the name “university”

implies, students in higher education should come to know not only unfamiliar ideas, but people who are unlike themselves. Classes that promote active learning and critical thinking are better places to get to know other students-not only to make friends, but to understand and be able to transcend differences.

4. Students are more engaged when active means of instruction are used

Over the past ten years, the Harvard Assessment Seminars (Light, 2000) have investigated the question of what makes education effective in college. These things help:

- clearly expressed expectations,
- frequent writing assignments,
- many projects rather than one paper or examination at the end,
- interactive questions,
- studying and working together,
- relating the course work to the world outside of the classroom.

B. What Do We Know About Students' Development as Critical Thinkers?

The most widely known description of intellectual development, that of Jean Piaget, holds that students reach their highest levels by the time they enter high school. But university students continue to grow intellectually, not just in the acquisition of knowledge but in the way they understand the nature of truth and the intellectual quest. Students entering university who have mastered a great deal of content but who have been educated in traditional ways may still see the world in black and white terms; they may believe that meaning is a commodity passed on by professors, rather than a construct that results from the students' own mental activity. A university education can make an important difference not only in what students come to know but in the ways they think—or it may not.

Traditional teaching that merely conveys content has not been shown to help

students grow in their manner of thinking (Perry, 1999; Bonwell and Eison, 1991). The important variable is not only what university professors teach, but also the way they teach that can stimulate important cognitive and intellectual development on the part of university students.

Studies of students' learning at the university level show that students' capacity to engage in critical thinking develops gradually, perhaps even in stages.

William Perry (1999) identified a developmental continuum in the growth of students' assumptions about knowledge and truth. His scheme is briefly summarized here:

- At the lowest levels, students believe every question has a right answer, andthe professor has it. They become frustrated when the professor doesn't giveit.
- Slightly more experienced students still believe there is a right answer, but that a skilled professor might withhold it from the students because he or she believes it is better for them to discover that answer on their own. They may be puzzled when other students seriously embrace a different point ofview.
- Still more experienced students begin to doubt that there is a right answer to anything. They may grow discouraged and feel that nothing matters.
- The most developed students come to recognize that there may be more than one approach to a problem, though some approaches are more valid than others. They recognize that a multiplicity of perspectives exists. Rather than flounder in relativism, they commit themselves to a set of core beliefs, and act in the world with convictions and commitments, and with tolerance for those who may hold other views.

C. The Equilibrium / Disequilibrium Model

Students make progress in their growth as thinkers when they face what the psychologist Piaget called cognitive disequilibrium, challenges to their comfortable and familiar ways of seeing things. At the same time, we should remember that each of the stages functions as a schema, as a way a student will view the day-to-day events of his or her education. That is, a student who believes there are right answers will search lectures for them, while a student who has come to recognize that knowledge is provisional will be as interested in her professor's ways of inquiring as in the ideas she puts forth. Three conditions seem to help students advance in their intellectualdevelopment.

(1) They should be faced with choices, with materials that invite more than one interpretation, and the challenge to make and defend their owninterpretations;

(2) They should hear their classmates' express points of view different from their own (When it comes to intellectual growth, hearing someone's thoughts expressed that are just slightly more advanced than our own can be more of a stimulus for advancement than hearing reasoning that is considerably more sophisticated than our own).

(3) They should be encouraged to reflect, especially in writing, on the ways in which their thinking is changing.

D. Reasoning Across the Curriculum

We have seen arguments above that support active learning in university classrooms. But which classrooms? A colleague from a Central European country once made the comment that if you gathered together a group of university teachers in his country, they would have to talk about hats. They would not see that they had common professional questions to talk about—like the challenges of teaching their classes well. Must this be the case? Are there processes of learning and reasoning that are common across disciplines?

The differences between fields of scholarship are easy to spot. Our disciplinary training teaches us different ways of talking and writing to others who share disciplinary assumptions. Here are some of those differences, expressed in list form, almost in the form of caricatures by our colleague, Scott Brophy. (Professor Brophy is a philosopher, since we are naming disciplines).

<u>Disciplinary Differences: Humanities</u>

- Lots of textual interpretation
- An inclination to see everything in the universe as a text
- A division between:
  - -- An inclination to think there is only one correct interpretation of texts (dogmatism)
  - -- An opposite inclination to think there is no objectivity, everything is a matter of interpretation, and any interpretation is as good as any other (relativism)

<u>Disciplinary Differences: Social Sciences</u>

- Public Policy issues
- Understanding the past and other cultures
- A division between:
  - -- studies of how people live and what they believe (descriptive: lots of surveys)
  - -- studies of how people should live and what they should believe (normative: flights of theory that are sometimes inattentive to the realworld)

<u>Disciplinary Differences: Natural Sciences</u>

- A tendency to think that nothing is a matter of interpretation, that everything is objective.

Nevertheless, having called attention to those differences, we can note that most disciplines and content areas share principles of reasoning in conducting research and presenting results to others. Whether scholars are interpreting a work of literature or investigating a topic in political science literature, they usually do most of the following:

Common Across the Curriculum: Conducting Research

- Problem setting
  - What is being investigated?
  - Why does it matter?
- Forming hypotheses
- Searching for supporting evidence
- Examining counter-evidence
- Revising hypotheses in light of new evidence
- Reasoning from the evidence to the conclusion (defending the thesis)

Common Across the Curriculum: Presenting Results to Others

- Explaining the significance of the question to be answered
- Examining the reasons for competing answers
- Defending a thesis
  - Refuting competing theses
  - Mustering the relevant evidence to support the thesis (convincing others that if they are rational then they should believe yourthesis).

In the experience of the Reading and Writing for Critical Thinking Project, faculty from different disciplines have found it possible to learn with each other and from each other— even when, after the workshops, they adapted what they learned when they went about teaching their own courses.

E. Active Learning Across the Curriculum

A university course that inducts students into the structured habits of thinking and communicating that characterizes that discipline should be planned on two levels. First, we should conceptualize the course as a whole as an invitation into and training in the ways of the discipline. Second, we should plan to conduct each class in ways that promote active learning and critical thinking.

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Part II

How is an Individual Class Arranged for Active Learning?

Now that we have discussed ways of organizing a university course that invites active participation in the discipline, we need to devote some attention to the day-to-day conduct of a course. In the previous section were mentioned several methods or strategies of teaching. In this section those methods are explained.

Many professors have briefly experimented with active teaching methods in their classes but, finding only limited or unfocused participation from the students, they returned to more traditional means. Indeed, just about any educator can recite the benefits of active learning. It's the details that often elude us. Said a Russian participant in an RWCT workshop: "We have the big ideas. What we need are the small ideas." What follows, then, are mostly "small ideas," but they are embedded within one very big idea: that is, any collection of teaching strategies even within a single class period will be more effective if they are combined within a careful plan that orchestrates the students' thinking. We begin with that plan.

A Framework for Active Teaching and Learning: Evocation / Realization of Meaning / Reflection

In the following section a selection of strategies for teaching are presented in three categories according to the purposes they serve: Evocation, Realization of Meaning, and Reflection (Steele and Meredith, 1995, after Estes and Vaughn, 1986). These three phases constitute a teaching and learning framework which itself has proved to be a useful way to organize a university class. The Evocation/Realization/ Reflection model begins with a phase in which the teacher relates the content of the class to the students' prior knowledge and to their own questions and learning purposes. It moves on to a phase in which students are guided to inquire, investigate, and otherwise actively learn the material. It culminates in a phase in which the students discuss and reflect on what they have learned, interpret the material, or use it to solve problems. RWCT training leads participants to learn and use many teaching strategies for each phase, and also to learn how and when to use each strategy most effectively to promote students' learning.

A. Strategies for the Evocation Phase

Strategies for the evocation phase introduce the topic of discussion and help student raise questions about it. Activities in this phase flow from the consistent finding of research on learning that suggests that we learn best when we are reminded to call to mind what we already know about a topic, when we raise questions about the topic, and when we set our own purposes for learning.

(1) Advance Organizer

An advance organizer (Ausubel, 1970) is a brief talk or lecture, preferably illustrated with pictures or graphics, in which the professor provides an overview of the topic, introduces key terms, and makes it clear what the class will be studying during that class period. The purpose of an advance organizer is to guide students to summon up their prior knowledge about a topic and be ready to add to and rearrange that prior knowledge.

(2) Focusing Questions

Questions that make a connection between what the students already know and what the class will cover are valuable ways to begin a class. Questions may take the form of large problems or mysteries to be solved, or anecdotes followed by intriguing questions. Focusing questions work best when they are pitched at a fairly high level of generality. For example, in a history class, the professor might begin by saying:

"In or around 1849, revolutionary movements that were part romantic and part nationalistic in spirit sprang up in France, Italy, Greece, and Romania. Why?"

(3) Think / Pair / Share

Focusing questions are more effective when a mechanism has been provided for all students to consider and answer them. Think/Pair/Share (Kagan, 1991) is a cooperative learning activity in which the professor puts an open-ended question to the class, preferably by writing it on the chalkboard. Students are given two minutes to respond to the question individually (Often they are asked to do so in writing). Next, the students turn to a classmate and share answers. Finally, the professor calls on two or three pairs to share their answers. Then the class launches into the day's material. In a think/pair/share activity, every student--even in a class of 100 or more students--is motivated to think about the material and to discuss it with someone else.

(4) Anticipation Guide

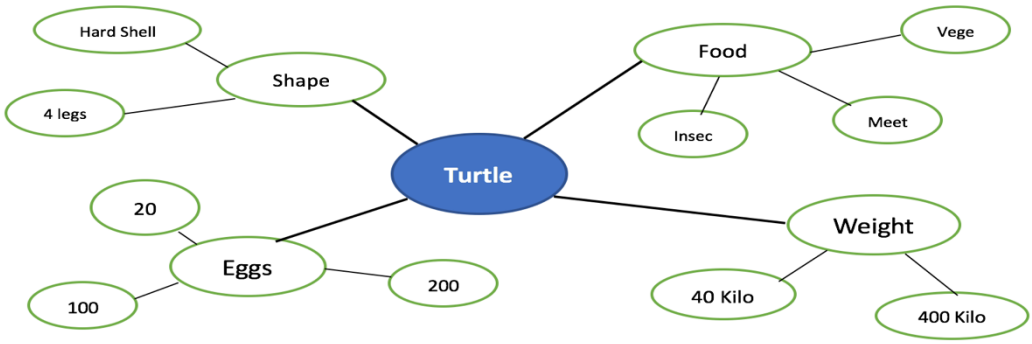
The teacher may prepare a set of questions with short answers (often with true/false answers) that tap important aspects of the topic (Estes and Vaughn, 1986). Students are asked, individually or in pairs, to answer the questions as best they can before the main part of the class begins. They return to the questions at the end of the class to see how their thinking has changed.

