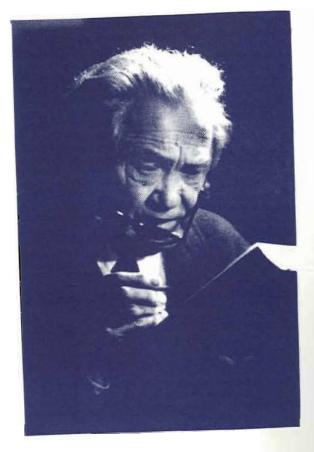# Critical Thinking
and
Educational Reform

John Stuart Mill

"In the case of any person whose judgement is really deserving of confidence, how has it become so? Because he has kept his mind open to criticism of his opinions and conduct. Because it has been his practice to listen to all that could be said against him: to profit by as much of it as was just, and expound to himself, and upon occasion to others, the fallacy of what was fallacious. Because he has felt, that the only way in which a human being can make some approach to knowing the whole of a subject, is by hearing all manner of diverse opinion, and studying all modes in which it can be looked at by every character of mind. No wise man ever acquired his wisdom in any mode but this; nor is it in the nature of human intellect to become wise in any other manner."

Sonoma State University

Henry Steele Commager
Dean of American Historians, addressing the First International Conference on Critical Thinking and Educational Reform.

THE FOURTH INTERNATIONAL CONFERENCE
ON
CRITICAL THINKING AND EDUCATIONAL REFORM
August 3-6, 1986

Program
and
Abstracts

Under the Auspices
of the
Center for Critical Thinking and Moral Critique
and
Sonoma State University

From Previous Conferences:

Michael Scriven

Albert Shanker

Neil Postman

Delores Gallo

TABLE OF CONTENTS

INTRODUCTION
The Heart and Core of Educational Reform

We have every reason to believe that critical thinking ought to be the heart and core of educational reform. If a person is adept at thinking critically, she is adept at gathering, analyzing, synthesizing, and assessing information, as well as identifying misinformation, disinformation, prejudice, and one-sidedness. A student with such skills will have the tools of life-long learning. Such skills are developed in a strong sense only when students are given extensive and continuing opportunities to construct and assess lines of reasoning from multiple conflicting points of view. Because of the human mind's spontaneous tendency to egocentric and sociocentric reasoning, it is essential that students reason dialectically or dialogically, that is, empathize with and reason within points of view they oppose as well as within those they support. If children do not grow up with a rich and varied backlog of such experiences they will not develop genuine fair-mindedness. The time to begin this process is no later than the pre-school stage. This is where the foundation for fairness to others must be laid. It should be an essential part of the core of all schooling thereafter.

Such a goal is both cognitive and affective, for emotions and beliefs are always inseparably wedded together. When we describe ourselves as driven by irrational emotions we are also driven by the irrational beliefs which structure and support them. When we conquer an irrational emotion through the use of our reason we do it through the utilization of rational passions. It is only the development of rational passions that prevents our intelligence from becoming the tool of our egocentric emotions and the self-serving points of view embedded in them. A passionate drive for clarity, accuracy, and fair-mindedness, a fervor for getting to the bottom of things, to the deepest root issues, for listening sympathetically to opposition point of view, a compelling drive to seek out evidence, and intense aversion to contradiction, sloppy thinking, inconsistent application of standards, a devotion to truth as against self-interest -- these are essential components of the rational person. It enables her to assent rationally to a belief even when it is ridiculed by others, to question what is passionately believed and socially sanctioned, to conquer the fear of abandoning a long and deeply held belief. There is nothing passive, bland, or complacent about such a person. All human action requires the marshalling of human energy. All human action presupposes a driving force. We must care about something to do something about it. Emotions, feelings, passions of some kind or other are part of the root of all human behavior. What we should want to free ourselves from is not emotion, feeling, or passion per se, but irrational emotions, irrational feelings and irrational passions. A highly developed intellect can be used for good or ill at the service of rational or irrational passions.

The educational reform needed then is not a return to the past but the forging of a new beginning, one in which for the first time schools become focused on critical thinking and dialogical learning. The role and education for both the teacher and the student needs to be reanalyzed and reconceptualized. Teachers need coursework in critical thinking as well as in its application to curriculum .They need instructors in those courses who model critical thinking. They need intensive field experience involving the observation of master teachers and supervised practice. They need to be valued as critical thinkers and given increasing professional autonomy. They need to be involved in the development of standards of practice in critical thinking. They need regular time to meet with colleagues to observe and learn from each other's successes and failures. They need access to critical thinking materials. They need to join with the administrators and parents in making a commitment to a school environment conducive to critical thinking. Such needs will not be met without funds: funds to thoroughly train staff (with long-term follow-up), funds for teacher release time, funds for staff to attend conferences, for instructional materials, for after-school committe work, etc... Quality in education will not come out of pure commitment and dedication.

On the college level we need strategies for getting beyond narrow disciplinary and technical loyalties and commitments so typically strong in departmentally organized curricula. By spending the bulk of one's time writing and thinking within the confines of one field of knowledge, or worse, within one narrow specialty of that field, one loses sight of the place of that part within the whole. The student then is serially tested within "parts," with little incentive to try to synthesize the parts into a whole. Such a task is not merely "additive" one, but requires that students assess the parts for conflicts and contradictions, and use each to correct the others. Few college students make any real progress in this difficult and unrewarded task.

The problem of educational reform is therefore a long-term problem, requiring long-term as well as short-term strategies, and requiring a re-allocation of social resources. We could make no wiser decision than to make a commitment to become a nation of educated and fair-minded people. Then we would have not only a large pool of talent to solve our technical and scientific problems, but also a citizenry with the critical faculties and ethical dispositions to work cooperatively toward solutions to the vexing problems which increasingly threaten the very survival of humankind in the world.

HISTORY OF THE CONFERENCE

The 1986 conference on Critical Thinking and Educational Reform reflects the development implicit in the five annual conferences which preceded it. From the beginning, the First National Conference on Critical Thinking, Moral Education and Rationality (1981), the concept of critical thinking we have fostered was linked to broadly based ethical concerns and not simply on more narrowly defined academic and technical needs. We began by bringing together some of the finest philosophical minds to reflect upon this crucial area of concern. Nicholas Rescher, Michael Scriven, Joseph Ullian, Julius Moravcsik, Ruth Marcus, Ralph Johnson, J. Anthony Blair, Mary Anne Warren, were among those who set us on our way. Beginning with thinkers capable of the most profound and self-critical thought was an excellent foundation to build upon. But we quickly saw that if progress was to be made we had to expand our efforts to involve decision-makers at all levels of education. We were well aware that reports on educational reform would not reform education. Very often these reports themselves were in need of critique.

The conferences that followed the first have been expanded progressively therefore to include more emphasis on the crucial early years and on the forces and factors affecting the realities of teaching. We have sought to augment and unfold sound theory with models of sound practice. Hence, our growing emphasis on workshops and video-tapes modeling instruction.

There have been two central problems that we have faced in bringing together K-12 and college instructors. Many college instructors and theoreticians have had little experience trying to translate the results of their research into classroom strategies at the K-12 level. And many K-12 teachers in turn have little sympathy for any theory that cannot immediately be so translated. Indeed there is still alive in educational circles today the syndrome that H.L. Mencken so vividly caricatured:

> "The aim seems to be to reduce the whole teaching process to a sort of automatic reaction, to discover some master formula that will not only take the place of competence and resourcefulness in the teacher but that will also create an artificial receptivity in the child. Teaching becomes a thing in itself, separable from and superior to the thing taught. Its mastery is a special business, a sort of transcendental high jumping. A teacher well grounded in it can teach anything to any child, just as a sound dentist can pull any tooth out of any jaw." (Baltimore Sun, 1923)

Last spring, 280,000 California eighth-grade students took a history-social science test in which 40% of the questions address critical thinking skills. The California State Department of Education has developed a continuum of critical thinking skills for the 3rd, 6th, 8th, 10th, and 12th grades. A number of other states, including New York, Connecticut, Pennsylvania, South Carolina, Utah, Wisconsin, and Alaska are mandating critical thinking instruction in one form or another. The College Board has already pointed out that the ability to reason and think critically is a fundamental and necessary component of all other basic academic competencies. And just recently the American Federation of Teachers has launched a national critical thinking project including brochures, in-service programs, video-tapes and co-operative union-school district ventures.

The Center for Critical Thinking and Moral Critique has been working closely with the California State Department of Education, the College Board, numerous school districts, the Association for Supervision and Curriculum Development, and the American Federation of Teachers to facilitate implementation of the highest standards of critical thinking instruction from kindergarten through the university.

It is important to recognize that we are still very much in the beginning stages of educational reform based on critical thinking instruction. There is every reason to think that the need for an annual conference in critical thinking will continue indefinitely. The deeply entrenched compartmentalization of knowledge, the increasing sophistication of propaganda and mass manipulation techniques, the continuing dominance of rote memorization and recall of facts as modes of learning, the growth of television and the electronic media, the increasing conflict of opposing ideologies in the global village, the acceleration of misunderstanding and stereotype in international politics, the growing desire for simplistic explanation of life with opposing groups being identified as essentially "good" or "evil", the growing threat of nuclear holocaust--all argue for the pressing need for fairminded critical thinking skills.

ORGANIZATION OF THE CONFERENCE

It is our assumption that all of the participants in the conference bring to it a shared general interest in critical thinking understood as a family of interdependent intellectual skills and abilities in need of support by a complex of rational passions. We assume as well then that all participants share a commitment to the principle that such abilities and affective qualities can only be developed over an extended period of time and as the result of careful cultivation. We expect therefore that all particpants will have some interest in the unique and necessary contributions of others working in diverse subject areas and at diverse educational levels.

Those who teach the early years need to understand and appreciate the superstructure that is to be built upon the foundations they help to lay. Those who teach the middle years need to understand and appreciate what has come before and what is to follow. And those who teach the later years need to provide the capstones that will solidify the skills, insights, and passions that can secure life-long learning grounded in deeply internalized critical thinking skills. We assume then that all participants will make some effort to communicate with and build connections to others, to reach out beyond the parochialism of subject matter and grade level.

At the same time we realize that special interest groups exist within the critical thinking movement and need to develop along a manifold of directions. All presentations therefore are classified to highlight their emphasis. When a presentation is deemed to be fundamentally addressed to a specific group or grade level, an appropriate label is provided (such as K-3, K-12, 6-8, G, CC, U, etc...). When more than one label is given that is because more than one audience is being addressed. The labels provided are sometimes nothing more than educated guesses and participants should be guided more by the presentation description than the label alone.

Virtually all sessions have been scheduled for 1½ hours to maximize opportunities for questions and discussion.

The evening "cocktail" hours are intended to be an integral part of the conference. We are encouraging all of the presenters to make themselves available for the cocktail hours so that the kinds of extended exchanges which are often not feasible in question and answer sessions might be facilitated.

Monday night's roundtable discussions will not be entirely open-ended but will be chaired and focused upon central issues. The purpose will be to open discussion on central issues not to settle them and to help particpants to identify others who are working on issues and problems of concern to them.

The video programming is intended to augment the presentations by providing some models of instruction and what may come of it (e.g., tapes of students modeling critical thinking skills). Additionally, there will be some video programs shown which can be ordered as discussion starters for in-service training (i.e., tapes such as "Critical Thinking and History", "Critical Thinking and Science", and "Dialogical Practice, Program I").

CONFERENCE THEME: WEAK & STRONG SENSE CRITICAL THINKING

The conference theme has been selected to give participants a central concept by means of which they can understand the basic relationships between all of the various presentations. The field of critical thinking research and instructional approaches is rich and diverse, but there are common core concepts and insights which can be used to organize that diversity and render it coherent.

There is no question, for example, that there are a body of intellectual skills presupposed in critical thinking, skills which have broad application across the full range of human thought and action. Whenever humans act or think they conceptualize or give meanings to their action and thought. These meanings or conceptualizations may be more or less clear (hence the importance of skills of clarification). These meanings organize and give expression to "information", which may be more or less accurate, well-justified, and complete (hence the importance of skills for the gathering, processing and assessing of information). They are based upon beliefs some of which we take for granted (hence the importance of skills for locating and assessing assumptions). They build toward or entail consequences and implications (hence the importance of skills for pinning down and assessing consequences and implications). Finally, human action and thought is based upon and creates meanings within some prespective, point of view, or world view (hence the importance of skills which locate the prespective or point of view within which a given action or line of thought is developed).

But critical thinking is not just about intellectual skills, for intellectual skills can be used in a variety of ways, some of which are inconsistent with the foundational values of critical thinking: open- or fair-mindedness and a concern to apply the same rigorous standards of evidence and proof to our own thinking---especially that which serves our vested interest---as we do to others. It is easy, of course, to be "critical" when we are hostile to persons or belief systems, very difficult when we are strongly predisposed to favor persons or belief systems. Our egocentric or sociocentric biases may act as blinders to narrow our critical thinking to what are fundamentally self-serving uses of it. This problem was identified in ancient Greece by Socrates and Plato as the problem of *sophistry*. We know it in the modern world as the problem of demogogery, propaganda, closed-mindedness and self-deception. This, of course, is not simply a matter of stupidity or of conscious evil.

What it does mean is that critical thinking skills can be used to defeat the ends of critical thinking. Or, less extreme, a person may not yet have learned how to organize and use his or her critical thinking skills with the same degree of consistency within domains where there is emótional blockage. In these cases, we can call the person a "weak sense" critical thinker, highlighting the incomplete development of those skills. In any case, there are degrees or levels of proficiency in critical thinking and the distinction between "weak" or "strong" sense helps to highlight some of the salient considerations to keep in mind in conceiving the developmental process from uncritical to critical thought. It also helps to highlight the *values* implicit in critical thought (e.g. fairmindedness).

All of the presenters have been asked to make the relation of their presentation to these distinctions apparent to their audience so that the relationships of the various presentations to each other will be more clear. Participants should feel free to question presenters in this regard to ensure that they understand whether the presenter is simply focusing on the intellectual skills (without regard to the problem of transfer to domains of vested interest and ego-involvement) or whether the presenter is conceiving of his or her objective as bearing upon this higher order use of critical thinking.

SUNDAY, AUGUST 3

8:00-9:00 am	REGISTRATION Ives Hall Patio
9:00-10:15 am	Richard W. Paul, Director, Center for Critical Thinking and Moral Critique *Teaching Critical Thinking in the Strong Sense in Elementary, Secondary and Higher Education.* Commencement Area
10:30-12:00 noon	Stephen Norris *Varieties of Critical Thinking Tests: Their Design and Use* SU:MP G
	John Prihoda, Richard Paul, Vincent Ryan Ruggiero, David Perkins *Community College Program: Critical Thinking at the Community College* STV:1002 CC
	John Barell *Coaching Teachers Who Teach Critical Thinking* Dar 108 G
	Lenore Langsdorf *Egocentricity: What it is and Why it Matters* CS 68 G
	Ralph Johnson *Seminar on Teaching Critical Thinking* STV 3008 HS/U
	Joel Rudinow *Teaching Critical Thinking the Hard Way* STV 2049 HS/U
	Gus Bagakis *The Myth of the Passive Student* Art 108 G
	Leonard Gibbs, M. Neil Browne, Stuart Keeley *A Randomized Evaluation of A Critical Thinking Program for Faculty and Students at the University of Wisconsin-Eau Clair* Ives 76/77 U
	Eugene Garver *Faculty Development in Critical Thinking* STV 3046 U
	Frank Williams *Computer Assisted Instruction Lessons for Informal Logic and Critical Thinking* STV 3040 G
12:00-1:30 pm	Lunch

1:30-3:00 pm	Vincent Ryan Ruggiero *A Holistic Approach to Thinking Instruction* SU:MP G
	Joseph Williams *Solving Problems in Writing* STV 1002 G
	Ralph Johnson *Mini Critical Thinking Course: Information and the Mass Media* Dar 108 G
	Sharon Bailin *Critical and Creative Thinking* CS 68 G
	Gerald Nosich *On Teaching Critical Thinking* STV 3008 G/U
	T. Edward Damer *Can a Creationist be a Critical Thinker?* STV 2049 G
	Debbie Walsh *The AFT Critical Thinking Project: The Hammond, IN Pilot* Art 108 G
	Corrinne Bedecarre *Lecture on Teaching Critical Thinking in the Strong Sense Using Women's Issues* Ives 76/77 6-U
	Edys Quellmalz *Teaching Thinking Strategies Across the Curriculum - The Higher Order Thinking (H.O.T.) Project: Secondary Level* STV 3040 HS
	Marcia Heiman *Learning to Learn: Thinking Improvement Program* STV 3046 K-12
	David Hyerle *Design for Thinking: Making Sense in the Classroom* STV 3049 K-12
3:15-4:45 pm	Richard Paul *Workshop on the Art of Teaching Critical Thinking in the Strong Sense* SU:MP G
	Edys Quellmalz *Teaching Thinking Strategies Across the Curriculum - The Higher Order Thinking (H.O.T.) Project: Elementary Level* STV 1002 K-6
	Harvey Siegel *Mini Critical Thinking Course: Epistemological Underpinnings of Critical Thinking* Dar 108 G

