Teaching and Assessing for Thinking in Our Classrooms and Programs

De Anza College
SLO Convocation Day
April 27, 2012

Carol Gittens, PhD
Santa Clara University

Goals for the Session

- **Expand your repertoire of classroom, program, and institution level critical thinking assessment strategies**

- **Engage and Affirm your critical thinking skills and positive critical thinking habits of mind**

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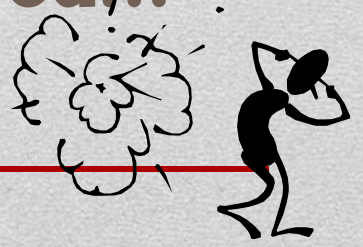
Challenging a Few Myths

- **CT is what you learn at school (but it doesn't apply to real life).**
- **Critical thinking *naturally improves* just from being in college.**
- **Nobody knows what "critical thinking" means.**
- **Whatever it is, CT can't be measured…**



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Failures of critical thinking contribute to…

patient deaths * lost revenue * ineffective law enforcement * job loss * gullible voters * garbled communications * imprisonment * combat casualties * upside down mortgages * vehicular homicide * bad decisions * unplanned pregnancies * financial mismanagement * heart disease * family violence * repeated suicide attempts * divorce * drug addiction * academic failure * … * … *

WHAT WERE WE THINKING?

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Novel Question in contexts of uncertainty, risk

Human Reflective Response Time

Tick
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Tick
Tick
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Tick
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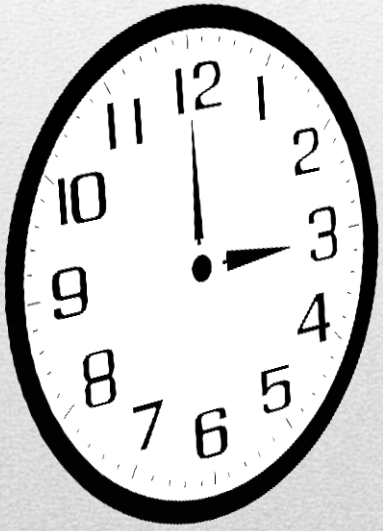
Tick



Humans need 11 - 16 seconds to process a novel question.

What does this mean for a student faced with an novel question in a classroom, field, or testing setting?

And what should the instructor, supervisor or assessor do?

