

Teaching and Learning in/for the Future



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Overview

1. Introduction
2. Learning Principles
3. Learning Principles
4. Silver Bullets & Mythology
5. Technology, Diversity, and Teaching/Learning
6. Conclusion



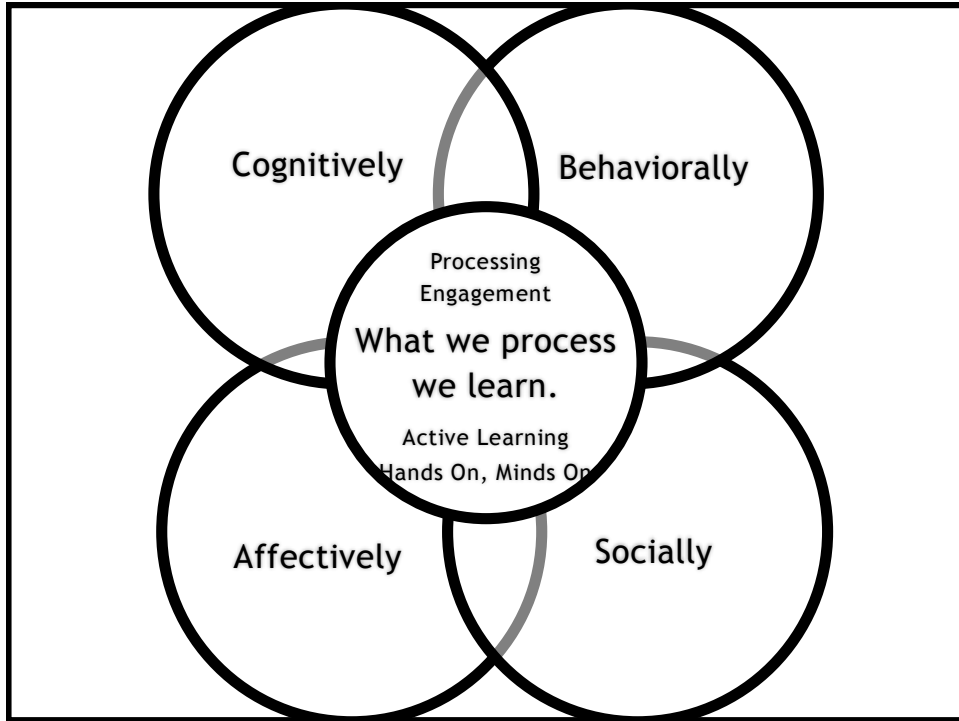
To acquire knowledge of or skill in as a result of study or experience. (OED)

Learning Principles



What does the activity tell us?

1. Meaning is constructed during experience and reconstructed during recall.
2. Construction/reconstruction result from processing.
3. Knowledge is organized.
4. When specifics are lost, meaning remains.
5. Strategies are used to function more effectively.
6. We can assess the effectiveness of our thinking.



A fundamental source from which something (learning) proceeds. (OED)

Learning Principles

clarity ^{EST}

6 Principles for Developing Deep & Flexible Learning

1. Learning through practice at retrieval
2. Learning through varied tasks and purposes
3. Learning at the principle level
4. Learning awareness and control (metacognition)
5. Learning through developmental feedback
6. Learning embedded in prior knowledge & experience

(Engle, 2006; Halpern & Hakel, 2003; Mariano, Doolittle, & Hicks, 2009; Wagner, 2006)

Peer-to-Peer Review/Critique/Feedback

- Peers provide feedback on each other's writings, drawings, artifacts, presentations, posters.
- Providing feedback on others' papers fosters better writing in the reviewer and reviewee.
- Resident physicians provide video-based peer feedback on each other's surgery simulations
- Rapid feedback in large classes improved achievement over delayed feedback