(5) Paired Brainstorming

Where factual information will be shared, students can be asked to make personal lists of the facts they know or think they know about the topic of the day's class (Vacca and Vacca, 1986). After two minutes, they turn to a classmate and combine their lists.

(6) Clusters

Clusters or semantic webs are graphic organizers that help students see relationships between ideas (Steele and Meredith, 1995). The professor can begin the class by writing the topic in a circle in the middle of a display, and then list as satellites the main sub-topics of the topics. Students can be challenged to offer the facts they know related to each sub-topic, and to formulate questions for the parts they do not yet know. These questions, of course, will give purposes for their inquiry during the upcoming lesson. An example of a cluster is given here.



(7) Free Write

As an alternative to brainstorming, individual students may be asked to "free write" for a fixed amount of time everything that comes to mind about a topic (Elbow, 1991). They are to write without stopping and without correcting themselves. Following the class proper they may free writeagain.

(8) Terms in Advance

A professor may display a set of key terms that will be used in a class and ask students to ponder their meanings as well as the relationships between them: How might this particular set of terms combine in the class that is to follow?

B. Strategies for the Realization of Meaning Phase

"Realization of Meaning" is the term given within the RWCT project to the phase of a lesson during which the students come to grips with the content. As the term implies, the students do not passively receive content, but rather work to construct it, or understand it as answers to their questions or as the fulfillment of their purposes for learning. "Realization of Meaning" is thus synonymous with "understanding," "construction," "inquiry," and the like, and the methods that are used in this phase are active ones.

(9) Graphic Organizers

Visual devices that organize ideas, such as cause-and-effect charts, chronological tables, clusters, tree diagrams, Venn diagrams, double-bubble charts, T-Charts and M-Charts are used to help students follow the presentation of information. Graphic organizers may be used by the students to take notes. (Vacca & Vacca, 1986). For example, a student may prepare in advance a tree diagram on which to record a presentation of information arranged taxonomically. Using a graphic organizer in this way helps students make sense of a lesson as it unfolds, since the organizer shows the relationship between the ideas in a presentation. Graphic organizers may also be used by the lecturer's presentation to illustrate the relationship between ideas.

(10) Enhanced Lecture

As mentioned above research has shown that students comprehend better when questions are raised before information is presented to them. Research has also shown that students' attention to a lecture flags considerably after about twenty minutes. These two insights together provide the justification for the Enhanced Lecture procedure (Bonwell and Eison, 1991). The strategy begins with an evocation activity to draw out the students' questions and encourage them to set purposes for listening. Such evocation activities may include a Think/Pair/Share, Paired Brainstorming, or an Anticipation Guide. The lecture is broken into sections of about 15-20 minutes, separated by another Think/Pair/Share or similar response technique, before another section of lecture is given. The exercise culminates with another response activity, such as a free write or the conclusion to the Anticipation Guide. The Enhanced Lecture may be used by any size group and is a good way to encourage active learning in a context in which passivity, on everyone's part but the lecturer's, normally prevails.

(11) Reciprocal Teaching

A group of psychologists (Brown, Armbruster, and Palincsar, 1984) designed the reciprocal teaching procedure to take advantage of two principles of learning: First, we normally learn most about a topic when we are teaching it; and second, that the component skills of understanding are best learned overtly before they are practiced covertly. Reciprocal teaching is a cooperative learning activity carried out in small groups in which the teacher first demonstrates the roles an active learner and teacher plays, and then guides students to take turns playing those roles. The roles are deigned to practice key aspects of understanding: getting the gist of the material, fining important ideas, seeing the relationships between details and large ideas, and understanding the large structure of a text. The roles are carried out after a section of the text has been read:

- First, the person playing the role of group leader summarizes what has been said;
- Next the leader poses two or three thoughtful questions about the content;
- Then the leader clarifies any difficult parts of the text;
- Finally, the leader predicts what will come next in the text.

The teacher demonstrates to the class exactly how the roles are performed before they are asked to perform on their own.

(12) Questioning the Author (QtA)

A group of learning specialists were exploring the reasons why students have difficulties learning from textbooks (Beck, et al., 1993). They found two main explanations: First, textbooks are often confusingly written, or at best, rarely contain all the information readers need for a full understanding. Second, readers typically take a passive stance when faced even with an unclear written presentation and rarely do much to repair their incomplete understanding. Thet developed a technique called Questioning the Author (Beck. et al., 1998) to teach readers to overcome these problems. In a QtA lesson, then, the teacher begins by explaining, in a paraphrase Socrates' famous complaint about written language, that written texts are not always clear, and that a reader's failure to understand may be as much the fault of the text as of the reader. The teacher reminds the students that when they confront a speaker who is not making complete sense, they can press for more explanation. When faced with a written text, they can press for better explanation as well, only in this instance they or their classmates will have to supply the explanations. To encourage students to press for clarification, the teacher uses prompts such as these:

"What do you think the author is saying here?"

"How might we put this more clearly?"

"Why do you think the author is telling us this now?"

"What do you have to know already in order to make sense of what we have just read?"

"Where do you suppose this argument is going from here?"

Using QtA in a group setting can help students learn to read actively. Using the procedure can also introduce the students to a particular line of presentation or reasoning. When that is the case, they can often perform productively on their own, after being led through a QtA procedure with a new kind of text.

(13) Know / Want to Know / Learn

Know/Want to Know/Learn or K-W-L (Ogle, 1986) is a strategy in which students are asked first to brainstorm what they know about a topic. Then with the aid of a teacher, they search their information and derive questions about what they want to know about the topic. After conducting an inquiry, the students are asked to list what they learned about the topic. The information thus considered is arranged in the form of a chart, like this:

What do we know?	What do we want to know?	What did we learn?
Bats can "see" at night.	How do they do this?	Bats use a sort of SONAR system to navigate.

(14) Paired Reading / Paired Summarizing

Here students pair up and read a text together (Vacca & Vacca, 1986). Taking turns, after one student reads a section silently or aloud, she summarizes what has just been said. The other student asks probing questions about the text, which both try to answer. Then the roles are reversed when the next section isread.

(15) Study Guides

Study guides help guide participants' processes of inquiry even when the teacher is not present, as when participants are reading an assigned reading independently (Vacca & Vacca, 1986). Recall that the sheet guided the participants' attention to certain ideas that were woven through the text about corn, even as they read the whole piece, and that they also framed the small- group discussion about the text that took place after the text was read.

For the purposes of promoting critical thinking, study guides work best when they:

- help students follow intricate patterns of thought or subtle ideas that they probably would not have reached on their own, but do not serve as a substitute for a careful reading of the text;
- when they invite critical or higher-order thinking at every step; and
- when they are used as a springboard to discussion or writing, and not as an end in themselves.

(16) Dual-Entry Diaries

Dual Entry Diaries (Berthoff, 1982) offer a simple way to encourage individual students to read carefully and to relate what they read to issues they are concerned about. They are especially useful when students are reading longer assignments, out of class. To make a dual entry diary, the participants should draw a vertical line down the middle of a blank sheet of paper. One the left hand side they should note a part of the text that struck them strongly. In the context of the debate program, most likely this will be a statement or a piece of information that can be used as an argument, a reason in support of an argument, or a piece of evidence in support of a reason. Or it may be a seeming fallacy. Or a particularly clever wording. On the right-hand side of the page the students should write a comment about the phrase they noted in the left-hand column: What was it about the quote that made them write it down? What did it make them think of? What question did they have about it? As they read the text, they should pause and make entries in their dual entry diaries. Some teachers assign a minimum numbers of dual entry diary entries: so many per ten pages, for example.

(17) Other Response Journals

Other response journals written to questions posed by the teacher, such as the following:

"Choose three ideas in this chapter with which you disagree;"

"Find one hidden assumption behind what the author has written here;"

"Write a chronicle of your developing understanding of what the author has written in this chapter." (That is, read the title of the chapter and the first paragraph. Write down two things you already know about this topic. Write at least two questions about the material that you expect to find answers to in the chapter. Write the answers when you find them. Write at least three other big ideas that you did not anticipate).

(18) Jigsaw Reading

For Jigsaw reading (Slavin, 1991), it is probably best to assign the whole reading to all of the students, and make them accountable (through quizzes or papers) for the contents of the whole assignment. Study questions about the material can be prepared and shared with all of the students, Students will be randomly assigned to expert groups in which they work together and become especially proficient at a subset of the questions and at teaching their peers to think of answers to those questions. Then they will return to their home groups, and teach their part of the material to their peers.

(19) I.N.S.E.R.T. Technique

I.N.S.E.R.T. (Estes and Vaughn, 1986) provides students a way of activating their prior knowledge about a topic and then comparing their expectations to what they read in a text. Students usually begin by brainstorming, singly or in pairs, what they know about a topic. Then as they read a text about that topic, they lightly mark the text in the margins, as follows:

√	indicates a passage that confirms what they thought was true.
--	indicates a passage that disconfirms something they thought was true.
+	indicates a passage that contains important information they had not anticipated.
?	marks a passage containing something they want to know more about.

After reading the text, students can compare a chart like the one below in which they list some key points that were marked in each way:

√	---	+	?

C. Strategies for the Reflection Phase

What is called the reflection phase in RWCT roughly entails what Piaget called "accommodation." That is, we don't really know something until we have rearranged our way of thinking about the world to take the new knowledge into account, and that happens when we reflect upon the ideas and compare them to our old way of thinking, apply them, interpret them, debate them, elaborate upon them. Activities that are used in the reflection phase include many strategies for discussion and debate.

(20) Shared Inquiry

The Great Books Foundation introduced the Shared Inquiry (Plecha, 1992) approach fifty years ago. The approach requires that the students read a rich text, a text that deserves pondering and that supports more than one interpretation. The teacher carefully constructs four or five interpretive questions with which to open the discussion. An interpretive question satisfies three criteria:

- it is a real question: that is, it taps an interesting issue.
- it is specific to the text, and its answer requires that students refer to the text
- it is open-ended: it can be answered in at least two defensible ways.

