

# Assessing Critical Thinking across the Curriculum

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# Outline of Session

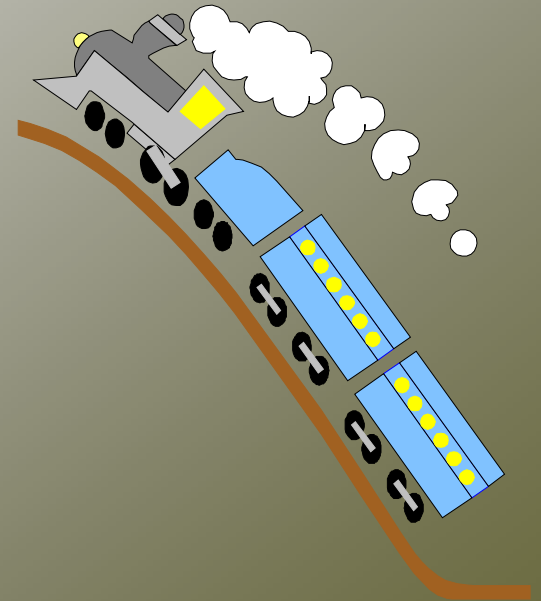
- ❖ Framing the Assessment Task
- ❖ Why Critical Thinking
- ❖ Approaches to Critical Thinking
- ❖ Planning Curriculum & Assessments
- ❖ Assessment Instruments
- ❖ Final Thoughts on Putting It Together



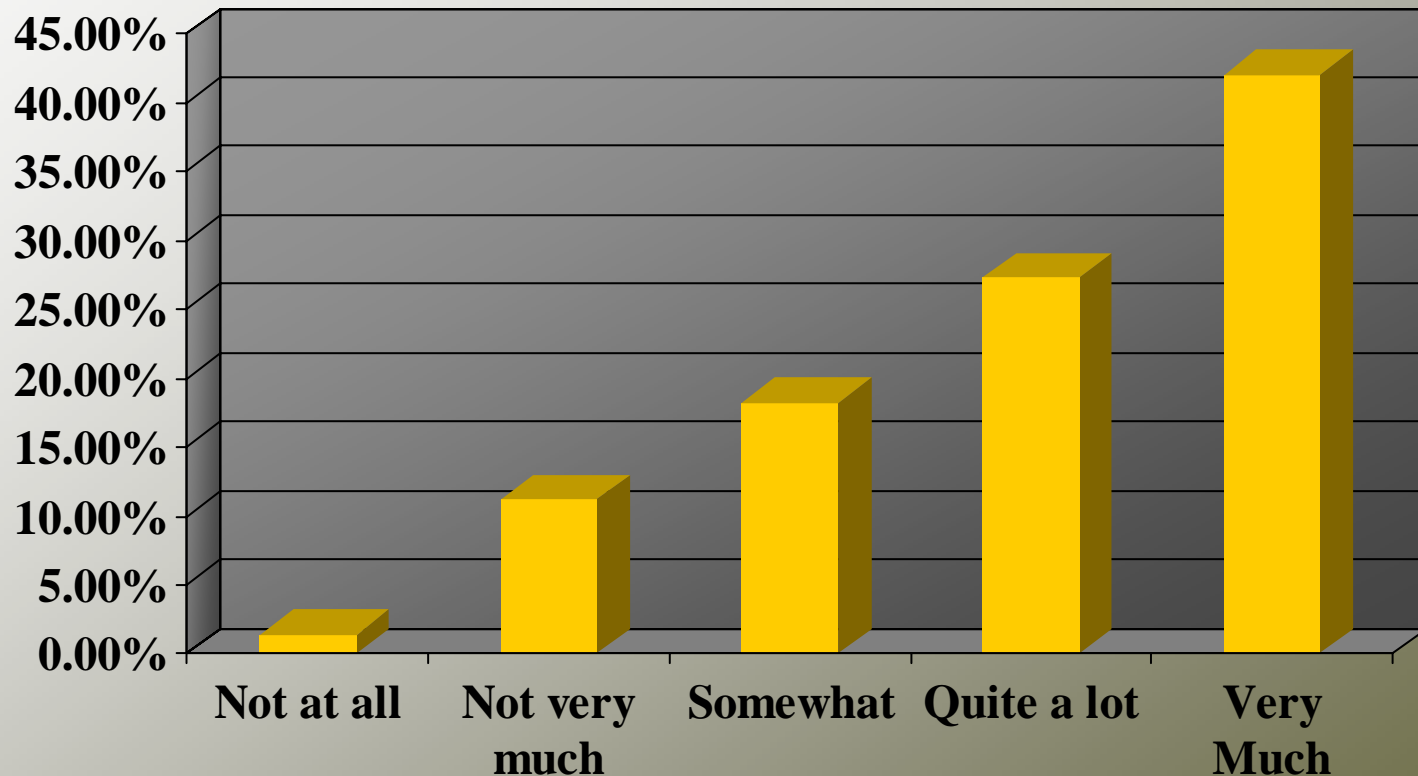
# Key Questions

## in assessing critical thinking across the curriculum

- ❖ Why assess critical thinking?
  - Audience
- ❖ What to assess in critical thinking?
  - Criteria
- ❖ How to assess critical thinking?
  - Student development
  - General education vs. major field
  - Approaches and instruments
- ❖ When to assess critical thinking?
  - ❖ Entry
  - ❖ Midpoint
  - ❖ Graduation
  - ❖ Alumni

