

# Presentations

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# Welcome

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# Chapter 1

## OTESSA22 - Assessment and Digital Technology in Higher Education

### Introduction

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Slides - <https://bit.ly/otessa22-b>

Find me on the web...

Twitter

Mastodon

**Presented Online at OTESSA22, May 17, 2022**

I acknowledge that the land where I currently live and work remains the traditional, ancestral, and unceded land of the **syilx** (silks) people, whose historical stewardship of and connections to the land continue to today. I am grateful to be an uninvited guest on this land. To learn more, please visit the Westbank First Nation website.

### Hypothes.is

If you haven't already, feel free to sign up here as we will use hypothes.is later. Also, if you have questions or comments, please annotate to your heart's content!

### Background

This review is guided by four research questions:



Figure 1.1: Figure 1. Author's bicycle overlooking Okanagan Lake.



1. What are the major themes or patterns in the literature related to approaches to assessment in higher education?
2. What are the major themes or patterns in the literature related to the impact of technology on assessment in higher education?
3. What gaps exist in the literature related to approaches to assessment in technology-mediated higher education?

### **Scriven, 1967**

Scriven, M. (1967). *The methodology of evaluation*. In B. O. Smith (Ed.), *Perspectives of curriculum evaluation*. Rand McNally

- distinction between **formative** and **summative**

### **Bloom, 1968**

Bloom, B. (1968). Learning for Mastery. Instruction and Curriculum. Regional Education Laboratory for the Carolinas and Virginia, Topical Papers and Reprints, Number 1. *Evaluation Comment*, 1(2), 12.

- Incorporated **formative** and **summative** distinction into his ideas about mastery learning

### **Mislevy, 1994**

Mislevy, R. J. (1994). Test theory reconcieved. *ETS Research Report Series*, 1994(1), i-38. <https://doi.org/10/gjm236>

- test theory is machinery for reasoning from students' behavior to conjectures about their competence, as framed in a particular conception of competence."(p. 4).

### **Black and Wiliam, 1998**

Black, P., & Wiliam, D. (1998). Assessment and Classroom Learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7-74. <https://doi.org/10/fpnss4>

- major review of the literature on **formative assessment**
- describe formative assessment as encouraging gains in achievement that were
  - > among the largest ever reported for educational interventions (p. 61)

**Pellegrino et al., 2001**

Pellegrino, J. W., Chudowsky, N., & Glaser, R. (2001). *Knowing What Students Know: The Science and Design of Educational Assessment*. National Academies Press. <https://doi.org/10.17226/10019>

- “a process of drawing reasonable inferences about what students know on the basis of evidence derived from observations of what they say, do, or make in selected situations” (p. 112)
- “reasoning from evidence” (p. 43)