The teacher usually writes a question on the chalkboard and gives students time to write answers to it (Writing their answers leads students to think carefully and makes sure each student has something to contribute to the discussion). The students are asked to share their ideas, and the instructor guides them to clarify their thoughts, to build on each other's ideas and debate each other, but he or she does not venture an answer himself. The instructor may keep a seating chart on which he records notes on students' answers and may occasionally sum up the ideas that have been offered and pull out the main positions that have been taken.

After students have experienced discussions with the shared inquiry technique, they will enjoy raising their own questions for discussion.

(21) An Introduction to Cooperative Learning

Several of the teaching approaches described below come to us from the movement for cooperative learning. These include the Discussion Web; One Stay, Three Stray; Academic Controversy; and the Value Line. Cooperative learning approaches evoke much participation from students. They tend to exercise higher order thinking, improve motivation for learning, and have social benefits (Johnson and Johnson, 1978; Slavin, 1991). But they must be handled carefully if they are to work well. In RWCT workshops we recommend that students be taught how to do cooperative learning, and that it be pointed out to them that cooperating with others is an important set of skills that helps both in school and in life. It is worthwhile to teach the skills of cooperative learning.

Begin by asking students to observe certain "community agreements" when they work in groups. Among these might be:

- Everyone participates and no one dominates

- Be relevant
- Listen actively
- Support each other

It is possible to assign students certain roles to play when they work in groups. If they rotate through these roles, they will practice most of the component skills of a good group member. Some possible roles are:

The Facilitator -	the person who calls on people and keeps the work going;
The Timekeeper -	the person who divides the tasks by the amount of time they have, and reminds people of the time they have;
The Clarifier -	the person who makes sure everyone understands the task the same way;
The Recorder -	the person who takes notes for the group and summarizes what has been said at intervals;
The Reporter -	the person who presents the group's work to the rest of the class.

One final point: It is important to remember that in cooperative learning, students are asked to take responsibility for their peers' learning, but to be accountable for their own. They are encouraged to help each other learn the material, but they are tested individually.

(22) Discussion Webs

Discussion Webs (Alvermann, 1991) are mechanisms for student-directed discussions. The teacher prepares a binary question for discussion in the format illustrated below:

NO	DISCUSSION WEB Should the government take measures to preserve minority languages? CONCLUSION	YES

Ask each pair of participants to make their own discussion web like the one pictured. During the next six or seven minutes, the pairs are asked to consider the question,

Should the government take measures to preserve minority languages?

Rather than resolving the issue, each pair is asked to list several reasons why the government should take measures (These reasons should be listed on the form, under "Yes") and then all the reasons why the government should not take measures to preserve minority cultures (These should be listed on the form under "No.").

After the pairs have listed reasons on both sides, each pair should join another pair, and share the reasons they listed under "Yes" and those they listed under "No." Now the foursome should the discuss the issue through until they are able to reach a conclusion. They may write their conclusion at the bottom of one of the sheets. The teacher should take the time to review the reasoning of several of the groups.

(23) Academic Controversy

Academic Controversy (Kagan, 1991) is a cooperative learning procedure for exploring issues that have multiple interpretations. The advantages to the procedure is that it involves full participation from students, regardless of the size of the class (The disadvantage is that the instructor is minimally present to the students during the activity).

The instructor introduces the issue and puts a question to the students in a binary form (agree / disagree; right / wrong; yes / no). The students are assigned to home groups of four. The pairs of students within each group are assigned to opposite sides of the issue. The students take a few minutes to as a group to make sure they understand the question, then the pairs separate to list and discuss arguments that support their side. After five minutes the members of the pairs separate and each finds a member of a different group who was assigned to the same side of the argument. These new pairs share their reasons and arguments, before returning to their original partners to report what they learned. The pairs now prepare their best arguments to present in an informal debate, which they engage in with the opposite pair withing their original group of four. As an option, after about ten minutes of debate the instructor may invite the students to argue for the position they now feel they really hold.

(24) Value Line

The Value Line (Kagan, 1991) is a cooperative learning activity that is useful for exploring controversial issues about which there may be different positions among a single dimension. Examples of questions that are useful for treatment in a value line are:

- Do members of minority groups have a right to practice their own culture?
- Should handguns be controlled?
- How much influence should economic interests have in public policy on environmental protection?

It is best to begin by pointing out the two extreme points of view on an issue. Then ask the students to stand along a line that runs from one extreme position on the issue to the other. After they have taken their stands, ask students to compare their views with those of the students standing immediately around them. You may then invite people to speak up for each subgroup. To instigate debate, the line may be folded in half, and the students may try to persuade those now standing opposite them of their views.

(25) Ten Minute Essay

Often when the Value Line the Academic Controversy, or the Discussion Web are practiced, students articulate and hear a good many ideas that may be forgotten if they are not captured quickly. Even when a more rigorously worked piece of writing is expected later, the professor may invite students to take ten minutes at the end of a discussion and write down everything they are thinking about the topic in question (Temple, Lee, and Brophy, 1998).

(26) One Stay / Three Stray

This is a cooperative learning activity that has the benefit of having students work in small groups, where their participation may be higher, and also have hear the views of the rest of the students in the class (Kagan, 1991). Students are assigned to “home groups” of about four members, who carry out a group project together (discuss a question or design a solution to a problem). The students are given a number (one through four) within their group, and the groups themselves are numbered. At a signal, the students all stand up, and students number 1 move one group away (moving clockwise around the room) and join a new group. Students two move two groups, and students three move three groups. Students four stay home and explain their group’s work to the visitors. The visitors ask questions, and then return to their own groups, but not before congratulating the presenter on his or

her group's work. They take turns explaining to their home group what they learned on their visits. The group then discusses its own work in light of what was learned from the other groups.

(27) Save the Last Word for Me

Often in conducting discussions the teacher seeks ways to boost students' confidence in making arguments, while also allowing himself or herself the opportunity to contribute to the discussion. Noting that having the last word in a discussion often gives the speaker a feeling of authority, the designers of this activity (Harste and Short) structured it this way: As they read a text, students are asked to choose important passages from it and write them on one side of a small piece of paper. Then on the other side of the paper they write a comment: what did the passage make them think of? Why is it important? How might they question it?

When the discussion begins, a student is invited one at a time to read the passage that was chosen for comment. Then that student (or the instructor) invites others to make comments on the same passage. Once others have had their say, the student reads his or her comment, and that is the last word.

(28) Three Part Interview

Like all cooperative learning activities, the Three-Part Interview (Kagan, 1991) is a device for encouraging participation from all students. Students are assigned to home groups of four or six members. Once a topic is introduced and a question put to the students, students pair up and interview each other to elicit their ideas. Then each one presents the partner's ideas to the whole home group. The group may discuss all of the ideas until a joint position is reached.

(29) Jigsaw II

Another cooperative learning activity, Jigsaw II (Slavin, 1991) works by having students to prepare in expert groups to teach their classmates material when they meet in their home groups. The teacher assigns the whole class a common reading assignment and prepares a series of expert sheets that ask questions and pose problems related to that assignment. After reading the whole assignment, students count off within their home groups and then go for a period of time to different expert groups to prepare to teach a portion of the material to their home group. In essence, they prepare to take their teammates productively through the questions and problems on the expert sheets. They return to their home groups and teach those questions and problems (It is important for the professor to stress that "teaching" here does not mean telling, but rather leading their teammates through a process of inquiry that helps them learn. Following the group exercise, all of the students may be tested on all of the material--not just the material for which they were the experts.

(30) Critical Discussion Groups

A critical discussion is one in which students approach a text with systematic skepticism and ask questions about it. A useful group of questions for persuasive and even informational writing is the following set, which is adapted from Browne and Keeley (2000):

- What is the main question posed by this piece?
- What answer does it offer?
- What reasons are offered in support of thatanswer?
- Do the reasons justify the conclusion?
- What other answers might we offer to the main question?
- What has been left unsaid?
- What "facts" are we asked to accept on faith?

- What unspoken value assumptions must we accept in order to reach the same conclusion as the author?
- What descriptive assumptions must we accept in order to reach the same conclusion as the author (That is, has she characterized certain groups or certain ideas in ways with which one might disagree?)?

For a piece of narrative writing, the questions may be different. Here is one potential set (after Temple, 1995):

- Who "won" in this story? What did he or she do to win? Who lost? Why did he or she lose? What lesson do we draw fromthis?
- With whom does the author of this work want us to identify? Whom do you think the author wants us to emulate? What is it about the way characters are portrayed that leads you to those conclusions?
- Suppose this character had been of a different sex: Would events have played out the same, or differently? Suppose she or he had come from a different social class; a different age group...
- What things about our lives or our culture or our society does this work set out to defend? What things does this work set out to challenge? What things does it seem to take for granted?
- What alternative readings can you suggest for thisstory?
- Who is the intended audience for this story? What sort of reader could acceptthe premises of this story un-problematically?

The professor, as a guiding member of the group, may conduct the first several discussions, leading the students through a discussion of each of these questions. Later, the students can manage their own discussions in groups. One good way for them to proceed is to have students participate in Critical Discussion Groups, playing assigned roles (See below).

(31) Critical Discussion Groups with Roles

Once students have grown familiar with the critical questions set out in the preceding section, they can conduct their own discussion with the same questions. Assign them to groups of six and have them count off (number themselves) within their group. An interval before the discussion takes place, assign a question to each member of the group, and ask that member to be prepared to lead the group in a discussion of that question.

Part III

Designing a Course for Active Learning

How is an active learning-based course to be arranged? Of course there are many ways to organize a course that teaches the material well; but at the outset of this guidebook it was argued that the goal of teaching at the university level is to teach students to use disciplinary knowledge and thinking. This goal implies an obligation that goes beyond teaching course content effectively and commits us to helping students find ways to use the content offered in the course to solve problems and to make meaning. That is, our goal is not only the acquisition of content, but learning and practicing refined and informed ways of thinking.

A course that seeks to train students to use the insights and intellectual tools of the discipline in order to think can employ many of the strategies that were described in the previous section of this guidebook. However, still more progress can be made toward this goal if the course is conceived not only as a series of active and interesting classes, but as a carefully orchestrated series of experiences that challenge and support the student in different ways at different points in the semester.