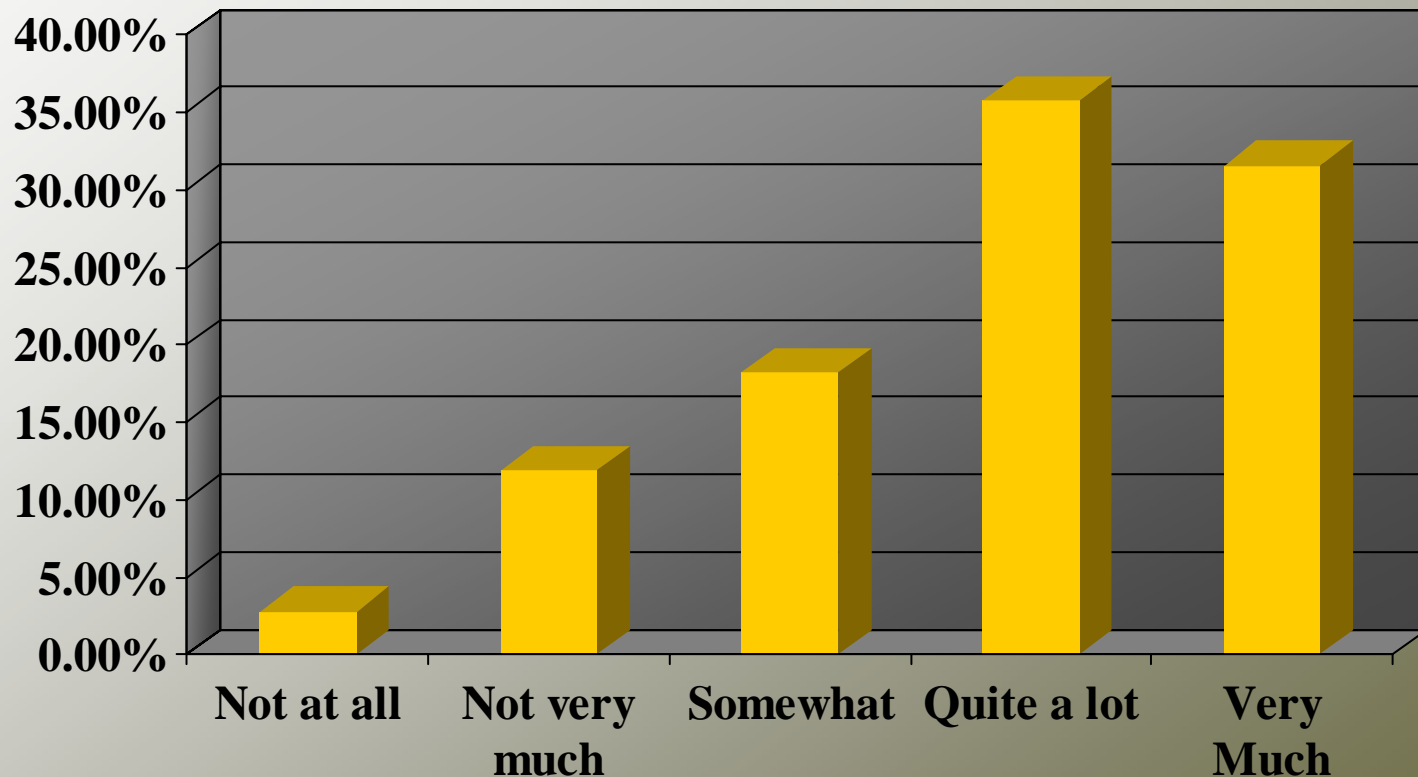


## Extent to Which Goals Are Clearly Stated



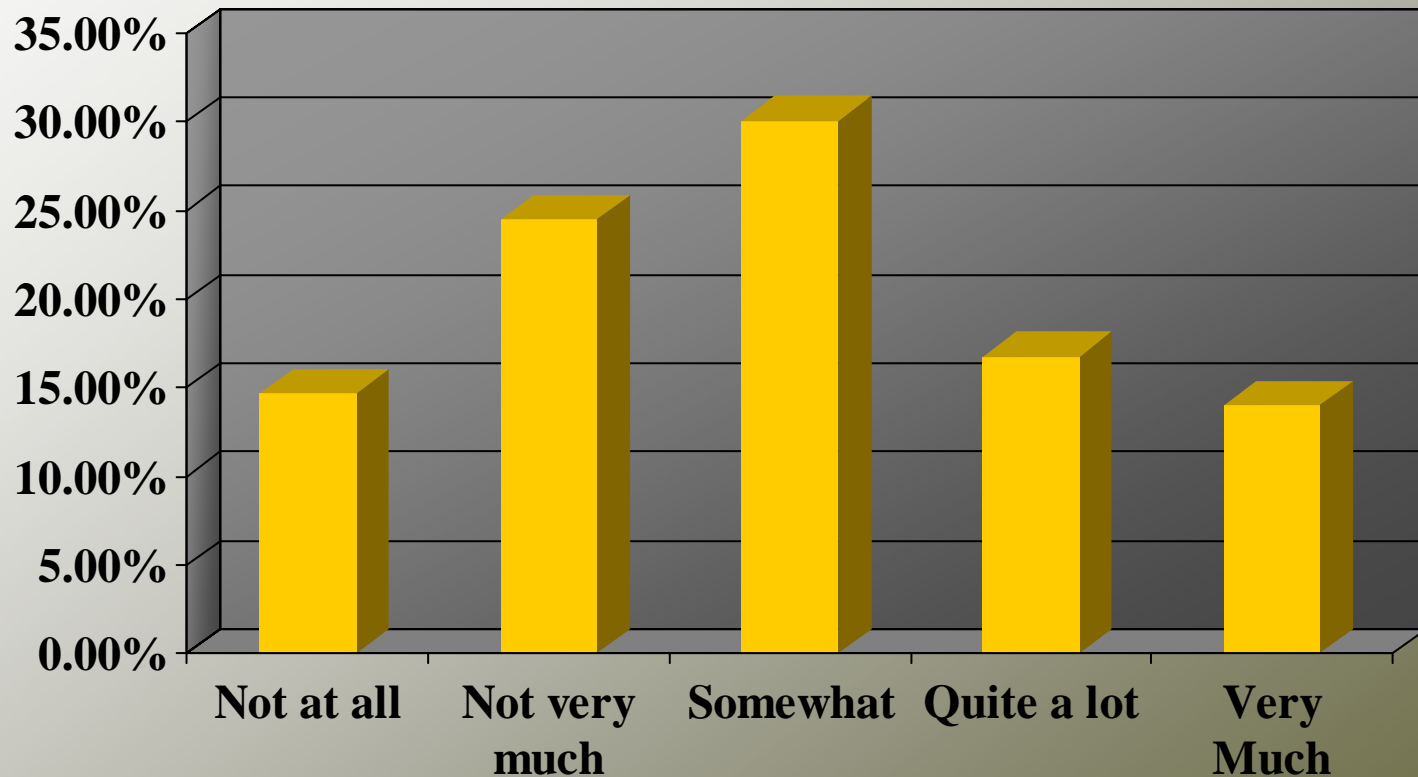
Ratcliff, J.L, Johnson, D.K., and Gaff, J.G. Changing the General Education Curriculum. New Directions for Higher Education. March 2004.

# Extent to Which Course Requirements Are Linked to General Education Goals



Ratcliff, J.L, Johnson, D.K., and Gaff, J.G. Changing the General Education Curriculum. New Directions for Higher Education. March 2004.

# Extent to Which Student Learning Is Assessed Relative to Goals



Ratcliff, J.L, Johnson, D.K., and Gaff, J.G. Changing the General Education Curriculum. New Directions for Higher Education. March 2004.

# Most don't assess Critical Thinking

General Education Component	Institutions a Stated General Education Goal		Percent with a Goal that also Assess that Goal
	Number	Percent	Percent
<b>Computing</b>	92	51.9%	64.1%
<b>Critical Thinking</b>	119	67.2%	64.7%
<b>Cultural Diversity</b>	113	63.8%	44.2%
<b>Reading/Writing</b>	156	88.1%	77.6%
<b>Speaking/Listening</b>	98	55.4%	68.4%

Ratcliff, J.L., Johnson, D.K., La Nasa, S.M., and Gaff, G.J (2001). The Status of General Education in the Year 2000: Summary of A National Survey. Washington, D.C.: Association of American Colleges and Universities.

# ASSESSMENT

- is a way of describing student learning,
- to an identified audience,
- for clearly-articulated reasons.



# Assessment

## Reveals the Gap

between what is intended  
and what is achieved



**GOAL**

Curricular  
Goals

- 1.
- 2.
- 3.
- 4.

**The  
Performance  
Gap**

Learning  
Outcomes

- 1.
- 2.
- 3.
- 4.

