Presentations

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Chapter 1

OTESSA22 - Assessment and Digital Technology in Higher Education

Introduction

Colin Madland, PhD Candidate, University of Victoria

Slides - https://bit.ly/otessa22-b
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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) peo-
> ple, 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)
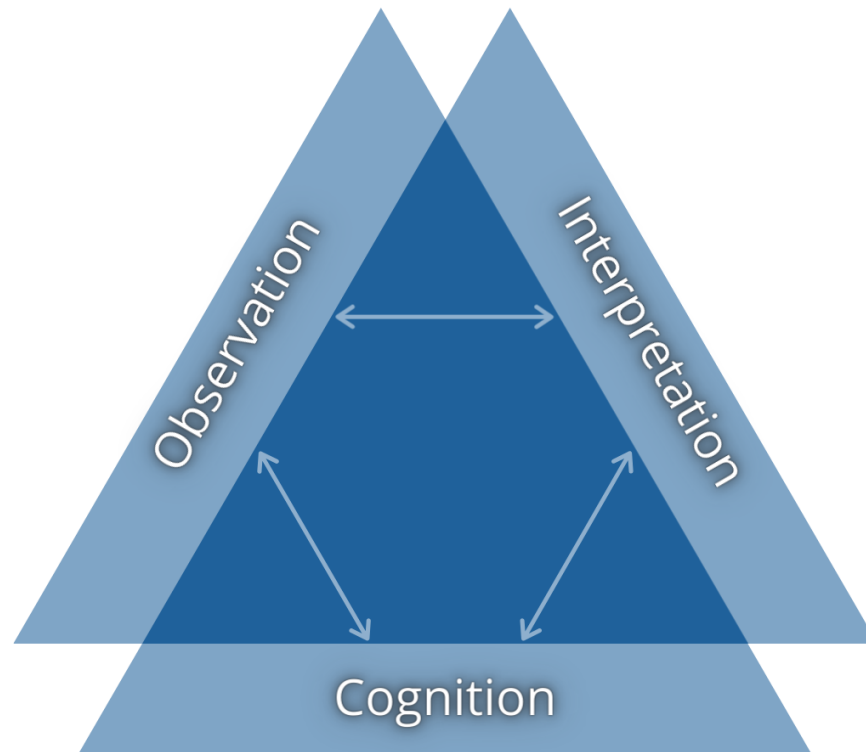
- "reasoning from evidence" (p. 43)

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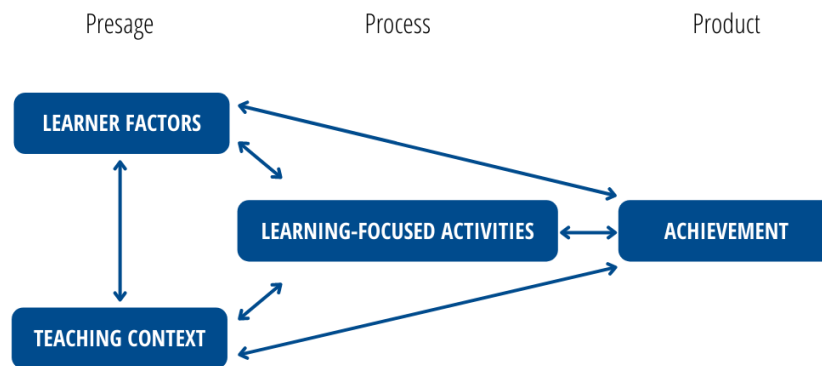
Figure 1.3: Figure 3. 3-P Model of Teaching and Learning adapted from Biggs (1993)