Such a course might have the following parts to it: First, the students will be introduced to the course material in a compelling way. This introduction takes place in what we call the problem-setting phase of the course. In this phase, students will be shown the issues practitioners in the discipline contend with and why they matter, what some important questions are that can be explored during the course, and in general how the conversation of the discipline is conducted by scholars and activists who work in this field.

Second, during the Introduction of Methods phase, students can be taught the tools of inquiry in that discipline: the orienting concepts and methods of inquiry (reading, investigating, experimenting, interviewing, surveying, writing, and so on) as well as they ways discoveries in the field are communicated.

Third, and at intervals throughout, the professor engages in content-sharing. From the beginning to the end of the course the students have content presented to them, in the form of lectures, guest presentations or reading.

Fourth, students are given guided practice as they investigate and grapple with the content of the course. In this phase, the students try out their investigative and communicative skills under the close supervision of the professor. These are short-term assignments and they are given prompt critiques.

Finally, the students will be challenged to make an extended inquiry into the topic, functioning more or less independently until they have results to present to the professor and the class.

When all five of these phases are observed--problem-setting, introduction of methods, content sharing, guided practice, and extended inquiry--, students not only learn core concepts but become active learners and critical thinkers in the field of study in question. Below we sample teaching strategies that are helpful during each of the five phases.

A. The Problem-Setting Phase

In the Problem-Setting phase, we give an overview of the course and introduce the main questions to be covered in the course in such a way that it is clear how they matter. After all, if our goal is for students to integrate what they learn from the course into their ways of thinking about the world, they need to know at the outside how the content of the course serves human as well as academic concerns. There are several strategies available to us in the Problem- Setting phase.

(32) Case Studies

Case studies are brief narratives of actual events which demonstrate problems that are dealt with by practitioners in the field. A course in developmental psychology, for example, might begin with three

brief case studies: an account such as those by Rene Spitz of the effects of institutional care on war orphans (showing the effects of environment of development); a report on studies of reunited identical twins such as those of Michael Bouchard (demonstrating the effects of inheritance on development); and a report on the work among delinquent boys, such as that of James Garbarino, which argues for a "social-biological" approach to understanding human development. These three case studies present major ways of thinking in the field, in a context that shows why work in this field is important to us.

(33) Focusing Questions

Questions that are large in scope can be put to the students at the beginning of a course, and revisited periodically to show the students benchmarks of their growing understanding. In what ways does literature serve us? Who are the greatest poets of Romanian literature, and how does one decide? How does heredity work? Why is there poverty? What would be the best economic system for the countries of Central Europe?

(34) Autobiographical Statements

The professor of the course may choose to give an autobiographical talk, explaining how he or she found the way to becoming an expert in this discipline. What was it that first fascinated the professor about this field? What does the professor find most intriguing about the field today? How have studies in the field changed over the years? What is it like to be a worker in this field? Of course, the professor may want to invite in colleagues to present their own autobiographical statements in a panel discussion.

In conjunction with the approaches shared above, the professor may choose to use techniques shared earlier in this guidebook, such as free writes, anticipation guides, and think/pair/share activities.

B. Introduction of Methods

In the methods phase, we introduce and teach the investigative and communicative tools that the students will be using in the course as they go about exploring the course materials and pursue related experiences. Whether the course is discovery-based or more traditionally academic, upon reflection a professor can discover several strategies of investigation and forms of communication that are regularly used in his or her discipline. Here follow some examples.

(35) Reading in the Discipline

An academic discipline is, in one sense, a certain kind of conversation about the world (Bruffee, 1993). That conversation has its own vocabulary, its own logic, its own discourse, and its own traditions. The most successful students will be those who have the kind of language they need in order to read materials and follow lectures in that discipline.

Toward the beginning of a course, conducting a close reading of representative course materials with the class can show the students how to read the kind of written discourse that is typical of that discipline. The professor may read while thinking aloud, that is, stating what she is looking for, reading passages out loud and voicing the important points she finds in them and the questions they raise in her mind, and voicing her expectations of what might come next.

One existing technique that might be pressed into service to organize such an activity is reciprocal teaching. Another is Questioning the Author. Both are described in the next section of this guidebook.

(36) Reference Skills

Will students be expected to use books, journals, readers' guides, or Internet sources? If so, it is worthwhile to take the time to teach everyone the skills they will need in order to find information, then be sure to give an assignment promptly that challenges them to practice these newly learned skills.

(37) Writing in the Discipline

Any professor can distinguish between an excellent and a poorly written paper in his or her subject; but students report that these differences are rarely explained to them, and they are almost never told before they are assigned to write a paper how to research and organize material for the paper and how to present it in writing.

Professors who take seriously the challenge of making clear to students how they should go about writing in their courses usually take the following steps. If you are assigning topics for papers, it is always advisable to (1) complete the assignment yourself before the students are asked to write to it, so you will understand the expectations that are imbedded in the assignment; and (2) show the students an example of a well-constructed paper written to that or a similar assignment. A format for such a demonstration and discussion is the following.

- Think of the structural aspects of a certain kind of paper that you want students to learn. For example: In a paper comparing works by two authors, perhaps you want the students to begin by setting out the background of the two authors, describing their styles, setting out the criteria for comparing works by them, comparing two representative works, writing the conclusions of their comparisons.
- Share an example of a good paper that displays those structural aspects.
- Discuss the example until students appreciate what they should learn from it.
- Describe the steps used to write that sort of paper.
- In class, have the students practice writing an outline for the paper
- Critique the students' outlines.
- Write on a chart for future reference instructions for writing that kind of paper.

(38) Conducting Interviews

An often-overlooked source of knowledge in a course are live informants. Yet interviewing, transcribing, editing, and reporting on what has been learned from a live informant is a highly educative activity, provided that the students are properly equipped. Here is a relatively simple activity to get students started using interviews:

Ask the students to interview three people--teachers, adults in the community, and other students about the topic (especially people from relevant groups, such as minority groups, local politicians, business people, or clergy). The students should ask the people why they care about this topic, what position they take on it, if they have ever disagreed with others about it, and about the form that the disagreement took. They should take notes on the interview and bring these back to the group.

Interviews can range from simple activities to very elaborate ones, such as oral histories, co-authored autobiographies, and ethnographies.

(39) Surveys and Other Research

Students may carry out research as part of the on- going requirements for the class. In a course on psychology, for instance, the students may be taught how to administer and score a particular kind of test or survey. The information they collect through these means can be processed with the help of the guiding concepts of the course to lead to meaningful learning.

C. Content-Sharing

Content sharing is traditionally what professors do best.

Methods from the Evocation / Realization of Meaning / Reflection Framework

Many of the strategies that will be presented in the next section of this guidebook are ideally suited for content sharing. Among the most useful are these methods:

- The Enhanced Lecture
- The Know / Want to Know / Learn Procedure
- Paired Reading / Paired Summarizing
- Study Guides
- Graphic Organizers
- The Jigsaw Procedure

The core of material in the class can be shared in a way that maximizes students' engagement with it. On a day to day basis it is most useful to employ Evocation/ Realization of Meaning/ Reflection framework (see a description in the next section) as a pedagogical organizer.

Here follow some additional strategies that university faculty have found successful as they presented content in such a way as to maximize the students' engagement and understanding.

(40) Introducing Terms

In the social sciences and humanities, terms often carry connotations that influence the ways students think of them. Here are several exercises for clarifying terms and making explicit their connotations that can be used in a class in order to reveal prejudices and clarify misunderstandings.

(41) Terms Times Three

The professor may help the students call to mind the associations they already have for key terms that will be used in a lesson by asking the students three questions about each keyterm:

- Where and in what context have you come across this term in your studies, or in your reading?
- What are some examples of this term from your ownexperience?
- What do you think this term will mean in thislesson?

(42) Definitions

In this exercise, students are set to work seeking to formulate a definition of some of the key terms in the lesson topic. Students are asked to "Think-Pair-Share" (See previous section): to think about the definition of the term on their own, then to share their thinking with a partner, formulating together the best definition that they can. The process continues with two or three pairs joined together, each larger group coming up with the best definition that they can. Finally, representatives of the large groups share their definitions with the whole group, others in the whole group offering criticisms of the proffered definitions.

D. Guided Practice

In addition to understanding the main worth of the subject, being equipped with investigative and communicative tools with which to explore the subject and having a growing body of core knowledge with which to think about issues in the discipline, students need guided practice in carrying out inquiry in the subject. In the guided practice portions of a course we allow students opportunities to practice their investigative and communicative tools, while closely observing their performance and giving corrective feedback. Many strategies for use in guided practice were presented in the previous section.

(43) Reading Assignments

In a section above, we advocated that the professor show the students how to read material in the discipline at hand. The point is not to suggest that the students do not know how to read, but rather that they may be unfamiliar with the way the written discourse in a particular subject is organized. Demonstrations can be done by means of a think-aloud, the Questioning the Author Strategy, or the

Reciprocal Teaching procedure (see descriptions in the next section). In cases where students need further help reading challenging materials, we have available a host of strategies that encourage careful reading, including the I.N.S.E.R.T. Procedure, Know / Want to Know / Learn, and Paired Reading / Paired Summarizing Procedure. All are explained in a later section of this guide.

Practice in discussing topics in the course can be provided by means of the Shared Inquiry procedure, "save the last word for me," "Discussion Web, Value Line, Academic Controversy, and by using the Dual Entry Diary (see the next section for descriptions).

(44) Case Studies or Problem Sets

Professors pose case studies or problem sets usually after they are sure that the students have developed the skills to handle the challenges. In a psychology class, the problem set may be to design and build a playground for a preschool. In a history course, the problem set may be to conduct a set of interviews of residents who have experienced the immigration and emigration of different groups in a community. To use case studies or problem sets, the professor often proceeds as follows:

- Professor or student presents the case or problem
- Professor highlights new aspects of the problem, or introduces new methods of analysis
- Students in groups work on analyses or solutions
- Students present findings to the class
- Professor leads other students in commentary

(45) Experiential or Service-Learning

On Service Learning

Professors since the time of Comenius have recognized the imperative of connecting academic learning to the world, and approaches to experiential learning have developed to respond to that goal. A more recent development, service learning, might be described as "experience + commitment." In courses that use service learning activities, students are asked to work some time each week in a local agency that contributes to the public welfare. To the ussual goals of adding flesh and blood to the ideas and theories of the course and outlets for practicing their tools of inquiry, etc., service learning adds an emphasis on democratic participation and engaged citizenship.