# Effective Assessments Show Student Development Over Time



Entry

Midpoint Progress

Goal Attainment

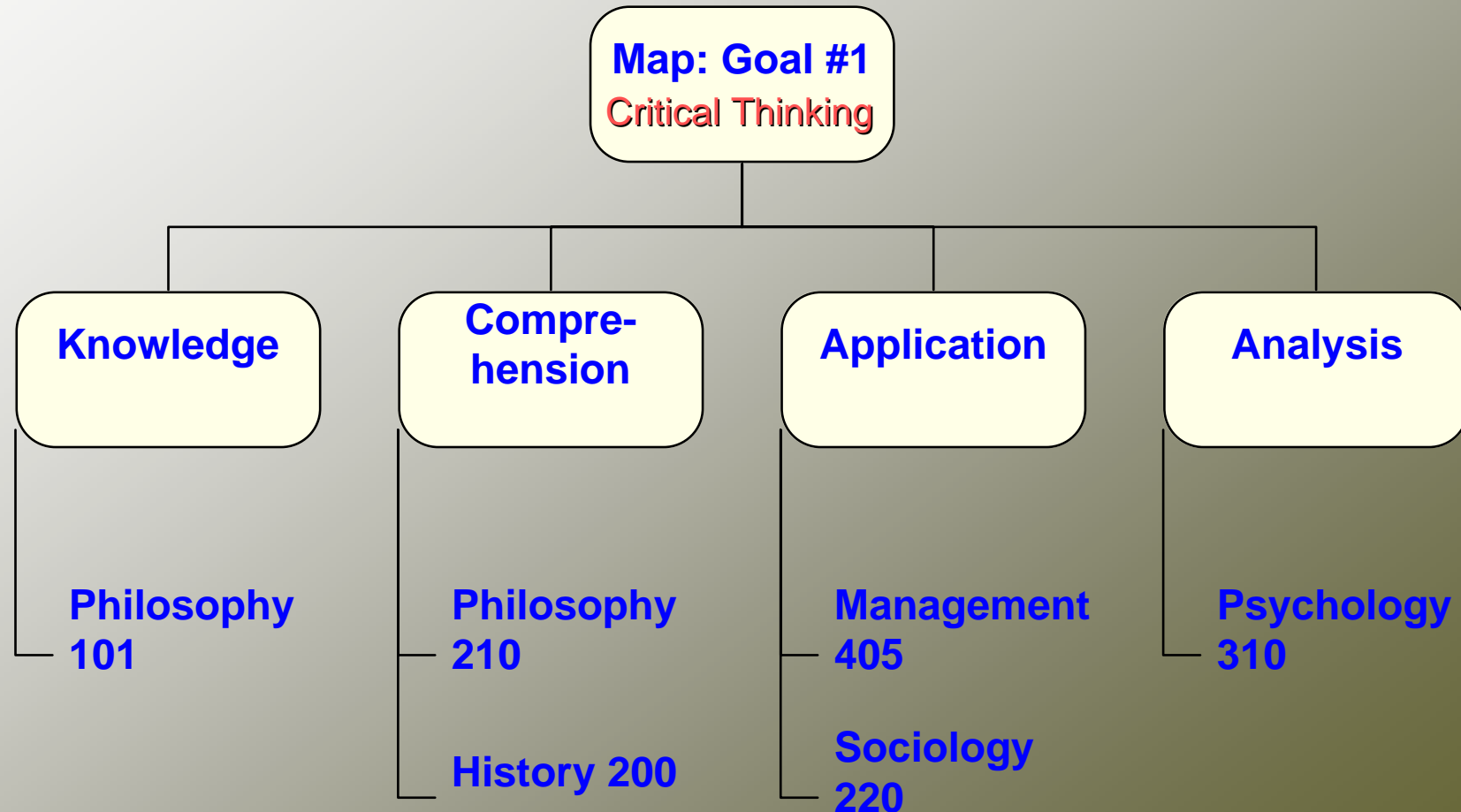
# Assessment Planning Grid

LEARNING	Admission	Midpoint	Graduation	Alumni
Outcome #1	Entry Level	Milestone Level	Graduation Level	Reflection on Experience
Outcome #2	Entry Level	Milestone Level	Graduation Level	Reflection on Experience
Outcome #3	Entry Level	Milestone Level	Graduation Level	Reflection on Experience
Outcome #4	Entry Level	Milestone Level	Graduation Level	Reflection on Experience
Outcome #5	Entry Level	Milestone Level	Graduation Level	Reflection on Experience

## Inventory the Curriculum for Each Goal, Level & Application of Learning

<b>Goal #</b>	<b>Course/ Experience</b>	<b>Level of Learning</b>	<b>Application of Learning</b>
#1	Philosophy 101	Knowledge	None
#1	Philosophy 210	Comprehension	Social Issues
#1	Psychology 310	Analysis	Personal situations
#1	Sociology 220	Application	Group situations
#1	History 200	Comprehension	Historical events
#1	Management 405	Application	Business situations

# Map Curriculum and Extracurriculum according to levels of learning



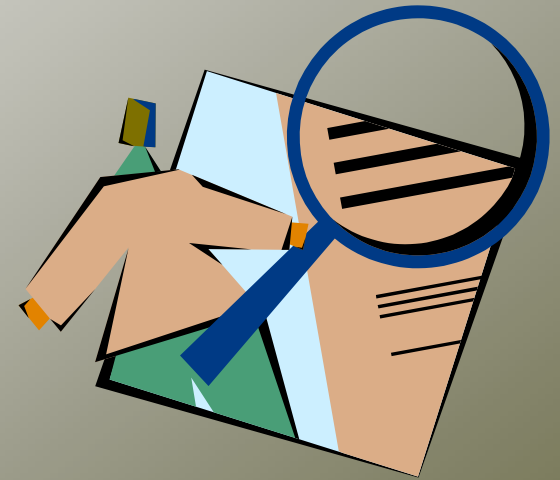
# Why Critical Thinking is Important to Quality Liberal Learning

- "Quality education" is proportional to the depth of analysis that students have at their disposal.
- Liberal learning, constructed to promote critical thinking, broad-ens students' horizon of possibility, expands their sense of a larger humanity, and liberates them from the confines of their common sense.
- In quality education, critical inquiry functions to cultivate students' ability to question, deconstruct, and then reconstruct knowledge in the interest of emancipation.

Zeus Leonardo, "Critical Social Theory and Transformative Knowledge: The Functions of Criticism in Quality Education," Educational Researcher, Vol. 33, No. 6, pp. 11-18.

# First Generation and the Value of Critical Thinking across the Curriculum

- ❖ “In comparison to “traditional” students, first-generation students are more likely to benefit in their critical thinking from attendance at orientation sessions, use of the library, and attendance at a college with a climate that emphasizes being critical, evaluative, and analytical...” (NSSL, Pascarella, 1995).



# Diversity courses and workshops are linked to student gains in Critical Thinking

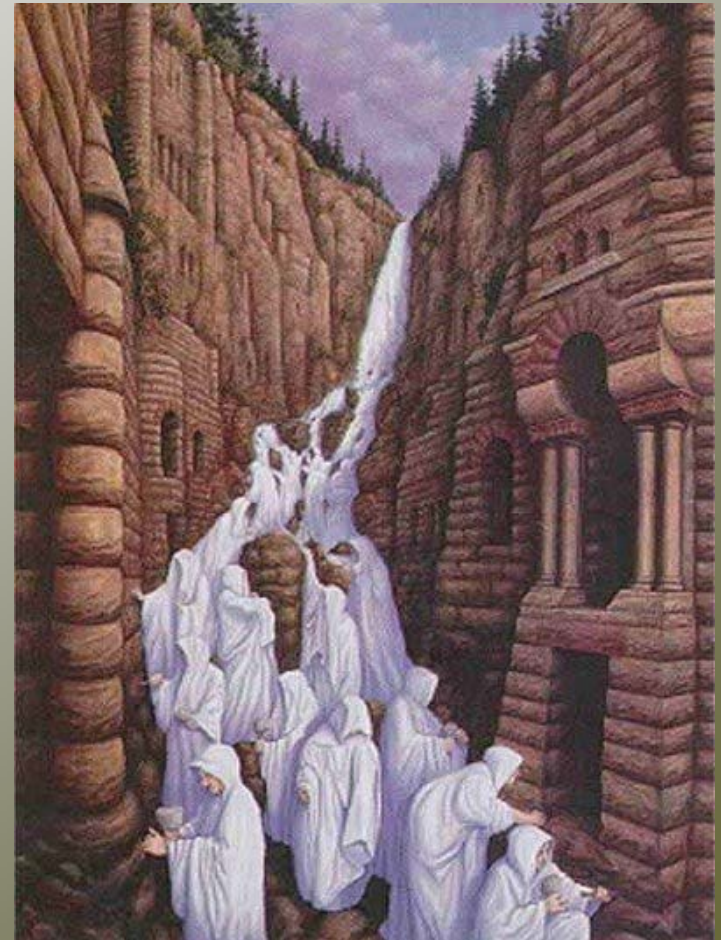
- ❖ Openness to diversity and growth in intellectual inquisitiveness and critical thinking are linked.
- ❖ Participation in a cultural awareness workshop increases students openness to diversity.