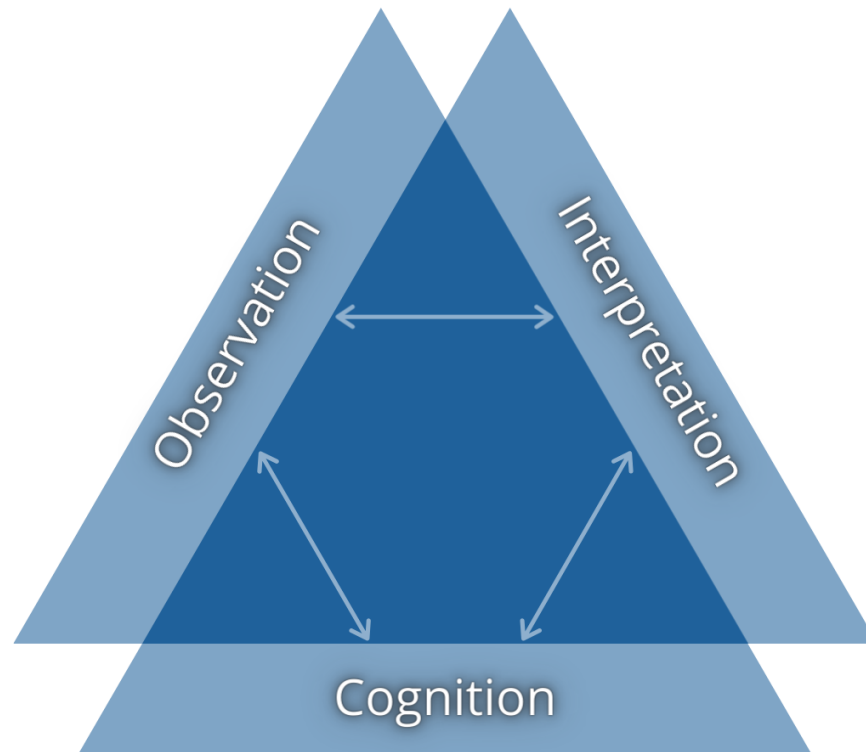


Figure 1.2: Figure 2. Assessment Triangle from Pellegrino et al. (2001)

**Assessment Triangle**

### Cognition

- a cognitive model of the domain

### Observation

- a performance task used to gather data regarding learner achievement

### Interpretation

- an inference or judgement of the learner's achievement in relation to the model of the domain

## Approaches to Learning

### Biggs, 1993

Biggs, J. B. (1993). From Theory to Practice: A Cognitive Systems Approach. *Higher Education Research & Development*, 12(1), 73–85.  
<https://doi.org/10/ccdmd9>

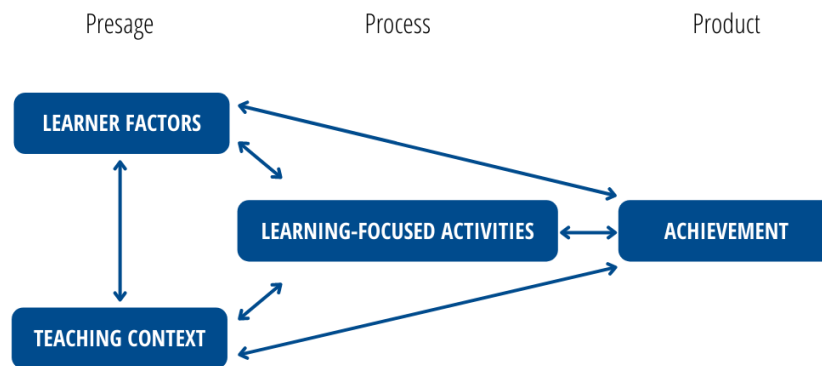


Figure 1.3: Figure 3. 3-P Model of Teaching and Learning adapted from Biggs (1993)

### Presage

- factors that precede learning activities
  - learner factors
    - \* prior knowledge
  - \* educational experience

- \* affective states
- \* wellness (physical & mental)
- teacher factors
  - \* vertical & horizontal discourses (Bernstein, 1999)
- \* institutional policies
- \* department norms
- \* educational experiences

### Process

- learning focused activities
  - reading, writing, discussing, building, creating, synthesizing, researching, sharing, debating, publishing...
- surface approaches
  - using low-level cognitive skills when high-level cognitive skills are required
- deep approaches
  - using high-level cognitive skills for tasks which require them

### Product

- learner achievement of outcomes (intended or emergent)
- fed back into the system
  - informs learners and instructors

## Conceptions of Assessment

### Brown, 1994; 1996

Brown, G. T. L. (2004). Teachers' conceptions of assessment: Implications for policy and professional development. *Assessment in Education: Principles, Policy & Practice*, 11(3), 301–318. <https://doi.org/10.1080/0969594042000304609>

Brown, G. T. L. (2006). Teachers' Conceptions of Assessment: Validation of an Abridged Version. *Psychological Reports*, 99(1), 166–170. <https://doi.org/10/bf67hf>

- general mental structure, encompassing beliefs, meanings, concepts, propositions, rules, mental images, preferences
  - improvement of teaching and learning,

- school accountability,
- student accountability, or
- treating assessment as irrelevant.

### **Fletcher et al., 2012**

Fletcher, R. B., Meyer, L. H., Anderson, H., Johnston, P., & Rees, M. (2012). Faculty and Students Conceptions of Assessment in Higher Education. *Higher Education*, 64(1), 119–133. <https://doi.org/10.1007/s11218-012-9200-0>

- instructors were more likely than learners to view assessment as consistent and trustworthy methods to understand and improve learning
- learners were more likely to have negative views of assessment and viewed it as a measure of student and institutional accountability.