	Dianne Romain *Why Not Debate? Strong Sense Critical Thinking Assignments* CS 68 6-U
	David Stroup, C. Blaine Carpenter *Teaching and Assessing Critical Thinking in the Natural Sciences* STV 3008 G
	M. Neil Browne, Stuart Keeley *Classroom Assignments that Encourage Critical Thinking* STV 2049 HS/U
	Jack Lochhead *Teaching Kids to Argue: Inciting Riot in the Classroom* Art 108 G
	Elinor McKinney *Models for Teaching Higher Order Thinking* Ives 76/77 K-12
	Richard Lichtman *The Media and Critical Thinking* STV 3040 G
	John May *Part I: Moral and Practical Reasoning: Differences, Relations and Applications* STV 3046 HS/U
5:00-5:45 pm	John Prihoda *Community College Program: Review Session For Community College Personnel* STV 1002 CC
8:00-11:00 pm	Wine & Beer Social Dining Commons
	Videotape Program Commons Alcove

MONDAY, AUGUST 4

8:45-10:15 am

Vivian M. Rosenberg
Introducing Affective Awareness as a Critical Thinking Skill
SU:MP   G

Robert H. Ennis
A Conception of Critical Thinking
STV 1002   G

Richard Paul
Mini Critical Thinking Course: The Nature of Critical Thinking Through Socratic Interrogation
Dar 108   G

Connie De Capite
Language Arts and Critical Thinking for Remedial and Bilingual Students
CS 68   G

Ralph Johnson
Getting Clear About Vagueness
STV 3008   U

Connie Missimer
How to Generate Strong Sense Alternative Assignments
STV 2049   6-U

Jon Baron
A Theory of Rational Thinking
Ives 76/77   G

Anthony Blair
Acceptability as a Criterion of Argument Cogency
STV 3040   U

Georgia Squires, Dianne Romain
Strong Sense Critical Thinking in Junior High School Social Studies
Art 108   JrH

James Gray
Intelligence Examinations and Critical Thinking Instruction
STV 3046   G

10:30-12:00 noon

David Perkins
Knowledge as Design in the Classroom
SU:MP   G

Corrine Bedecarre, Virginia Epstein, Bernadine Stake
Critical Thinking and Women's Issues
STV 1002   G

Vincent Ruggiero
Mini Critical Thinking Course: Dispositions: the Neglected Aspect of Thinking Instruction
Dar 108   G

Chuck Blondino, Ken Bumgarner
Effective Design for Critical Thinking Inservice
CS 68   K-12

John Hoaglund
Critical Thinking and Teaching Informal Fallacies: The Old Approach and the New
STV 3008   HS/U

Mark Weinstein
Integrating Critical Thinking into School Systems
Art 108   K-12

Ann Kerwin, Marlys H. Witte
Ignorance: A Powerful Tool for Teaching and Learning Critical Thinking in the Strong Sense
Ives 76/77   G

Perry Weddle
How to Appeal to Authority
STV 3040   6-U

Debbie Walsh
Integrating Critical Thinking Skills into the K-12 Curriculum
STV 3046   K-12

12:00-1:30 pm   Lunch

1:30-3:00 pm

Edward Glaser, Joel Rudinow, Richard Paul
Can Critical Thinking Be Taught?: Using the Watson-Glaser Critical Thinking Appraisal as a Teaching as Well as Testing Tool
SU:MP   G

John Barell
Assessment and Staff Development for Critical Thinking
STV 1002   G

Gerald Nosich
Mini Critical Thinking Course: Constructing Arguments
Dar 108   K-12

Paul Connolly
Research on Written Composition: Implications for Teaching Critical Thinking
CS 68   G

T. Edward Damer
A No Text Approach to Teaching Critical Thinking
STV 3008   HS/U

Edward D'Angelo
The Ideological Nature of Teaching Critical Thinking
STV 2049   G

Judy Hirsch
Using Critical Pedagogy for Democratic Empowerment in Teacher Education: A Comparison of the Theories of Freire and Feuerstein
Art 108   G

Karen Rosenblum-Cale
Towards Achieving an Active, Cooperative, Exploratory, Open-Ended Education
Ives 76/77   K-12

George Collison
Problem Solving and Writing With Word Processors
STV 3040   G

Nancy Lyons
Dance: Critical Thinking With the Body
Warren Auditorium   G

3:15-4:45 pm   Joel Rudinow
Can Critical Thinking Be Taught?: A Teaching Strategy for Developing Dialectical Thinking Skills
SU:MP   6-U

Matthew Lipman
Must We Distinguish Two Senses of Critical Thinking?
STV 1002   G

J. Anthony Blair
Mini Critical Thinking Course: Using Arguments to Decide What to Believe
Dar 108   G

Michael Rich
Moral Arguments as a Means of Introducing Critical Thinking Skills to Elementary School Students
CS 68   K-6

Judy Hirsch
Teaching Critical Thinking Skills to Students in Remedial Classes: Feuerstein's Theories on Cognitive Modifiability
STV 3008   K-12

John Feare
Counseling as a Critical Thinking Activity
STV 2049   G

Ira Shor
A Paolo Freire Workshop in Critical Thinking: Dialogue and Desocialization in the Classroom
Art 108   G

Corrinne Bedecarre
Workshop on Teaching Critical Thinking in the Strong Sense Using Women's Issues
Ives 76/77   HS/U

Jon Baron
Workshop on the Teaching of Rational Thinking
STV 3040   G

Vincent Ruggiero
Community College Program: The Administrator's Role in Thinking Instruction
STV 3046   CC

5:00-5:30 pm   John Prihoda
Community College: Review & Closing
STV 1002   CC

5:45-7:45 pm   Banquet (Speakers: Paul, Perkins, Blair)
Dining Commons

8:15-11:00 pm   Wine & Beer Social
Grade Level and Subject Area Roundtables
Dining Commons

TUESDAY, AUGUST 5

8:45-10:15 am

David Perkins, Richard Paul
Critical Thinking's Original Sin: Round Two
SU:MP   G

Robert Swartz, Jane Rowe
Integrating Teaching for Thinking Into Mainstream Classroom Instruction
STV 1002   K-12

D. G. Schuster
Tracing the Essence: A Questioning, Restructuring Approach to Understanding Scientific Material
Dar 108   G

John Hoaglund
Mini Critical Thinking Course: Stimulating Thinking About Thinking With Logical Puzzles
CS 68   G

Paul Lyons
Critical Thinking and Critical Consciousness
STV 3008   G

Connie Missimer
Doing Battle With Egocentric Proclivities Without Dying on the Plain of Relativism
STV 2049   G

Peter Kneedler
California State Department of Education Program: Overview of K-12 Critical Thinking Assessment in California
Art 108   K-12

Jill Binker, Marla Charbonneau
How to Remodel K-3 Lesson Plans to Incorporate Critical Thinking
Ives 76/77   K-4

Paul Connolly
A Natural Process Approach to Critical Inquiry
STV 3040   G

Mark Battersby
"The Critic": Critical Thinking in the Strong Sense
Computer Center 1513   G

10:30-12:00 noon

Greg Sarris
Toward Socratic Learning and the Third World Student
SU:MP   G

Donald Lazere
Overcoming Fragmentation in Teaching Critical Thinking
STV 1002   G

Linda M. Phillips
The Role of Critical Thinking in Reading Comprehension
Dar 108   G

James Freeman
Mini Critical Thinking Course: Argument Diagraming
CS 68   G

Perry Weddle
A Cookbook of Critical Thinking Exercises
STV 3008   HS/U

Diane F. Halpern
Critical Thinking Across the Curriculum: Practical Suggestions for Promoting Critical Thinking in Every Classroom
STV 2049   G

Peter Kneedler
California State Department of Education Program: Evaluation of Critical Thinking in California's New Statewide Assessment of History and Social Science
Art 108   K-12

Mark Battersby
Critical Thinking as Applied Epistemology
Ives 76/77   G

Jenna Brooke
Teaching Critical Thinking in the Secondary History Classroom
STV 3040   8-12

12:00-1:30 pm   Lunch

1:30-3:00 pm   James Freeman

The Human Image System and Thinking Critically in the Strong Sense

SU:MP   G

David Perkins
The Possibility of Invention
STV 1002   G

Ogden Morse, Geoffrey Scheurman
Panel: Projects for Integrating Critical Thinking
Dar 108   G

T. Edward Damer
Mini Critical Thinking Course: Learning About Good Arguments Through the Fallacies
CS 68   G

Jane Rowe
Reshaping the Elementary School Curriculum to Infuse Teaching For Thinking
STV 3008   K-6

Carol LaBar, Ian Wright
Necessary Distinctions in Critical Thinking
STV 2049   G

Jan Talbot, Edys Quellmalz
California State Department of Education Program: Evaluating Critical Thinking Skills Through Constructed Responses
Art 108   K-12

Sandra Black
Practical Issues in Implementing Thinking Skills Programs
STV 3040   K-12

Gerald Nosich
Teaching Critical Thinking Across the Curriculum
Ives 76/77   G

3:15-4:45 pm

Harvey Siegel
Rationality and Ideology
SU:MP   G

Robert Ennis
How to Write Critical Thinking Test Questions
STV 1002   G

Panel: Joseph Williams, Donald Lazere, Diane Halpern
The Dialectic of Factual Knowledge and Critical Thinking
Dar 108   G

John Chaffee
Mini Critical Thinking Course: Critical and Creative Problem-solving
CS 68   G

Catherine Avington
Project Impact: Bridging the Gap Between Critical Thinking Concepts and the Classroom
STV 2049   K-12

Beth Breneman, Diane Levin
California State Department of Education Program: Reading/Writing Statewide Assessment
Art 108   K-12

Alita Letwin
A Conceptual Citizen Education Curriculum: Examining and Evaluating the Fundamental Ideas of Authority and Justice
STV 3040   K-12

Marlys H. Witte, Ann Kerwin
Facing the Unknown in Medicine: An Experiment to Enliven Medical and Nursing Education
STV 3008   U

C. Blaine Carpenter
Clarifying a Concept: Assessment of Critical Thinking Ability
Ives 76/77   G

7:30-11:00 pm

Wine and Beer Social
Dining Commons

Videotape Program
Commons Alcove

WEDNESDAY, AUGUST 6

8:45-10:15 am

M. Neil Browne, Stuart Keeley
Bridging the Gap Between Teacher's Verbal Allegience to Critical Thinking and Their Actual Behavior
SU:MP   K-12/G

Linda Bomstad, Harry Brod
Advocating Neutrality
STV 1002   G

J. Anthony Blair
Problems With Teaching How to Use Arguments to Decide What to Believe
Dar 108   G

Diane Brooks, Ira Clark
California State Department of Education Program: Critical Thinking and the History-Social Science Curriculum, K-8
CS 68   K-8

Tej Pandey
California State Department of Education Program: Problem Solving in the Statewide Mathematics Assessment
STV 3008   K-12

Alita Letwin
A Conceptual Citizenship Education Curriculum: Examining and Evaluating the Fundamental Ideas of Privacy and Responsibility
STV 2049   K-12

Connie Missimer
Analyzing Evidence in a Fair-minded Way: Some Ideas
Ives 76/77   HS/U

Mark Battersby
"The Critic": Critical Thinking in the Strong Sense
Computer Center 1513   G

Carol LaBar, Ian Wright
Mini Critical Thinking Course: Practical Reasoning
Art 108   G

10:30-12:00 noon

Perry Weddle
Social and Historical Analogy
SU:MP   HS/U

Jack Lochhead, David Stroup, C. Blaine Carpenter
Panel: Critical Thinking: Math and Science
STV 1002   G

John Chaffee
Teaching Critical Thinking Across the Curriculum
Dar 108   K-12

Diane Brooks, Ira Clark
Critical Thinking and the History-Social Science Curriculum
CS 68   9-12

Linda Zimmerer, Zack Taylor
California State Department of Education Program: Process Skill Assessment in Science
STV 3008   K-12

Peter Blewett
Learning is a Crystal: A Project Method for Teaching Critical and Creative Thinking in the Social Sciences
STV 2049   HS/U

George Collison
Teaching Deductive and Inductive Thinking Using Computer Simulations as Instructional Tools
Art 108   G

Dennis Rohatyn
The Contemporary Relevance of Stephen Toulmin's "The Uses of Argument"
Ives 76/77   U

Mark Battersby
Teaching Critical Thinking in the High School: A College Instructor's Confession
STV 3046   9-12

12:00-1:30 pm   Lunch

1:30-3:00 pm   John D. May
Part II: Moral and Practical Reasoning: Differences, Relations, Applications, SU:MP   G

Joseph Ullian
Thoughts Pertaining to Rationality, Relativism and Problems of Classification
STV 1002   G

Judith Collison
A Program for Teacher Education in Reasoning Skills
Dar 108   G

Elinor McKinney
Models for Teaching Higher Order Thinking, Demonstration
CS 68   K-12

Virginia Epstein
Wild Things Revisited: Children's Literature and Critical Thinking
STV 2049   K-8

Priscilla Agnew
The Critical Thinking Worksheet
Art 108   6-U

Margaret Hyde, Kenneth Fawson, John Chaffee
Teaching Critical Thinking Skills: A Telecourse Approach
STV 3008   G

Vincent Ruggiero
Final Comments on the Administration of Critical Thinking Instruction for Community College Personnel
STV 3046   CC

3:15-4:45 pm   Wrap-up
Warren Auditorium

ABBREVIATIONS

STV: Stevenson

CS: Cluster Schools

SU:MP: Student Union,
Multi-Purpose Room

N: Nichols

Ives: Warren-Ives Hall,
Warren Auditorium

G: General

JrH: Junior High School

HS: High School

U: University

K-12: Kindergarten-Grade 12

CC: Community College

W: Workshop

Agnew, Priscilla
Professor
Department of Philosophy
Saddleback College
28000 Marguerite Parkway
Mission Viejo, CA 92692

The Critical Thinking Worksheet

The Critical Thinking Worksheet is a pedagogical tool for introducing students to critical thinking. Many students acquire the technical skills such as identifying premises, assumptions and conclusions, distinguishing between strong and weak arguments, clarifying ambiguous terms and so on. However, these students often experience frustration in grasping the overall structure of the project of critical thinking. The worksheet provides a visual aid for integrating all of these technical skills. In this workshop, the use of the worksheet will be demonstrated. Participants will have the opportunity to experience the process of critical thinking from the point of view of a beginning student of critical thinking. This session is especially intended for those who are introducing critical thinking skills to high school and college students.

Avington, Catherine
Mentor Teacher
Learning Center, Project I.M.P.A.C.T.
Mt. Diablo High School
2455 Grant Street
Concord, CA 94520

Bridging the Gap Between Critical Thinking Concepts and the Classroom

This workshop will introduce Project I.M.P.A.C.T. - Improving Minimal Proficiencies by Activating Critical Thinking, a program that has been adopted by the U.S. Department of Education. Project I.M.P.A.C.T. has 23 critical thinking skills that are activated by 10 teaching behaviors. Sample activities that illustrate these skills will be discussed.

Bagakis, Gus
Professor
Department of Philosophy
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

The Myth of the Passive Student

Students are required to take critical thinking in the California state universities. In my experience many other teachers are frustrated by the passive uninterested students they must deal with. My assumption is that this frustration is misplaced and that students are merely reflecting the needs of our political economy, which requires passive, consuming, isolated robots. I also argue that this "passivity" is inconsistent with the potential that we have as human beings, whose frustrations are reflected in the increase in mental illness, crime, apathy and drugs. What students need is a recognition of and support for their intelligence and potential, as empowered people who can transform society to satisfy their authentic human needs.

The critical thinking movement provides an exciting prospect for such a transformation. Unfortunately there is a high probability that critical thinking will be taught in the "weak" sense, that is, in a detached academic sense, whereas I advocate it be taught in the "strong" sense, incorporated into the lives of the students and the community. Thus my pedagogical philosophy incorporates the "strong" approach modeled after that of Paolo Freire.

At the presentation I will introduce two ingredients of my class: group work and world views. I will outline how I use group work to give students an opportunity to develop their otherwise latent skills in communicating and arguing. In groups students can effectively cultivate their own perspectives as well as develop a new sense of power. I also present a world views perspective to my students showing them how issues are often interpreted and analyzed from a standpoint that is assumed to be natural but demands analysis because it reflects a particular world view. I have divided standpoints into three world views: individualistic, wholistic and process. I intend to outline these world views to the audience and encourage dialogue on their usefulness as heuristic devices.

Bailin, Sharon
Professor
Department of History and Philosophy of Education
The Ontario Institute for Studies in Education
252 Bloor Street, West
Toronto, Ontario
Canada M5S IV6

Critical and Creative Thinking

Critical and creative thinking are both frequently cited as goals in education, yet they are often conceived as very different kinds of goals requiring different, and even antithetical kinds of pedagogy. Teaching critical thinking often consists in teaching isolated techniques of reasoning, while fostering creativity is connected with encouraging intuition and the spontaneous generation of ideas. I shall argue that both these education tendencies are misconceived as they are based on a false opposition between critical and creative thinking. I shall attempt to show that the two are really intimately and inextricably interconnected, and I shall outline the education implications of pursuing creative and critical thinking as joint and inseparable goals.

Barell, John
Professor
Department of Curriculum
and Teaching
Montclair State College
210 Chapin
Upper Montclair, N.J. 07043

Assessment and Staff Development for Critical Thinking

In this workshop, I will report on how diverse districts are informally assessing students' critical thinking abilities using writing samples of their responses to complex social, political and economic issues. What do these assessments reveal about the use of thinking "skills" as well as the disposition to be critical? How does a district use them for curriculum development, staff supervision and teaching for critical thinking? And how well do these assessments of secondary school (and perhaps college) students relate to David Perkins' research on "informal reasoning"?

