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
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...
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?
Novel Question in contexts of uncertainty, risk

Human Reflective Response Time

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
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?
Teaching and Assessment Tool
Scoring Rubrics

Describe three or four levels of performance

<table>
<thead>
<tr>
<th>Level of Performance</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>Excellent/Strong</td>
<td>4</td>
</tr>
<tr>
<td>Adequate/Satisfactory</td>
<td>3</td>
</tr>
<tr>
<td>Deficient</td>
<td>2</td>
</tr>
<tr>
<td>Truly Weak</td>
<td>1</td>
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</tbody>
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www.InsightAssessment.com
Measuring Critical Thinking Worldwide
Share a scoring rubric from day-1 to establish expectations to make “critical thinking” operational for students.
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
<table>
<thead>
<tr>
<th>Rubric for Evaluating Written Argumentation</th>
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<td><a href="http://www.measuredreasons.com">www.measuredreasons.com</a></td>
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<table>
<thead>
<tr>
<th></th>
<th>Highly Developed</th>
<th>Developed</th>
<th>Underdeveloped</th>
<th>Substandard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose and Focus</strong></td>
<td>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 the intended audience. The writer avoids unnecessary content and ensures that the purpose and content are well-organized and easy to follow.</td>
<td></td>
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<tr>
<td></td>
<td>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 to the reader and the intended audience. The writer avoids unnecessary content and ensures that the purpose and content are well-organized and easy to follow.</td>
<td></td>
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<td></td>
<td>The writer’s decisions about focus, organization, and content sometimes interfere with effective communication. The purpose of the writing is not always clear to the reader and the intended audience. The writer may include unnecessary content and fails to organize the purpose and content effectively.</td>
<td></td>
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<tr>
<td></td>
<td>The writer’s decisions about focus, organization, or content interfere with communication. The purpose of the writing is not achieved.</td>
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</tbody>
</table>

| **Depth of Though**   | The information presented in the writing reveals the writer's ability to think critically and understand complex ideas. The writer is aware of implications both for the immediate and for related issues. |
|                      | The writer’s ideas are presented in a way that reveals the writer’s ability to think critically and understand complex ideas. The writer is aware of implications both for the immediate and for related issues. |
|                      | The writer’s ideas lack clarity and understanding of complex ideas. The writer’s arguments lack coherence and logical development. |
|                      | The writer’s ideas lack clarity and understanding of complex ideas. The writer’s arguments lack coherence and logical development. |

| **Thesis**            | Has a highly developed thesis that is clearly stated, supported, and developed in the body of the writing. The thesis is relevant and supported by evidence. |
|                      | Has a developed thesis that is clearly stated, supported, and developed in the body of the writing. The thesis is relevant and supported by evidence. |
|                      | Has a weak thesis that is not clearly stated, supported, or developed in the body of the writing. The thesis is not relevant or is not supported by evidence. |
|                      | Has an undeveloped thesis that is not clearly stated, supported, or developed in the body of the writing. The thesis is not relevant or is not supported by evidence. |

| **Reasoning**         | Substantial analysis and development of ideas that support the thesis. Credible evidence and logical arguments are provided. The writer demonstrates an understanding of the subject and employs strong critical thinking skills. |
|                      | Substantial analysis and development of ideas that support the thesis. Credible evidence and logical arguments are provided. The writer demonstrates an understanding of the subject and employs strong critical thinking skills. |
|                      | Limited analysis and development of ideas that support the thesis. Credible evidence and logical arguments are not provided. The writer demonstrates a limited understanding of the subject and employs weak critical thinking skills. |
|                      | No analysis or development of ideas that support the thesis. Credible evidence and logical arguments are not provided. The writer demonstrates a limited understanding of the subject and employs weak critical thinking skills. |

| **Voice**             | The writer’s voice is clear, consistent, and engaging. The writer’s tone is appropriate to the audience and purpose of the writing. |
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| **Grammar and Vocabulary** | The writing is free of errors and demonstrates a broad and sophisticated vocabulary. The writer's sentences are well-constructed and flows smoothly. |
|                           | The writing contains few errors and demonstrates a moderately sophisticated vocabulary. The writer's sentences are generally well-constructed and flow smoothly. |
|                           | The writing contains numerous errors and demonstrates a limited vocabulary. The writer's sentences are poorly constructed and flow awkwardly. |
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| **Mechanics of Presentation** | The presentation of the writing is clear and professional. The writer uses appropriate formatting, punctuation, and capitalization. |
|                              | The presentation of the writing is clear and professional. The writer uses appropriate formatting, punctuation, and capitalization. |
|                              | The presentation of the writing is unclear and unprofessional. The writer uses inappropriate formatting, punctuation, and capitalization. |
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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.
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
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
W10: What did I learn about my own thinking? ASK: Yourself
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?
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
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.
Questions & Comments?

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