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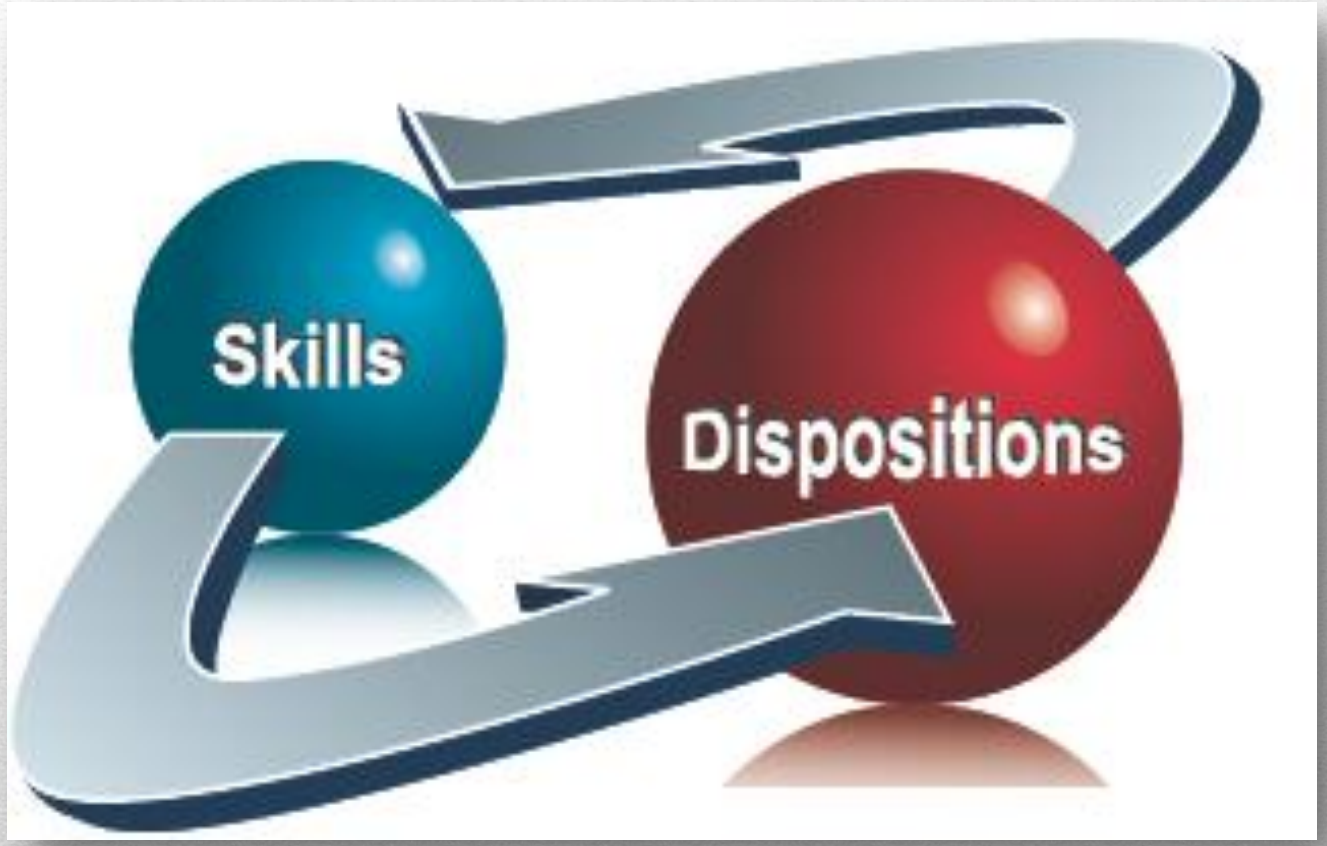

Arts & Humanities

Natural Sciences

Social Sciences

Professional Disciplines

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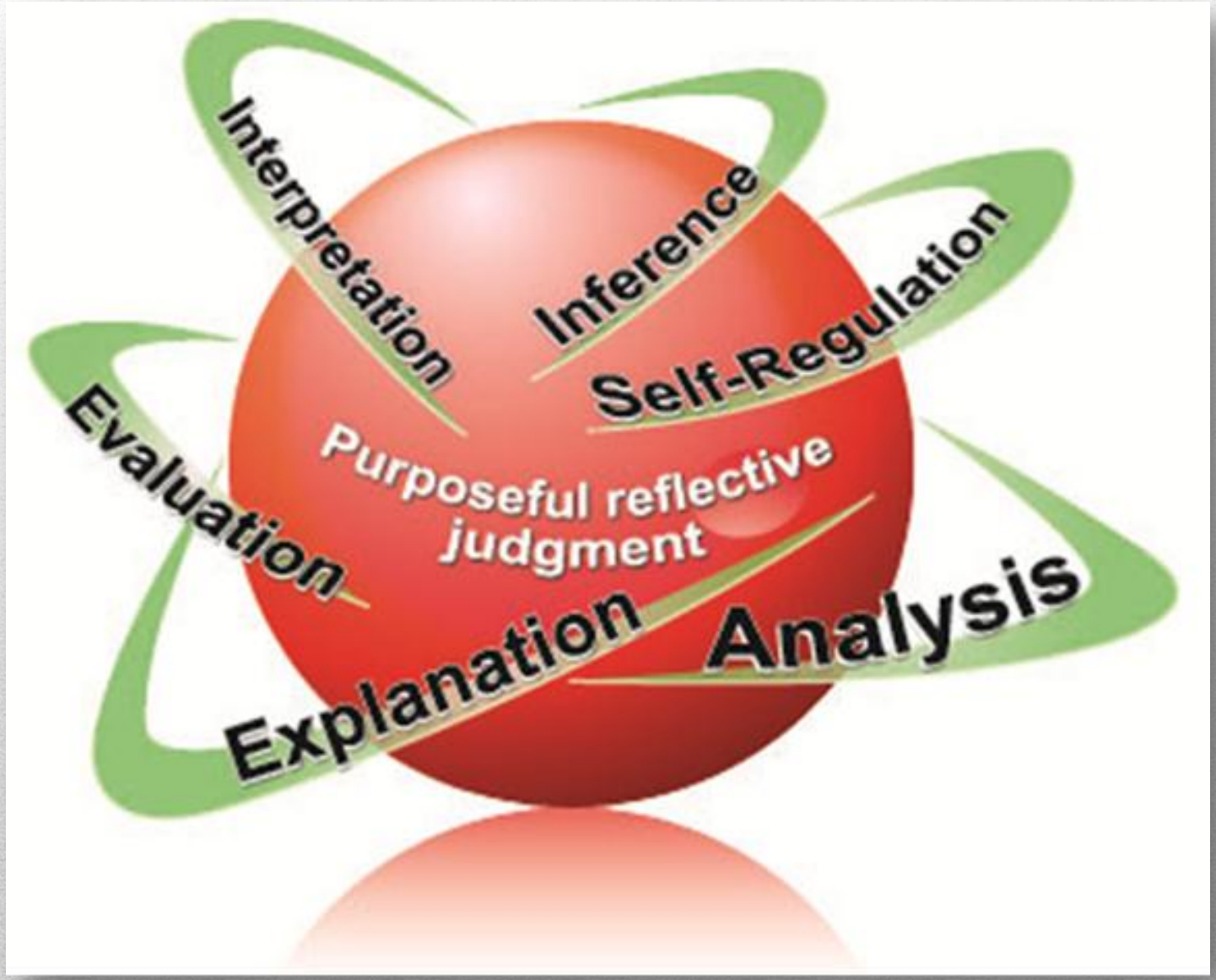