Barell, John

Coaching Teachers Who Teach Critical Thinking

If we wish students to engage in critical thinking in the 'strong sense,' how do we nurture this intended outcome through teacher-supervisor-coach interactions? Assuming experienced teachers are aware of the nature of critical thinking and find it difficult to engage students in this process, how do we help them become more flexible, empathic analysts and problem solvers? A model coaching process will be demonstrated and related to research on staff development, teacher growth, metacognition and achievement motivation.

Baron, Jonathan
Professor
Department of Psychology
University of Pennsylvania
3815 Walnut Street
Philadelphia, PA 19104

A Theory of Rational Thinking

All thinking may be described as a search for possibilities, evidence, and goals, and use of the evidence to draw conclusions about the possibilities (in the light of the goals). Rational or good thinking requires sufficient search and fairness concerning possibilities. The most insidious departures from this model are insufficient search and bias toward possibilities that are already strong. The causes of these departures often involve the thinkers beliefs about thinking itself.

Baron, Jonathan

Workshop in the Teaching of Rational Thinking

In this workshop, criteria will be provided for assignments and exercises for the teaching of rational thinking at all levels. It will be argued that the teaching of thinking requires the use of whole thinking tasks rather than exercises in components or subskills. Participants will make up, present, and evaluate (in terms of the criteria provided) their own ideas about such assignments. (Participants will find it helpful to have attended Baron's earlier presentation or to be otherwise familiar with his approach.)

Battersby, Mark
Professor
Department of Philosophy
Capilano College
North Vancouver, British Columbia
Canada V7J 3H5

"The Critic": Critical Thinking in the Strong Sense

One has to be skeptical with the possibilities of using computers to teach critical thinking. No skill more fully employs the range of human intelligence in assessing and analyzing. All efforts to produce standardized, mechanically graded critical thinking tests are fraught with the difficulty that most arguments are open to a variety of analysis and often no particular answer or even a set of answers can be judged correct. Nonetheless, I believe I have developed a program, *The Critic*, that is of use in teaching critical thinking in the weak sense. The program encourages the analysis and criticism of arguments and the identification of fallacious reasoning. But, as an unexpected consequence of using the program, I now have much more time in my own semester course to go over arguments of deeper significance; I now have more time to promote critical thinking in the strong sense. The workshop will involve demonstration of this program and its use in teaching critical thinking in both senses.

Battersby, Mark

Teaching Critical Thinking in the High School, a College Instructor's Confession

In the fall of '85 I was asked to teach a college level critical thinking course to the talented students of an enrichment program in an affluent suburb. I presumed that I could teach in more or less the same manner that I taught my college course. But many problems arose: I had to work harder to keep classroom order and to keep students interested. But most surprisingly, I had to work against the students' desire to turn the course into a "How-to-be-a-more-Efficient-Public-Speaker" course. This blatantly amoral attitude came as a shock to me, and I must confess that I did not adequately deal with it. I take this as anecdotal evidence for Richard Paul's thesis that weak sense critical thinking is potentially a dangerous thing if not accompanied by strong sense instruction. I will share with participants my experiences, failures, successes and reflections, and would like to explore with others, methods for promoting more strong sense teaching without abandoning the very necessary practice of more mundane analytical skills.

Battersby, Mark

Critical Thinking as Applied Epistomology

When teaching more than mere analysis in critical thinking, we are teaching students the norms of knowledge. This can be compared to instruction in applied ethics. Indeed, critical thinking's relationship to epistemology is like that of applied ethics to traditional ethical theory. Ethics can be divided into meta-ethics, normative ethics and applied ethics. A parallel division of epistemology might be: meta-epistemology (so-called epistemology), normative epistemology (e.g. philosophy of science) and critical thinking (applied epistemology). The purpose of this workshop is to explore the plausibility of this comparison and its potential benefits to the teachers of critical thinking.

Bedecarre, Corrinne

Graduate Student
General College
University of Minnesota
216 Pillsbury Drive S.E.
Minneapolis, MN 55455

Lecture on Teaching Critical Thinking in the Strong Sense Using "Women's" Issues

In the beginnings of the Critical Thinking movement, much attention was focused upon the use of certain types of examples: they needed to be 'relevant,' 'natural,' 'everyday' samples of reasoning. Editorial pages, letters to the editor, political speeches have all been employed for analysis in both classrooms and textbooks. This return to actual argumentation instead of sanitized examples or erudite tomes is indeed important. I believe that the teaching of Strong Sense Critical Thinking calls for a new focus, a next step in the selection and development of appropriate course examples.

For this reason, I argue for the adoption of issue analysis as a means to evaluate issues in which there is substantive controversy of the sort that involves conflicting world views, presuppositions, concepts, epistemology, and methodology.

Some issues do seem more conducive to in-depth analysis than others; U.S. Foreign Policy issues are often used at SSU, for instance, as they often entail, at least, a conflict between a mainstream American world view and other world views. I will argue that many so-called 'women's issues' are also ideally suited for issue analysis. Sexual assault, domestic violence, pornography, child care subsidies and maternity leave in the U.S., for example can successfully display gender conflicts, mainstream versus feminist views and be the rich multi-categorical field necessary for world view critique.

Bedecarre, Corrinne

Workshop on Teaching Critical Thinking in the Strong Sense Using "Women's" Issues

In this workshop I will propose that many so-called 'women's issues' are ideally suited for strong sense critical thinking courses. The Critical Thinking movement began, in part, with a concern for 'relevant,' 'natural,' 'everyday' examples--the next step is to focus again upon the content of our materials to find multi-categorical issues which involve a substantive level of conflict. To do world view critique or issue analysis using women's issues is demanding, difficult, stressful and uncommonly rewarding. As this is a somewhat new endeavor, I'd like to discuss my strategies and successes and involve the participants in analyzing some of the problems.

Binker, A.J.A.

Research Assistant
Center for Critical Thinking
and Moral Critique
Sonoma State University
Rohnert Park, CA 94928

How to remodel K-3 Lesson Plans

Co-Presenter
Charbonneau, Marla

Research Assistant
Center for Critical Thinking and Moral Critique

Since most teachers already have, or have access to, a host of traditional lesson plans for their grade level, learning how to remodel these to foster strong sense critical thinking is an invaluable skill. In this workshop, we will discuss general strategies we have used to critique and remodel K-3 lesson plans. After a detailed discussion of several examples of remodels, we will ask participants to practice revising a lesson plan in small groups. The whole group will then meet to discuss the revisions.

Black, Sandra

Consultant
Cognitive Skills Development
Associates
P.O. Box 468
St. Augustine, FL 32085

Practical Issues in Implementing Thinking Skills Programs

Dr. Black will address three questions asked by school administrators: 1) what is meant by "teaching thinking", 2) how is thinking skills instruction organized, and 3) how have school districts which have implemented extensive thinking skills instruction plans decided on a course of action? She will describe six types of thinking skills programs commonly implemented in the United States, and give examples of each type.

Blair, J. Anthony

Professor
Department of Philosophy
University of Windsor
Windsor, Ontario
Canada N9B 3P4

Problems with Teaching How to Use Arguments to Decide What to Believe

I recommend using arguments to inquire critically and systematically into whether we should believe a claim, when that claim is important, controversial and one we want to adopt or reject. (See Meiland's *College Thinking*, or Johnson and Blair's *Logical Self-Defense* for two similar methods of teaching this process.) But it is easier to describe this method than to teach it successfully in the classroom. And it is especially difficult to get students to exercise the reciprocity of "strong sense" critical thinking when examining a claim which they strongly favor or oppose beforehand. In this session, participants will be requested to describe their own experiences and difficulties, and to discuss together ways of getting students to look at the arguments for and against a claim in a truly open-minded, critical way.

Blair, J. Anthony

"Acceptability" as a Criterion of Argument Cogency

People continue to say that one criterion of a logically sound argument is that its premises must be true--even though true premises are neither a necessary nor a sufficient condition of a cogent argument. But what criterion of premise adequacy should replace "truth"? Johnson and Blair, and Govier, in their textbooks, and Hamblin in *Fallacies*, have proposed "acceptability" as the correct standard of premise adequacy. However, there is (to my knowledge) no well-developed theoretical account of acceptability. How is it to be understood? Does it not entail relativism--doesn't the premise have to be acceptable to someone? In this paper I attempt an analysis of acceptability. (In the process I will discuss the connections between this analysis and "strong sense" critical thinking.)

Audience: People interested in the theory of argument evaluation.

Blair, J. Anthony

Using Arguments to Decide What to Believe

Objective: To learn a method for investigating the truth or plausibility of a claim in a systematic way.

Rationale: Faced with contentious claims, there is a tendency to respond with immediate reactions, and also to consider only a few of the pros and cons. Moreover, the reflection that goes into such an examination when it does occur is seldom thorough or tenacious. What seems needed are some easily-understood and readily-applied methods that will extend and deepen the critical examination of contentious claims. The method taught in this Unit is one of these.

Method: The method is a systematic collection and examination of (1) the pros and cons of a contentious opinion or claim, (2) the merits of those pros and cons, and (3) the overall strengths and weaknesses of the best case for the claim. The basic concept is dialectical argumentation. The model is very like debate, except there is no prior commitment to any one position.

Procedure: The class will be taught the theory of the method, then given a chance to apply it and see how it works in practice.

Prerequisites: Those who take this Unit should already be familiar with (1) what an argument is, and (2) how assessment of an atomic argument requires critical examination of its premises or reasons and of its inferences or connections between the premises and the conslusion.

Perkins, David

Knowledge as Design in the Classroom

This workshop introduces participants to the basic strategies of "knowledge as design," a systematic approach to integrating the teaching of critical and creative thinking into subject-matter instruction. The key notion is that any piece of knowledge or product of mind -- Newton's laws, the Bill of Rights, a sonnet by Shakespeare -- can be viewed as a design, a structure adapted to a purpose. By examining the purpose of Newton's laws, the Bill of Rights, or a sonnet, analyzing structure, and assessing how and how well the structure serves the purpose, students can achieve genuine insight into such products of mind and into the way knowledge works in general. By redesigning existing designs (for instance, make up your own Bill of Rights) and devising new ones, students can learn the art of inventive thinking.

Perkins, David

The Possibility of Invention

"How can something come out of nothing?" is a fundamental question not only for physicists pondering the origins of the universe but for psychologists, philosophers, and educators pondering the nature of creative thinking. How can a person invent something genuinely new, or is it so that nothing we invent is really new? This presentation explores the basic "logic" of invention, arguing that there are fundamental patterns of information processing that can be found in human thought, and some of them even in computers and biological evolution.

Phillips, Linda M.

Assistant Professor
Institute for Educational Research and Development
Memorial University of Newfoundland
St. John's, Newfoundland
Canada, A1B 3X8

The Role of Critical Thinking in Reading Comprehension

In reading it is generally thought that critical thinking is something applied to text that deals with points of view, controversial subjects and propaganda. In critical thinking it is generally thought that reading is a prerequisite to reasoning. The role of critical thinking in reading comprehension is more intimate than is expressed by either of these views. In this paper I wish to resist any attempt to separate thinking from reading and to point out that reading well is thinking well. Case studies will be examined to illustrate how two children reading a short passage, work through their interpretation. It will be shown that what distinguishes Steven from Colleen is the quality of their thinking. Steven comprehended the passage by thinking well, Colleen, on the other hand, interpreted the passage but did not comprehend it because she did not think well. It will be shown that the same criteria which distinguish Steven's reading from Colleen's, also distinguish good thinking from poor.

Prihoda, John
Superintendent/President
Iowa Valley Community College
District
P.O. Box 536
Marshalltown, IA 50158

Critical Thinking at the Community College

Co-Presenters
Paul, Richard W.
Perkins, David
Ruggiero, Vincent Ryan

This is the "opening" session of the special program on critical thinking for community college personnel. John Prihoda, who will be coordinating these sessions, will define some of the issues from a community college perspective and describe the program plan. Richard Paul will discuss some of the history of the critical thinking movement and indicate some of the approaches being taken at the community college level. Vincent Ruggiero will describe some of the methods and materials being used in critical thinking instruction.

John Prihoda will close the session with some comments on the administrative implications of the critical thinking movement.

Quellmalz, Edys
Project Director
H.O.T. Project
205 Georgia Lane
Portola Valley, CA 94025

Teaching Thinking Strategies Across the Curriculum: The Higher Order Thinking (H.O.T.) Project (Elementary Level)

This session will describe the Higher Order Thinking (H.O.T.) Projects currently underway in San Mateo County, Sacramento County and the San Juan Unified School District. The projects involve teachers in a collaborative effort to develop and monitor students' higher order thinking skills in school subjects. In the instructional component, teachers examine textbooks and other classroom resources in order to design activities that will involve students in sustained reasoning about significant concepts and problems typically encountered in academic and practical situations. Following an overview of the projects, teachers will describe lessons developed and discuss samples of student work.

Brooks, Diane
Manager
History-Social Science Unit
California State Department
of Education
721 Capitol Mall
Sacramento, CA 95814

Critical Thinking and The History-Social Science Curriculum K-8

Co-Presenter
Clark, Ira
Consultant
History-Social Science Unit
California State Department of Education

Participants will receive an overview of the current draft of the Model Curriculum Guide, Grades K-8, History-Social Science. Grade appropriate activities and classroom strategies for teaching critical thinking skills through the history-social science curriculum will be discussed and developed.

Brooks, Diane

Co-Presenter
Clark, Ira

Critical Thinking and The History-Social Science Curriculum 9-12

Using the Model Curriculum Standards for Grades 9-12, History-Social Science, participants will discuss and develop classroom activities and strategies for getting students to enlarge their views through critical thinking skills.

Brooke, Jenna
Research Assistant
Center for Critical Thinking
and Moral Critique
Sonoma State University
Rohnert Park, CA 94928

Teaching Critical Thinking in the Secondary History Classroom

Based on the M.A. thesis she recently completed, Ms. Brooke will present a curriculum model which introduces critical thinking concepts by leading students through a multi-level hierarchy of understanding, then integrates concept use and critical thinking development into the actual history units.

Browne, M. Neil
Professor
Department of Economics
Bowling Green State University
Bowling Green, OH 43403

Co-Presenter
Keeley, Stuart
Professor
Department of Psychology
Bowling Green State University

Classroom Assignments that Encourage Critical Thinking

Even in those rare classes where students are active participants, most of their practice opportunities are stimulated by assignments. This paper focuses on designing assignments to be consistent with critical thinking objectives. The approach to critical thinking assumed by the authors is that derived from their book, *Asking the Right Questions: A Guide to Critical Thinking*. The presentation will emphasize the practical. Suggested assignments will be tied to specific critical thinking skills or attitudes. Illustrations of effective assignments will incorporate efforts to teach critical thinking in both the weak and strong senses. Classroom assignments that are integrated with teaching behavior, curriculum materials, and evaluation techniques will be stressed. The presentation will be based on our teaching experience as well as our faculty development programs at several universities.

Browne, M. Neil

Co-Presenter
Keeley, Stuart

Bridging the Gap Between Teachers' Verbal Allegiance to Critical Thinking and Their Actual Teaching Behavior

Faculty and administrators regularly rank critical thinking as a preeminent educational objective. They claim it is the core of what teachers should be doing. Unfortunately, their talk is rarely supported by their teaching behavior. An initial obstacle to transforming verbal devotion to critical thinking into classroom performance is the mistaken belief that the discontinuity between prescription and practice is illusory. The first section of this paper summarizes research by ourselves and others concerning the extent of critical thinking activity in secondary and postsecondary classrooms. The remainder of the paper discusses strategies that offer promise for actually integrating critical thinking into classrooms. Especially important is the need to address the dominance of the "coverage model" in shaping teaching practice. Our paper will include suggestions for dialogic conversation with those who are motivated by the "coverage model."

Carpenter, C. Blaine
Professor
Department of Biology
Clayton Junior College
Morrow, GA 30260

Clarifying a Concept: "Assessment" of Critical Thinking Ability

Concern for excellence in education both within the academy and from external sources has led to a growing interest in assessment. This interest has frequently been accompanied by confusion, fear and frustration. One of the sources of these feelings is the debate over what assessment is, i.e., whether it is:

1. the assessment of individual student learning gains; or
2. the screening, advising, and placement of entering students; or
3. the measurement of overall course, program, and institutional effectiveness.

The point frequently overlooked is that all of these are assessment, albeit assessment for different purposes and, therefore, requiring different approaches. Clayton Junior College (a developing four-year college of the University System of Georgia) is redesigning its general education curriculum. The approach we are taking to developing a coherent program is to focus instruction and assessment on clearly-defined student outcomes, one of these being critical thinking (specifically problem solving and inquiry). The primary purposes of critical thinking assessment at Clayton Junior College, therefore, are placement and advising of entering students and assessment of individual student progress. It is the intent of this workshop to:

1. discuss a representative sample of various critical thinking assessment programs in use in educational institutions across the United States,
2. discuss the conceptual framework for integrating critical thinking into the Clayton Junior College curriculum and
3. discuss the assessment of the Critical Thinking Outcome at Clayton Junior College.

Audience: People interested in the theory of argument evaluation.

Chaffee, John
Professor
Department of Philosophy
La Guardia Community College
Long Island City, NY 11101

Teaching Critical Thinking Across the Curriculum

This session will explore an established interdisciplinary program which teaches and reinforces fundamental thinking skills and critical attitudes across the curriculum. The program is centered around *Critical Thought Skills*, a course specifically designed to improve the thinking, language and symbolic abilities of entering college students. The course has been integrated into the curriculum through an NEH funded project of faculty training and curriculum re-design. In addition to reviewing the structure, theoretical perspective and evaluative results of the program, special attention will be given to exploring practical approaches for developing thinking abilities.