(a) What Happens in a Service-Learning Course?

- Students in the class provide a needed service to individuals, organizations, schools, or other entities in the community.
- The service experience relates to the subject matter of the course.
- Activities in the class provide a method or methods for students to think about what they learned through the service experience and how these learnings related to the subject of the class.
- The course offers a method to assess the learning derived from the service. Credit is given for the learning and its relation to the course, not for the service alone.
- Service interactions in the community recognize the needs of service recipients, and offer an opportunity for recipients to be involved in the evaluation of the service.
- The service opportunities are aimed at the development of the civic education of citizens even though they may also be focused on career preparation.
- Knowledge from the discipline informs the service experiences with which the students are involved.
- The class offers a way to learn from other class members as well as from the instructor.

(b) What Are the Benefits of Service Learning for Students?

Personal Outcomes:

- Positive sense of personal efficacy, personal identity, spiritual growth, and moral development.
- Development of ability to work well with others, leadership and communication skills.
- Students or faculty report that service-learning has a positive impact on students' academic learning and that service-learning improves students' ability to apply what they have learned in the "real world."
- More complex understanding, better ability to analyze problems and to think critically, cognitive development.

Social Outcomes:

- Reduction of stereotypes and growth of cultural and racial understanding. Development of sense of social responsibility and citizenship skills.
- Positive effect on commitment to service.
- Volunteer service in college is associated with involvement in community service after graduation.

Career Development:

- Service-learning contributes to career development.

Relationship with the College of University:

- Students engaged in service-learning report stronger faculty relationships that those who are not involved.
- Service learning improves student satisfaction with college.
- Students engaged in service-learning are more likely to graduate.

(c) How Is Reflection Encouraged?

Dual-Entry Diary:

For this journal, students use a spiral notebook. On the left side of the journal students describe their service experiences, personal thoughts, and reactions to their service activities. On the right side of the journal, they discuss how the first set of entries relates to key concepts, class presentations, and readings. Students may be asked to draw arrows indicating the relationships between their personal experience and the formal course content.

Critical Incident Journal:

Students focus on a specific event that occurred at the service site. Students are then asked to respond to prompts designed to explore their thoughts, reactions, future action, and information from the course that might be relevant to the incident. For example:

- Describe an incident or situation that created a dilemma for you because you did not know how to act or what to say.
- Why was it such a confusing event?
- How did you, or others around the event, feel about it?
- What did you do, or what was the first thing that you considered doing? List three actions that you might have taken and evaluate each one.
- How does the course material relate to this issue, help you analyze the choices, and suggest a course of action that might be advisable?

Three Part Journal:

Students are asked to respond to three separate issues in each of their journal entries: (a) Describe what happened in the service experience, including what you accomplished, some of the events that puzzled or confused you, interactions you had, decisions you made, and plans you developed. (b) Analyze how the course content relates to the service experience, including key concepts that can be used to understand events and guide future behavior. (c) Apply the course materials and the service experience to you and your personal life, including your goals, values, attitudes, beliefs, and philosophy.

Directed Writings:

Students are asked to consider how a particular aspect of course content from the readings or class presentations, including theories, concepts, quotes, statistics and research findings relate to their service experiences. Students write a journal entry based on key issues encountered at the service site.

Robert Bringle and Julie Hatcher, "Reflection in Service-Learning: Making Meaning of Experience. Educational Horizons. Boston: Allyn and Bacon, 1999.

(d) How Is Growth in Students' Quality of Reflection Measured?

Criteria for Assessing Levels of Reflection

Level One:

- Gives examples of observed behaviors or characteristics of the client or setting, but provides no insight into reasons behind the observation; observations tend to become dimensional and conventional or unassimilated repetitions of what has been heard in class or from peers.
- Tends to focus on just one aspect of the situation.
- Uses unsupported personal beliefs frequently as "hard" evidence.
- May acknowledge differences of perspective but does not discriminate effectively among them.

Level Two:

- Observations are fairly thorough and nuanced although they tend not to be placed in a broader context.
- Provides a cogent critique from one perspective but fails to see the broader system in which the aspect is embedded and other factors that may make change difficult.
- Uses both unsupported personal belief and evidence but is beginning to be able o differentiate between them.
- Perceives legitimate differences of viewpoint.
- Demonstrates a beginning ability to interpret evidence.

Level Three:

- Views things from multiple perspectives; able to observe multiple aspects of the situation and place them in context.
- Perceives conflicting goals within and among the individuals involved in a situation and recognizes that the differences can be evaluated.
- Uses both unsupported personal belief and evidence but is beginning to be able o differentiate between them.
- Perceives legitimate differences of viewpoint.
- Demonstrates a beginning ability to interpret evidence.

(e) Considering the Possibilities: Designing a Service-Learning Project

In designing a service-learning project, it helps to consider the following questions.

Preliminaries

- What, very briefly, is the focus of your course? What are its goals?
- In what concrete ways do the problems treated in your discipline play out in the world today? How do they play out in your community?
- Who are some people working in your community who are educated in your discipline and use it in their work? What do they do?

Service Activities

- What are some activities students in your course might engage in to give them some first-hand experience grappling with the problems of your discipline as they apply in people's lives in your community?
- Where might they carry out those activities? Who might host and supervise them?
- What training will they need, and how can they get it?
- How can you make sure that the interests, priorities, and sensitivities of the community are taken into account in the service projects?

Learning Activities

- How will students get opportunities to relate their service work to the materials and ideas of the course?
- How will they be led to reflect on their work?
- How will their work be evaluated and graded?

E. Extended Inquiry

The Extended Inquiry phase is where students, either individually or in groups, carry out an independent investigation or other project. If they have been prepared well during the methods-teaching and guided practice phases of the course, they should be well equipped to do a serious investigation on their own. This is their opportunity to think like a practitioner in the discipline. At the conclusion of their work they may present their findings to the class for discussion and critique.

Students profit from doing research projects and, provided that equitable ways can be found to assign credit for their relative contributions, students benefit from doing project work in groups, research shows.

There are many effective ways to structure research projects besides the typical library-based paper. It is helpful to conceive of research papers as (1) having different degrees of formality, (2) using different sources, and (3) having different formats. Below we present one approach to research papers that has proved useful in helping students learn to do research: the "I-Search" paper.

The I-Search Paper

- One popular kind of research project that highlights the process of research and stresses students' personal connection to the topic is the "I-Search" Paper, described by Ken MacCrorie in 1988. The I-Search Paper is developed in six stages:
- The students formulate questions about a topic. After they have been immersed in a topic, the students are helped to search their knowledge and curiosity and formulate a researchable question.

- The students make a research plan. The plan might incorporate several kinds of sources, including not only books and magazines, but interviews, surveys, and Internet-based searches.
- The students gather and record information. Students should be given instruction in all of the ways they may do the research: ways of finding resources in the library, procedures for arranging and conducting interviews, and standards for discriminating between different sources on the Internet. They should also be taught note-taking and outlining skills, as necessary. They may be taught to use graphic organizers asa way of visualizing their information before writing itup.
- The students write their paper. The paper should be formatted according to the outline given below.
- The students present their papers. The students submit the written papers, and may also give oral presentations or poster sessions on the papers.
- The Paper is evaluated. The evaluation of the paper is conducted according to criteria in that are tied to the process and form of the paper, and that are communicated in advance

Five Components of the I-Search Investigative Paper

(1) Questions

In this section students will describe what they already knew about this question when they began their search and why they cared about or were interested in this question.

(2) The Search Process

In this section, students will describe the sequence of steps in the search. For example, students will describe what sources they began with, and how these led to further sources. Students will describe problems or breakthroughs in their search-tell when they really got interesting. Students can also tell how their questions changed or expanded as a result of the search process, and they should acknowledge the help they received from others in obtaining valuable sources.

(3) What Was Learned

Here students will focus on three or four major findings or conclusions and support them with examples, stories, or arguments that will help the reader understand how they arrived at those conclusions. They will try to connect their findings with their original questions. They might also suggest further questions to explore in the future. Students should include any analyses they did cause and effect, pro/con, compare and contrast, or sequencing.

(4) Lessons for the Writer

This section will give students a chance to describe how they have developed as a researcher. They will answer the question, "What do you now know about searching for information that you didn't know before?" To answer this question, students will describe those findings that meant the most to them. They might also discuss how their newly found knowledge will affect the way they act or think in the future. Finally, they might want to talk about the skills they have developed as a researcher and writer.

(5) References

This section will contain all of their references.

Part IV

Models of Higher Education Training for Active Learning

We come now to the question of how training can be arranged for higher education faculty. There are two main models for organizing training: The workshop series model and the seminar model. We normally recommend that the workshop series model be used first, since it is amenable for training groups of thirty to forty university faculty from across the country at one time. Oncethese people have been trained, they may conduct workshops using the seminar model in their own communities.

A. The Workshop Series Model

- The workshop series model is most often used in the Reading and Writing for Critical Thinking Project. It proceeds as follows:
- A series of workshops are offered during which teaching methods are introduced and discussed;
- The participants receive opportunities for guided practice;
- The participants make and share plans for trying out selected methods in their teaching;
- After the workshop, the participants try the teaching methods out in their classes;
- The participants meet in local support groups to discuss their experiences using the methods, and try to advise each other on ways to solve problems;
- The participants share their experiences at the beginning of the next workshop and discuss ways the methods can best be adapted to the dynamics of their classrooms.

The following is a suggested agenda for a series of four workshops, each session lasting about eighteen hours (six hours of meeting time per day X three days).

<u>Workshop One</u> (three to four days)

Warm-up, Introductions, and Workshop overview

Needs Assessment:

- What are the features of the way your classes go? What things would you like to change?
- What research says about active learning and critical thinking?

<u>Demonstration Lessons and Guided Practice</u>

- Introducing the ERR framework
- The Enhanced Lecture
- Shared Inquiry
- Discussion Web
- Other questioning strategies

Assessment:

How to Evaluate Students' Participation in Discussions?

The ERR Framework and the Whole Course Framework.

The Whole Course Plan:

Problem-setting, Introduction of Methods, Content- sharing, Guided Practice, and Extended Inquiry

Planning for Implementation Workshop evaluation

<u>Interim Activities</u>

(Participants try out methods in their classes)

(Participants meet in groups to compare results and discuss refinements of their trials of the methods).