# Definitions of Critical Thinking

“Active, persistent and careful consideration of a belief or supposed form of knowledge in light of the grounds that support it, and the further conclusions to which it tends.”

John Dewey, 1909



# Definitions of Critical Thinking

“ Critical thinking is the process of reasonably deciding what to believe or do.”



Robert Ennis, 1971

# Definitions of Critical Thinking

“Critical thinking: skillful, responsible thinking that is sensitive to context, reliant on criteria, self-correcting, and conducive to judgment.”

Walter Lippman, 1989



# Definitions of Critical Thinking

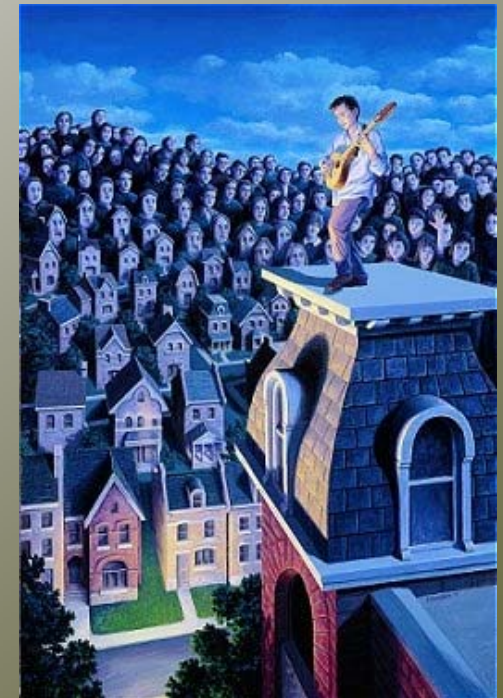
“Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.”

Richard Paul, 1993

# Richard Paul

## Elements of Thought in Reasoning:

- o Purpose
- o Concepts and Ideas
- o Assumptions
- o Data, Information, Evidence
- o Interpretations and Inferences
- o Points of View
- o Question at Issue
- o Implications and Consequences



# NSF/NIE/NAEP

- o Problem solving occurs within the context of knowledge, beliefs, and environment.
- o Six problem-solving steps:
  - Formulate problems
  - Clarify problems
  - Develop a plan
  - Implement a plan
  - Reach a goal
  - Assess



# Bloom's Taxonomy of Cognitive Development

## Six Progressive Levels of Development:

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation



# Assessments of Problem Solving

## Type “A”:

Focuses primarily on a few elements and standards of thinking - usually single answer sought

## Type “B”:

Involves more complex tasks with no real simple or single answer

# Curricular Organization

- I. Critical thinking intense courses  
(California Community Colleges)
- II. Stand alone critical thinking course  
(California State University campuses)
  - Reading
  - Philosophy
  - Psychology
- III. Critical thinking throughout the  
curriculum (University of California  
campuses)



# Embedding Critical Thinking Assessment into the Curriculum

- Purposefully integrates critical thinking into evaluation activities of courses.
- Assessment criteria are based on program critical thinking goals, not just course goals.
- Assessment is by tests, projects, papers and activities.
- Evaluation of performance is often done by groups of faculty rather than single instructors.

# Integrating critical thinking across courses in the curriculum

- Increases student learning, and
- Helps student to:
  - Pose questions
  - Propose hypotheses
  - Gather and analyze data
  - Make arguments
  - Portray perspective



# Integrating critical thinking into courses across the curriculum

- ❖ Increases teaching pleasure for faculty,
- ❖ Class discussions are richer,
- ❖ Students are more fully engaged,
- ❖ The quality of student performance improves.



# Integrated critical thinking

- ❖ Does not happen through serendipity;
- ❖ Requires planning:
  - ✓ In each individual course,
  - ✓ In the program (gen ed or major) as a whole.
- ❖ Requires fostering through pedagogical practices.
- ❖ Requires explicit and ongoing assessment.

# The Challenge of Critical Thinking

- ❖ Is to awaken students to the existence of problems and issues around them;
- ❖ Every class begins with “Something that is a problem or a cause of wonder.”<sup>2</sup>
- ❖ Critical thinking is a productive activity. “Critical thinkers are engaged with life.”<sup>1</sup>

1. Stephen D. Brookfield, [Developing Critical Thinkers](#). San Francisco, 1987.

2. G. Meyers, “Reality, consensus and reform in rhetorical composition teaching,” [College English](#), 1986.

# Critical Thinking and Academic Problems

- Not all problems are academic;
- Students need to develop mental habits (“discipline” themselves) to experience problems phenomenologically;
- The mental habits of each discipline is largely discrete and specific;
- Generic qualities of critical thinking involve:
  - Identifying and challenging assumptions
  - Exploring alternative ways of thinking and acting
  - Engaging in dialogic interchanges of our views and those of others

# Planning for Critical Thinking

1. Critical Thinking is a learnable skill
2. Problems, questions and issues are
  - a) the entry point to critical thinking
  - b) The source of sustained motivation
3. Successful courses balance challenges to think critically with student needs
4. Courses are student assignment center rather than content and lecture centered.

John C. Bean, Engaging Ideas. San Francisco: Jossey-Bass, 1996.

# Planning for Critical Thinking

5. Students are required to formulate and justify ideas in writing or other appropriate means.
6. Critical thinking is not a solitary activity; Students benefit from dialogue, critique and feedback.
7. Critical thinking courses nurture metacognitive abilities.
8. Students' developmental needs are used in the design of the courses.

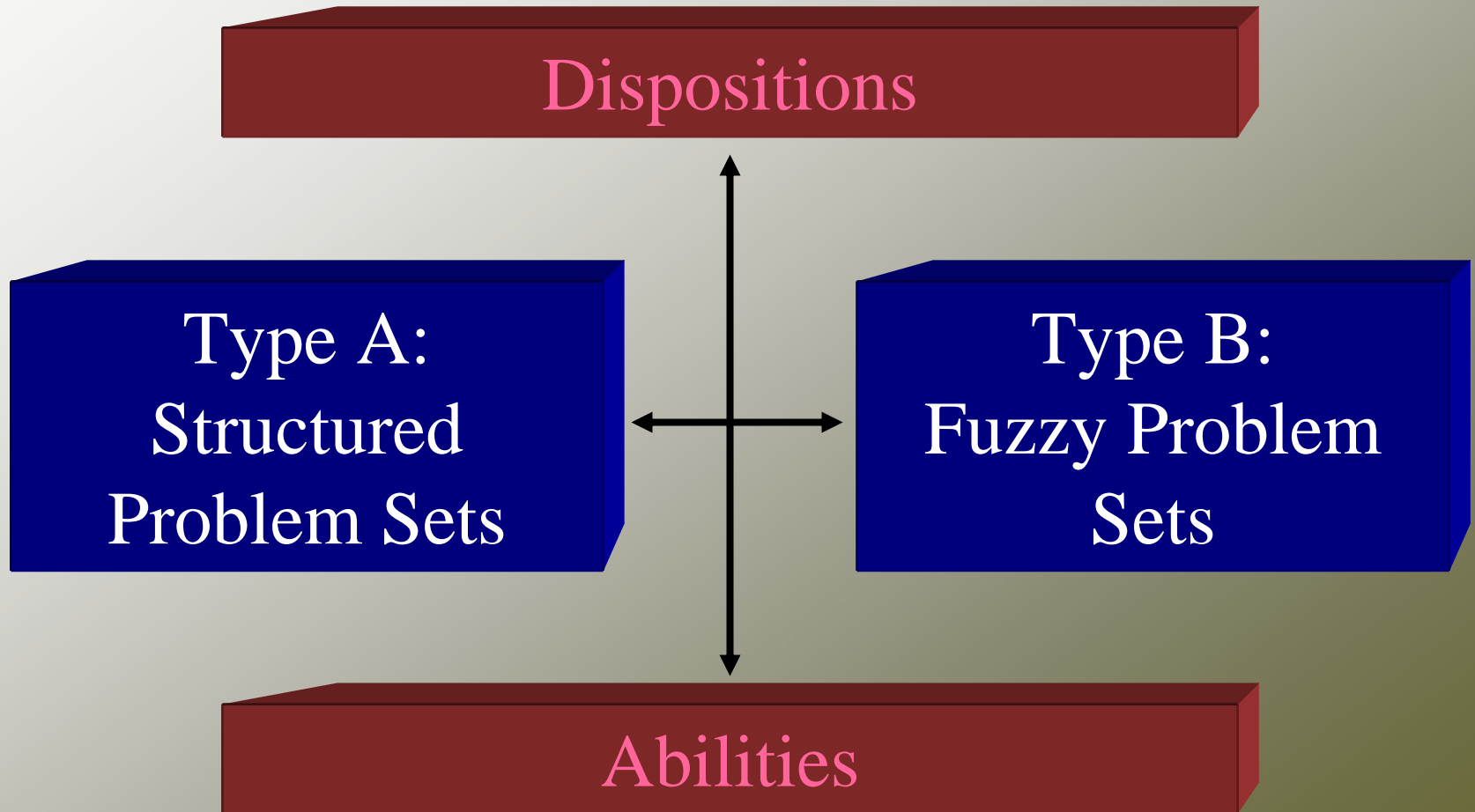
John C. Bean, [Engaging Ideas](#). San Francisco: Jossey-Bass, 1996.