Chaffee, John
Critical and Creative Problem-Solving

Solving problems effectively involves an integrated set of critical and creative thinking abilities. This workshop will introduce a versatile problem-solving approach which is useful for analyzing complex problems in a creative and organized fashion. Participants will work through a sequence of problems, individually and in small groups, and will be given the opportunity to discuss and critically reflect on the learning process. In addition, participants will explore ways of incorporating problem-solving approaches into the courses that they teach.

Collison, George
Computer Coordinator
Holyoke Public Schools
500 Beech Street
Holyoke, MA 01040

Problem Solving and Writing With Word Processors

In this session, I will discuss a process approach to writing using a modified Polya model. The problems faced by beginning writers are very similar to those faced by beginning problem solvers in math and science. Our teachers have developed materials and strategies to teach process writing using a problem solving model. Computers are used as classroom publications tools, allowing peer review of writing on a large scale. Only 1 or 2 computers are needed per class of 20 or 30 students.

Collison, George
Teaching Deductive and Inductive Thinking Using Computer Simulations as Instructional Tools

This session will focus on computer simulations in math and science which provide abstract objects that students can manipulate concretely. The transition from concrete to formal thought is very difficult for many students. Computers provide a representational medium in which students can concretely test conjectures and verify properties and relations of complex systems, helping to bridge the gap between the concrete world of objects and the formal world of inferences and relations. *The Geometric Supposer, Catlab,* and *MicroDynamo* are among many programs that offer this opportunity.

Collison, Judith
Assistant Professor
Department of Philosophy
Westfield State College
Westfield, MA 01086

A Program For Teacher Education in Reasoning Skills

An essential prerequisite to the study of any discipline is the study of the skills involved in various types of reasoning. Reasoning skills must be taught explicitly, at all educational levels, not merely implicitly, through the study of fields of knowledge incorporating the various forms of reasoning. In order to make the teaching of reasoning skills explicit, teachers need to be taught these skills, and they need to learn and develop ways of teaching such skills.

I have designed a program for high school teachers who wish to make the teaching of thinking skills an integral part of their instruction. The program has four levels: 1) An overview of cognitive theories and their educational implications; 2) The study of methods of reasoning and analysis; 3) Examination of the disciplines in light of the different reasoning methods; 4) Reorganization of the course materials to reflect the orientation towards teaching reasoning skills. The goal of the program is to enable teachers to teach skills of analysis, synthesis, and relevant criticism.

Connolly, Paul
Professor/Director
Institute for Writing and Thinking
Bard College
Annandale-on-Hudson, NY 12504

Research on Written Composition: Implications for Teaching Critical Thinking

A new book by George Hillocks, Jr., *Research on Written Composition* (NCRE and ERIC, 1986), reviews research done during the past twenty years into which modes and foci of writing instruction are most effective. The study reports the impact on students' writing of (1) different teaching roles, objectives, and tasks (modes of instruction) and of (2) different course emphases--on grammar, models, sentence combining, criteria scales, inquiry, or freewriting. The conclusions about effective writing instruction are directly relevant to teaching for critical thinking. Hillocks' book can be expected to provoke hard questions and strong responses, however, for it challenges various Firm Beliefs, including those of the present speaker, a proponent of freewriting and of a "process approach" to writing instruction. The report offers a good opportunity to exercise critical thinking "in the strong sense," therefore, for those teachers who will need to reconcile the research conclusions with their own teaching viewpoints.

Connolly, Paul
A "Natural Process" Approach to Critical Inquiry?

"All there is to thinking," wrote Norman Maclean in *A River Runs Through It,* "is seeing something noticeable which makes you see something you weren't noticing which makes you see something that isn't even visible." This is a workshop on forms and uses of informal writing that help students to think. It is about using writing to develop attitudes, abilities, methods, knowledge, and active, collaborative learning. The subject of our own writing and thinking in this workshop will be biological "taxonomy," but we will reflect, also, on the ways writing is classified and what this signifies.

Damer, T. Edward
A "No-Text" Approach to Teaching Critical Thinking

Professor
Department of Philosophy
Emory and Henry College
Emory, VA 24327

This workshop will demonstrate how a college or high school course in critical thinking may be taught without the use of a textbook. The working materials of the "no text" approach are student-selected editorials, letters to the editor, advertisements, and conversations. An outline of such an approach will be presented with handouts of sample materials and assignments.

Damer, T. Edward
Can a Creationist be a Critical Thinker?

This paper will examine our inclination to regard those with whom we disagree as non-critical thinkers. It will be a careful analysis not only of ego-centric thinking but of the ego-centric predicament of not being able to escape from genuinely believing ourselves to be better thinkers than others who come to different conclusions than we. The paper will attempt to answer a number of related questions. Can we assume that our ideological opponents are flawed in their thinking--even before we examine the process by which they arrived at their views? Can two critical thinkers come to contradictory conclusions on an important issue without assuming that one of the two must have made a logical wrong turn? Are we prepared to regard any ideological sexist, racist, or creationist as a critical thinker?

Damer, T. Edward
Learning About Good Arguments through the Fallacies

This session will be devoted to the treatment of a selected number of informal fallacies. Since a fallacy will be defined as a violation of one of the three criteria of a good argument, the emphasis will be upon the ways in which an understanding of the fallacies can help one to develop abilities to construct good arguments and to detect bad ones. A handout of common fallacies from the new edition of the instructor's *Attacking Faulty Reasoning* will be distributed to class participants.

D'Angelo, Edward
The Ideological Nature of Teaching Critical Thinking

Professor
Department of Philosophy
University of Bridgeport
Bridgeport, CT 06601

A discussion of the weak and strong senses of teaching critical thinking with examples from literature, social studies, and science. Ideological perspectives, value frameworks, and power relations will be analyzed as the basis for a strong sense conception of critical thinking. Examples will be presented from various school curriculums.

DeCapite, Connie
Language Arts and Critical Thinking for Remedial or Bilingual Students

Reading Resource Specialist/
Mentor Teacher
Santa Ana Unified School District
601 W. Alpine
Santa Ana, CA 92707

This workshop will focus on two (2) specific components. Initially, the presenter will discuss the benefits of using critical thinking skills to help low achieving or ESL students develop language, reading and writing proficiency. The second part of the workshop will focus on how to develop and implement a language arts program consisting of activities utilizing critical thinking strategies and interdisciplinary materials. Teachers will receive units of study which were originally designed for use with Chapter I middle school students. However, the strategies and content are universal in nature so these units could be modified to serve any student.

Ennis, Robert H.
A Conception of Critical Thinking

Professor
Department of Educational
Policy Studies
University of Illinois at
Urbana-Champaign
1310 South Sixth Street
Champaign, IL 61820

On the assumption that a liberally educated person should be able to think critically in handling the civic and personal problems of daily life, as well as those of the standard subjects as taught in school, Robert Ennis will offer a conception of critical thinking that bridges all of these concerns. Starting with the idea that thinking critically is reflectively and reasonably going about deciding what to believe or do, he will suggest a number of dispositions and abilities that might well constitute a critical-thinking set of goals for the school, K-U.

Ennis, Robert H.
How to Write Critical Thinking Test Questions

In this workshop, Dr. Ennis will help the participants to learn how to frame questions that test critical thinking skills.

Epstein, Virginia
"Wild Things" Revisited: Children's Literature and Critical Thinking

Professor
Department of Education
Regis College
West 50th Ave & Lowell Blvd.
Denver, CO 80221-1099

This workshop for teachers across grade levels and curricula will provide opportunities to explore the uses of children's books in teaching critical thinking, specifically about issues of war and peace. The value messages of picture books with this theme will be analyzed and evaluated by participants with particular emphasis on the books' aesthetics, including illustrations, language, and format; these will be compared to traditional means and purposes of teaching young people about war and peace.

Feare, John R.
Counselor
Grossmont College
8800 Grossmont College Drive
El Cajon, CA 92020

Counseling as a Critical Thinking Activity

In counseling sessions the counselor guides the counselee through a process of self- and social-criticism for the purpose of problem-solving, decision-making, goal-setting, and/or conflict-resolution. Whether the topic is the selection of a major or coping with a serious personal or interpersonal predicament, the process is essentially the same, differing only in intensity. Emotions may need to be expressed, but in movement toward resolution or synthesis reasoning needs to be clear and accurate, values need to be clarified, assumptions examined, alternatives explored, multi-viewpoints considered, and judgments formulated.

Thus, counseling is a critical thinking activity, and the counselor is no less than the instructor a facilitator of learning. The content is the process and the circumstances of the counselee's life.

The argument will be presented also that this conception of counseling as a critical thinking activity, unthreateningly engaged in by two willing participants, is incompatible with the image of a counselor which may be inferred from the recommendations of the Master Plan Review Commission: a functionary who "mandatorily" orients, test, places, counsels, and monitors students.

Discussion of these and related ideas will be invited.

Freeman, James B.   ### Argument Diagraming

Many recent texts have incorporated a way of displaying the structure of arguments through so-called tree or circle-and-arrow diagrams. This is becoming a standard component of basic critical thinking instruction. The purpose of diagraming is to display perspicuously what supports what, or what is claimed to support what, in an argument. The utility of this is obvious. How can we cogently criticize or evaluate an argument unless we perceive what supports what? This unit of the critical thinking course will present argument diagraming as developed in my forthcoming text *Logical Thinking: Basic Concepts for Reasoning* (Englewood Cliffs, N.J.: Prentice-Hall, 1987). I shall present the four basic argument structures: convergent, serial, divergent, and linked. I shall also point out how these structures may be motivated by very straight-forward questions which could easily arise in concrete situations where two people are deliberating some issue. These basic structures are part of the notions developed by Stephen Toulmin in *The Uses of Argument* (Cambridge: Cambridge University Press, 1958) and which I have incorporated in the diagraming technique of *Logical Thinking*. Again, these notions can be motivated by questions arising in an argumentative discussion. I shall then apply this diagraming procedure to display the structure of various sample arguments.

Freeman, James B.
Professor/Author
Department of Philosophy
Hunter College/C.U.N.Y.
695 Park Avenue
New York City, NY 10021

The Human Image System and Thinking Critically in the Strong Sense

The concept of the human image system is a rhetorical concept, central to persuasion theory. A person's image of something consists of all the beliefs, attitudes, and values he has concerning that thing. The image system is the totality or total system of these images. What a person believes, more generally the persuasive effect of the messages he receives, is a product not just of the messages, but of the image system with which they must interact.

The purpose of this presentation is to review what the concepts of image and image system mean and to see what light they shed on the strong sense of critical thinking and problems in teaching students to think critically in the strong sense. How, if at all, can we train students to be more consciously aware of their image systems? Will being aware of themselves as image formers or image producers help students to take a more critical stance toward the beliefs, attitudes, values that comprise their images? Can we speak of rational as opposed to irrational image systems? Do images in any way mirror the world or are they merely subjective products? What in particular is the role of self-image and world image, or self-world image, in the human image system? How is it connected with egocentricity and sociocentricity? Can answers to these questions contribute to being stronger critical thinkers in the strong sense?

Garver, Eugene
Professor
Chair in Critical Thinking
St. John's University
Collegeville, MN 56321

Faculty Development in Critical Thinking

This is a practical workshop on different formats and strategies for faculty development programs in critical thinking. We will begin with a discussion of different kinds of faculty development with diverse objectives, broadly along a spectrum from long-term faculty development, through curriculum development and course development, down to the improvement of specific teaching techniques. Then we will discuss the advantages and disadvantages of different faculty development activities, such as question-writing and assignment-writing techniques, textbook review, syllabus review, and the diagrammatic representation of thought. We will conclude with some delicate pragmatic questions, how hard our colleagues can be expected to work in different workshop formats, how to engage in collective consideration of the threats and accusations of the hegemony of critical thinking over the curriculum. Examples will be drawn primarily from the speaker's faculty development work at Saint John's University.

Gray, James E.
Professor
Department of American
Multi-Cultural Studies
Sonoma State University
Rohnert Park, CA 94928

Intelligence Examination and Critical Thinking Instruction

This session will use various cultural specific "intelligence" examinations as a basis for explaining and demonstrating instructional strategies appropriate for identifying premises, assumptions, conclusions, and other related skills vital to critical thinking. Materials will be provided.

Halpern, Diane F.
Professor/Author
Department of Psychology
California State University
San Bernardino, CA 92707

Critical Thinking Across the Curriculum: Practical Suggestions for Promoting Critical Thinking in Every Classroom

Several practical suggestions and ideas that can be used to promote critical thinking in almost every classroom will be presented. Specific topics addressd will include: (1) How to develop a critical thinking attitude in students; (2) Classroom activities designed to encourage critical thought; and (3) Barriers to critical thinking in underprepared/low achieving students. The principles of cognitive development and human learning will serve as a framework for instruction in the basic thinking skills. The emphasis will be on how to translate the objectives of critical thinking instruction into traditional content area domains.

Heiman, Marcia
Director
Learning to Learn Program
Boston College
Chestnut Hill, MA 02167

"Learning to Learn" Thinking Improvement Program

This presentation will discuss the *Learning to Learn Thinking Improvement Program*, as a system for improving student's analytical thinking skills which has a 20-year history of research and development. The system, based on research on the learning skills of successful students, has been approved for national dissemination by the U.S. Department of Education because it reliably results in students' improved academic performance in courses across the curriculum. The program has been adopted by 40 colleges in the U.S. and one (the University of Haifa) in Israel.

Hirsch, Judy
Resource Specialist
Oakland Public Schools
Assistant Professor
California State University-Hayward
114 Echo Avenue
Oakland, CA 94611

Using Critical Pedagogy for Democratic Empowerment in Teacher Education : A Comparison of the Theories of Freire and Feuerstein

Our country is facing a crisis of citizenship. Public schools are failing to prepare the youth of this country to be fully participating citizens in tomorrow's world. Paolo Freire, of Brazil, and Reuven Feuerstein--of Israel-- have been successful in using pedagogy as a means of personal and social liberation. This workshop will focus on their methods of using critical thinking to empower teachers, so they can then empower their students; for there can be no critical pedagogy without critical pedagogues.

Hirsch, Judy

Teaching Critical Thinking to Students in Remedial Classes: Feuerstein's Theories on Cognitive Modifiability

Feuerstein's Instrumental Enrichment Program is the most widely-used program for teaching thinking in the world. The aim of this workshop is to familiarize the participants with the theories of Mediated Learning Experience and Structural Cognitive Modifiability, and also to provide hands-on experience with several levels of this program. There will be ample time for questions. The presenter lived in Israel and worked with Prof. Feuerstein for eight years. (This workshop is most appropriate for teachers of junior and senior high school remedial and special education classes.)

Hoaglund, John
Professor/Author
Department of Philosophy
Christopher Newport College
50 Shoe Lane
Newport News, VA 23606

Critical Thinking and Teaching Informal Fallacies: The Old Approach and the New

Considerable progress has been made in the conception and analysis of informal fallacies, especially since C.L. Hamblin's *FALLACIES* in 1970. As a result fallacies can be taught better today, and the aim of this workshop is to give an idea how. First several fallacies will be analyzed as they were taught a generation ago. Then participants will employ the same techniques on fallacies selected to illustrate the shortcomings of the techniques. This helps expose some questionable presuppositions of older treatments and prepares the way for a view of how today's are an improvement.

Hoaglund, John — Stimulating Thinking About Thinking with Logical Puzzles

This is a practical workshop on using logical puzzles in ordinary language (no symbolism) for teaching critical thinking skills. Participants will work one relatively straightforward puzzle, then solutions will be shared. This brings an awareness of the challenges and some of the skills brought into play. Next, a second puzzle will be worked together by the grid method. Then this solution will be studied from the vantage points of the logical relations of consistency, inconsistency, implication, and contradiction. Finally a method of teaching these relations along with examples and sample problems will be treated.

Hyerle, David — Design for Thinking: "Making" Sense in the Classroom

Curriculum Consultant
P.O. Box 26
Port Costa, CA 94569

The focus for the 1986 Sonoma State Critical Thinking Conference is on "thinking critically in the strong sense." Though it is important to recognize differences between the weak sense (micro-logical skills) and the strong sense (macro-logical approaches) of critical thinking, it is equally important not to dichotomize the two, but rather to investigate and promote the essential interrelationships of these forms. Learning, as different from "schooling", is the conscious, rational act of creative analysis. Whether one is grappling with the ambiguity of the symbol "story" as a child in a classroom in Oakland, California, or with the symbols "beasts of burden" as peasant laborer in a literacy program in Northern Brazil, there is a commonality in process. This connectedness in found in how one "makes" things through the symbolizing process, how one sees the qualities of these things, and how one organizes the relationships and patterns of information and ideas. If learners are asked to question the symbolizing and organizing processes they inherit through individual and cultural/political experiences, the humanizing and conscious act of learning may occur. Albert Upton, Professor Emeritus at Whittier College, in California, was interested in how we, as human beings, "make" sense of our world and how we communicate this sense to others. His thinking skills model, simply viewed, takes on the qualities of a micro-logical, closed system for problem-solving; close scrutiny, though, reveals a model that is nonprocedural, not hierarchical, and open ended. This presentation will provide an indepth view of the Upton model, its relationship to both the "weak" and the "strong" senses of critical thinking, and the direct teaching of the model to students in the context of the classroom.

Johnson, Ralph H. — Seminar on Teaching Critical Thinking

Professor
Department of Philosophy
University of Windsor
Windsor, Ontario
Canada, N9B 3P4

The idea behind this seminar is the need for those of us teaching critical thinking to have a chance to discuss common problems and the techniques and strategies we have developed for meeting them. The seminar presenter undertakes to open the workshop with a few thoughts about the task we confront and then act as a facilitator for the discussion which, he believes, will ensue.