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/ctccpq

- 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/cw9jwc

- 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
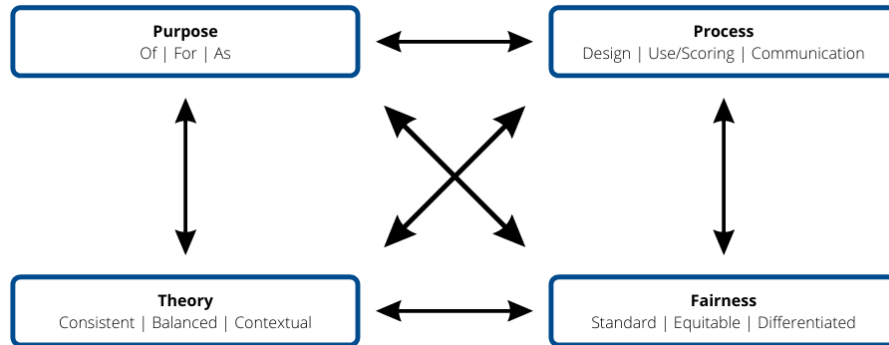

Figure 1.4: Figure 4. Approaches to Classroom Assessment from DeLuca et al. (2016)

- *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?

References

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

Bernstein, B. (1999). Vertical and Horizontal Discourse: An Essay. *British Journal of Sociology of Education, 20*(2), 157–173. JSTOR. https://doi.org/10/ftmsvc

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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

DeLuca, C., Willis, J., Cowie, B., Harrison, C., Coombs, A., Gibson, A., & Trask, S. (2019). Policies, Programs, and Practices: Exploring the Complex Dynamics of Assessment Education in Teacher Education Across Four Countries. *Frontiers in Education, 4*, 132. https://doi.org/10/gh5k2r

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

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

Shepard, L. A. (2000). The Role of Assessment in a Learning Culture. *Educational Researcher, 29*(7), 4–14. https://doi.org/10/cw9jwc

Chapter 2

TWU Faculty Professional Learning

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

Find me on the web...
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.

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.

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. https://doi.org/10.17226/10019

- "reasoning from evidence" (p. 43)

- "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)

2.1.1 The Assessment Triangle

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).

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.

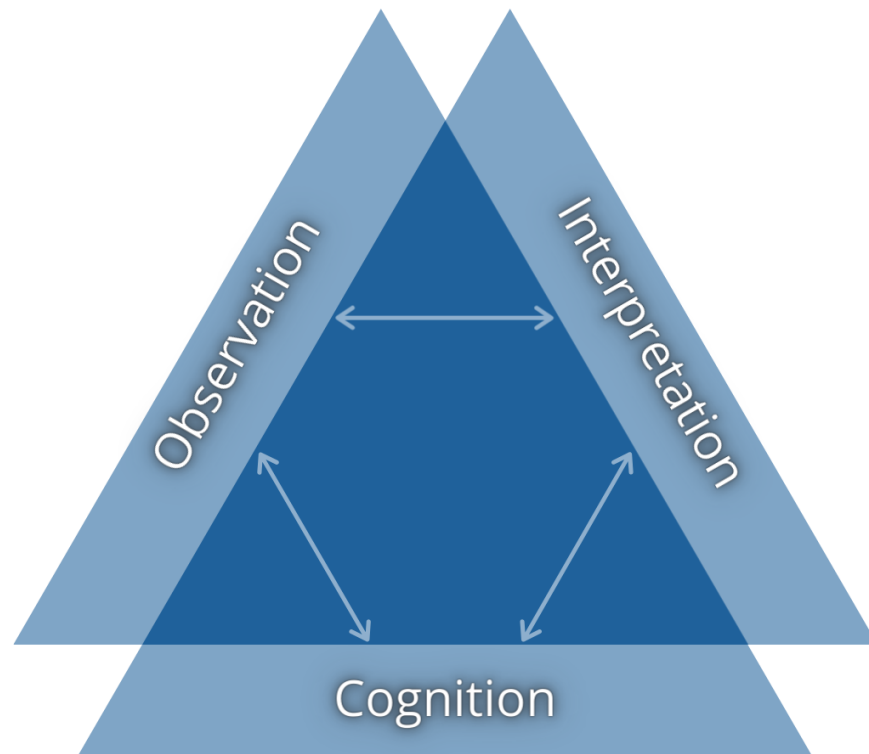The final component of assessment is an inference or interpretation of the data