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Three Basic Options for Measuring Learning Outcomes

1. Rubrics and Rating Tools

Qualitative Rating Forms, Typological Matches, Checklists

Require practiced judgment and inter-rater calibration

Adaptable to performance and written data

2. Performance Assessments

Tests, Essays, Lab Reports, Case Studies

Embedded / Authentic / Commercial

Baseline / Cross-Sectional / Longitudinal

Potential for comparisons & data integration

3. Self Reports

Journals, Self Critiques, Focus Groups, Questionnaires

Insights about personal progress and deficiency

Require significant resources for data analysis

Are we consistently getting a valid and reliable measure of the phenomenon we intended to target?

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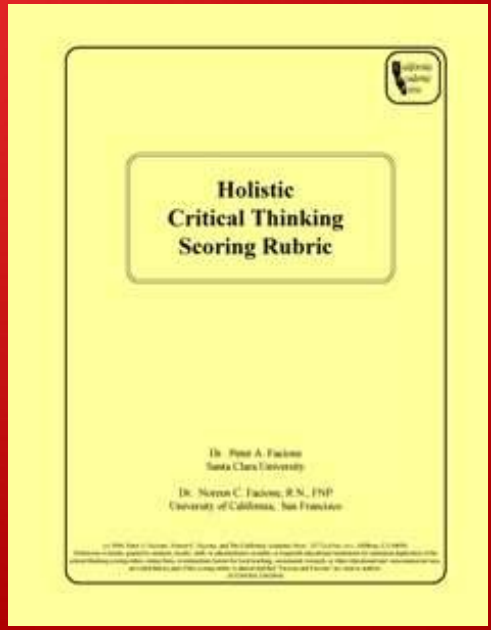
Teaching and Assessment Tool Scoring Rubrics

Describe three or four levels of performance

Excellent/Strong	= 4
Adequate/Satisfactory	= 3
Deficient	= 2
Truly Weak	= 1

Holistic Critical Thinking Scoring Rubric (HCTSR)



Share a scoring rubric from day-1

to establish expectations

to make "critical thinking" operational for students

The Holistic Critical Thinking Scoring Rubric

A Tool for Developing and Evaluating Critical Thinking

Peter A. Facione, Ph.D., and Noreen C. Facione, Ph.D.