Johnson, Ralph H. — Getting Clear About Vagueness

Most critical thinking courses deal with language problems and in particular with vagueness. A typical story goes like this: the term "bald" is vague because it is a concept with blurry edges or boundaries not clearly demarcated. This story has never satisfied me. In this paper I intend to present thoughts about what vagueness is and how to sensitize our students to it without at the same time giving them misleading advice which causes them to jump on every abstract term that comes their way.

Johnson, Ralph H. — Information and the Mass Media

I make the following assumption: that in order to be a critical thinker, one must have the following things: first, certain intellectual and logical skills and the propensity to use them appropriately; second, a basis of knowledge and information; third, vigilance against ego and ethno-centric bias.

For my contribution to the mini-course, I propose to concentrate on the second of the above-mentioned items, specifically on how the critical thinker deals with information and the mass media. The idea would be to give the students a crash course in how the critical thinker uses the mass media in such a way as to benefit from their strengths, while avoiding being seduced into thinking we know more than we do. I will outline the elements that go into being a RACON: a reflective and aggressive consumer of the news. I will provide material to illustrate the above.

Kneedler, Peter E.
Consultant
California Assessment Program
California State Department
of Education
721 Capitol Mall
Sacramento, CA 95814

Overview of K-12 Critical Thinking Assessment in California

In a session of special interest to K-12 teachers and specialists, staff of the California Assessment Program will provide an overview of the state testing program. The statewide assessment program places a heavy emphasis on the critical thinking skills and tests critical thinking through the content areas of reading, writing, mathematics, science, and history-social science. Content area speakers from the California Assessment Program who will conduct more extended sessions during the conference will provide brief (10 minutes) descriptions of their upcoming sessions. Pete Kneedler will introduce the speakers. They are:

Ms. Diane Levin - Reading/Direct Writing Assessment
Dr. Beth Breneman - Direct Writing Assessment
Dr. Tej Pandey - Mathematics
Ms. Linda Zimmerer - Science
& Mr. Zack Taylor - Science
Mr. Peter Kneedler - History/Social Science
Mrs. Jan Talbot - Critical Thinking/Writing in History-Social Science

Kneedler, Peter E.

Evaluation of Critical Thinking in California's New Statewide Assessments of History-Social Science

In the spring of 1985, California introduced a new test to its 300,000 eighth grade students. Forty percent of the assessment items on the test assess 12 specific critical thinking skills. In this session, Dr. Kneedler will describe the new test, how it was constructed, and test results. Descriptions of critical thinking skills assessed at grade 8 and those under consideration for the grade 12 assessment will be illustrated. Participants will receive blackline masters of transparencies shown along with several other documents that describe approaches and the critical thinking skills.

La Bar, Carol
Professor
Faculty of Education
University of British Columbia
Vancouver, B.C.
Canada, V6T 1Z5

Co-Presenter
Wright, Ian
Professor
Faculty of Education
University of British Columbia

Necessary Distinctions in Critical Thinking

Claims about what to do, or what to believe have to be assessed if one wishes to think critically. The type(s) of assessment carried out will depend upon the nature of the claim under consideration. This workshop will focus on the distinctions among empirical, conceptual and value claims, and introduce participants to the different standards of assessment. Materials suitable for secondary school students will be provided.

La Bar, Carol
Co-Presenter
Wright, Ian

Practical Reasoning

Critical thinking includes reasoning about what ought to be done, as well as what to believe. This sort of reasoning, sometimes called practical reasoning, involves two logically different kinds of reasons: 1) motivating reasons in the form of value standards which the agent accepts, and 2) beliefs about the degree to which the actions under consideration will fulfill the value standard. These two different kinds of reasons lead to a conclusion about what ought to be done; that is a practical judgment. This session will focus on the practical syllogism and the use of principle 'tests' as a way of assessing the value standard.

Langsdorf, Lenore
Professor
Department of Philosophy
University of Texas at Arlington
P.O. Box 19527
Arlington, TX 76019

Egocentricity: What it is and Why it Matters

We start to see from our own perspectives: my seeing depends on these two eyes, which are intrinsically linked to a particular place, time, and perspective. We expand our perceptual capacity by borrowing others' eyes (so to speak), as we learn to see the world through pictures that enable us to see what we have not seen with our own eyes.

Likewise, we start to reason from our own perspectives: my thinking depends on this ego of mine, which is intrinsically linked to a particular place, time, and perspective. We expand our reasoning capacity by borrowing others' egos (so to speak), as we learn to reason from other egocentric positions (presented in implicit and explicit arguments) that enable us to reason to conclusions that we have not thought, and in many cases cannot think, on the basis of our egos.

Some limitations in perceptual capacity do, sooner or later, force themselves into our awareness so that we take corrective measures. Other limitations are so universally present that they don't present themselves into our awareness at all. Analogizing upon this difference between pathological and normal limitations in vision gives us one way to understand the difference between "weak" and "strong" sense critical thinking:

> Teaching critical thinking in the weak sense is supplying a set of techniques or procedures which can improve our reasoning.

> Teaching critical thinking in the strong sense, however, means becoming aware of and imaginatively countering the perspectivalism that is just as intrinsic to the ego's thinking process as visual perspectivalism is to the eye's seeing process.

In effect, teaching strong sense critical thinking means devising the cognitive equivalent of a mirror that would be used to supplement the one-perspective-at-a-time nature of vision.

Rather than treating egocentricity as a distortion of our reasoning process, then, this presentation explores, first, some consequences of egocentricity's being just as intrinsic to reasoning as perspective is to vision. We then go on to explore some differences between reasoning with language and seeing with eyes. On the basis of this understanding of what egocentricity is and why it matters, we conclude with a consideration of some strategies for doing for our ego-centered reasoning what films and paintings do for our eye-centered seeing.

Lazere, Donald
Professor
Department of English
California Polytechnic State University
San Louis Obispo, CA 93407

Overcoming Fragmentation in Teaching Critical Thinking

Teaching critical thinking, in what Richard Paul terms the strong sense of questioning students' fundamental frames of reference, is impeded by the approach to single topics in isolation that is characteristic of American political rhetoric, news media, and education. Just as public discourse is atomized by short, unrelated blips of communication, education is fragmented by departmentalization, short terms of instruction, the demands on students of several unrelated courses each term, and the breaking up of individual courses into a sequence of disparate units or modules of topics and assignments. This fragmentation makes it nearly impossible to approach any particular issue within a sufficiently broad context to attain true critical understanding and judgment. An example that will be addressed in this presentation is the subject of government and budgetary policies and supply-side economics. Students' understanding of these issues tends to be stunted by a whole unexamined body of beliefs or culturally conditioned assumptions concerning wealth, poverty, government, and capitalism. These broader beliefs must be addressed and demystified in order to get at the fallacies in thinking about particular economic facts or policies. Part of this session will involve a 15 minute dialogue between Richard Paul and Donald Lazere.

Letwin, Alita
Director of Educational Services
Center for Civic Education/Law
in a Free Society Project
Suite 1, 5115 Douglas Fir Road
Calabasas, CA 91302

A Conceptual Citizenship Education Curriculum: Examining and Evaluating Fundamental Ideas of Privacy and Responsibility

This participatory session will examine Law in a Free Society materials for grades K through 12 on the concepts of Privacy and Responsibility. It will also provide information on new materials and programs being developed to commemorate the Bicentennials of the Constitution and the Bill of Rights. The focus is on ways to develop those analytic, evaluative and problem-solving skills necessary to participate as an independent, knowledgeable citizen. The LFS curriculum is designed to relate student experiences to recurring problems in their own lives, the life of the school, and broader social and political life in the past, present and future. The session will cover the following activities: (1) Description of the goals, rationale, programs and materials developed by the Law in a Free Society project of the Center for Civic Education. (2) Examination of the LFS curriculum and materials by viewing filmstrips, involvement in decision-making activities such as a legislative debate; town meeting; school rule-making body; and political democracy in a culturally diverse society. (3) Examination of the scope and sequence design of the LFS curriculum for grades K-12. (4) Description of the LFS teacher training model.

Letwin, Alita
A Conceptual Citizenship Education Curriculum: Examining and Evaluating the Fundamental Ideas of Authority and Justice

Authority and Justice are two of the concepts that are dealt with by the Law in a Free Society Curriculum for grades K through 12. In this curriculum, the focus is on how to develop those evaluative, and problem-solving skills necessary to becoming an independent, knowledgeable and intellectually critical person and citizen. The LFS curriculum is designed to relate student experiences to recurring problems in their own lives, the life of the school and broader social and political life in the past, present and future.

Suggested solutions to these problems are examined for their underlying values and their compatibility with democratic principles and processes. The methods used involve as well as impart knowledge about our political system and are inquiry oriented while calling for analytic rigor. This participatory session will describe the goals and rationale of the Law in a Free Society Project of the Center for Civic Education, examine the LFS curriculum and materials both in the scope and sequence design and describe the LFS teacher training model.

Lichtman, Richard
Professor
Wright Institute
2728 Durant Avenue
Berkeley, CA 94704

The Media and Critical Thinking

It is crucial to help students learn how to critically analyze media presentations. Very often distorted views of the world and society are presented. Through the art of critical analysis students can come to a more profound view of life in the U.S. and beyond. The issues relevant to such instruction will be discussed and points illustrated using the Bill Cosby Television show and the movies *The Color Purple* and *Out of Africa*.

Lipman, Matthew
Professor
Institute for the Advancement of Philosophy for Children
Montclair State College
Upper Montclair, NJ 07043

Must We Distinguish Two Senses of Critical Thinking?

Richard Paul's approach to the teaching of critical thinking involves a distinction between the use of critical thinking skills to justify and maintain beliefs already held (weak sense) from the use of such skills to modify and enlarge one's own established beliefs (strong sense). Matthew Lipman will relate this distinction to the Philosophy for Children program which he originated.

Lochhead, Jack
Professor
Department of Physics and Astronomy
University of Massachusetts
Amherst, MA 01003

Teaching Kids to Argue: Inciting Riot in the Classroom

Feyerabend (1975) has argued that we must think critically about critical thinking. I will present an effective classroom methodology for introducing students to problem solving that is consistent with Feyerabend's notion of epistemological anarchy. The true anarchist's approach to teaching problem solving must not show students how to solve problems but instead forces them to consider whatever solution they choose to use. Such a process has been developed by Arthur Whimbey and myself (1986). In this approach students are asked to work in pairs. They are given a series of relatively easy problems which they must work according to the following rules:

For each problem one student takes on the role of problem solver and the other the role of listener; they then switch roles for the subsequent problem. The problem solver's role is to read the problem aloud and to continue talking throughout the entire process. The listener's role is to keep the problem solver talking and to continually probe for more detailed descriptions of the problem solver's thought process. A good listener will ask for clarification of even the most trivial steps.

Through this relatively simple process students learn to examine their own thinking and at times demonstrate aspects of critical thinking in "the strong sense".

Lyons, Nancy
Professor
Department of Theater Arts
Sonoma State University
Rohnert Park, CA 94928

Dance - Critical Thinking with the Body

Every movement or action we make involves assumptions and concepts of how the world is. Each action can provide a feedback loop to test the validity of our assumptions on a moment to moment basis. A dancer must continue to test his or her assumptions constantly, or it can all be over in a split second. In the act of dancing and in the act of making dances, the critical thinking that is essential springs not only from the conscious mind, but from the intuitive, the body knowledge, the instincts. The workshop will look at some of the ways the body serves as a critical thinker.

Lyons, Paul
Professor
Department of Basic Studies
Stockton State College
Pomona, NJ 08240

Critical Thinking: Critical Consciousness

There is a national clamor concerning the need for critical thinking in our schools and colleges. Much of this attention rests on the ways in which the absence of critical thinking undermines our national capacity to compete economically and strategically. There are contradictory qualities to such a rationale, in particular, that between a task-oriented critical thinking compatible with corporate and military goals, and critical thinking about self and society, e.g., Freire's critical consciousness, which is inherently in tension with such goals.

Most critical thinking curricular reforms do not address the above contradiction, nor do they pay attention to the powerful counter tendency in higher education to collapse all issues to the primacy of market and entrepreneurial values. Consequently, reforms, particularly those stressing cognitive strategies, are unlikely to have significant success. In fact, there is no reason to anticipate significant success via any strategy.

Partial, marginal success requires a strategy which recognizes that the primary barriers to critical thinking are motivational and emotional at the pedagogical level, and political and cultural, at the institutional and contextual level. The latter barriers include a problematic economy, a seductive mass culture, and such concrete, omnipresent factors as the number of hours students work. A critical pedagogy will bring such considerations into the classroom. However, for such a pedagogy to work it will need to pay attention to the nuts and bolts of good teaching, e.g., the first class, the syllabus, attendance, testing, discussion. Finally, teaching critical thinking involves little that is new or sophisticated; it does require an awareness that intellectual curiosity and self-discipline are problematic qualities within our society. As a result, a sensitivity to our Sisyphean task makes it all the more likely that we will make marginal gains.

May, John D.
Professor
Department of Government
University of Queensland
St. Lucia, Qld. 4067
Australia

Moral and Practical Reasoning: Differences, Relations, Applications

Part I. How moral propositions differ from prescriptive ones. How the two affect one another in everyday practical reasoning. How mini-exercises can help students to identify components of practical arguments (normative, functional, warranting, prescriptive) to identify tacit elements of practical arguments, to clairfy their own moral and naturalistic beliefs, to spot flaws in practical arguments, and to weigh practical significance of flawed arguments.

Part II. Aristotle's Flautists. Use of brief statement on justice as vehicle for promoting strong-sense and other kinds of critical thinking. Working demonstration of multi-stages teaching module suitable for use in college courses of (philosophy, political theory, social theory, rhetoric) and/or high school courses (English, social studies).

McKinney, Elinor S.
Educational Consultant
10343 San Diego Mission Rd. #343D
San Diego, CA 92108

Models for Teaching Higher Order Thinking: Introduction

Dr. McKinney will show how integration of several models can result in a comprehensive approach to teaching higher order thinking. By utilizing strategies with both affective and cognitive consequences, teachers can help students apply their reasoning skills to their own and others' points of view in discussions of complex and controversial issues. Models to be discussed in this workshop include Kohlberg's Discussions of Moral Dilemmas, the Hilda Taba Teaching Strategies, and the Parnes Creative Problem Solving Process.

McKinney, Elinor S.

Models for Teaching Higher Order Thinking: Demonstration

This workshop will demonstrate strategies and models introduced in the speaker's previous session. Participants will be led through a series of lessons which illustrate the integration of the models and show how to apply them to the various subject matter disciplines.

Missimer, Connie
Author/Consultant
4836 N.E. 40th Street
Seattle, WA 98105

How to Generate "Strong Sense" Alternative Arguments

Several ways to generate a different point of view, theory, hypothesis, or argument will be presented in this class session by the author of *Good Arguments*. The emphasis will be on creating novel viewpoints through scrutiny of assumptions, although techniques for generating counter-arguments will also be featured.

Missimer, Connie

Doing Battle with Egocentric Proclivities without Dying on the Plain of Relativism

Richard Paul rightly argues that a critical thinker can "use critical concepts and techniques to maintain his most deep-seated prejudices and irrational habits of thought by masking them in more 'rational' form." But how to take this worry to heart without concluding that everything one (everyone) thinks must be hopelessly tainted? An answer may lie in cultivating the spirit of deliberation as opposed to that of debate as a means of freeing one's ego from one's ideas.

Missimer, Connie — Assessing Evidence in a Fair-Minded Way---Some Ideas

Students often judge an argument in all-or-nothing terms, as "right" or "wrong". While these judgments may sometimes apply, I would argue that far more often the appropriate assessment is along a range of likelihood ("likely," "possible," "unlikely"). Students often wrongly infer that thinking in these probabilities leaves them in limbo. They can be shown how abandonment of absolute certainty needn't dampen resolve, and leads to far greater mental flexibility. Several types of evidence will be used in illustration.

Norris, Stephen — Varieties of Critical Thinking Tests: Their Design and Use

Assistant Professor
Institute for Educational Research and Development
Memorial University of Newfoundland
St. John's, Newfoundland
Canada, A1B 3X8

Critical thinking tests can serve different purposes. They might be used to examine, for example, critical thinking skills or critical thinking dispositions, or to examine either several aspects of critical thinking or only a few aspects. In addition, the information provided by a critical thinking test might be used to make decisions about individual students, to assess the effectiveness of critical thinking curricula, to evaluate teachers, or to compare the quality of schools.

I will argue in this paper that not all types of critical thinking tests can serve equally well all of the purposes for which such tests might be used. A systematic matching of type of test to the intended use can help make available critical thinking tests more effective. I will also argue that the bottom line in all cases, no matter what type of test is used and no matter what the purpose for using it, is that the reasons be known for students' reponses to the tasks on the tests.

Nosich, Gerald — Constructing Arguments

Professor
Department of Philosophy
University of New Orleans
New Orleans, LA 70148

In this workshop, I'll go over some techniques and steps for constructing arguments as well as some strategies for teaching argument construction. The techniques covered include how to clarify what you're trying to argue for, how to give plausible, relevant reasons, how to identify and support the weakest parts of the argument, and how to use argument construction as a basis for writing term papers.

Nosich, Gerald — Teaching Critical Thinking Across the Curriculum

This seminar is designed for people who do not teach a course specifically on critical thinking, but who want to incorporate teaching critical thinking skills into courses in different areas. The seminar will cover some specific and practical methods for teaching these skills in Social Science courses (History, Psychology), in Humanities (English Lit, Fine Arts, Music), and in the Natural Sciences.