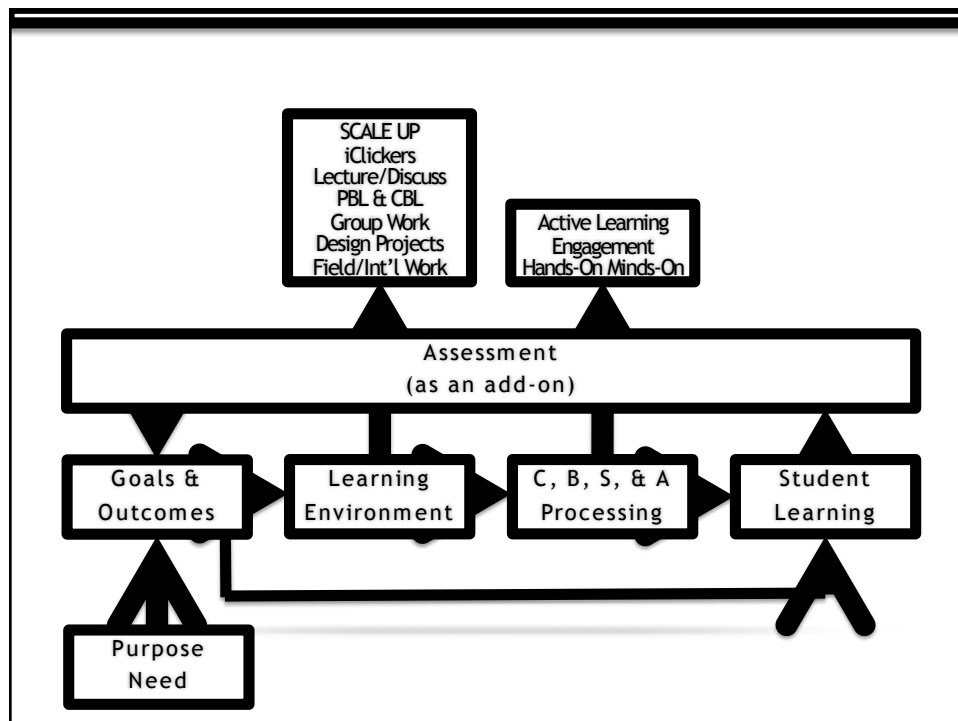
(Cho & McArthur, 2011; Kulkarni, 2015; Levi Altstaedter & Doolittle, 2014; Lundstrom & Baker, 2008; Nicol et al., 2013; Stacey et al., 2015)

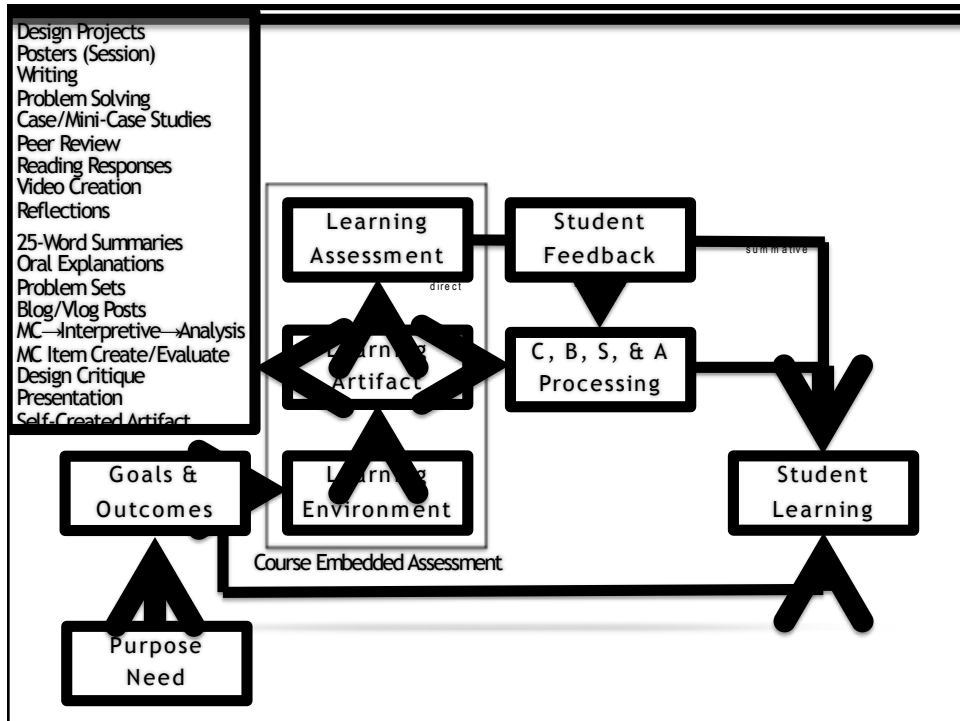
Peer-to-Peer Review/Critique/Feedback

The findings show that producing feedback reviews engages students in multiple acts of evaluative judgment, both about the work of peers, and, through a reflective process, about their own work;

that it involves them in both invoking and applying criteria to explain those judgments; and that it shifts control of feedback processes into students' hands, a shift that can reduce their need for external feedback.