### **Earl, 2013**

Earl, L. M. (2013). *Assessment as learning: Using classroom assessment to maximize student learning (Second edition)*. Corwin Press.

- Assessment *OF* Learning
  - summative
- Assessment *FOR* Learning
  - formative
- Assessment *AS* Learning
  - metacognitive

## **Approaches to Assessment**

Both learning and assessment are complex phenomena which are impacted by myriad factors.

### **Shepard (2000)**

Shepard, L. A. (2000). The Role of Assessment in a Learning Culture. *Educational Researcher*, 29(7), 4–14. <https://doi.org/10.3102/0013164400029007>

- traditional assessment structures originated in behaviourist models of teaching and learning
  - emphasis on culture of summative assessment
- modern constructivist models of teaching and learning are less compatible with previous assessment structures, yet a culture that emphasizes summative assessment seems to persist alongside emerging models of assessment

**DeLuca, 2016**

DeLuca, C., LaPointe-McEwan, D., & Luhanga, U. (2016). Approaches to classroom assessment inventory: A new instrument to support teacher assessment literacy. *Educational Assessment*, 21, 248–266. <https://doi.org/10/gfgtsg>

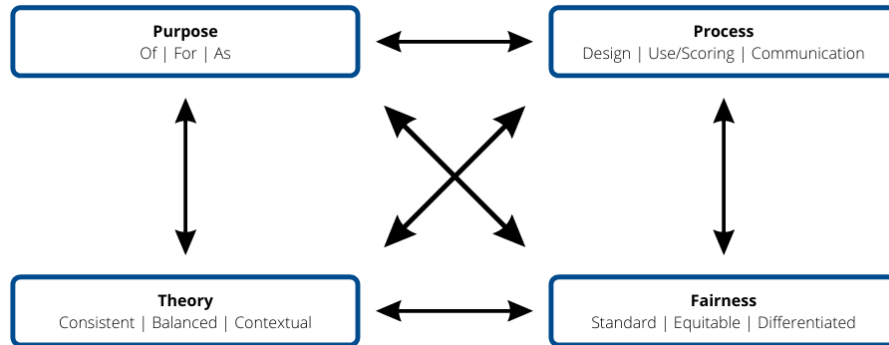


Figure 1.4: Figure 4. Approaches to Classroom Assessment from DeLuca et al. (2016)

- *Approaches to Classroom Assessment Inventory*
  - designed to inventory K12 teachers' thoughts, beliefs, actions related to assessment
    - \* Assessment purpose (of, for, as learning)
    - \* Assessment process (design, use/scoring, communication)
    - \* Assessment fairness (standard, equitable, differentiated)
    - \* Assessment theory (consistent, balanced, contextual)

## Technology-Mediated Assessment in Higher Education

### Contrasting with K12

There is a very large body of literature on assessment in K12 learning contexts, and a not-quite as large, but still substantial body of literature on assessment in higher education. It may be tempting to conflate the two contexts, but K12 teachers typically complete 2 full years of pedagogical training as part of their academic and practical preparation. These two years often include specific courses on assessment, learning theory, as well as domain-specific pedagogies.

On the other hand, higher education instructors (from part-time sessionals to adjuncts to tenure-track and tenured faculty) tend to engage in little academic preparation in learning theories or assessment, although they seem to absorb the signature pedagogies of their discipline.

## Impact of Technology

- Impact on higher education is ubiquitous (SIS, LMS/VLE, CRM, etc.)
- Tends to emphasize **efficiency** (however ill-defined that may be)
  - doing the same things with greater speed and/or reduced effort
  - reinscribes mis-aligned assessment structures

## Pockets of Innovation

### Bearman et al. 2020

Bearman, M., Dawson, P., Ajjawi, R., Tai, J., & Boud, D. (Eds.). (2020). *Re-imagining university assessment in a digital world*. Springer.

- cognitive offloading
- artificial intelligence
  - “personalized” learning; recommender systems, automated item generation, automated essay scoring
- dialogic feedback
  - video, audio, screencast
- data & learning analytics
  - process data
- peer/self-assessment
- micro-credentials

However...