Nosich, Gerald — On Teaching Critical Thinking

The workshop will focus on a method for teaching students how to construct arguments of their own and how to criticize arguments of others. The method will be the one used in my *Reasons and Arguments*; the essential steps are how to paraphrase well, how to fill in missing premises, and how to evaluate the truth of claims. Also covered will be some specific classroom techniques and some ways to combat ethnocentric thinking.

Pandey, Tej — Problem Solving in Statewide Mathematics Assessment

Consultant
California Assessment Program
California State Department
of Education
721 Capitol Mall
Sacramento, CA 95814

Dr. Pandey will describe the assessment of problem solving or nonroutine applications of mathematics which are contained in the grade 6, 8 and 12 statewide assessment in mathematics. Illustrative test items will provide participants with information on assessment approaches in specific areas of problem solving, such as problem formulation, analysis and strategies, interpretation, and solution. Plans for mathematics assessment in California's Golden State Examinations will also be described. Participants will be provided with documents that describe the statewide mathematics assessment in detail.

Paul, Richard — Workshop on the Art of Teaching Critical Thinking in the Strong Sense

Director
Center for Critical Thinking and
Moral Critique
Sonoma State University
Rohnert Park, CA 94928

In this workshop emphasis will be placed on strategies which enhance strong sense critical thinking abilities and skills. First, the distinction between weak and strong sense critical thinking will be explained. Then exercises will be used to explain and demonstrate how one can use the macro-abilities of critical thinking (Socratic questioning, reciprocity, and dialogical reasoning) to orchestrate micro-skills in achieving "strong sense" objectives.

Paul, Richard — The Nature of Critical Thinking Through Socratic Interrogation

Professor Paul will interrogate the audience Socratically in order to elicit collective insights into the nature of critical thinking. This parallels the first couple of sessions of his introductory course in critical thinking in which Professor Paul uses a similar strategy for getting his students to begin to come to terms with some of the basic issues.

Paul, Richard — Teaching Critical Thinking in the Strong Sense in Elementary, Secondary, and Higher Education

Richard will argue for the importance of teaching critical thinking at all levels in such a way as to foster the critical spirit and the application of that spirit to the foundations of our own beliefs and actions. He will argue that it is inadequate to conceive of critical thinking simply as a body of discrete academic skills. The synthesis of these skills and their orchestration into a variety of forms of deep criticism will be accentuated. He will comment on the application of strong sense critical thinking to personal and social life as well as to academic subject domains. In this perspective, the strong sense critical thinker is conceived of as having special abilities and a special committment to becoming an integrated and moral person.

Perkins, David
Co-director, Project Zero
Graduate School of Education
Harvard University
Cambridge, MA 02138

Critical Thinking's Original Sin: Round Two

Co-Presenter
Richard Paul

Last year at the Sonoma Conference, Richard Paul and David Perkins debated the psychological sources of closed-mindedness and superficial thinking. Paul contended that deep motivational factors such as egocentricity are the culprit. Perkins contended that powerful cognitive factors such as avoidance of cognitive load lead to one-sidedness and oversimplification. This year, the two seek to review, broaden, and deepen the debate. To demonstrate the spirit of fair thinking, each will argue the other's side!

Blewett, Peter
Professor
Department of History and
General Education
Anchorage Community College
2533 Providence Avenue
Anchorage, AK 99508-4670

Learning Is a Crystal: A Project Method for Teaching Critical and Creative Thinking in the Social Sciences

This session will enable participants to learn about one model for combining cognitive, affective and psychomotor thinking strategies for the social sciences. The presentation will show how students formulate questions, present and defend hypotheses and write essays based on a unifying semester theme. Participants will learn how a group project strategy can enable students to integrate critical, creative thinking with dialectic discourse through a sequence of individual, small group and large group activities culminating in a well-written essay. The success of this method rests largely on a process of concept formation which might best be described as the "crystallization of knowledge". A video tape containing examples of each stage of the project method will be shown.

Blondino, Chuck
Director of Curriculum
Educational Services District #121
1410 South 200th Street
Seattle, WA 98148

Effective Design for Critical Thinking Inservice

Co-Presenter
Bumgarner, Ken
Director of Basic Education
State of Washington Superintendent of Public Instruction
Old Capitol Building, FG-11
Olympia, WA 98504

A team approach has been used effectively in the State of Washington to institute and improve the teaching of critical thinking in elementary, secondary and higher education. Central to this team is effective networking that exists between and among the educational service districts (ESDs) and the curriculum and instruction leadership of the state office. Employee and curriculum organizations as well as parent, citizen and business associations have joined in this team effort focused on the teaching of thinking skills at all levels. Organizing and networking techniques employed will be discussed at the presentation along with approaches taken to garner support of the educational groups, citizen organizations, and outside enterprises.

Bomstad, Linda
Professor
Department of Philosophy
California State University,
Sacramento
Sacramento, CA 95819

Co-Presenter
Brod, Harry
Professor
Department of Philosophy
University of Southern California
Los Angeles, CA 90024

Advocating Neutrality

There is a controversy over the preferred method of teaching critical thinking: Should an instructor treat competing viewpoints neutrally or advocate certain viewpoints over others? In this paper I argue that there are weak and strong senses of advocacy. Weak advocacy may involve giving greater or more careful development to unfamiliar or minority viewpoints, but it does not involve a teacher prescribing these views as such. Strong advocacy is advocacy *simpliciter*; it does involve a teacher recommending or prescribing some views over others. I contend that weak advocacy is compatible with neutrality in the classroom. In fact, it often serves the goal of neutrality as well as the goal of critical thinking in Paul's strong sense. On the other hand, strong advocacy is assailable on a number of moral grounds and it hinders critical thinking in the strong sense.

Breneman, Beth
Consultant
California Assessment Program
California State Department of Education
721 Capitol Mall
Sacramento, CA 95814

Co-Presenter
Levin, Diane
Consultant
California Assessment Program
California State Department of Education

**Reading/Writing
Statewide Assessment**

In part I of this session, Ms. Diane Levin of the California Assessment Program will describe the assessment of higher order thinking skills in CAP's grade 3, 6, 8 and 12 tests. Attendees will be introduced to the hierarchy of thinking skills assessed. Emphasis will be placed in CAP's new grade 12 reading assessment. Participants will be provided with descriptive materials on test content that will include illustrative assessment passages and test questions.

In the second half of this session, Dr. Beth Breneman will describe the current CAP written expression tests at grades 3, 6, and 8 and the new CAP direct writing assessment being developed at grades 8 and 12. Participants will be introduced to the array of discourse types being considered for the writing assessment - each of which imposes special thinking and text-making requirements on the writer. This model will be contrasted to the current CAP multiple-choice system for assessing written expression. Relationships between the reading and writing assessments will also be explored.

Quellmalz, Edys

**Teaching Thinking Strategies
Across the Curriculum: The
Higher Order Thinking (H.O.T.)
Project (Secondary Level)**

This session will describe the Higher Order Thinking (H.O.T.) Projects currently underway in San Mateo County, Sacramento County and the San Juan Unified School District. The projects involve teachers in a collaborative effort to develop and monitor students' higher order thinking skills in school subjects. In the instructional component, teachers examine textbooks and other classroom resources in order to design activities that will involve students in sustained reasoning about significant concepts and problems typically encountered in academic and practical situations. Following an overview of the projects, teachers will describe lessons developed and discuss samples of student work.

Rich, Michael
Professor
Modesto Junior College
435 College Avenue
Modesto, CA 95350

**Moral Argument as a Means of
Introducing Critical Thinking
Skills to Elementary School
Students**

An important way to foster critical thinking skills in elementary school students is through the use of moral argument. I suggest that the teacher begin by examining the arguments that children actually have; not only the arguments heard on the playground, but also arguments that arise between the students and the teacher in the classroom. This approach has many benefits, the most important of which is the opportunity to practice critical thinking skills in the "strong sense." There are, however, some pitfalls as well. Through the use of examples taken from the classroom, I hope to show how to reap the benefits of the use of moral arguments without falling prey to the pitfalls.

Rohatyn, Dennis
Professor
Department of Philosophy
University of San Diego/KPBS-FM
San Diego, CA 92110

The Contemporary Relevance of Stephen Toulmin's "The Uses of Argument"

Critical thinking in the "strong sense" means discovering one's prejudices and examining them objectively. Richard Paul refers especially to the egocentrism and ethnocentrism which tacitly influence our assumptions, claims and commitments.

In *The Uses of Argument*, Stephen Toulmin argued that logicism (the view that logic is a branch of mathematics) involves just such hidden prejudices, which thinkers must make explicit even if they should prove acceptable. Toulmin challenged the logicist paradigm on the grounds that it was inapplicable to everyday life, let alone to legal or inductive (scientific) reasoning. Today, Toulmin sees Descartes (not Frege or Russell) as having set the "foundationalist" agenda. Moreover, so long as we remain unaware of the source of our world-view, we adhere to it by default. Ironically, to transcend to Cartesian yearning for "context-free truths" we must restore the 17th century framework which Descartes (who despised history) sought to remove from his system. Hence "strong sense" analysis is indispensable, and it frees us from the burden of not living up to a misplaced ideal of rigor.

Romain, Dianne
Assistant Professor/Teaching Associate
Center for Critical Thinking and
Moral Critique
Sonoma State University
Rohnert Park, CA 94928

Why Not Debate? Strong Sense Critical Thinking Assignments

First, I will define strong sense critical thinking values such as fairmindedness, truth, and autonomy. Second, I will argue that student debates tend to de-emphasize some of these values. Finally, I will present a dialogue paper assignment, small group projects, and guidelines for class discussion that encourage strong sense critical thinking values.

Rosenberg, Vivian M.
Associate Professor
Department of Humanities-
Communications
Drexel University
Philadelphia, PA 19104

Introducing Affective Awareness as a Critical Thinking Skill

This paper is based on the assumption that Critical Thinking in the "strong" sense is more than simply constructing, criticizing, and assessing arguments. Critical thinking involves 1) understanding how our minds work; 2) developing insight into different ways of thinking about problems and ideas and 3) developing strategies to analyze different kinds of problems and ideas.

Because human beings are not machines, we must recognize the inevitable interlacing of ideas and feelings at every level of experience. Thus affective awareness should be included as a major component of Critical Thinking.

Instead of advocating the avoidance of feelings, I recommend that we learn to examine more rigorously the interactions of feelings and ideas. To illustrate how affective awareness can be taught in the classroom, I describe a program in which students are directed, *consciously and systematically* to focus on feelings--to identify how they feel as they deal with ideas and problems, and to understand how others feel. I conclude that affective awareness is a teachable skill, and that it can--and should--be taught and practiced in critical thinking courses.

Rosenblum-Cale, Karen
Educational Consultant/Author
3516 Briarvale
Corona, CA 91720

Towards Achieving an Active, Cooperative, Exploratory, Open-Ended Education

Traditional education has long been an "alien" environment in which children's natural instincts towards inquiry are often extinguished in favor of a homogenized conformity. Students' own evaluations of the world around them are not encouraged; there is a reliance on the primacy of facts.

In this presentation, an alternate approach to education is discussed. Classroom activities and structures on the primary, middle school, and secondary level are suggested which result in an active, cooperative, exploratory, flexible and open-ended education; one which utilizes the child's propensity to ask questions, make statements, imagine, and critically evaluate the world around them.

Rowe, Jane
Teacher
Provincetown Elementary School
Provincetown, MA 02657

Re-Shaping the Elementary School Curriculum to Infuse Teaching for Thinking

The Provincetown Elementary School Staff (K-6) has developed a problem solving-decision making curriculum model which integrates both creative and critical thinking skills. The emphasis thus far in the school has been to use this model as a major construct for teaching social studies. The school is planning to use this model as a basis for re-shaping the curriculum in other areas in its program. This presentation will involve a demonstration of how standard curriculum material in elementary school teaching can be re-shaped to teach for thinking.

Rudinow, Joel
Professor, Santa Rosa Junior College
Research Associate
Center for Critical Thinking and
Moral Critique
Sonoma State University
Rohnert Park, CA 94928

Teaching Critical Thinking the Hard Way

In this session, the issues of academic freedom and responsibility arising from the incorporation of controversial subject matter into the Critical Thinking course will be explored.

Ruggiero, Vincent Ryan
Professor/Author
Department of Humanities
S.U.N.Y. at Delhi College
Delhi, NY 13753

A Holistic Approach to Thinking Instruction

Because the development of thinking instruction has taken place in two separate disciplines (philosophy and psychology), it has produced two models of the thinking process--a critical model and a creative model. Unfortunately, neither model is by itself adequate for problem-solving and issue-analysis, which demand both the production and evaluation of ideas. This workshop will present a holistic approach to thinking instruction that combines creative and critical thinking and demonstrates how that approach applies to problems and issues across the curriculum.

Ruggiero, Vincent Ryan — Dispositions: The Neglected Aspect of Thinking Instruction

All the understanding of creative and critical thinking and all the skill in applying that understanding to problems and issues will profit students little if they lack the *motivation* to think well. This fact has led a growing number of authorities on thinking instruction to urge that classroom instructors give special attention to the *dispositions* that underlie effective thinking. This workshop will identify these dispositions and suggest ways for instructors to assist students in developing them. (It will also examine the obstacles to such development and ways in which they can be overcome.)

Ruggiero, Vincent R. — The Administrator's Role in Thinking Instruction

Vincent Ruggiero will describe some of the problems in fostering and coordinating critical thinking instruction that require special administrative attention. He will spell out a variety of ways that administrators can serve as facilitators and "spark-plugs".

Sarris, Greg
Adjunct Lecturer/Coordinator-Writing Program
Student Affirmative Action and
Educational Opportunity Programs
University of California, Santa Cruz
Santa Cruz, CA 95064

Toward Socratic Learning and the Third World Student

If we as teachers are to foster dialogical and dialectical reasoning in the classroom, if in fact we are to foster critical thinking in the strong sense where, as Richard Paul says, students are enabled to see beyond the world views that distort their perception and impede their ability to reason clearly, an open interchange of ideas and points of view from all students, regardless of ethnicity or cultural and class background, is imperative, indeed prerequisite, for any measurable degree of success. Considering the changing demography of this state and others like it, we can no longer be content with a dialogue that includes only students of a homogenous background, socially or otherwise. Our classrooms are diverse, the concerns and points of view students are multiple and complex.

All too often for the Third World student silence becomes the modus operandi in a classroom. Silence breeds apathy and, not unusually, withdrawal from the system. Language barriers and cultural differences exacerbated by teachers who themselves can only work within a limited cultural framework and, consequently, a limited knowledge base prohibit access to any kind of critical dialogue for these students. Establishing a knowledge base that can include the Third World student requires open dialogue in a learning context that is reciprocal in nature, where learner becomes teacher and vice versa. Methods for establishing such a learning context and subsequent knowledge base will be explored so that all students can partake and be engaged actively as critical thinkers in the strong sense. Examples and practical strategies will be given as well as a model dialogue between a Black student and an American Indian student on the nature and significance of the ghost in *Hamlet*. Engaging the Third World student in dialogical and dialectical reasoning not only enables the student meaningful access to an education, but also the means to affect change and to shape that same education.

Schuster, D.G.
Professor
Department of Physics
University of Natal
Durban 4001
South Africa

Tracing The Essence: A Questioning, Restructuring Approach to Understanding Scientific Material

The meaningful learning of scientifc and mathematical material often poses difficulties for students even up to graduate levels. Scientific text is often concise, mathematical, and presented as a uniform linear sequence of deductive steps. The presentation may be deductively elegant but inductively and pedagogically less satisfactory. Students are commonly able to follow such material step by step and handle the mathematical formalism, but are often weak at separating essence from detail, interpreting, and gaining physical insight into instances. They are often unable to identify the main threads or generate the material independently, which is a criterion of assimilation and real understanding. In the absence of guidance in understanding such material, even advanced students may resort to semi-rote learning and manipulation of formalism, especially if test questions reward this. A teaching and learning approach involving questioning, analysis, characterizing, and restructuring has been used for such material at advanced undergraduate level. In several passes through the material, the essence is identified, main reasoning steps are traced, and dependencies explained. Detail is dealt with separately. Learners actively process and restructure the material, and supplement it with scene-setting organizers and induction from instances, to better link with their existing schemata. The approach, besides facilitating grasp of the subject matter, has a metacognitive aspect which gives many students an appreciation of the nature of real understanding for the first time. Examples are available from the fields of mechanics, relativity and thermodynamics.

Shor, Ira
Associate Professor/Author
Department of English
College of Staten Island
Staten Island, NY 10301

A Paolo Freire Workshop in Critical Thinking: "Dialogue" and "Desocialization" in the Classroom

What is a Freire approach to critical pedagogy? What is the dialogue-method of teaching? How does a dialogue class "desocialize" teachers and students from the anti-critical culture and curriculum surrounding us?

Siegel, Harvey
Professor
University of Miami
P.O. Box 248054
Coral Gables, FL 33124

Rationality and Ideology

Critical thinking is one among a number of contending educational ideals. Consequently, friends of critical thinking face the task of justifying that ideal; that is, demonstrating that critical thinking is an ideal which rightly ought to guide our educational endeavors.

However, many philosophers and social theorists argue that educational ideals and values are fundamentally ideological. If this is correct, then educational ideals like critical thinking cannot be justified, except in terms of prior ideological commitment. On this view, critical thinking can be justified as an educational ideal only if one is already committed to an ideological position which sanctions it; if one is committed to a rival ideology, which does not sanction critical thinking, then that ideal cannot be justified. The justification of educational ideals is, then, relative to prior ideological commitment. Many questions are raised by this view. The most basic question raised is that concerning the relationship between rationality and ideology.

