

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



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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)



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European Commission:
European Higher
Education Area



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)



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European Commission:
European Higher
Education Area

The Council for the
Advancement of Standards
(CAS) in Education
Association of American
Colleges and Universities



“**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

open-mindedness

creative problem solving

extending arguments

scholarly rigor

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

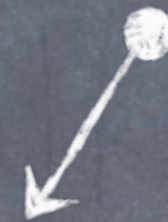
(CAAP Program Management, 2012)



California Critical
Thinking
Disposition
Inventory
(CCTDI)

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

ETS Proficiency
Profile (EPP)
Critical Thinking



- (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)



Halpern Critical Thinking Assessment (HCTA)

Collegiate Learning Assessment+ (CLA+)



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

| Campus-Based Definition | Campus % | Proficiency Profile (ETS) % of items | Collegiate Assessment of Academic Proficiency (ACT) % of items |
|-------------------------|----------|---|---|
| Application | 19 | 0 | 0 |
| Judgment/argument | 15 | 56 | 73 |
| Perspective taking | 14 | 0 | 9 |
| Synthesizing | 12 | 11 | 0 |
| Metacognition | 10 | 0 | 0 |
| Questioning | 8 | 0 | 0 |
| Evidence-based thinking | 6 | 28 | 55 |
| Drawing inferences | 4 | 17 | 27 |
| Problem solving | 4 | 6 | 0 |

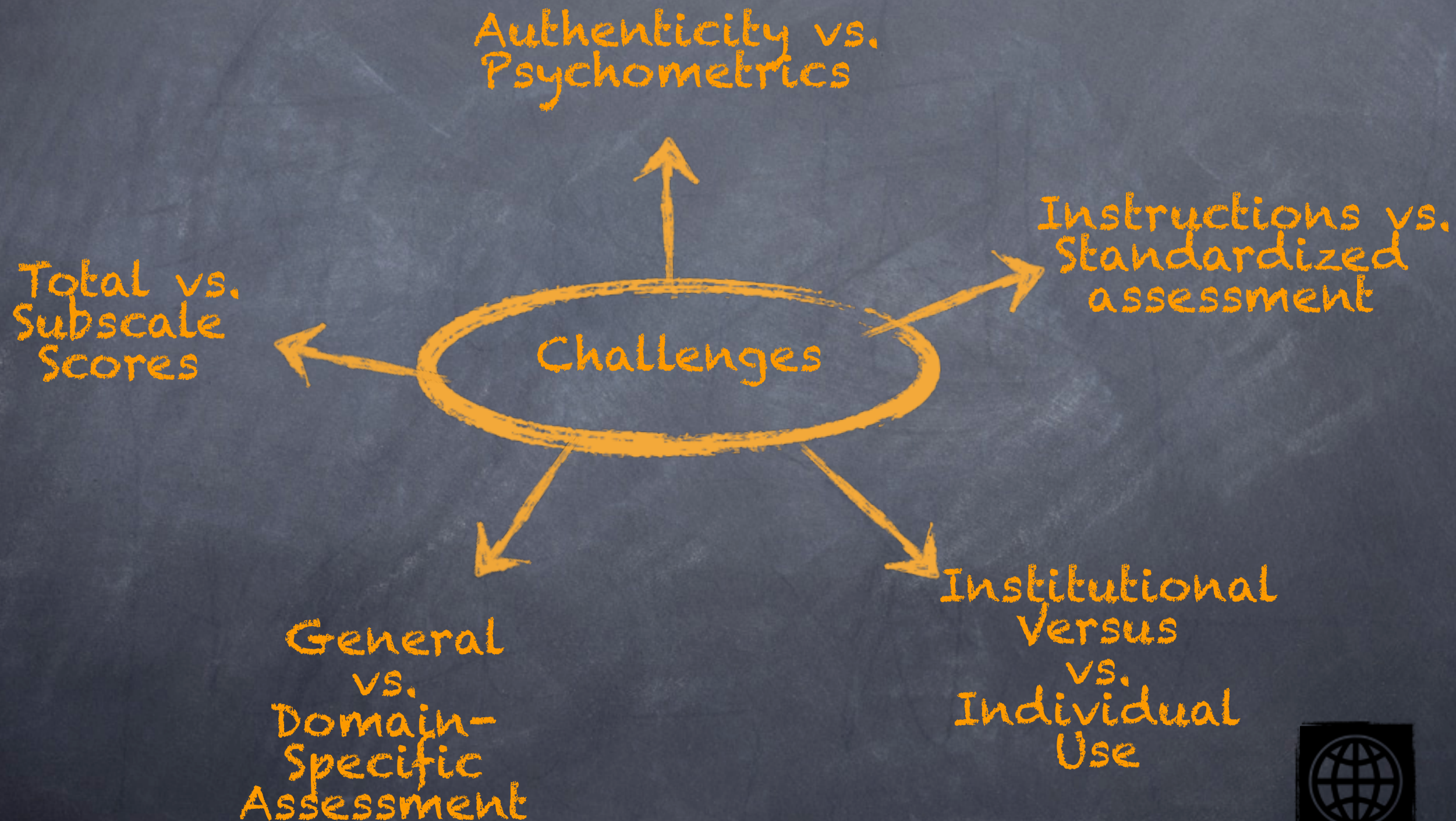
Table adopted from
Martha L. A. Stassen, Anne Herrington, Laura Henderson, 2011.

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Common challenges in Designing Critical Thinking Assessment



¡Gracias!
Thank you!
Merci!
Obrigado!

Mark Zelman

Human Development
The World Bank