Figure 2.3: Assessment triangle showing the three components of assessment (Pellegrino, et al. 2001).
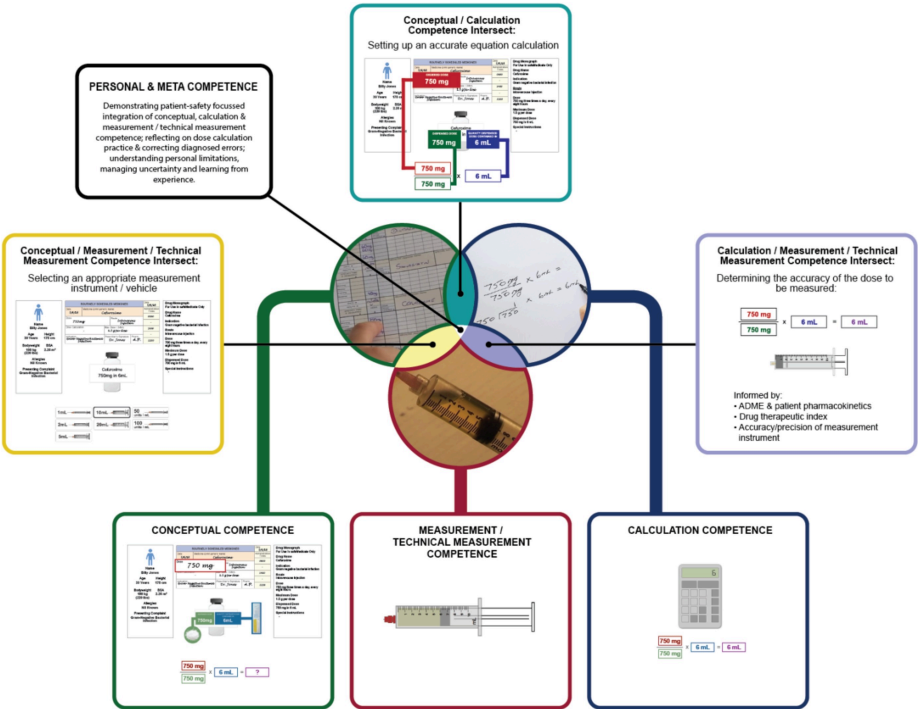
Figure 2.4: Drug dosage calculation competence from Weeks et al. (2019)

generated by the assessment instrument. 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 have 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?

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?

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.

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?

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?
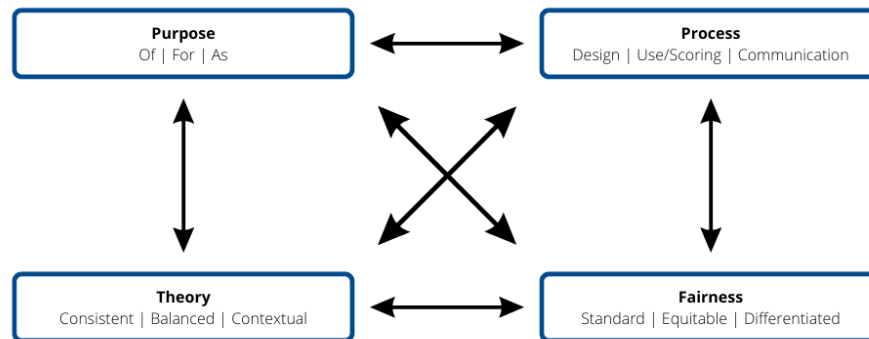4. How can you come to know what the student knows in relation to the learning outcomes?

Figure 2.5: A Framework for Assessment as described below.

2.3   A Framework for Thinking about Assessment

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.

References

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

Weeks, K. W., Coben, D., O'Neill, D., Jones, A., Weeks, A., Brown, M., & Pontin, D. (2019). Developing and integrating nursing competence through authentic technology-enhanced clinical simulation education: Pedagogies for reconceptualising the theory-practice gap. Nurse Education in Practice, 37, 29–38. https://doi.org/10.1016/j.nepr.2019.04.010