In this presentation I will explore the relationship between rationality and ideology, and the implications of this relationship for critical thinking. I will argue that it had better be possible to rationally criticize ideologies, if our educational commitment to the ideal of critical thinking is itself to be justified, and our educational efforts capable of being seen as worthwhile. I will argue as well that rationality does transcend ideology and is capable of criticizing alternative ideological commitments, and that the ideal of critical thinking can indeed be justified and is rightly seen as a fundamental guide to our educational endeavors.

Siegel, Harvey — Epistemological Underpinnings of Critical Thinking

To be a critical thinker is to base one's beliefs, opinions and actions on relevant reasons. The notions of "reason" and "rationality" are, however, philosophically problematic. Just what is a reason? How do we know that some consideration constitutes a reason for doing or believing something? How do we evaluate the strength or merit of reasons? What is it for a belief or action to be *justified?* What is the relationship between justification and *truth?*

These questions are the meat and potatoes of that branch of philosophy known as *epistemology* or the theory of knowledge. They might be thought of as abstract and unrelated to education for critical thinking. But so long as critical thinking is thought of as essentially involving *reasons* and *rationality,* these questions are central to the critical thinking student's understanding of her subject matter. So it is important for a critical thinking course to help students understand the epistemology underlying critical thinking.

In this workshop we will examine these epistemological questions, and explore their relevance for critical thinking. Beginning with ordinary, everyday examples, we will consider the concepts of reasons, evidence, justification, and truth. Our aim will be not only to get clear on these notions, but also to grasp the connection between these concepts and education for critical thinking.

Squires, Georgia — Strong Sense Critical Thinking in Junior High Social Studies

Teacher
Kenilworth Junior High
998 E. Washington St.
Petaluma, CA 94952

Co-Presenter

Romain, Dianne

We will present student projects that encourage fairminded reconstruction of opposing viewpoints. We will divide the audience into small groups to develop other critical thinking assignments. We will discuss questions that students and parents raise about assignments that question accepted values.

Stroup, David J. — A Critical Thinking Network in Science

Assistant Professor
Biology Program
Clemson University
330 Long Hall
Clemson, SC 29631

Co-Presenter

Carpenter, C. Blaine

Many educators may see the increased emphasis on critical thinking as a welcome sign, but two essential questions remain to be answered before this interest can be translated into use in the classroom: (1) What is critical thinking (How is it defined)?, and (2) How can critical thinking be taught? In 1983, Alverno College was awarded a grant by the Fund for the Improvement of Post-Secondary Education (FIPSE) for the purpose of answering these questions. A Critical Thinking Network in Science was formed for the purpose of enhancing understanding of what critical thinking is and how it can be taught and assessed in the classroom. This network was designed within disciplinary boundries based on the belief that the greatest potential for collaboration and cooperation among scientists working on a project of this type lies not at the institutional level, but within a network composed of interested faculty members from different institutions. The Network agrees that one of the essential objectives of a comprehensive general education or liberal arts curriculum is to enhance critical thinking ability.

It is the intent of this workshop to: (1) discuss the process skills or components of critical thinking as identified by the network, (2) discuss the behavioral criteria developed by the network to assess individual and group development within each component or process skill, (3) illustrate the strategies for teaching and assessing critical thinking that were designed by members of the network for use in their own classes, and (4) discuss the assessment data generated by the administration of pre-tests and post-tests in the network members' classes. These tests deal with drawing and interpreting graphs, two of the criteria identified by the network that relate to critical thinking process skills or components.

Swartz, Robert
Co-director
Critical and Creative
Thinking Program
University of Massachusetts
Boston, MA 02125

Integrating Teaching for Thinking into Mainstream Classroom Instruction

Co-Presenter
Rowe, Jane

Members of the Critical and Creative Thinking Program at the University of Massachusetts at Boston will demonstrate and discuss lessons and techniques that infuse a focus on critical thinking into classroom instruction by restructuring traditional content. The concept of critical thinking that is utilized will be discussed as well as issues about the structure of instructional programs in schools and school systems that can foster this kind of integration. Ms. Rowe will discuss her teaching experiences as part of this presentation.

Talbot, Jan
Chairperson
Subcommittee for Critical
Thinking/Writing in History-Social
Science
5307 Rimwood Drive
Fair Oaks, CA 90041

Evaluating Critical Thinking Skills Through Constructed Responses

Co-Presenter
Quellmalz, Edys

Individual and group constructed responses are an integral part of the history-social science critical thinking statewide assessment. In this session, Jan Talbot and Edys Quellmalz will describe a variety of approaches and assignments that were field-tested last spring. Assignments require students to construct their own arguments, analyses and evaluations. Students are given the opportunity to pursue extended lines of thought while considering the points of view of others. The subcommittee has identified four assignment formats: cued and uncued critiques and arguments which students may complete individually or in group problem-solving contexts. All assignments address significant history-social science issues. Participants will receive descriptive materials on the proposed assignments.

Ullian, Joseph
Professor
Department of Philosophy
Washington University
St. Louis, MD 63130

Thoughts Pertaining to Rationality, Relativism, and Problems of Classification

Joseph Ullian will informally share with the audience his recent reflections on rationality, relativism, and problems of classification. He will discuss whether or in what sense truth is relative, what it means to be a reasonable person, and what it means to classify or categorize experience in "justified" or "unjustified" ways.

Walsh, Debbie
Assistant Director
Educational Issues Department
American Federation of Teachers
555 New Jersey Ave., N.W.
Washington, D.C. 20001

The AFT Critical Thinking Project: The Hammond, IN Pilot

An overview of the Critical Thinking Project developed by the Educational Issues Department of the American Federation of Teachers with specific focus on the piloting of AFT's 35-hour training-of-trainers component of the project. The pilot was a cooperative effort of the AFT, the Hammond Teachers Federation and the Hammond Public Schools to train a cadre of 23 teachers who will provide the training throughout the Hammond school system. The program has now gone nationwide. The AFT videotape on thinking skills will also be previewed.

Walsh, Debbie

Integrating Critical Thinking Skills into the K-12 Curriculum

This introductory workshop will provide an overview of the critical thinking "movement," approaches to the concept and what the research tells us. Sample strategies will be illustrated for infusing classroom instruction and assessment of critical thinking skills and abilities within the disciplines. Small group activities will provide participants with an opportunity to analyze their existing approaches and to share and apply new strategies and techniques.

Weddle, Perry
Professor
Department of Philosophy
California State University,
Sacramento
6000 J Street
Sacramento, CA 95819

How to Appeal to Authority

The argument "According to authority A, X is the case. Therefore, X is the case," has a spotted reputation, having been called a second-best way to argue, and even a fallacy.

This workshop takes the appeal to authority seriously. It defends the thesis that such appeals are fundamental, unavoidable parts of anyone's life. Educationally the outcome should be the ability and disposition to gauge appeal strength and to make strong appeals. The workshop explores the principles upon which any strong appeal rests and attempts to apply them to a variety of materials chosen from sources with which all citizens must deal.

Audience: Middle schools and beyond.

Weddle, Perry — Social and Historical Analogy

This session begins with a presentation in the form of a hypothesis:

In order to make history more thoughtful and more meaningful to the clients, we as history teachers should be tying yesterday's events and lessons to the events and movements of today.

Although the hypothesis tempts its author, he by no means firmly believes it yet. While arguing for it and exemplifying it (to a degree), he really hopes to enlist audience help -- pro, con, and as Devil's Advocate. In the discussion the theme issue can be expanded. Eventually the discussion will be led in the direction of deciding which elements need to be incorporated into (and deleted from) history and social studies classes in order to make their students think more critically.

Audience: Middle schools and beyond

Weddle, Perry — A Cookbook of Critical Thinking Exercises

Perry Weddle will share with participants exercises on how to make more efficient use of critical thinking exercises for teachers and students alike.

Weinstein, Mark — Integrating Critical Thinking into School Systems

Director
Reasoning Skills Project
Center for the Improvement of Education
Queens College, C.U.N.Y.
Flushing, NY 11367

Critical thinking and especially critical thinking in the strong sense is a plausible goal for educators in a democratic society. But the critical thinking movement, especially as reflected in pre-college education has various sources and many goals. Theoretic beliefs and administrative positions frequently make critical thinking in the strong sense difficult to conceptualize and harder to implement. The apparent acceptance of strong sense critical thinking as an ideal should not confuse us as to the difficulties to be faced if we are to integrate programs for critical thinking into large school settings. This paper will explore the attempt in New York City to integrate thinking skills in twelve school districts. We will trace the difficulties looking for generalities and present solutions that reflect a wide variety of concrete contexts and conceptual attitudes.

Williams, Frank — Computer Assisted Instruction Lessons for Informal Logic/Critical Thinking

Assistant Professor
Department of Philosophy and Religion
Eastern Kentucky University
Richmond, KY 40475-0959

Explanation and illustration in class or in textbooks are insufficient for developing skills such as the ability to recognize the difference between argument and mere assertion and to distinguish between reasons and conclusions. What students need is the opportunity for practice with patient correction of errors. Computer assisted instruction, (CAI) can provide much of the needed practice more effectively than traditional teaching methods. These computer lessons assume that students have been introduced to basic concepts in the classroom. They are not designed to teach concepts and principles from scratch. The aim is that they will enable students to master certain very basic skills sooner, so that class hours may be devoted to subtler, more advanced and more complex matters.

Williams, Joseph — Solving Problems in Writing

Professor
Department of English
University of Chicago
Chicago, IL 60637

Real life problem solving differs from laboratory problem solving in several ways: real life problems are not easily identified or defined; they have no one right solution nor is there a standard way to solve the problem. There is no way to determine easily the goodness of the solution because the problem is so deeply embedded in a wider context of problems. Teachers who ask students to solve problems in writing often fail to understand that some students think that they are being asked to solve a laboratory-like problem when the instructor is looking for evidence that they appreciate that a problem is ambiguous, complex and open-ended. Or vice-versa.

This workshop will address the ways to think through the context of a writing problem, ways to anticipate a student's simply following a "set of rules" for solving a writing problem, and ways to demonstrate those rhetorical conventions that most of us take to be the signs of thoughtful problem solving—of good critical thinking.

Witte, Marlys H.
Physician
Department of Surgery
College of Medicine
University of Arizona
Tucson, AZ 85724

Co-Presenter
Kerwin, Ann
Professor
Department of Surgery
College of Medicine
University of Arizona

Ignorance: A Powerful Tool for Teaching and Learning Critical Thinking in the Strong Sense

Too often educators solicit and reward "right" answers and "right" thinking with little reflective awareness of the complex dynamics between knowledge and its mirror image, ignorance. An appreciation of the content of ignorance (what we know we don't know, what we don't know we don't know, and what we think we know but don't) as well as methods of exploration (including Socratic ignorance) foster critical thinking in the strong sense--not only the skills essential for thinking creatively and logically across disciplines but the commitment to do so even when it is painful. Relying on their experience as teacher-students in the pioneering "Curriculum on Medical Ignorance" at the University of Arizona, Dr. Witte, a physician-scientist, and Dr. Kerwin, a philosopher, will explore the vast domain of ignorance (in any subject), focus on crucial skills of asking questions and questioning answers, and show how ignorance, properly conceived, is a powerful tool for nurturing critical thinking in the strong sense. From this participatory session, teachers can learn how to "mainstream" ignorance into medical, science, and general education at every level.

Witte, Marlys H.

Co-Presenter
Kerwin, Ann

Facing the Unknown in Medicine: An Experiment to Enliven Medical and Nursing Education

While much of medical and nursing education focuses on memorizing the "facts of the day" and discourages rigorous questioning skills and attitudes, doctors and nurses need to know how to recognize and deal with the unknowns in medicine--the ambiguities, complexities, uncertainties, and lack of knowledge, which face them daily while lives hang in the balance. In this participatory session, Dr. Witte and Dr. Kerwin will survey the scope of the unknowns in medicine (in basic biology, clinical management, and bioethics) and propose different ways to explore the unknown in the medical and nursing curriculum.

Zimmerer, Linda
Manager
Science Education Unit
California State Department
of Education
721 Capitol Mall
Sacramento, CA 95814

Co-Presenter
Taylor, Zack
Consultant
Science Education Unit
California State Department
of Education

Process Skill Assessment in Science

Science will be added to California's grade 8 statewide assessment in 1986. In this session, Linda Zimmerer and Zack Taylor will describe the process skills that will be an integral part of the new assessment. Illustrative items will highlight discussion of the process skills of observing, comparing, organizing, relating, inferring, and applying. Participants will receive documents describing the proposed assessment for science.

PANELS

Critical Thinking, Math and Science

Jack Lochhead   **C. Blaine Carpenter**
David J. Stroup

This panel will focus on the sense in which routine and non-routine mathematical and scientific thinking presuppose critical thinking. Consideration will be given not only to the "ultimate" nature of such thinking but to the forms that thinking takes (or ought to take) as students are approaching it at various levels of "ignorance" and incomplete understanding.

Critical Thinking and Women's Issues

Virginia Epstein   **Corrinne Bedecarre**

Bernadine Stake
Senior Research Associate
Center for Instructional
Research and Curriculum Evaluation
University of Illinois,
Urbana-Champaign
1310 South Sixth Street
Champaign, IL 61820

The panelists will explore a variety of women's issues related to critical thinking instruction including: sex equity in the classroom, social factors in learning, sex roles, thinking styles, built-in biases, male norms, moral issues, etc.

Teaching Critical Thinking Skills:
A Telecourse Approach

Kenneth Fawson   **Margaret Hyde**
Assistant Provost: Instructional Services   *Professor*
Evergreen Valley College   Evergreen Valley College
3095 Yerba Buena Road   3095 Yerba Buena Road
San Jose, CA 95135   San Jose, CA 95135
John Chaffee

In October, 1984, Evergreen Valley College was selected by the Bay Area Television consortium (under a FIPSE Grant) to develop a transferable interdisciplinary telecourse in Critical Thinking for use by the 19 community colleges in the Consortium. This project will allow the colleges to offer a transferable Critical Thinking course which meets an interdisciplinary need and the CSU transfer requirement. In conjunction with the course, Dr. John Chaffee's text, *Thinking Critically*, published by Houghton Mifflin, will be used.

Projects for Integrating Thinking

Ogden Morse   **Geoffrey W. Scheurman**
Chair, English Department   *Chair, Social Studies Department*
Joel Barlow High School   *Douglas High School*
100 Black Rock Turnpike   *Box 1028*
West Redding, CT 06896   *Douglas, WY 82633*

The projects discussed will help enable teachers to foster the deliberate teaching and integration of thinking skills with the presentation of normal content material. The project offers several avenues to aid teachers in developing a unit of study and to integrate them into specific subject areas. Geoffrey Scheurman will discuss the Wyoming Critical Thinking Project. Ogden Morse will discuss a model he developed for transferring critical thinking theory into practical application in the classroom.

The Dialectic of Factual Knowledge
and Critical Thinking

Joseph Williams   **Donald Lazere**
Diane Halpern

This panel will focus on the challenge of teaching critical thinking in the strong sense to students who have a highly limited knowledge of history, economics, political ideology, etc... as well as a limited vocabulary by means of which to understand and critically evaluate readings in these subjects.

Can Critical Thinking be Taught?

Joel Rudinow   Edward Glaser

Chair: Richard W. Paul

An ancient philosophical question in a modern context - this topic raises related questions about the natures of critical thinking, learning and teaching.

Part A: *Using the Watson-Glaser Critical Thinking Appraisal (CTA) as teaching as well as Testing Tool.*

Prior to this session at the conference, Form A of the CTA will be administered to a group of students. From this group, several individuals who scored low but give other evidence of having superior intelligence and up-to-grade-level reading comprehension skills will be invited to participate in a video-taped feedback by use of a modified Socratic dialogue session related to performance on the CTA.

The tape from the interaction with one such student will be played and discussed at the conference session. The expectation is that by leading the student to examine his/her own reasoning, the individual will come to see principles (not just the logically correct answers to test items that had been answered incorrectly), and achieve a significantly higher score on retest with Form B of the CTA. The actual scores on the two Forms will be reported, with interpretive commentary.

Part B: *A Teaching Strategy for Developing Students' Dialectical Thinking Skills.*

Application of Socratic techniques in issue-oriented small-group discussion settings encourage students to engage in reflective self-criticism and to reason sympathetically within alternative frames of reference. Video tapes of students engaged in dialogue will be presented and discussed.

PROGRAMS*
CALIFORNIA STATE DEPARTMENT OF EDUCATION
Critical Thinking Assessment Program

Tuesday, August 5, 1986
8:45-10:15 a.m.
Art 108

Peter E. Kneedler
Consultant
California Assessment Program
California State Department
of Education

Overview of Critical Thinking Assessment in California

Tuesday, August 5, 1986
10:30-12:00 noon
Art 108

Peter E. Kneedler

Evaluation of Critical Thinking in California's New Statewide Assessment of History-Social Science

Tuesday, August 5, 1986
1:30-3:00 p.m.
Art 108

JanTalbot
Chairperson
Subcommitte for Critical Thinking Writing in History-Social Science

Edys Quellmalz
Project Director
Higher Order Thinking (H.O.T.)
Project

Evaluating Critical Thinking Skills Through Constructed Responses

Tuesday, August 5, 1986
3:15-4:45 p.m.
Art 108

Beth Breneman
Consultant
California Assessment Program

Reading/Writing Statewide Assessment

Diane Levin
Consultant
California Assessment Program

Wednesday, August 6, 1986
8:45-10:15 a.m.
STV 3008

Tej Pandey
Consultant
California Assessment Program

Problem Solving in Statewide Mathematics Assessment

Linda Zimmerer
Manager
Science Education Unit

Zack Taylor
Consultant
Science Education Unit

Process Skill
Assessment in Science

Descriptions of these presentations will be found in the preceeding pages, alphabetized by surname.