# Selecting Assessment Criteria

- ❖ “Critical Thinking” means different things to different people.
- ❖ Achieving some consensus on the dimensions of critical thinking to be assessed is an important first step.
- ❖ Some critical thinking skills are generic, while others are more germane to specific majors and fields of study.

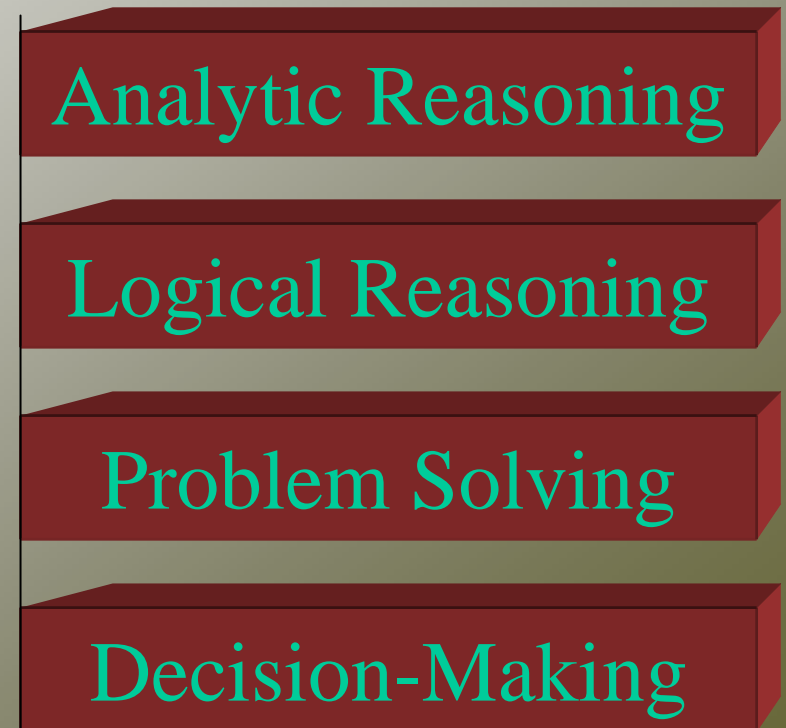
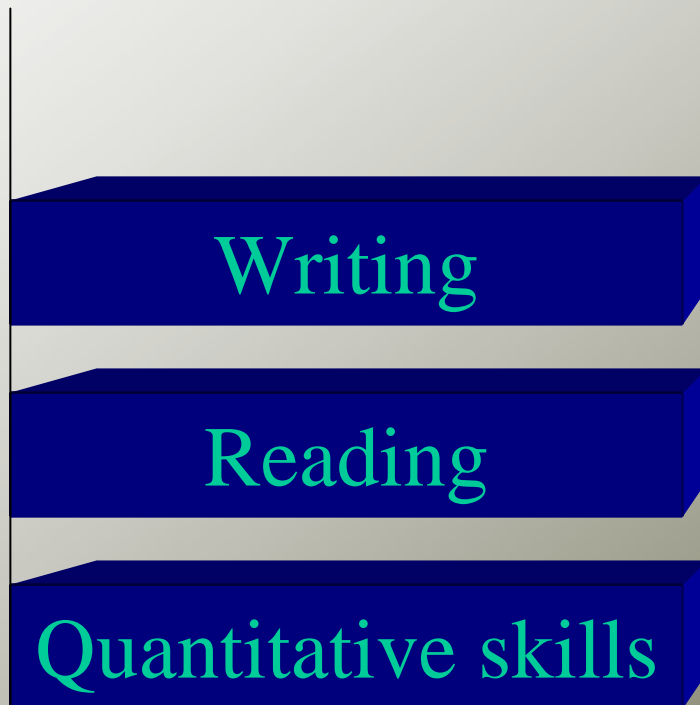


# Dimensions of Critical Thinking



# Dimensions of Critical Thinking

Critical Thinking is Related to Certain Other  
“Basic” and “Higher Order” Skills



# Seeing Which Measures Overlap: Using an Intercorrelation Matrix

Assessment Measures	Analytic Reasoning	Critical Thinking	Writing	Reading Comprehension
Analytic Reasoning	1.00			
Critical Thinking	0.80	1.00		
Writing	0.25	0.35	1.00	
Reading Comprehension	0.35	0.25	0.60	1.00

# Dimensions of Critical Thinking

General Education and  
Generic Critical Thinking Skills



Contextually-Mediated Skills  
(Major or Specialized Field)

# Ways to Define Critical Thinking and to Set Assessment Criteria

1. Literature Reviews
  - Psychology, Literacy, Philosophy
2. Expert Advisory Groups
3. Stakeholder focus groups
  - Faculty
  - Employers
  - Policymakers
4. Delphi Surveys of Stakeholders



# NCTLA Goals Inventories for Critical Thinking and Problem Solving

- Developed in 1997-98
- Initial criteria from experts
- Criteria refined by teaching faculty
- Criteria validated by employers and faculty at 80 institutions
- Each inventory provides 100 goals in a framework for student learning
- Can contrast “students should be able” with “students are able” at any assessment point.

# NCTLA Critical Thinking Framework

## Interpretation

- Categorizing
- Detecting Indirect
- Persuasion
- Clarifying Meaning

## Analysis

- Examining Ideas and Purpose
- Detecting and Analyzing Arguments

## Evaluation

## Inference

- Collecting and Questioning Evidence
- Developing Alternatives and Hypotheses
- Drawing Conclusions

## Presenting Arguments

## Reflection

## Dispositions

# NCTLA Delphi Survey of Employers: Findings

- Faculty, employers, and policymakers agree about the importance of most specific skills for college graduates.
- College graduates need critical thinking skills in order to become more effective communicators and decision-makers.

# NCTLA Goal Inventories: Critical Thinking & Problem-Solving

- ❖ Useful to achieve consensus about what criteria to use.
- ❖ Can be used to set criteria for:
  - What students can do,
  - What they should be able to do,
  - The performance gap between the two.
- ❖ Can be used to differentiate between:
  - Critical thinking in general education,
  - Critical thinking in the major field of study,
  - Points of disagreement and agreement on criteria.