Workshop Two (Three to four days)

Warm-up, Introductions, and Workshop overview

Review of the participants' implementations of the methods

Demonstration Lessons and Guided Practice: Cooperative Learning Strategies

Jigsaw II

One Stay / Three Stray

Academic Controversy

Gallery Tour

Three-Part Interview

Pens in the Middle

Teaching Group Behaviors

Community Agreements

Assessment:

Developing Self-Assessments for Group Work

Review of the ERR Framework

Review of the Whole Course Plan

Planning for implementation

Workshop evaluation

Interim Activities

(Participants try out methods in their classes)

(Participants meet in groups to compare results and discuss refinements of their trials of the methods).

Workshop Three (Three to four days)

Warm-up, Introductions, and Workshop overview

Review of implementations

Demonstration Lessons and Guided Practice: Writing across the Curriculum

A model of the writing process

Response journals

Argumentative essays

Guiding student research

The I-Search format

Other research paper formats

Assessment:

Developing Rubrics and Other Means of Evaluating Writing

Review of the ERR Model

Review of the Whole Course Plan

Planning for Implementation

Workshop evaluation

Interim Activities

(Participants try out methods in their classes)

(Participants meet in groups to compare results and discuss refinements of their trials of the methods).

Workshop Four (Three to four days)

Warm-up, introductions, and workshop overview

Review of implementations

The ERR Model:

Content and process in plans for the class period

The Whole Course Plan:

Content and process in plans for the whole course Guided practice in developing course plans

Preparing to Disseminate:

How to share what you know with others Workshop evaluation

B. The Seminar Model

When the participants live within close proximity with the trainers, the weekly or bi-weekly seminar model can be used. Seminars meet for two and a half to three hours at a time. Twenty-four meetings (twelve per semester) could yield the same amount of contact time as the workshop format.

The topics for the seminars might be allocated to twenty-four sessions as follows:

Session 1	Warm-up, Introductions, and Workshop overview Needs Assessment: What are the features of the way your classes go? What things would you like to change?
Session 2	What research says about active learning and critical thinking? Introducing the ERR framework. I.N.S.E.R.T
Session 3	The Whole Course Plan
Session 4	Know / Want to Know / Learn; The Enhanced Lecture
Session 5	Shared Inquiry
Session 6	Discussion Web
Session 7	Classroom Debates
Session 8	Graphic Organizers
Session 9	Cooperative learning strategies: Jigsaw II; One Stay / Three Stray
Session 10	Gallery Tour; Three-Part Interview
Session 11	Pens in the Middle; Academic Controversy; Value Line

Session 12	Teaching Group Behaviors; Community Agreements
Session 13	Writing Workshop: A model of the writing process
Session 14	Writing across the curriculum: Dual Entry Diary; Other Response Journals
Session 15	Writing across the curriculum: Argumentative and expository essays
Session 16	Writing across the curriculum: Designing essay assignments
Session 17	Writing across the curriculum: Quick-write activities; Free writing; Cubing; RAFT
Session 18	Guiding student research; The I-Search format; Other research paper formats
Session 19	Evaluating writing: Designing Rubrics; Portfolio Assessment
Session 20	Experiential or service learning: Exploring the potential for field-based activities for the courses we teach.
Session 21	Lesson planning
Session 22	Course planning
Session 23	Where do we go from here? Our plans for our own classrooms.
Session 24	Planning to share what we have learned with our colleagues.

C. The Structure of a Seminar

Each seminar is normally organized as follows:

Warm-up activity

Review implementations of methods from the previous workshop

Demonstration lesson

Critique of lesson

Guided practice using this method

Plans for Implementation

Evaluation of session

Following each session, participants will be expected to try out the methods introduced in their own classrooms.

The Summer or Winter School Model

In some settings, a more intensive workshop during a five or six-day period may be preferable. Summer School and Winter School models have been used successfully in Uzbekistan, Lithuania, Albania, Russia, and other places.

Part V

How Students Learn: A Statement of First Principles

Editor's note: The following essay was written as a grounding in learning theory for the activities of the Reading & Writing for Critical Thinking Project. The original audience consisted mostly of pre-university level teachers. The ideas presented here are relevant to teaching at the higher education level as well.

The Reading and Writing for Critical Thinking Project offers a coherent set of strategies for teaching that are designed to open classrooms to greater student participation and more active learning. The project stresses practice rather than theory. Nonetheless, the strategies chosen for the project are supported by several respected traditions of scholarship in education: by the constructivist tradition associated with Jean Piaget (1955), Lev Vygotsky (1969), and others; by the metacognitive learning project associated with Ann L. Brown (1978), Donald Graves (1982), and others; by several strands of research and practice in the area of critical thinking; and by efforts in civics education, especially its recent manifestation in education for social responsibility.

1. Constructivism

Constructivism stresses the active role of learners in creating or "constructing" knowledge from their own activities of exploration, discovery, and reasoning. Constructivist learning theory holds that since we interpret new experiences in light of the understandings constructed from old ones, the already-constructed provides learners with schemes or cognitive frameworks that are the bases for the yet-to-be-constructed.

As an example of constructivism at work, consider this experiment. Two groups of women read a brief passage about a wedding. A short while later, all wrote a recall of the passage. One group wrote a sad account of an arranged marriage. They noted the relative status of the families (inferred from the respective fathers' occupations), and speculated on the amount of bride-price the bride's family had to pay. Several alluded to the hard years ahead of the young wife, as she joined her husband's extended family as the least respected member.

The other group wrote about a joyous occasion. The remembered many of the out-of-town guests, provided detailed descriptions of the bride's gown, and added details like the romantic place the couple would have their honeymoon.

How to explain the difference? The first group of women lived in South India, and the second group lived in a middle-class neighborhood in the United States. Both groups apparently interpreted the relatively neutral passage according to what they knew about weddings--or in technical terms, they constructed the meaning of the wedding from their schemata for weddings. (Pitchert & Anderson, 1977)

2. Constructed and Received Knowledge

Is all learning constructed? Jean Piaget made a distinction between kinds of knowledge that are discovered by active learning, on the one hand; and "social-arbitrary knowledge," or factual knowledge that must be received, on the other. Examples of knowledge that can be discovered through experience and reflection are the realization that quantities do not change with the arrangement of objects; or a visceral understanding of the nature of racial prejudice. An example of social arbitrary knowledge, of a fact that must be received from others, is the answer to the question, "Who was the fourteenth Pope in Rome?"

The fact that there are two rough categories knowledge--one, the actively constructed knowledge that results from inquiry, and the other, the "received knowledge" that is passively acquired--has important

implications for education. Knowledge that results purely from discovery is of a highly usable sort: We learn by discovery what "hot" and "cold" and "heavy" and "light" are, and we use these concepts every day of our lives. But individual discovery learning can be a slow process: How many of us would ever discover a quadratic equation, or the structure of an atom, or a way to condense wisdom and mystery into concise meditations as do the teachings of the Buddha? Indeed, the institution of education itself is based on the recognition that a person in her childhood cannot possibly rediscover even a meaningful fraction of the knowledge many generations of scientists, scholars, and artists created through their labors. Besides, individual discovery learning is vulnerable to idiosyncratic variations, a problem which has led thinkers like Lev Vygotsky to worry that discovery learning without a thoughtful educated model present might result in "spontaneous concepts" that vary unacceptably from the "scientific concepts" into which educated people have classified the things of this world. The result of that would be a mind full of inaccuracies and superstitions.

But on the other extreme, an approach to teaching that passively conveys "school knowledge" without enlisting the learner's discovery processes too often results in a disjunction between usable and useless knowledge, in which curriculum-based "inert ideas" float in aloof detachment from the orienting notions with which an educated person--even a supposedly well-educated person---negotiates the real problems of her life (Whitehead, 1957; Gardner, 1991). Gardner tells us of political science students at a prestigious university who forget their training and scrap like barroom drunks when asked about their favorite candidate--but we don't really need to be reminded of these examples. The result of disconnected learning is a waste of our efforts at educating, if what our students learn is of little practical use to them.

How do we solve this problem?

Several educators have approached the problem of the disjunction of constructed knowledge and "school knowledge" by steering students' construction of knowledge toward the disciplines that comprise the school curriculum: That is, by enlisting students' curiosity about questions that disciplinary scholars ask, and encouraging students to pursue knowledge using the same methods of investigation these scholars use. In this view, the disciplines in the academy are conceived not as store rooms of static information, but rather as modes of investigation, as ways of knowing. This orientation has given rise to inquiry-based approaches to education, that encourage students to ask questions, and that orient them to think within the "structures of the disciplines" (Bruner, 1965; Saul, et. al., 1993).

More than discipline-based questions are necessary, however. Students must surely have a core of knowledge about a topic or discipline to make their inquiry productive. If comprehension is understood as interpreting new information in light of existing knowledge structures (see the discussion of "schema theory," below), then it is important that students be helped to acquire a core of orienting ideas about many topics-- what some psychologists call "world knowledge"--so that they will be adequately equipped to construct personal understandings of a range of subjects. (A scholar of the humanities, E.D. Hirsch, Jr. [1987], refers to this core knowledge as "cultural literacy;" but the controversy that has surrounded his proposal to greatly increase students' store of "cultural literacy" should alert us to the danger of ending up where we started from: that is, our focus on conveying "world knowledge" or "cultural literacy" should not come to usurp the students' activities of inquiry).

In sum, there is much evidence to support the conclusion that learning works best when it is most actively guided by the learner's processes of discovery. The ideal teacher, then, will serve as a model of disciplined inquiry, will encourage curiosity and investigation by the tasks she arranges and the questions she asks, and will provide enough information for students to have an adequate basis for seeking and organizing knowledge.

Two important schools of learning theory have recently derived from constructivism.

3. Schema Theory

An explosion of research in cognitive psychology in the 1970's and 1980's generated a large body of theorizing and research on learning in general and reading and writing in particular. While that research proceeded on many fronts, especially noteworthy is the work of Richard Anderson and his associates (1985), who established a program of research and theorizing called schema theory, that is based on constructivist ideas. The work of Anderson, et. al., demonstrated the importance of the learner's activity in constructing knowledge, and also the important of the learner's prior knowledge in learning.