- critical to consider ethical and social impacts!
  - surveillance
  - equity
  - algorithmic assessment

### Bower, 2019

Bower, M. (2019). Technology-mediated learning theory. *British Journal of Educational Technology*, 50(3), 1035–1048. <https://doi.org/10.1111/bjet.12771>

In technology-mediated learning contexts, agentic intentions reside with humans, and not with technology.

- 3 (select) premises
  - technology **mediates** between learners and outcomes
  - beliefs, knowledge, practices, and environment are mutually influential (add this to the complexity of assessment)
  - role of teachers is to optimise learning through the **purposeful deployment** of learning technologies

## Revisiting Shepard (2000)

### Using `hypothes.is`

- 22 years have passed...
- What has changed?
- What is your experience of technology-mediated assessment in higher education?
- What are your greatest challenges related to technology-mediated assessment?

## Themes and Research Directions

- assessment as conversation in digital environments
- validity exploration of *Approaches to Assessment* in higher ed.
- humanizing assessment, ethics

## Questions? Comments?

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## Chapter 2

# TWU Faculty Professional Learning

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*PhD Candidate, University of Victoria*

Notes - <https://bit.ly/twu-assessment>

- My web page
- Twitter
- Mastodon

**Presented Online for TWU Faculty Professional Learning, Thursday, March 9, 2023**

I acknowledge that the land where I currently live and work remains the traditional, ancestral, and unceded land of the **syilx** (silks) people, whose historical stewardship of and connections to the land continue to today. I am grateful to be an uninvited guest on this land. To learn more, please visit the [syilx.org](https://syilx.org).

### 2.1 What is ‘assessment’?

Pellegrino, J. W., Chudowsky, N., & Glaser, R. *Knowing What Students Know: The Science and Design of Educational Assessment*. National Academies Press.

“reasoning from evidence” (p. 43)



Figure 2.1: QR Code to access presentation notes. You can scan the QR code with your mobile phone, then send the tab to your desktop (at least in FireFox).



Figure 2.2: My blind dog, Eleanor near the top of Mission Hill, overlooking syilx territory.



Figure 2.3: QR Code to access Mentimeter

“a **process** of drawing reasonable **inferences** about what students know on the basis of **evidence** derived from **observations** of what they say, do, or make in **selected situations**” (p. 112)

A grade is an inadequate report of an inaccurate judgment by a biased and variable judge of the extent to which a student has attained an undefined level of mastery of an unknown proportion of an indefinite material. (Usually ascribed to Paul Dressel at various times and in various publications...let me know if you find a verifiable source.)

### 2.1.1 The Assessment Triangle

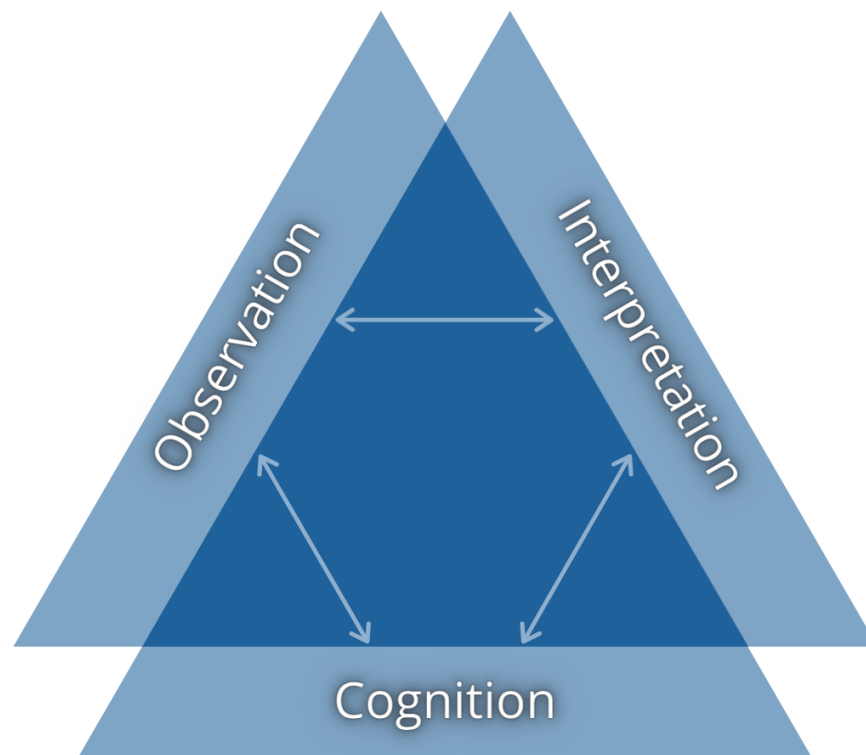


Figure 2.4: Assessment triangle showing the three components of assessment (Pellegrino, et al. 2001).