Strong 4. Consistently does all or almost all of the following:

- Accurately interprets evidence, statements, graphics, questions, etc.
- Identifies the salient arguments (reasons and claims) pro and con.
- Thoughtfully analyzes and evaluates major alternative points of view.
- Draws warranted, judicious, non-fallacious conclusions.
- Justifies key results and procedures, explains assumptions and reasons.
- Fair-mindedly follows where evidence and reasons lead.

Acceptable 3. Does most or many of the following:

- Accurately interprets evidence, statements, graphics, questions, etc.
- Identifies relevant arguments (reasons and claims) pro and con.
- Offers analyses and evaluations of obvious alternative points of view.
- Draws warranted, non-fallacious conclusions.
- Justifies some results or procedures, explains reasons.
- Fair-mindedly follows where evidence and reasons lead.

Unacceptable 2. Does most or many of the following:

- Misinterprets evidence, statements, graphics, questions, etc.
- Fails to identify strong, relevant counterarguments.
- Ignores or superficially evaluates obvious alternative points of view.
- Draws unwarranted or fallacious conclusions.
- Justifies few results or procedures, seldom explains reasons.
- Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions.

Weak 1. Consistently does all or almost all of the following:

- Offers biased interpretations of evidence, statements, graphics, questions, information, or the points of view of others.
- Fails to identify or hastily dismisses strong, relevant counterarguments.
- Ignores or superficially evaluates obvious alternative points of view.
- Argues using fallacious or irrelevant reasons and unwarranted claims.
- Does not justify results or procedures, nor explain reasons.
- Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions.
- Exhibits close-mindedness or hostility to reason.

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4= Strong

Consistently does all or almost all of the following:

- Accurately interprets evidence, statements, graphics, questions, etc.
- Identifies the salient arguments (reasons and claims) pro and con.
- Thoughtfully analyzes and evaluates major alternative points of view.
- Draws warranted, judicious, non-fallacious conclusions.
- Justifies key results and procedures, explains assumptions and reasons.
- Fair-mindedly follows where evidence and reasons lead.

HCTSR: Download free at:

www.InsightAssessment.com

Measuring Critical Thinking Worldwide

Rubric for Evaluating Written Argumentation

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	Highly Developed	Developed	Underdeveloped	Substandard
Purpose and Focus	The writer has made insightful and mature decisions about focus, organization, and content to communicate clearly and effectively. The purpose and focus of the writing are clear to the reader and th content are w ticated, and/c	The writer has made good decisions about focus, organization, and content to communicate clearly and effectively. The purpose and focus of the writing are clear	The writer's decisions about focus, organization, or content sometimes interfere with clear, effective communication. The purpose of the writing is	The writer's decisions about focus, organization, or content interfere with communication. The purpose of the writing is not achieved.
Depth of Thought	The informati veals the writ and understa rial. The write aware of impl the immediat			resented 's lack d under- aterial. rtions lack plications diate
Thesis	Has a highly de assertion that p direction to the to support, ext not substitute f development o			cognizable lacks s.
Reasoning	Substantial a development assumptions Credible evid and accurate fair-mindedly plays strong skills and habits of mind (See *Holistic Critical Thinking Scoring Rubric*.)			underde- s, circular, ments. In- ions, faulty l errors, s, etc. *cal Think- ing Scoring Rubric*.)

Purpose and Focus
Depth of Though
Thesis
Reasoning
Organization
Voice
Grammar and Vocabulary
Mechanics of Presentation

Critical Thinking Tests

Two people in bathing suits and cotton T-shirts are enjoying a beautifully sunny day at the beach. One person, concerned about the skin cancer risks from too much exposure to direct sunlight, goes to sit in the shade under a beach umbrella. The other stays sitting in the sun saying, "It's too late to sit under an umbrella, we've been in the sun for an hour already, so the umbrella will do me no good." What would be the best evaluation of this person's reason?

A. Poor reason. Because the umbrella's shade does not reduce the cancer risks anyway.
B. Poor reason. Sitting in the shade of the umbrella should limit any further damage.
C. Good reason. The cooler shade will repair the damage already done by the sun.
D. Good reason. The cancer risk of sunlight has been exaggerated by the media.