The work of cognitive psychologists in general and of schema theorists in particular has inspired the development of new teaching techniques to encourage learners' active search for knowledge. Among these are the Evocation/Realization of Meaning/Reflection model, the Know/Want-to- Know/Learn or "K-W-L" strategy (Ogle, 1986), Reciprocal Teaching (Palincsar and Brown 1984), and Questioning-the-Author, or the "Q-T-A" strategy (Beck, 1997). Cognitive psychology has also given theoretical and research support for several teaching methods that were already widely used, such as the Directed Reading-Thinking Activity or "DRTA" strategy (Stauffer, 1975).

4. Reader Response Criticism

When constructivist learning theory is applied to literature, the most compatible tradition of criticism is reader response criticism or subjective criticism. As formulated by Louise Rosenblatt (1978) and David Bleich (1975), reader response theory stresses the role of the reader in constructing literary meaning: from envisioning the setting and characters out of the images and feelings that are available from her own direct or vicarious experience, to awarding emphasis to events in a text, to arriving at interpretations of the work. Reader response theory also gives importance to the interpretive community of readers: as readers share responses to works of literature, a community of understanding is formed, in which the "intersubjectivity" of people sharing individual responses not only contributes to a larger understanding of the work, but also promotes interpersonal awareness and the sharing of common metaphors for experience.

Teachers who work from a reader response model acknowledge students' own agency in making meaning from their encounters with texts. While these teachers' discussions eventually cover many literary aspects of a text such as symbols, themes, and stylistic devices, the discussions usually begin with personal responses, in answer to questions such as: "What did you notice in the text?" "What did it make you think of?" "How did it make you feel?"

Useful models of teaching based on reader response criticism have been worked out by David Bleich (1970), Robert Probst (1986), and Judith Langer (1995).

5. Metacognitive Learning

Highlighting the learner's activity in making meaning is not a new turn for educators. In the 1930's, Ogden and Richards' path-breaking work, The Meaning of Meaning, ventured the claim that meaning is not a static quantity but an activity, in which someone makes sense of something. A recently emerging field of cognitive science, however, has done new things with this insight. If constructing meaning is an activity of the learner, then it follows that the learner can be taught to perform this activity in more efficient ways. Traditionally, schools have displayed before students the products of thinking (as in the formalized knowledge that is conveyed in books and lectures), but have rarely demonstrated the processes by which those products were achieved. How is this to be done, since thinking is a covert activity? In the words of Donald Graves (1982) teaching students to think should be approached as a studio craft. As Isabel Beck put it, learning should be understood as a cognitive apprenticeship. Both these expressions help to capture the role of a teacher as a model of thinking and learning, and the role of learners as that of acquiring from these demonstrations a set of processes and strategies that they can use in their own construction of knowledge.

6. Learning as Cognitive Apprenticeship

Teaching approaches that are based on the model of cognitive apprenticeships seek to show students how to learn, and to transfer onto the students the responsibility for their own learning. The Know/Want-to-Know/Learn strategy demonstrates this orientation, by teaching students how to set purposes for learning, to search actively for information, and to reflect on what they have learned. The teacher who uses such techniques moves in the direction, at least, of “working himself out of a job;" that is, he seeks to enable the student to continue learning in the future without the direct aid of a teacher.

The "cognitive apprenticeships" approach functions with others besides the teacher filling the role of model. Indeed, students learn a great deal from each other, provided they are exposed to each others' ideas. Many teachers have established "workshop" environments in their classrooms in order to allow for students to work interactively and to benefit from each others' thinking.

7. Think-Aloud

Other off-shoots of the cognitive apprenticeships model include the use of "think-alouds." The term "think-alouds" refers to the teacher's practice of talking the students through a problem while voicing aloud his own thought processes, so that the students may learn to use these thought processes themselves. "Think-alouds" are often embedded in other activities, as when the teacher takes a participant's role (but without dominating) in a discussion.

8. Graphic Organizers

Graphic organizers, models or drawings that depict the relationships between ideas, can also be considered to be derivatives of the cognitive apprenticeships model. Graphic organizers seek to make thinking overt and visible by showing the connections between ideas. Graphic organizers can be used at all stages of learning: as ways to prepare for an investigation, as ways to guide investigation, and as ways to organize the reflection on what has been learned. The Discussion Web and the Venn Diagram as well as the Clustering activity described elsewhere in this guidebook are examples of graphic organizers.

9. Writing to Learn

Scholars who have explored the effects of literacy on consciousness report that the act of being able to represent language with print profoundly affects the way we think. People who live in non-literate cultures, according to Luria's famous studies (Luria, 1976) tend to be low in self-awareness, tend not be unable to reason beyond concrete experience, and tend to be limited in their ability to think about the language they use. People who are able to read and write, on the contrary, have the capacity to record their own ideas, debate them, refine them, and push beyond their present state of thinking to new levels of awareness.

How should we teach, once we are aware of the benefits of writing to raising students' awareness and boosting their powers of reasoning? Teachers who enlist writing in the service of learning observe several principles:

(1) They encourage exploratory writing. They encourage students to write journals and response papers, with a focus on recording ideas for consideration and discussion, and not necessarily for finished presentation.

(2) They encourage students' personal authorship. They nurture the idea that everyone has something to say, that everyone is an expert at least on his or her own experiences, that everyone can make meaning through thinking and writing.

(3) They emphasize the process of writing. If the only writing students see is the refined work of gifted authors, many will naturally conclude that they will never be writers themselves. If, on the other hand, teachers show students how writers create - by recording random observations in diaries and

notebooks, making many attempts at a piece before the best way to approach a topic, seeking helpful responses from a trusted reader to find ways to make their work better--they will find the whole enterprise of writing much more accessible.

(4) They emphasize content over form. These teachers see to it that works intended to be shared are received first for the messages and insights they contain. These teachers set up other occasions to make sure students master the forms of standard writing, and they are careful to make sure that a preoccupation with form not stifle the students' urge to record thoughts and communicate ideas. At the same time, they make very clear their expectations for the form and stylistics of students' writing, and they teach these things clearly.

10. Writing Is Learning

RWCT volunteers David Klooster and Patricia Bloem describe the ways the act of writing helps us to learn.

When writers begin a new project, one of their first realizations may be how little they know. Although we may feel confident about our ideas, writing is often a humbling experience because it quickly brings us to the edges of our understanding, the limits of our knowledge. We may first sit down thinking that we are brimming with ideas; then after a page or two we find ourselves stumped, pacing the room, wondering where to go next with the project. But through the process of writing--of exploring ideas, reading, trying out theories, stringing words together, anticipating the needs and questions of an audience--we keep expanding what we know. In some cases writing turns a little bit of knowledge into a lot, but at other times a writer must winnow out and narrow down, condensing a great deal of information into a small space, and the problem is not discovering enough information but eliminating enough to make the piece work. In this case the process of writing brings the writer to a greater understanding of what is essential in the material and what is peripheral.

In either case, writing helps writers know what they think. Before they write, they may feel the importance of an idea, but as they write they are able to articulate that importance clearly, to differentiate the idea from similar concepts, and to offer evidence for its support. They know why their ideas matter.

(David Klooster and Patricia Bloem, The Writer's Community. New York: St. Martin's, 1995), p. 7.

11. Critical Thinking

In the Reading & Writing for Critical Thinking Project we have defined critical thinking this way:

To think critically means to be curious, and to use strategies of inquiry: framing questions and searching systematically for answers. Critical thinking works on many levels, not only settling for facts, but pursuing the causes for and the implications of facts. Critical thinking means to use polite skepticism, to posit alternatives to stated positions; to ask "what if...?" Critical thinking means to reach a position on an issue and to defend it rationally. It means to consider carefully the arguments of others, and to examine the logic of those arguments.

This definition includes a great deal; but it must be remembered that critical thinking is not one skill, but several. Indeed, Matthew Lipman (1988), a prominent proponent of curricula to promote critical thinking, has quipped that the term "critical thinking" could refer to practically all of the functions of an active mind.

If the base line is a traditional passive-learning classroom, then the kind of active learning that results from the traditions mentioned in the previous sections of this paper can go a long way in the direction of promoting critical thinking. Nonetheless, the term "critical thinking" implies that students sometimes go beyond the active search for information and do something more: associate what they have learned with their own experience, compare it to other works, question its veracity or authority, examine the logic of its argument, derive implications from it, construct new examples of it, imagine solutions to problems it poses, examine the causes and effects it demonstrates, and so on.

The experiential and theoretical traditions that support the teaching of critical thinking are several.

12. Levels of Questioning

The Taxonomy of Educational Objectives by Benjamin Bloom and his associates (Bloom, 1956) has been a useful construct in both evaluating and manipulating the types or "levels" of thinking that are called for in a classroom. The taxonomy makes it possible to distinguish between "lower order" and "higher order" questions that teachers ask: between questions that require (at the lower end) the recognition or recall of facts and the comprehension of concepts and ideas, versus questions (moving toward the upper end) that invite the application of ideas, the analysis of arguments, the synthesis of several ideas to reach new solutions, and the evaluation of a whole line of reasoning.

Those who want to promote critical thinking in classrooms would do well to begin with Bloom's Taxonomy. There is generally a correlation between the kinds or levels of questions teachers ask and the kinds or levels of thinking that students do. When they are conscious of the kinds of questions they are asking, teachers can gain control over the kinds of thinking they invite. And students who can think at "higher" levels are better able to apply what they have learned than students whose thinking stays at the recognition and recall levels (Taba, 1966).

13. Formalized Approaches to Critical Thinking

In North America, scholarship and pedagogical practice in critical thinking has developed along three main fronts: First, at the Institute for the Advancement of Philosophy for Children at Montclair State University in New Jersey, Matthew Lipman (1988, 1991) and his colleagues have established a program in primary and secondary schools based on the principles that higher-order thinking begins with cultivating the natural curiosity of children about nature and about moral issues. Taking their cue from Aristotle's principle that "philosophy begins with wonder" (Metaphysics 982b), Lipman and his colleagues have developed a set of instructional materials that capitalize on students' initial sense of wonder and go on to develop analytic discovery and problem-solving skills.

Second, the philosopher Gareth Matthews (1985, 1988), of the University of Massachusetts, has demonstrated that appropriate questions about ethical and political problems can elicit thinking that is abstract, nuanced, and sophisticated-- from children much younger than the developmental claims of Piaget and Kohlberg had suggested were possible. Rather than relying upon special materials, Matthews' approach uses children's books and other familiar stories as points of departure; and instead of requiring special training for the teacher, Matthews encourages teachers to have an expectant attitude, and thoughtful conversational techniques.