The process of assessment begins with a detailed understanding and map of

the cognitive construct that is to be learned. This might be the ability to correctly calculate doses of medication, or transpose a piece of music, or write an argumentative essay. Below is an example of nursing competence from Weeks et al. (2019).

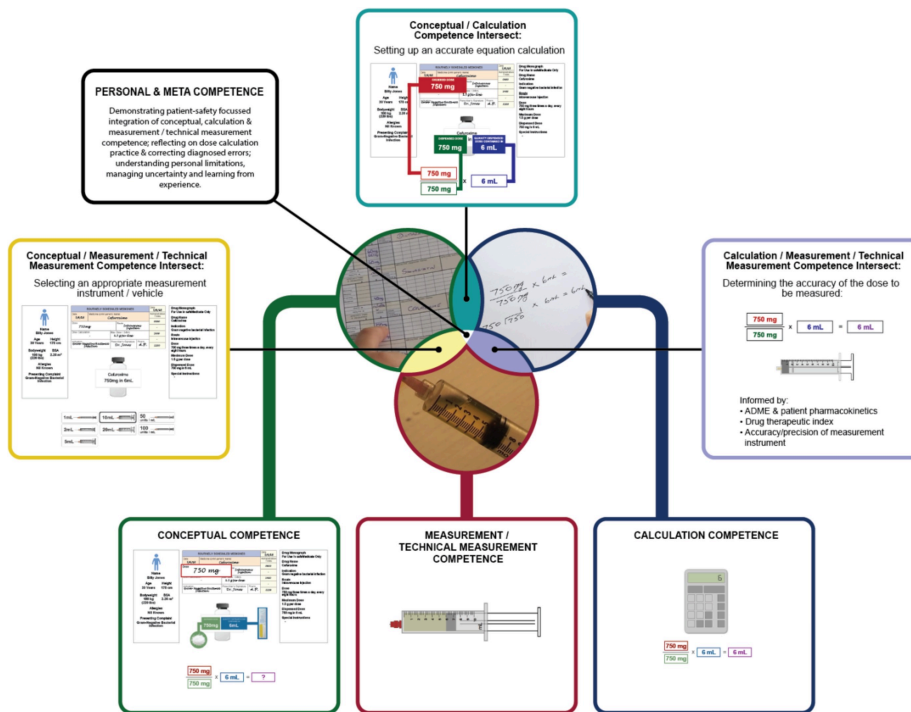


Figure 2.5: Drug dosage calculation competence from Weeks et al. (2019)

Here are two documents in use in TWU Nursing. While these aren't constructed specifically as cognitive models of the domain, but instead as evaluation tools, they represent comprehensive models of what is required to demonstrate competency.

- This is a checklist that nursing faculty use to allow learners to self-assess.
- And another used in practicum evaluations.

The second component of the assessment triangle is an instrument of some kind designed to elicit the competencies mapped in the cognitive model. The instrument can vary widely from selected-response tests, videos, podcasts, performance tests in a lab, and many more.

The final component of assessment is an *inference* or *interpretation* of the data generated by the assessment instrument (not a *measurement*). The accuracy of the interpretation depends on how well the instrument aligns with the cognitive

model (validity) and how stable the results are across populations (reliability).

One important thing to note is that many higher ed instructors (outside of faculties of education or psychology) do not tend to have much formal preparation in educational assessment, *however*, higher education instructors *do* have extensive background and preparation for conducting research. The assessment triangle above has many parallels to research (cognitive model/literature review; instrument to gather data; interpretation/discussion and conclusions).

## 2.2 Thinking about your Approach to Assessment

### Scenario 1

You are teaching a large enrollment course. The students will be submitting bi-weekly assignments, a midterm exam, and a culminating assignment all designed to support their learning.

