Assessing Critical Thinking in Higher Education
Outline

- What is critical thinking?
- Existing Assessments of Critical Thinking
- Some challenges in developing critical thinking assessment
Critical thinking is ...

one of the most important skills deemed necessary for college graduates

one of the most frequently discussed higher order skills

one of the most frequently mentioned competencies considered essential for both academic and career success
What is the definition of critical thinking?

the most debatable features about critical thinking is ...

its definition
The ways of thinking can be categorized into knowledge, skills, and attitudes/values/ethics. Knowledge includes: (a) reason effectively, use systems thinking, and evaluate evidence; (b) solve problems; and (c) clearly articulate. Skills include: (a) reason effectively and (b) use systems thinking. Attitudes/values/ethics include: (a) make reasoned judgments and decisions, (b) solve problems, and (c) attitudinal disposition (Binkley et al., 2012).
Students completing the first-cycle qualification (e.g., bachelor’s level) “can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study” and “have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues” (Ministry of Science Technology and Innovation, 2005, p. 194)
“Identifies important problems, questions, and issues; analyzes, interprets, and makes judgments of the relevance and quality of information; assesses assumptions and considers alternative perspectives and solutions” (CAS Board of Directors, 2008, p. 2)

Critical thinking “A habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion” (Rhodes, 2010)
More definitions...!!!!
Now is outcome or **utility** based definition. Halpern, 2003

...the use of those cognitive skills or strategies that increase the probability of a desirable outcome.

It is used to describe thinking that is **purposeful**, reasoned, and goal directed—the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions, when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task.
What is the definition of critical thinking?

If you are not fairly confused answering this question you don't understand the issue.
The different definitions of critical thinking are focusing on different aspects of critical thinking.

Some concentrate on the reasoning process specific to critical thinking.

Some concentrate on the outcomes of critical thinking, such as whether it can be used for decision making or problem solving.
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The multivariate nature of the definitions of critical thinking. Existing assessments of critical thinking tend to capture multiple themes:

- Creative problem solving
- Open-mindedness
- Scholarly rigor
- Extending arguments
- Writing effectiveness
California Critical Thinking Disposition Inventory (CCTDI)

(a) truth-seeking, (b) open-mindedness, (c) analyticity, (d) systematicity, (e) confidence in reasoning, (f) inquisitiveness, and (g) maturity of judgment (Facione, Facione, & Sanchez, 1994)
California Critical Thinking Disposition Inventory (CCTDI)

Collegiate Assessment of Academic Proficiency (CAAP) Critical Thinking (ACT)

(a) analyzing an argument,
(b) evaluating an argument
(c) extending arguments

(CAAP Program Management, 2012)
(a) distinguish between rhetoric and argumentation in a piece of nonfiction prose,
(b) recognize assumptions and the best hypothesis to account for information presented,
(c) infer and interpret a relationship between variables,
(d) draw valid conclusions based on information (ETS 2010)
Halpern Critical Thinking Assessment (HCTA)

(a) verbal reasoning skills,
(b) argument and analysis skills,
(c) skills in thinking as hypothesis testing,
(d) using likelihood and uncertainty,
(e) decision-making and problem-solving skills (Halpern, 2010)
Performance Tasks are measuring
(a) analysis and problem solving,
(b) writing effectiveness,
(c) writing mechanics.

Selected Response items are measuring
(a) scientific and quantitative reasoning,
(b) critical reading and evaluation,
(c) critiquing an argument
(Zahner, 2013)
Relationships Between Campus Critical Thinking Definitions and Critical Thinking Tests

<table>
<thead>
<tr>
<th>Campus-Based Definition</th>
<th>Campus %</th>
<th>Proficiency Profile (ETS) % of items</th>
<th>Collegiate Assessment of Academic Proficiency (ACT) % of items</th>
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<td>Problem solving</td>
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Table adopted from Martha L. A. Stassen, Anne Herrington, Laura Henderson, 2011.
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Common challenges in designing critical thinking assessment:

- Authenticity vs. Psychometrics
- Total vs. Subscale Scores
- Instructions vs. Standardized assessment
- General vs. Domain-Specific Assessment
- Institutional Versus vs. Individual Use
¡Gracias!
Thank you!
Merci!
Obrigado!

Mark Zelman
Human Development
The World Bank