-- Nicol, Thompson, & Breslin, 2013



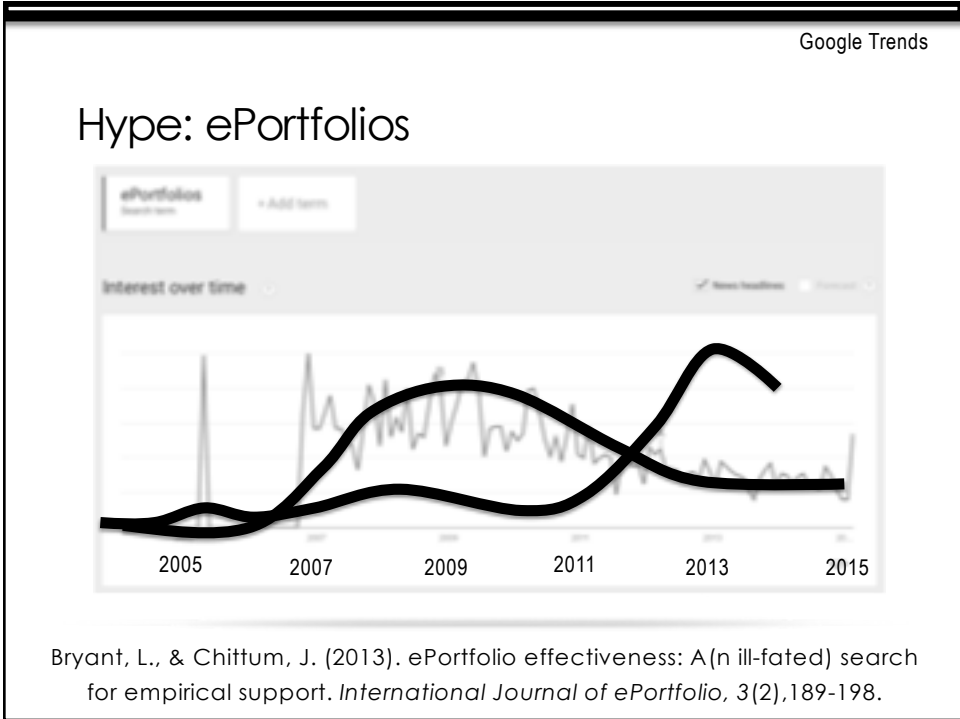
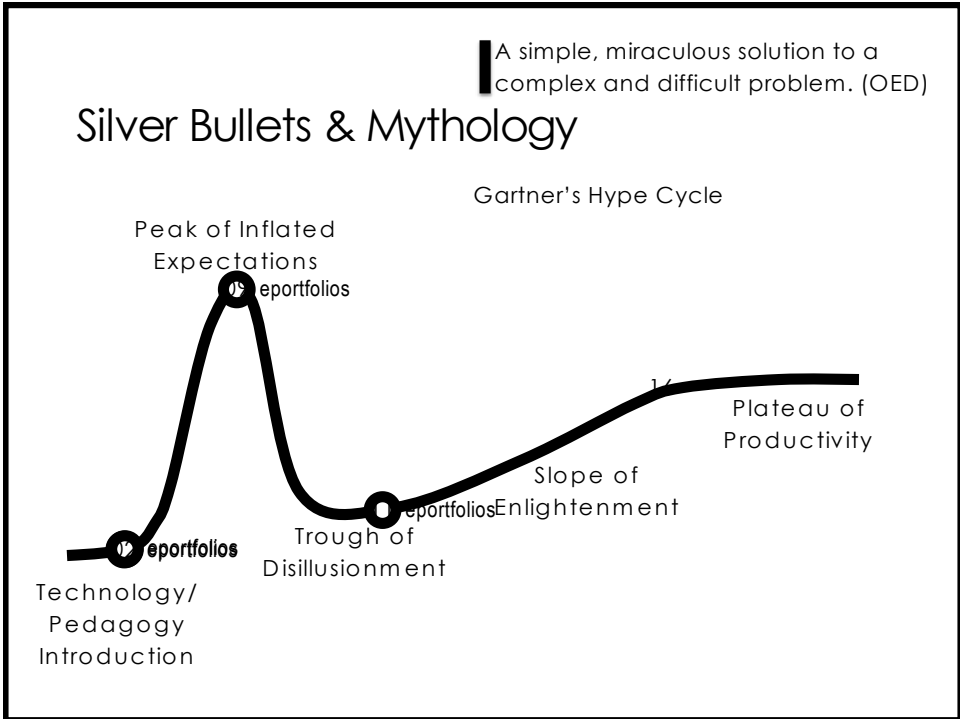