1. How would you approach grading the bi-weekly assignments?
2. How would you use data from learners' performance on the bi-weekly assignments?
3. How would you respond to learners who have diverse abilities in relation to the culminating assignment?
4. How would you deal with late assignments?



Figure 2.6: QR Code to access MentiMeter.



## Scenario 2

A core assignment in your course involves students working in groups online.

1. How would you ensure accountability and engagement with the assignment?
2. How would you communicate feedback with the group?
3. What factors would you consider when making grading decisions?
4. How would you manage unexpected events that disrupt a group's ability to complete the assignment?



Figure 2.7: QR Code to access MentiMeter.

## Scenario 3

There are expectations in your department that grades should be distributed across the grading scale. However, your class averages are consistently lower than your colleagues'. Your course assessment scheme includes two term exams and one final exam.

1. How might you incorporate assessment *for* learning into your assessment scheme?
2. How might you design the exams to address the gap?
3. What would be a fair approach to 'catching up' to your colleagues' course grades?
4. How might you analyze the exam scores to ensure reliability and validity?

## Scenario 4

You teach a course with multiple sections taught by various instructors. Your students have complained to you that assignments are constructed and graded differently across sections.



Figure 2.8: QR Code to access MentiMeter.

1. How might different purposes of assessment (...of/for/as learning) impact your response to learners?
2. What design strategies could mitigate the perception (or reality) of inconsistent assignments across sections?
3. What strategies could you use to ensure fairness across sections?
4. How might you ensure that your assignments are ‘measuring’ the same things as your colleagues’ assignments?



Figure 2.9: QR Code to access MentiMeter.

#### Scenario 5

You discover that a student has plagiarized some of their assignment (e.g., an essay, lab report).

1. How might your response change if the purpose of the assignment was one

of assessment of/for/as learning?

2. How might you adjust the design or deployment of the assignment to reduce plagiarism?
3. What factors would you consider in deciding how to proceed with the student?
4. How can you come to know what the student knows in relation to the learning outcomes?



Figure 2.10: QR Code to access MentiMeter.

## 2.3 A Framework for Thinking about Assessment

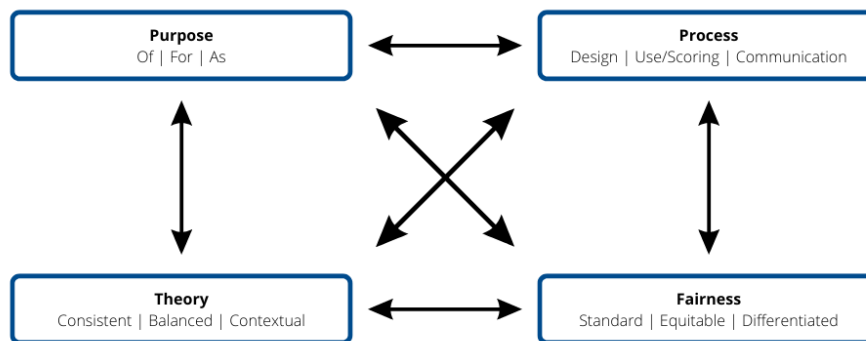


Figure 2.11: A Framework for Assessment as described below from DeLuca, et al. (2016)

DeLuca et al.'s model for assessment comprises four dimensions, each with three

priority themes. Each of these dimensions influence the other dimensions, and all influence instructors' approaches to assessment. The term 'approaches to assessment' is intended to convey the reality that assessment in formal education is tremendously complex and idiosyncratic. Assessment literacy is not a checklist of competencies, 'best' practices, or rules. The dimensions and their themes are listed below:

- Assessment Purpose
  - ...of learning
  - ...for learning
  - ...as learning
- Assessment Processes
  - design
  - use and scoring
  - communication
- Assessment Fairness
  - standard
  - equitable
  - balanced
- Measurement Theory
  - consistent
  - balanced
  - contextual

## References

DeLuca, C., LaPointe-McEwan, D., & Luhanga, U. (2016). Approaches to classroom assessment inventory: A new instrument to support teacher assessment literacy. *Educational Assessment*, 21, 248–266.

Pellegrino, J. W., Chudowsky, N., & Glaser, R. (2001). *Knowing What Students Know: The Science and Design of Educational Assessment*. National Academies Press.

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