# Assessing Critical Thinking: Planning Steps

- ✓ Once you have established the criteria, then you can select appropriate assessment methods and measures
- ✓ Selecting a means of assessment:
  - Type A instruments
  - Type B instruments
  - Course embedded approach to assessing critical thinking

# Assessments of Critical Thinking: Two Types of Instruments

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## Type “A”: Structured Problem Set

Focuses primarily on a few elements and standards of thinking - usually single answer sought

## Type “B”: Fuzzy Problem Set

Involves more complex tasks with no real simple or single answer

# Type “A” Problem Solving Instruments

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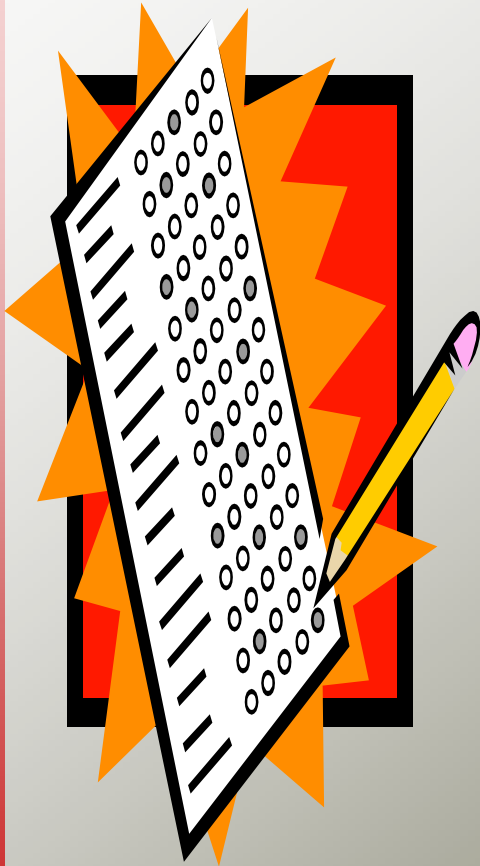
- ❖ CAAP Critical Thinking Test
- ❖ ETS Academic Profile
- ❖ California Critical Thinking Skills Test
- ❖ Cornell Critical Thinking Test
- ❖ Watson-Glaser Critical Thinking Appraisal

# Type “A” Problem Solving Instrument Features

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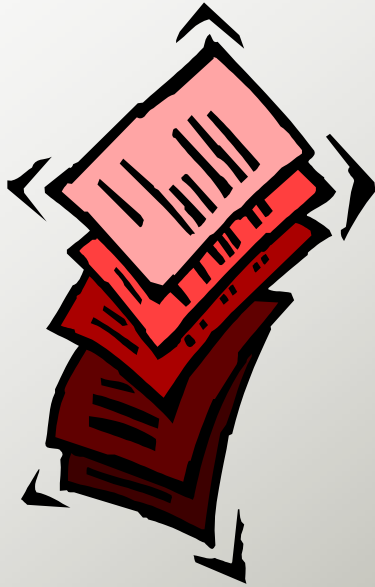
- There is a single correct answer.
- Tasks represent relatively simple, well-defined problems in a narrow content domain.
- Responses require selecting a response from a given number of choices, or short oral or written answer.
- Solutions depend upon special information and a repertoire of approaches to solving problems or answering questions.

# ETS Academic Profile



- Assesses: reading, writing, critical thinking, mathematics in the humanities, social and natural sciences
- Bundled
- Short form & Long form
- Norm and criterion referenced
- One form of test currently
- Cost: \$300 annual fee (1999-00)
  - Short form: \$11.00, \$10.00, \$8.75
  - Long form: \$16.50, \$15.50, \$14.25

# Collegiate Assessment of Academic Proficiency (CAAP)



- Modular with multiple forms
- Assesses: Reading, Writing Skills, Writing Essay, Mathematics, Science Reasoning, Critical Thinking
- Norm-referenced
- Group & individual data
- Linked to ACT entry assessments
- Cost: \$315 annual fee
  - 1 module/student: \$10.00, \$9.25, \$8.50
  - 2-5 modules/student: \$15.75, \$14.55, \$13.40

# CAAP Critical Thinking Test

- ACT test of critical thinking skills is designed for use after completion of required general education coursework.
- Developed by a panel of university content experts and ACT measurement specialists.
- Became operational in 1990.
- Measures the ability to clarify, analyze, evaluate, and extend arguments.
  - An argument is a sequence of statements which includes a claim that the conclusion follows from the other statements.
- 32-item, 40-minute multiple choice test

# CAAP Critical Thinking Test

- Consists of 4 passages that are representative of the kinds of issues commonly found in a college curriculum
- A passage typically presents a series of sub-arguments in support of a more general conclusion or conclusions
- Each passage presents one or more arguments and uses a variety of formats, including case studies, debates, dialogues, overlapping positions, statistical arguments, experimental results, or editorials
- User receives test booklets, answer sheets, test administrators' manuals; ACT scores and reports
- A total scale score is provided that is meaningful at the individual as well as group level.

# CAAP Critical Thinking Test

- o Institutions receive 2 student reports and an institutional summary report
- o Comparative information is provided, using normative data from other similar types of institutions at the same level of college (e.g., sophomores)
- o 4 forms available currently with 2 more under development

# California Critical Thinking Skills Test

- ❑ “Critical thinking is purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which the judgment is based...
- ❑ “Critical thinking includes the ability to analyze, criticize, and advocate ideas, to reason inductively and deductively, and to reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief.”

# California Critical Thinking Skills Test

- ❖ CCTST resulted from national Delphi study in 1988 and 1989 to obtain consensus among 46 members of American Philosophical Association.
- ❖ Dr. Peter Facione then constructed a 34 item multiple choice test (2 forms) published in 1990.
- ❖ Updated versions made in 1992.

# California Critical Thinking Skills Test

- User receives packets of test booklets, a test manual with answer keys and consultation, technical support and research information.
- Consists of situational content including neutral and controversial general topics.
- Three subtests and subscores.
  - Analysis
  - Evaluation
  - Inference
- Subscores not reliable for individuals.

# California Critical Thinking Skills Test

## CCTST Subtest Components

### 1) Analysis:

A prime cognitive component when we categorize, determine significance, interpret meaning, detect possible inferential relationships, or identify component elements.

# California Critical Thinking Skills Test

## CCTST Subtest Components

### 2) Evaluation:

A prime cognitive component when we assess the credibility of someone's statements: assess the strength of arguments, express the results of our reasoning, or justify reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations.

# California Critical Thinking Skills Test

## CCTST Subtest Components

### **3) Inference:**

A primary cognitive component when we bring together all the various elements needed to draw reasonable conclusions such as when we form conjectures and hypotheses, deduce possible consequences, query a data base, conjecture alternatives, and draw conclusions.

# Cornell Critical Thinking Test

- ❖ Outcome of the doctoral work of Robert Ennis in the 1950's
- ❖ A 2nd edition of two forms was published in 1971 and a 3rd edition was published in 1985
- ❖ Packet of test booklets and machine-readable answer sheets, a 30-page manual containing a scoring key and norms for various groups tested through the 1980's

# Cornell Critical Thinking Test

- ❖ Level Z recommended for college use.
- ❖ Instructions given for a time 50-minute administration.
- ❖ No support given for scoring or analysis of results.
- ❖ Scoring uses the formula: number correct minus one-half the number wrong.

# Cornell Critical Thinking Test

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“Critical thinking is the process of reasonably deciding what to believe and do.”

# Cornell Critical Thinking Test

Critical Thinking may involve up to three types of inferences:

- ✓ induction,
- ✓ deduction, and/or
- ✓ evaluation.