MINI-CRITICAL THINKING COURSE

Throughout the conference an actual course in critical thinking will be conducted. Textbook authors and other experienced critical thinking instructors will provide a crash course on a dimension of critical thinking, as follows:

Ralph Johnson
Information and the Mass Media
Sunday, August 3, 1:30-3:00 p.m.
Dar 108

Harvey Siegel
Epistemological Underpinnings of Critical Thinking
Sunday, August 3, 3:15-4:45 p.m.
Dar 108

Richard Paul
The Nature of Critical Thinking Through Socratic Interrogation
Monday, August 4, 8:45-10:15 a.m.
Dar 108

Vincent R. Ruggiero
Dispositions: The Neglected Aspect of Critical Thinking
Monday, August 4, 10:30-12 noon
Dar 108

Gerald Nosich
Constructing Arguments
Monday, August 4, 1:30-3:00 p.m.
Dar 108

J. Anthony Blair
Using Arguments to Decide What to Believe
Monday, August 4, 3:15-4:45 p.m.
Dar 108

John Hoaglund
Stimulating Thinking About Thinking with Logical Puzzles
Tuesday, August 5, 8:45-10:15 a.m.
CS68

James Freeman
Argument Diagramming
Tuesday, August 5, 10:30-12 noon
CS68

T. Edward Damer
Learning About Good Arguments Through the Fallacies
Tuesday, August 5, 1:30-3:00 p.m.
CS68

John Chaffee
Critical and Creative Problem-Solving
Tuesday, August 5, 3:15-4:45 p.m.
CS68

Carol LaBar, Ian Wright
Practical Reasoning
Wednesday, August 6, 8:45-10:15 a.m.
Art 108

VIDEOTAPE PROGRAM

Videotapes are one of the growing important resources in critical thinking instruction. The Center for Critical Thinking and Moral Critique is producing low-cost videotapes that can be used as discussion-starters and in some cases as examples of student performances, especially in the area of dialogical or dialectical reasoning. Some of these will be shown in an alcove in the Commons during the evening wine socials. These include:

Critical Thinking in Science

Professor Richard Paul, Chemistry Professor, Douglas Martin, and SSU student Eamon Hickey discuss ways in which critical thinking may be applied in science education. The following issues are raised: "To what extent is there a problem with science education being an exercise in rote memorization and recall?" "Is there a conflict between preparing science students to become critical thinkers and preparing them for specialized scientific work?" "To what extent is science being taught monologically?" and "Does monological instruction alienate students from the overall goal of becoming educated thinkers?" This tape is an excellent discussion-starter for in-service use.

Critical Thinking in History

In this videotape Professor Richard Paul is joined by History Professor Robert Brown and SSU student Eamon Hickey to discuss the relation of critical thinking to the interpretation, understanding, and construction of history. The following issues are discussed: What is the place of value judgments in history? To what extent is history written from a point of view or frame of reference? Can students come to understand history from a critical vantage point? How would history be taught if this were the goal? To what extent should history be used to inculcate patriotism? What is it to learn how to think historically? Have teachers been adequately prepared to teach history from a critical vantage point? What can be done to facilitate historical thinking rather than memorization of "facts"?

Dialogical Practice, I

One of the most important skills of critical thinking is the ability to enter into and reason within opposing viewpoints. In this videotape Sonoma State University students Stacy Goldring-Ray and Jean Hume practice dialogical reasoning, using the Israeli-Arab conflict as the subject.

Dialogical Practice, II

In this videotape, Sonoma State University students Hub Lambert and Dave Allender practice dialogical reasoning, using the issue of abortion as the subject.

(Both of these dialogical practice tapes are excellent illustrations of what it is for students to integrate a host of critical thinking skills and dispositions into their spontaneous thinking.)

Critical Thinking: The State of the Field

In this welcoming address to the Third International Conference on Critical Thinking and Educational Reform, Professor Richard Paul addressed the following issues: "What fundamental changes are necessary to give students the incentive to develop critical thinking skills?", "How does the very nature of belief pose a difficulty for critical thinking?", "How does traditional intra-disciplinary education provide an obstacle to independence of thought?", "How is critical thinking fundamental to all forms of reference and how can we use it to think across and beyond disciplinary boundaries!", "How is the field of critical thinking developing so as to cut across subject matter division?", "What are the social and institutional barriers to the development of critical thinking as a field and as an educational reality?"

Socratic Questioning in Large Group Discussion (4th Grade)

Professor Richard Paul leads a 4th Grade class discussion, using Socratic questions. Issues such as the follwing are discussed: "What is your mind?", "Does it do anything?", "Where does your personality come from?", "Is thinking like an American kid different from thinking like an Eskimo kid?", "Do you chose the kind of person you are going to be?", "Can you be a good person and people think you're bad?", and "How do you find out what's inside a person?"

Socratic Questioning in Large Group Discussion (6th Grade)

Professor Richard Paul leads a 6th Grade discussion, using Socratic questions. Issues such as the following are discussed: "Who does the 'our' in the textbook title *Our World* refer to?", "Are people easy or hard to understand?, "Are all members of a group alike?", "Do some groups think they are better than other groups?", "Are there any groups of people that you think are bad?", "If you had to list the qualities of most Americans, what would they be?", "If you had to list the qualities of Germans, what would they be?", "Italians?", "Russians?" "Now imagine all of you are Russian boys and girls; how would you describe Americans?" The students' stereotypes and biases are probed. When contradictions begin to emerge, the students struggle to reconcile them or go beyond them.

Socratic Questioning in Large Group Discussion (7th and 8th Grades)

Professor Richard Paul writes a definition of critical thinking on the board --"Critical thinking is seeing through the surface of things, events, and people to the deeper realities" -- and then leads the class to probe the dimensions of the definition by Socratic questioning: "Can anyone give an example of a person you met that you thought was one way who you later came to think was very different?", "Have you ever seen a toy advertised on TV that you later saw was very different from the way it appeared on TV?", "Do people ever try to make things look different from the way they are?", "Is it common or not common for people to try to trick other people?", "How can we check to see if people or things are really the way they appear to be?", "Do we always know what we really want?" "What are we really like?", "Are all people around the world basically alike or basically different?", "How could we check?", and "How could we find out if we are right or wrong?"

Four-Part Workshop on Critical Thinking

Part One: Introduction to the Concept

In this introductory talk to an audience of public school teachers, Professor Richard Paul addresses the following issues: "What is the nature of critical thinking?", "How has it been defined and how useful are definitions?", "What are some of the characteristics and character traits of a person who thinks critically?", and "What kinds of macro-abilities and micro-skills would critical thinking instruction foster?" Professor Paul emphasizes fairmindedness, reciprocity, intelligent skepticism, and multilogical thinking. He explains the intimate relation between critical and creative thinking.

Part Two: Dialogical Practice

In this videotape Professor Paul explains the nature and importance of dialogical thinking and dialectical discussion. Dialectical exchange is modelled and the difference between it and "debate" is explained.

Part Three: Reciprocity

This tape focuses on a second macro-ability essential to strong-sense critical thinking, *reciprocity*, the process of entering into points of view that are in opposition to our own and reasoning within them. The teachers in the audience play the role of students and use the issue of the Lebanon hostage crisis as an occasion for learning how to reason sympathetically with an "alien" and "unpopular" point of view. A discussion is held on the importance of skills in reciprocity. The audience selects an unpopular point of view for two of Professor Paul's students to "reconstruct" and model. It is emphasized that there are no "dangerous" or "forbidden" ideas, only ideas well or poorly justified. The importance of freedom of thought is discussed.

Part Four: Socratic Questioning

Socratic questioning is designed to foster the habit of reflective thinking rather than the habit of looking to a teacher, a book, or a formula for a ready-made answer. A Socratic questioner probes deeply for reasons, clarifications, explanations, and evidence, helping us to see what grounds or lack of grounds we have for our beliefs. In this tape, the process of Socratic questioning is discussed and modelled. Background information essential to its understanding and "pitfalls" are discussed.

Learning How to Think About Thinking

Professor Paul leads a small group discussion whose purpose is to shed light upon the process of learning how to think about one's thinking. The issues used to illustrate the problem are "What is egocentrism?", "What is sociocentrism?", and "What is the relation between these tendencies of mind and critical thinking?". All the students involved have had at least one course in critical thinking.

The Attributes of a Critical Thinker

Professor Paul leads a class discussion of the attributes of a critical thinker. The class is introductory. Professor Paul uses Socratic Questioning and other techniques to facilitate student analysis, synthesis, and evaluation on the subject at hand. This tape can be used to illustrate both 1) initial student grappling with the idea of becoming a critical thinker, and 2) discussion techniques that facilitate student insight.

Student Insights into Metacognition

Professor Paul leads a discussion focused on a class's early experience with metacognition. The students analyze the problems which they experienced in thinking dialogically on issues chosen by them. In the assignment discussed, the students had constructed arguments on opposing sides of an issue. Some surprising insights and problems are articulated.

Critical Thinking in Elementary Instruction

A dialogue between Richard Paul and Michael Rich, a fifth-grade teacher in Vallejo, CA.

Critical Thinking and Student Perspectives, I

A dialogue between Richard Paul and Eamon Hickey.

COMMUNITY COLLEGE PROGRAM

Sunday, August 3
REGISTRATION
8:00-9:00 a.m.
Ives Hall Patio

9:00-10:15 a.m.
Commencement Area

Teaching Critical Thinking in the Strong Sense in Elementary, Secondary and Higher Education	Richard Paul, Director Center for Critical Thinking and Moral Critique

10:30-Noon
STV 1002

Critical Thinking at the Community College	John J. Prihoda, Supt./Pres. Iowa Valley Community College District
Introduction of Participants and Speakers	
Overview of the Current Movement in Critical Thinking	Richard Paul
History: Where it Came From	
Regulations Occuring in California and Elsewhere	
Defining Creative and Critical Thinking Skills	David Perkins, Harvard University
Methods and Materials in Thinking Instruction	Vincent R. Ruggiero, State University of New York, Delhi
Administrative Implications of the Critical Thinking Movement	John J. Prihoda

Noon-1:30
Lunch

1:30-3:00 p.m.
SU:MP

A Holistic Approach to Thinking Instruction	Vincent R. Ruggiero

3:15-4:45 p.m.

Community College personnel to select own choice.

5:00-5:45 p.m.
STV 1002

Review Session for Community College Personnel	John J. Prihoda

Monday, August 4

8:45-10:15 a.m.

Community College personnel to select own choice.

10:30-Noon
SU:MP

Knowledge as Design in the Classroom	David Perkins

Noon-1:30 p.m.

Lunch

1:30-3:00 p.m.

Community College personnel to select own choice.

3:15-4:45 p.m.
STV 3046

The Administrators Role in Thinking Instruction	Vincent R. Ruggiero

5:00-5:30
STV 1002

Review and Closing Comments	John J. Prihoda

5:45-7:45
Dining Commons

Conference Banquet

Tuesday, August 5

Community College personnel who remain will be able to attend any sessions of their choice.

Wednesday, August 6

Community College personnel who remain will be able to attend any sessions of their choice.

1:30-3:00
STV 3046

Final Comments on the Administration of Critical Thinking Instruction for Community College Personnel	Vincent R. Ruggiero

National Council for Excellence in Critical Thinking Instruction

As the term "Critical thinking" gains greater and greater currency in education, there is a growing number of individuals who are declaring themselves experts in the field and promising to provide short-term training for teachers and simple-to-apply programs and strategies. The purpose of the National Council is to draw upon the collective wisdom of those in leadership in the field to articulate minimal standards for quality in-service and instruction in critical thinking and to help serve as a clearinghouse for information about quality programs and strategies:

Membership

Jonathan Kozol
Fellow, John Simon Guggenheim Memorial Foundation

George Hanford
President, College Board

Albert Shanker
President of American Federation of Teachers

Joseph Williams
University of Chicago

Matthew Lipman
Director, Institute for the Advancement of Philosophy for Children

Irving Siegel
Educational Testing Service

Debbie Walsh
Assistant Director, Educational Issues Department, A.F.T.

Trudy Govier
Formerly University of Calgary

John Prihoda
President/Superintendent, Iowa Valley Community College

Jim Williamson
Mathematics Coordinator, Billings Public Schools

Ian Wright
University of British Columbia

Vincent Ruggiero
S.U.N.Y. Delhi College

Michael Scriven
University of Western Australia

David Perkins
Harvard University

Robert Ennis
Director, Illinois Critical Thinking Project

Stephen Norris
Memorial University of Newfoundland

Carolyn Sue Hughes
Past President, A.S.C.D.

John Hoaglund
Christopher Newport College

Ronald Giere
Indiana University, Bloomington

Dolores Gallo
Co-director, Critical and Creative Thinking Program U-Mass.-Boston

Richard W. Paul
Director, Center for Critical Thinking and Moral Critique

Jonathan Adler
Brooklyn College, C.U.N.Y.

Art Costa
California State University

Carol LaBar
University of British Columbia

Edys Quellmalz
Formerly, Stanford University

S. Morris Engel
University of Southern California

Robert Swartz
Co-director, Critical and Creative Thinking Program, U-Mass.-Boston

Gerald Nosich
University of New Orleans

T. Edward Damer
Emory and Henry College

Ralph Johnson
University of Windsor

J. Anthony Blair
University of Windsor

Edward M. Glaser
President, Human Interaction Research Institute

David Hitchcock
McMaster University

Donald Lazere
California Polytechnic State University

Daisie Radner
S.U.N.Y. Buffalo

Dan Dolan
Montana Office of Public Instruction

Perry Weddle
California State University, Sacramento

Lenore Langsdorf
University of Texas

Donald Nolan
Parkland College

Joel Rudinow
Research Associate, Center for Critical Thinking and Moral Critique

Harvey Siegel
University of Miami

Ronald S. Brandt
Executive Editor, Educational Leadership

Diane Halpern
California State University, San Bernardino

Rita King
History-Social Science Assessment Advisory Committee

Center for Critical Thinking & Moral Critique
Sonoma State University

The Center conducts advanced research, inservice educational programs, professional conferences, and disseminates information on critical thinking and moral critique. It is premised on the democratic ideal as a principle of social organization, that is, that it is possible

> so to structure the arrangements of society as to rest them ultimately upon the freely given consent of its members. Such an aim requires the institutionalization of reasoned procedures for the critical and public review of policy; it demands that judgments of policy be viewed not as the fixed privilege of any class or elite but as the common task of all, and it requires the supplanting of arbitrary and violent alteration of policy with institutionally channeled change ordered by reasoned persuasion and informed consent.*

It conducts its research through an international network of fellows and associates, as follows:

Honorary Fellows

Max Black, Professor of Philosophy, Cornell University, Ithaca

Robert Ennis, Director, Illinois Thinking Project, University of Illinois, Urbana

Edward M. Glaser, Psychologist, founder Watson-Glaser Critical Thinking Appraisal, Los Angeles

Matthew Lipman, Professor of Philosophy, Institute for the Advancement of Philosophy for Children, Montclair, N.J.

Israel Scheffler, Thomas Professor of Education and Philosophy, Harvard University

Michael Scriven, Professor of Philosophy, University of Western Australia, Nedlands, Australia

Research Associates

J. Anthony Blair, Professor of Philosophy University of Windsor, Canada

Carl Jensen, Associate Professor of Communications Studies, Sonoma State University

Ralph Johnson, Professor of Philosophy, University of Windsor, Canada

Don Lazere, Professor of English, California Polytechnic State University, San Luis Obispo

Perry Weddle, Professor of Philosophy, California State University, Sacramento

Ian Wright, Professor of Education, University of British Columbia, Canada

Teaching Associates

Robert Ennis, Center Fellow and Director, Illinois Thinking Project

Carl Jensen, Center Research Associate and Associate Professor of Communications Studies

Robert Karlsrud, Professor of History, Sonoma State University

Don Lazere, Center Research Associate and Professor of English, California Polytechnic State University, San Luis Obispo

Richard Paul, Director, Center for Critical Thinking and Moral Critique

Dianne Romain, Assistant Professor of Philosophy, Sonoma State University

Douglas Martin, Associate Professor of Chemistry, Sonoma State University

Joel Rudinow, Center Research Associate and Assistant Professor of Philosophy, Sonoma State University

Director

Richard W. Paul, Center for Critical Thinking and Moral Critique

The work of the Center includes an annual international Conference on Critical Thinking and Education; Master's Degree in Education with emphasis in Critical Thinking; Supplementary Authorization Program in the teaching of critical thinking (under the Single Subject Waiver Credential Program of the State of California); inservice programs in the teaching of critical thinking; Research Intern program (for graduate students in the field of critical thinking and moral critique); clearinghouse for the distribution of tests, documents, postion papers; and research in the field of critical thinking and moral critique and in the reform of education based upon the teaching of reasoning and critical thinking skills across the curriculum. Other recent contributors include the historian Henry Steele Commager and George H. Hanford, President of the College Board.

*Israel Scheffler, *Reason and Teaching* (1973, Bobbs-Merril Co., Inc.) page 137

From Previous Conferences:

Edward M. Glaser

Robert Ennis

Matthew Lipman

David Perkins

Welcome to
Sonoma State University