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How would you analyze these data?
This diagram, this essay, this dance?
What can we infer from this?

"Explain why you think that …

"How did you decide …
"What are your reasons for…
"What methods did you use to…
"What if we assumed …
"What is our evidence for …

Direct questions evoke CT skills

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Critical Thinking Reflective Log: Strong or Weak, and Why?

W2: Why do you think that? ASK: Another student, not in this course
W3: Seriously, how good is the evidence for that? ASK: Anyone, not yourself
W4: What else did you consider? ASK: Someone who has completed college
W5: Exactly why do you say that's the problem? ASK: Your best friend
W6: What does making this decision imply? ASK: Yourself
W7: How sound is the reason they're giving? ASK: Yourself, relative to TV commercial
W8: What's really the problem here? ASK: A professor
W9: What evidence would disconfirm our view? ASK: Someone who agrees with you.
W10: What did I learn about my own thinking? ASK: Yourself

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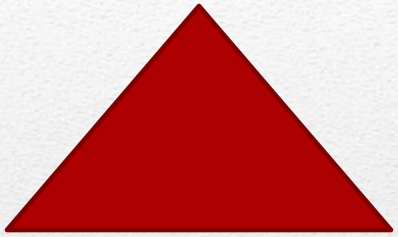
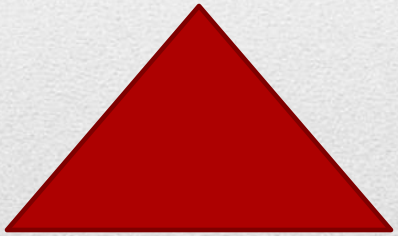
Thoughts on valid and reliable methods to demonstrate gains on desired outcomes

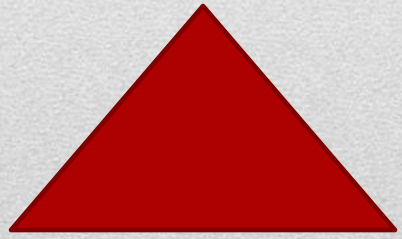


Invest in tool design and planning

Correct calibration and clear interpretation



Use local talent and good data



Attention to design is needed

Student motivation and timing

Assessing Critical Thinking

- Do assessments engage students in one or more critical thinking skills?
- Do assessments elicit students' critical thinking habits of mind?
- Are there opportunities to evaluate students' independent critical thinking and their thinking in groups?
- Are there a sufficient number of assessments that will be reviewed and returned to students so that they receive frequent feedback on their performances?
- What benchmarking data will be used for CT assessments at the course, program, and institutional levels?
- How will assessment results be shared to the campus community and used for systematic program enhancements / improvements?

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Ten Ways to Teach and Assess *for* Thinking

1. Explain the utility of thinking for life and learning
2. Allow students *time to think*
3. Use thinking skill verbs
4. Model positive CT habits of mind
5. Begin with examples, then move toward theories
6. Demand *good* reasons and *solid* evidence
7. Use engaging, realistic issues, cases & problems
8. Elicit *reflective* judgments, not snap answers
9. Teach disciplined decision making
10. Set the bar high – train and grade for thinking

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Give voice to our shared language for fair-minded, reflective thinking

- Use Powerful Critical Thinking Skills:
  - *Interpret* the data display
  - *Analyze* and *explain* what you find
  - What can we *infer* from these data?
  - *Evaluate* the inference we just drew
  - *Rethink* a judgment in light of new facts

- Call Forth Positive CT Habits of Mind:
  - Go ahead, Ask. Have courage and seek truth
  - Follow the data and reasons wherever they lead
  - Keep an open-mind about what others have to say
  - Proceed systematically, don't jump to conclusions
  - Don't lock yourself in – be ready to reconsider when conditions change

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Why Teach and Assess for Critical Thinking?

In education measure what you value because you get what you measure.

Critical thinking – purposeful reflective judgment - is the key to academic success, a necessary element in every professional endeavor, and a central factor in individual and communal adaptation and survival.

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Questions & Comments?

Carol Ann Gittens
cgittens@scu.edu
(408) 551-1855
http://www.scu.edu/assessment