# Cornell Critical Thinking Test

- There are four types of bases for such inferences:
  - the results of other inferences;
  - observations;
  - statements made by others;
  - and assumptions.
- Meaning and context permeate how one uses with three types of inferences and four types of bases.
- There is considerable overlap and interdependence among aspects of critical thinking.”

# Cornell Critical Thinking Test

- Meaning and context permeate how one uses with three types of inferences and four types of bases.
- There is considerable overlap and interdependence among aspects of critical thinking.
- Covers traditional subject matter plus descriptions of science experiments.

# Cornell Critical Thinking Test

## Five Subscores in the Level Z CCTT Test

1. **Deduction:** Determining whether a proposed conclusion follows necessarily from the statements given, contradicts them, or neither.
2. **Induction:** Judging a hypothesis on its ability to explain facts, by the inconsistency of competitors with the facts, by its not being itself inconsistent with the facts, and by its plausibility.
3. **Observation and Credibility:** Determining the believability of statement related to other information.
4. **Semantics and Meaning:** Identifying reasons underlying faulty thinking; recognizing intended meanings based on word usage.
5. **Assumptions:** Identifying probable unstated assumptions inherent in various statements.

# Watson-Glaser Critical Thinking Appraisal

- Development began in the 1930's with the first form published in 1942.
- Original test expanded in 1964 to include 2 forms and given its current name.
- Latest forms published in 1980.
- User receives: packets of test booklets, hand- or machine-scoreable answer sheets, a key and examinee record form and 16-page manual.
- Instructions given for either timed (40 min) or un-timed administration.
- Norms are limited (and out of date).
- Little support provided to produce individual score reports or statistical analysis of results.

# Watson-Glaser Critical Thinking Appraisal

“Critical thinking is a composite of attitudes, knowledge and skills including:

- 1) attitudes of inquiry that involve an ability to recognize the existence of problems and an acceptance of the general need for evidence in support of what is asserted to be true;
- 2) knowledge of the nature of valid inferences, abstractions, and generalizations in which the weight or accuracy of different kinds of evidence are logically determined; and
- 3) skills in employing and applying the above attitudes and knowledge.”

# Watson-Glaser Critical Thinking Appraisal

- ❖ Consists of some neutral content (e.g., weather and facts) and some controversial content (e.g. social, economic, and political topics).
- ❖ 80 multiple-choice items divided into the following five subscales.
- ❖ *Subscores not reliable for individuals, but subscore means for groups do allow some diagnostic interpretation.*

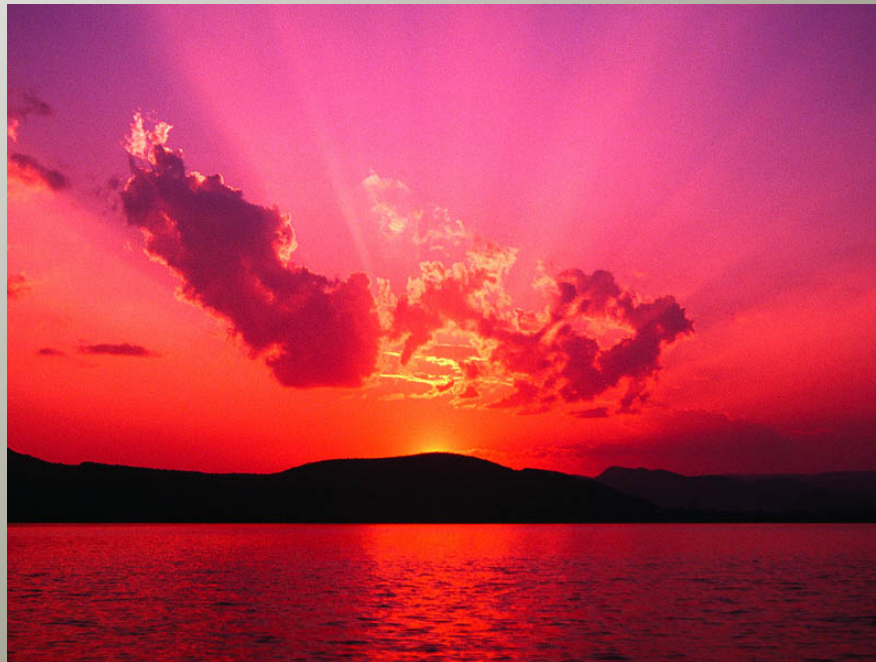
# Watson-Glaser Critical Thinking Appraisal

## • Five Subscores of the Watson-Glaser Test:

1. **Inference:** Discriminating among degrees of truth or falsity of inferences drawn from given data.
2. **Recognition of Assumptions:** Recognizing unstated assumptions or presuppositions in given statements or assertions.
3. **Deduction:** Determining whether certain conclusions necessarily follow from information in given statements or assertions.
4. **Interpretation:** Weighing evidence and deciding if generalizations or conclusions based on given data are warranted.
5. **Evaluation of Arguments:** Distinguishing between arguments that are strong and relevant and those that are weak and irrelevant to a particular question at issue.

# Type “B” Problem Solving Instruments

- o Ennis-Weir Critical Thinking Essay Test
- o ETS Tasks in Critical Thinking



# Type “B” Instrument Features

- ❖ There may be many acceptable answers or no clear-cut resolution to the problem.
- ❖ Tasks represent complex, ill-defined problems that call for information across several disciplines.
- ❖ Tasks tend to have a real world context rather than academic or classroom focus.
- ❖ Tasks require integration and application of sets of skills involving transfer to novel or unfamiliar contexts.

# Type “B” Features continued...

- ❖ Tasks call for substantial definition and clarification by respondent, addressing more of the components of the entire problem-solving process
- ❖ Tasks demand a degree of invention, creative thinking, and originality to construct a satisfactory solution or reach a chosen goal
- ❖ Tasks require taking into account other people’s perspectives, and sometimes are more effectively addressed by interacting with others or working in teams rather than alone

# Ennis-Weir Critical Thinking Essay Test

- First published in 1985
- Test based on a definition of that critical thinking is:
  - **“Reasonable and reflective thinking ...is focused upon deciding what to believe or do.”**
- Test relies on “real life” context, such as a letter to a newspaper editor arguing for elimination of overnight parking on city streets.
- In the letter to the editor example, the respondent not only shows his/her ability to make evaluative judgments about each of the letter’s paragraphs but also is asked to formulate responses and defend them logically.

## Ennis-Weir Critical Thinking Essay Test

- ❖ Points are awarded for argument analysis that recognizes and judges specific strengths and weakness in the original argument presented to respondents, and for adequately defending their judgments.
- ❖ The user receives a copy of the test and directions which can be reproduced for classroom use.
- ❖ Test manual provides criteria for analyzing and scoring responses, but is much ambiguity here.
- ❖ Users must establish their own conventions for interpreting and applying the scales.

# ETS Tasks in Critical Thinking

- ❖ Developed as the General Intellectual Skills Test for the NJ Dept. of Higher Education by ETS and College Board in 1988
- ❖ Is a performance-based assessment of critical thinking
- ❖ Measure the ability to use the skills of Inquiry, Analysis, and Communication
- ❖ Each student completes one task in 90 minutes by responding in writing to open-ended questions
- ❖ 8-10 short answer responses to each task
- ❖ Tasks are distributed to groups of students sequentially (Task A, Task B, Task C, etc.) so Tasks are randomly dispersed throughout the group being tested.

# ETS Tasks in Critical Thinking

- Tasks scored locally following the method designed by the Educational Testing Service..
- Results reported as percentage of group of students tested performing at different proficiency levels (range of 1-6 with 4 as the core score).
- Scoring at sub-skill level, depending upon problem and different applications required.