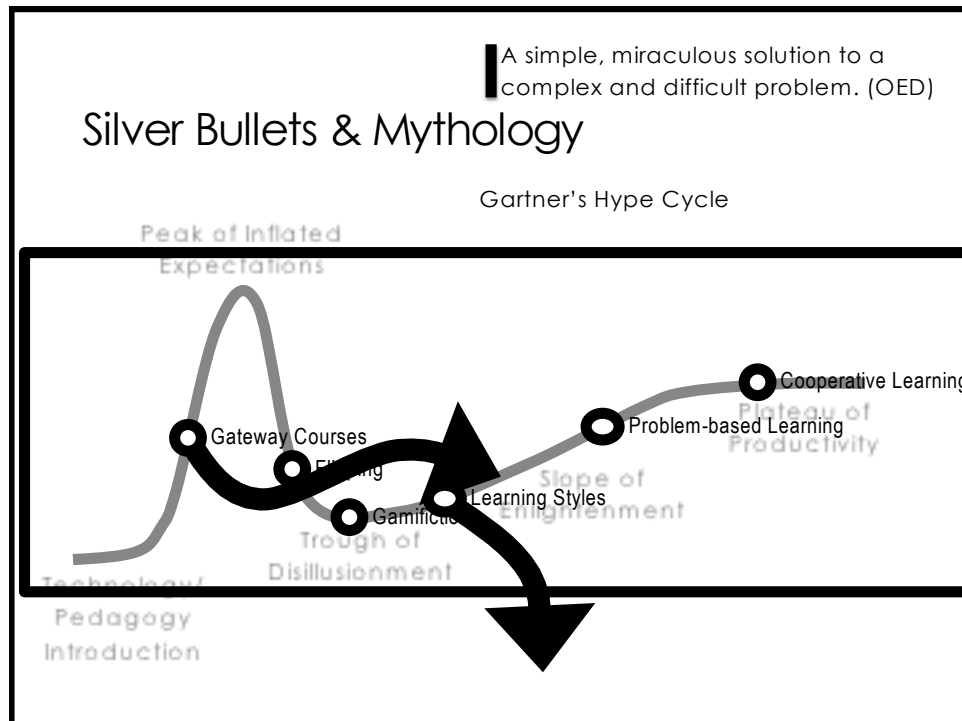
A simple, miraculous solution to a complex and difficult problem. (OED)

Silver Bullets & Mythology



Research, Not Rhetoric





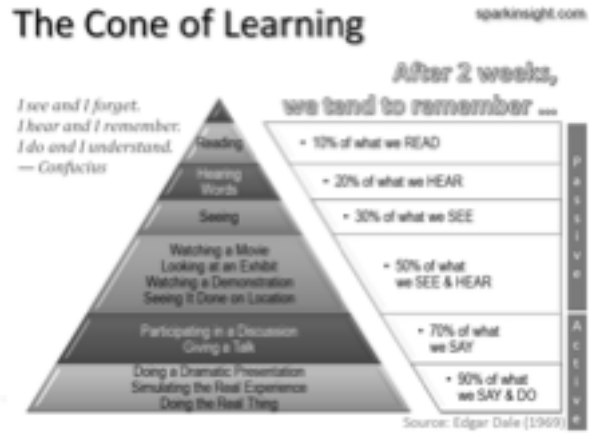
Silver Bullets & Mythology

Mythology

- Cone of Experience/Learning
- Learning Styles
- Multiple Intelligences
- Students' Tech should be Teachers' Tech
- Millennials are Multitaskers
- Brain Games build Brain Power (neuroplasticity!)
Research, Not Rhetoric

(de Bruyckere, Kirschner, & Hulshof, 2015; Watson, Terry, & Doolittle, 2013)

Cone of Experience / Cone of Learning



Technology, Diversity, & Learning




Learning Technology Inclusion

- ✓ Practice at Retrieval
- ✓ Varying Purpose & Tasks
- ✓ Principles
- ✓ Awareness & Control
- ✓ Developmental Feedback
- ✓ Knowledge & Experience


~~Silver Bullets~~ ~~Learning Myths~~

Research,
Not Rhetoric



Teaching and Learning (in) the Future

A Framework for Exploration



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