Third, in higher education, contemporary philosophers have developed approaches to logic and argumentative writing that apply analytic skills to discussing contemporary issues and to fostering higher-level thinking across the disciplines. Their work has been extended to down to the secondary and even primary school levels. At Sonoma State University in California, a group including Richard Paul, Gerald Nosich, and Linda Elder (1995) have produced teaching resources to promote teaching for critical thinking (Their work is disseminated through the Foundation for Critical Thinking, The Center for Critical Thinking, and The International Center for the Assessment of Higher Order Thinking).

Nonetheless, a concern over teaching thinking "skills" in isolation remains. A host of contemporary educators at the pre-college level have argued that any attempts to encourage critical or higher-order thinking must be kept as close as possible to real world tasks, to the sorts of problem-solving and inquiry that children and young people actually do. Recent research concerning critical thinking and learning suggests that a model focusing on isolated skills and fact learning minimizes critical thinking. For example, Brown (1989) argues that learning skills separately from real world tasks and purposes may allow students to do well on an objective test but leave them unable to apply those skills in new situations. Richer definitions of learning and thinking are supported by the research of cognitive psychology, philosophy, and multi-cultural education.

Common threads among this research suggest that: Effective, long term learning which can be

applied to new situations is basically a matter of making sense of information and ideas at hand. This happens best when learners actively participate in learning --internalizing, synthesizing, and making the information their own (Anderson et. al., 1985). Learning and thinking are enhanced when students have opportunities to apply new learning to authentic tasks (Resnick, 1987). Learning is enhanced when it is built on students' prior knowledge and experiences, allowing learners to link what they already know to new information to be learned (Anderson, et. al., 1985). Critical thinking and learning occurs when teachers understand and value diversity of ideas and experiences. Critical thinking occurs when there is not a "only one right answer" mentality (Banks, 1988)

In framing the Reading for Critical Thinking approach, we have borrowed four points from these critical thinking traditions:

1. The faith that curiosity about the world comes naturally to young people, and that young people are capable of entertaining serious questions and formulating creative ideas.
2. Recognition of the important role played by thoughtful teachers who encourage sustained inquiry, and who help students form habits and skills of productive thinking.
3. A resolve to contextualize our emphasis on critical thinking within discussions and other processes of inquiry in which students are already naturally engaged.
4. Acknowledgment of the connection between habits of thought and democratic citizenship.

14. Education for Social Responsibility

Modern urbanized societies face the task of making working communities out of people from many different social and ethnic backgrounds; and to do so with less reliable aid from the extended family, the church, or most of the other community organizations that earlier generations counted on to socialize people to community life. Schools are the one remaining institution with which most citizens have extended contact. Ready or not, teachers are now called upon to prepare students to live productively, cooperatively, and peaceably in their communities, even when those communities are changing at a rapid rate.

Preparing for effective citizenship in an open society requires that students develop important cognitive skills, such as forming their own opinions, creating meaning from experience and reflection, structuring arguments logically, and expressing themselves clearly and confidently. These cognitive skills, however, are not sufficient for the formation of citizenship: also needed are a cluster of attitudes and abilities in the social realm that predispose and enable students to live as valuable citizens.

15. Aspects of Social Responsibility

Valuable citizens are those who not only behave cooperatively and harmoniously within a given social order, but who can also be counted on to interpret changing events over time, and to make wise decisions as to how to behave in concert with the greater good. Moreover, they should be willing to act on those decisions in the ways they conduct their lives in their communities. As prerequisites for becoming valuable citizens, scholars have argued that students should develop:

1. a capacity for empathy with others; which consists at its core of perspective-taking: sensing what someone else's experience of events must be like, and eventually being able to set, and work toward, common goals with others (Selman, 1980);
2. a sense of efficacy, a feeling that participation in the affairs of the community (the classroom, the town, the nation) is worthwhile, because one's own actions will count for something (Colby and Damon, 1992; Merelman &King, 1986);
3. a sense of the relation of one's life to a larger whole: that is, an awareness of the value and purpose of one's activities in a context larger than oneself, be it the struggle for environmental preservation, the labor toward mutual prosperity for the community, or a "fit" in one or another

religious cosmology (Erikson, 1963);

4. a sense of integrity between one's beliefs and one's actions: for example, if one feels strongly that to isolate elderly people is cruel and wrong, then one should willingly devote time to be with elderly people (Erikson,1963);

The curricular means of preparing students for citizenship has long been civic education, a discipline of study that either constitutes separate courses or is combined into social studies curricula. Citizenship has an important knowledge base, certainly: and courses in civic education have an important role to play in providing students' knowledge they need for productive citizenship. However, the four components of valuable citizenship listed above will not reliably be developed in a conventional course on citizenship. That is because the development of what it takes to be valuable citizens requires more than the acquisition of knowledge: it needs the nurture of pro-social attitudes, the provision of skills in group processes, and the encouragement of the disposition to act on one's beliefs. Attitudes, processes, and actions in a social context are best developed not in one subject---regardless how rich in information it might be--but in the total context of schooling: through demonstrations, activities, environmental routines, and expectations that are woven into the fabric of the school day (Berman, 1997; Kohlberg, 1980).

16. How Social Responsibility Is Learned

The four attitudinal and behavioral components that constitute a sense of social responsibility can be helped to develop by school experiences.

1. A sense of empathy, of perspective-taking is enhanced by positive group experiences. Of documented success here are cooperative learning techniques (Johnson and Johnson, 1980). When students learn to depend on each other to carry out school tasks they are helped along the continuum from other- awareness to shared goals. The sense of empathy is also helped along by "workshop" activities that promote discussion, interpretive reading, and writing that flows from personal experience and considers opinions, and also has outlets in group sharing (Calkins, 1990).

2. A sense of efficacy is helped to develop in democratically-run classrooms in which students share in decision-making. John Dewey expressed this idea very eloquently at the beginning of this century:

   If we train children to take orders, to do things because they are told to, and fail to give them confidence to act and think for themselves, we are putting an almost insurmountable obstacle in the way of overcoming the present defects of our system and of establishing the truth of democratic ideals. Our State is founded on freedom, but when we train the State of tomorrow, we allow it just as little freedom as possible. Children in school must be allowed freedom so that they will know what its use means when they become the controlling body, and they must be allowed to develop active qualities of initiative, independence, and resourcefulness, before the abuses and failures of democracy will disappear. (Dewey, The Schools of Tomorrow, 1915, p. 304).

   Students are helped to develop a sense of efficacy when they are invited to participate in structuring the classroom environment, and in devising solutions to problems; when they are given choices in learning; and when their opinions about life and work in school are consulted through such devices as the community circle (Glasser, 1975).

3. To develop in students a sense of the meaning of their lives in relation to a larger pattern may sound like a grandiose undertaking, but any teacher who has struggled with the problem of alienation faced by many young people in post- industrial societies knows that the issue is deadly serious. It is likely that inviting students to relate their learning to their own lives, such as they do when they use devices such as response journals, learning logs or dual-entry

diaries; along with finding some contemporary material for the curriculum, or contemporary applications for that material, helps students synchronize their personal goals with the society in which they live (McCaleb, 1994; Freire, 1970; Horton and Freire, 1991).

4. To develop a sense of integrity between knowledge, beliefs, and behavior is developed in classrooms run according to democratic principles. It is developed further in classrooms that find connections in the community forlearning.

   Good examples of community-directed education are found in "Foxfire" Projects, in which students practice the cultural journalism: learning to seek out people in their community who know old traditions, stories, and crafts; interviewing those people and learning from them; writing up what they learned; and publishing their findings in some form. Foxfire projects cultivate a sense of place: a reverence and pride in local knowledge and tradition. They demonstrate that interesting acts of inquiry and skill development can focus on the things right around us. And they go a long way to bridge the gap between education and local action.

Learning Theory and the RWCT Project: A Summary

Learning theories can point the way to more productive and purposeful teaching and learning. Nonetheless, learning theories do not absolve us from having to make choices about what we want education to accomplish. In designing the Reading & Writing for Critical Thinking Project, we chose those theories that are compatible with our unifying ideal: which is the task of preparing students who are valuable citizens in an open society. Such citizens must be cooperative, but also be capable of leadership; must be respectful of people from diverse backgrounds, but also possess individual initiative; must be willing to act on principle, but also able to discern ways to relate enduring principles to rapidly changing situations.

For such young people to thrive in our classrooms, active learning is an imperative: this implies students' ability to harness their curiosity and search for meaning, and the ability to use the achievements of disciplinary scholars not as inert ideas but as ways of knowing. For our classrooms to foster the growth of such present and future citizens, we must help each student find personal relevance to what is learned; and we must not shrink from engagement with the world, but enlist the idealism of young people in the task of creating and sustaining a society worthy of all of its citizens. As teachers, all of this means that we must move away from being dispensers of knowledge, to being models of inquiring, seeking minds; and sharers of effective processes of learning and making meaning.

The learning theories that have been reviewed in this section--constructivism, metacognitive learning, critical thinking, and education for social responsibility-- are all directly reflected in the workshops promoted by the Reading and Writing for Critical Thinking Project. We trust that those workshops will point the way toward creating classrooms full of active and inquiring learners who are on their way to becoming valuable citizens. That, of course, is the never-quite-satisfied quest of all thinking teachers in every part of the world.

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Appendix:

About the Reading and Writing for Critical Thinking Project

The Reading and Writing for Critical Thinking Project was launched in the summer of 1997 by the Division of Children and Youth of the Open Society Institute for the purposes of helping teachers change their classroom practices in order to promote:

- active inquiry
- student-initiated learning
- opinion formation
- relating education to life
- problem-solving
- critical thinking
- writing as an aid to thinking
- cooperative learning
- alternative means of assessment.

As of the summer of 2001, the project is active in 26 countries with the support of the Division of Children and Youth at the Open Society Institute, New York and the National Soros Foundations of Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakstan, Kosova, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Romania, Russia, Serbia, Slovenia, Tajikistan, Ukraine, and Uzbekistan. In addition, the program is operated in Guatemala with funding from the Soros Foundation-Guatemala, and in Pakistan with support from the Aga Khan Foundation.

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