# ETS Tasks in Critical Thinking

- Skills assessed with total group:
  - **Inquiry**
    - Plan a search;
    - Use various methods of observation and discovery;
    - Comprehend and extract;
    - Sort and evaluate.
  - **Analysis**
    - ✓ Formulate hypotheses and strategies;
    - ✓ Apply techniques, rules, and models to solve problems;
    - ✓ Demonstrate breadth, flexibility, and creativity;
    - ✓ Evaluate assumptions, evidence, and reasoning.

# ETS Tasks in Critical Thinking

- Skills assessed with total group (con't.):
  - **Communication**
    - ✓ Organize the presentation
    - ✓ Writing effectively
    - ✓ Communicate quantitative or visual information
- Tasks provide feedback only on a group basis. There is no individual student feedback.

# King's College - Wilkes Barre, PA

- ❖ Critical thinking totally integrated into the curriculum!
- ❖ Carnegie Classification: Baccalaureate II
- ❖ Affiliation: Roman Catholic
- ❖ Enrollment: 2,222
- ❖ Highest Offering: Master's Degree
- ❖ Programs: Liberal Arts & General, Teacher Preparatory, Professional

# At Kings College, Liberal Learning Seeks:

- to develop in students the fundamental thinking and communication skills required of every educated person;
- to convey to students knowledge of the humanities, social sciences, and natural sciences;
- to give students an understanding of how the various disciplines differ, how they are related and how their distinct perspectives enrich our lives;
- to cultivate students' capacity and desire for independent and continuing learning.

<http://www.kings.edu/coursecatalog/curriculum/assessment.htm>

# Critical Thinking at Kings College

- Thoroughly integrated into the curriculum
  - ✓ Foundational Course (Critical Thinking 101)
  - ✓ Core Courses
  - ✓ The Major
- Critical Thinking expectations increase at each level:
  - ✓ Freshman
  - ✓ Sophomore
  - ✓ Junior
  - ✓ Senior



# Kings College Core Curriculum

- Deliberately and systematically develops the following capacities of liberal learning:
  - Critical Thinking
  - Effective Writing
  - Effective Oral Communication
  - Library and Information Literacy
  - Computer Competence
  - Creative Thinking and Problem Solving
  - Quantitative Reasoning
  - Moral Reasoning



<http://www.kings.edu/coursecatalog/curriculum/assessment.htm>

# Critical Thinking 100 (required) at Kings College

- The central tool of education is clear thinking. Whatever the discipline,...in the presentation of any viewpoint or idea, it is essential to have good reasons for one's beliefs and to support one's views with sound arguments....
- This course focuses on the process by which one develops and supports one's beliefs with clear, unambiguous arguments and evaluates the strength of the arguments of others in real-life situations.
- It includes practice in inductive and deductive reasoning, presentation of arguments in oral and written form, and analysis of the use of language to influence thought.
- It applies the reasoning process in fields such as business, law, science, and the arts.

# Critical Thinking 100 at Kings College: Course Objectives

1. to distinguish an argument from a set of claims which are not inferentially related;
2. to distinguish the functions of language to express and influence meaning;
3. to distinguish the kinds and purposes of definitions;
4. to distinguish between validity and soundness, as they are related to deductive argument, and to evaluate inductive and rhetorical arguments;
5. to recognize common fallacies in everyday reasoning
6. to recognize and assess reasoning in various fields: business, law, science, the arts, etc.;
7. to present arguments effectively in oral and written form.

# Critical Thinking 100 at Kings College: The course purposes are to develop:

- The habit of making reasonable, rationally defensible choices;
- the habit of assessing and defending the reasonableness of one's beliefs and values;
- an appreciation of the vital role critical thinking plays in decision-making, both private and public;
- an appreciation of the importance of looking at an issue from a variety of points of view and of recognizing the complexity that surrounds most controversial issues;
- an understanding that policy decisions are based on both logical reasoning and explicit value judgments;
- appreciation of the power of human reason and a recognition of its limitations.

# Critical Thinking 100 at Kings College: Course Outline

- I. The Nature of Argument
- II. Language and Argument
- III. Assessing Premises of Arguments
- IV. Determining the Relevance of Premises to the Conclusion
- V. Deductive Reasoning
- VI. Inductive Reasoning
- VII. Fallacies
- VIII. Reasoning in Various Fields of Study
- IX. Analyzing Extended Arguments in Natural Language
- X. Writing the Argumentative Essay

## What faculty thought were important for all graduates: University of Vermont

- Communication skills
  - ✓ written communication
  - ✓ oral communication
- Computer skills
- Quantitative skills
- Critical thinking skills
- Management skills



from the 3/4/98 draft of the CALS Curriculum report

# What students thought were important for all graduates: University of Vermont

- Critical thinking and problem solving skills
- Writing skills (above current standards)
- Speaking skills
- Information literacy skills
- Math and data analysis skills
- Skills for working in a diverse/multicultural society
- Practical experience, service learning, internships



from Provost Gamble's meeting with the Academic Affairs Council, UVM Student Government

# Critical Thinking at Indiana University, School of Nursing

## ❖ Skills and Competencies

- ✓ Evaluates decisions.
- ✓ Presents reasoned arguments.
- ✓ Guides own thinking processes.
- ✓ Applies previous & current knowledge to new contexts and situations.
- ✓ Analyzes arguments for validity.
- ✓ Critiques professional & research literature for meaningfulness.
- ✓ Examines multiple potential explanations.



# Critical Thinking at Indiana University, School of Nursing

## ❖ Curricular strategies

- ❖ Large and small group discussions, debates, research critiques, presentations, applied practicum experiences,
- ❖ Required courses to promote critical thinking, critical thinking workshops for students.



# Critical Thinking at Indiana University, School of Nursing

## ❖ Assessment Measures

- ✓ California Critical Thinking Inventory;
- ✓ 8/97 piloted the NET (Nurse Entrance Test) from Educational Resources to replace CCTI (discontinued 1/99);
- ✓ Alumni survey;
- ✓ Clinical evaluation tools .



# Critical Thinking at Indiana University, School of Nursing

## ❖ Findings

- Critical thinking abilities do not show substantial change from entrance to exist.
- Students overall ability to think critically is mediocre.
- Findings of the NET indicated that this measure was not sensitive enough to capture the range of critical thinking behaviors identified.
- 90% of alumni believed they were prepared to think critically.

# Critical Thinking at Indiana University, School of Nursing

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## ❖ Changes Made

- ✓ Incorporate more strategies that promote critical thinking in all courses in the major.
- ✓ Explore other means of measuring critical thinking as the CCTI appears to lack construct validity.
- ✓ Currently looking at assessment measures across courses.

## Step #3: Sample Educational Objectives: *Human Resource Management.*

- ❖ Objective #4: critical thinking and quantitative reasoning.
  - The student will design, conduct, and statistically analyze data to solve problems encountered by human resources professionals. The student will substantiate conclusions and implications generated by such research.
- ❖ Objective #5: valuing and critical thinking.
  - The student will identify and present the implications of various ethical and legal decisions facing human resources professionals. The student will substantiate his/her point of view with credible reasoning.

# Assessing Critical Thinking: Some Final Thoughts

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- **Determine what you are assessing (set criteria) prior to selecting instruments.**
- **Use tools, such as the NCTLA Goals Inventories, to set criteria.**
- **Map the General Education Curriculum for Critical Thinking skills, highlighting pathways to student success.**

# Assessing Critical Thinking: Some Final Thoughts

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- **Make Critical Thinking Classes intensive, engaging, student assignment centered courses.**
- **Monitor time spent on the development of Critical Thinking Skills through course evaluations.**
- **Renew faculty commitment to critical thinking through faculty development, course development, and program development.**

# Thank you!

- ▼ For further information on Assessment, Critical Thinking and Curricular Design, please contact:

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