Using the Learning Sciences Learning, Agency, & Equity



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Learning Sciences & Agency www.ResearchNotRhetoric.com /temp/aacu-doolittle2.pptx

Application

- High Impact Practices
- Experiential Learning
- Course & Gen Ed Design
- Innovative Approaches
- Collective Creativity
- Multidisciplinary Collaboration Immersive Ed Experiences
- Large Lectures

- Design Thinking
- Problem Solving
- Learning Assessments Actors to Agents to Authors
 - Project Management
 - Digital Learning
 - Critical Thinking

 - Intentional Planning

perspective ->







What does the activity tell us?

- 1. Meaning is constructed during experience and reconstructed during recall.
- 2. Construction/reconstruction result from cognitive, social, behavioral, & affective 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.



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 in response to developmental feedback
- 6. Learning embedded in prior knowledge & experience

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

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- Intentional Planning processing ->







A Hiker Problem

A hiker wants to climb a mountain, stay overnight in her tent, and then return to her car at the bottom of the mountain the next day. The single mountain path meanders back and forth up the slope.

The hiker begins walking up the mountain at sunrise. She walks all day and finally reaches the top at about sunset. She stays the night in her tent and at sunrise the next day she begins walking down the mountain, arriving at the bottom shortly after noon.

On a scale of 1-10 1 = Hell No and 10 = Hell Yes To what degree would you want to solve this problem?

Motivation & Metacognition

Intrinsic Motivation

1. Challenge

- 2. Choice
- 3. Control
- 4. Collaboration
- 5. Caring (value)
- 6. Competence
- 7. Curiosity

Metacognition

- 1. Awareness
- 2. Control

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The question is: Is there a point on the path when she was coming down that she passed at the same time of day when she was coming up the mountain? Be prepared to explain your answer, regardless of whether you answer "yes" or "no."



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Working Memory Capacity

Recall the words out loud, in order. (8 +♂)₩2Star? Starv

Operation Span Task

Working Memory Capacity

Recall the words out loud, in order. (⊕€6)\$\$\$ ₽h20neBhasse

















Working Memory Capacity

Working Memory Training ≠ ↑ WMC

Learn & Use Strategies

(Redick, Shipstead, Wiemers, Melby-Lervag, &Hulme, 2015)

Segmentation							
Multimedia Learning and Individual Differences: Mediating the Effects of Working Memory Capacity with Segmentation							
Authors:	Lusk, D., Evans, A., Jeffery, T. Palmer, K. Wikstrom, C., & Doolittle, P. (2009)						
Design:	11 min multimedia tutorial						
Торіс:	Historical Inquiry						
Variables:	Segmentation Low/High Working Memory Capacity						
Publication:	British Journal of Educational Technology, 40(4), 636-651						

Working Memory Capacity

WMC Strategies

- 1. Segmenting Instruction
- 2. Scaffolding Instruction
- 3. Lower Cognitive Load/Lower Information Density
- 4. Examples, Examples, Examples
- 5. Practice with Feedback



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dog 🗲



Instructional Strategies



learning • agency • equity

25-Word Summaries

Learning Environment: Students create a 25-word statement addressing the essential ideas, focusing on explaining and integrating ideas, not listing topics.

Learning Artifact: Students read a chapter or article and extract, organize, summarize, and integrate the reading's essential ideas into a clear and concise statement.

Learning Assessment: Summaries are assessed using a scoring guide focused on structural format, clarity of thought and expression, and delineation of core messages.



Post-modernism views knowledge as subjective and functional, not valuable itself. Reflective, needsbased knowledge creation in post-modernist education overcomes static, constrained modernist learning allowing complete education.

The summary is an excellent representation of the reading. You have captured multiple central ideas and express them well. That said, there are a couple things to think about as you move forward to other summaries. In the first sentence, the first part is quite clear, "postmodernism views knowledge as subjective and functional," however the last phrase needs clarification for someone who has not read the article ("not valuable itself"). The article does reference that modernism views knowledge as independently valuable, but that postmodernism views the value of knowledge in context. Simply stating that postmodernism views knowledge as "not valuable itself," can lead to misunderstanding. Perhaps rather than phrasing that last part in the negative, you could switch to a more positive phrasing, such as, "postmodernism views knowledge as subjective and functional, its value contextual." Think about how you might rephrase the last part of the first sentence.

The second sentence has a similar pattern, where the first part of the sentence is very clear, yet the ending of the sentence seems murky, "allowing complete education." What does that really mean? In what way is postmodern education more "complete" than a modernist education? By "complete" do you mean personally relevant? Socially useful? Both objective and subjective? How might this be clarified?

Finally, think about how the two sentences might be combined to increase their meaningfulness. The first sentence focuses on the subjective nature of postmodernism and the second sentence focuses on postmodernist education (an application). Is there a way to combine these or two sentences or transition between the two sentences to make the link between subjective knowledge and flexible education more apparent?

25-Word Summaries

Each 25-word summary is worth 50 pts and is graded using the following criteria:

	Structural Format	10 pts
2.	Clarity of Thought and Expression	15 pts
3.	Delineation of Core Messages	25 pts

plus Feedback:



25-Word Summaries

Practice Retrieving
Challenge

Varied Tasks

- Principle Level
 Control
- Develop Feedback
 Competence

Choice

- Prior Know & Exp
 & Caring
 - - ❀ Curiosity

- Segmenting
- Scaffolding
- Managing Load
- Æ Examples
- Feedback
- Review

Oral Explanations

Learning Environment: Students create clear and coherently organized 10-15 minute videos that reflect the student's understanding of the current topic under discussion, plus an application to their lives.

Learning Artifact: Students analyze and interpret readings, notes, and discussions; organize concepts and ideas; apply to a life issue; create an oral explanation.

Learning Assessment: Video are assessed using a scoring guide focused on organization, clarity of thought and expression, essential content explanation and application.



Oral Explanations

Each Oral Explanation is worth 100 pts and will be graded using the following criteria:

	Organization	20 pts
2.	Clarity of Thought and Expression	20 pts
3.	Essential Content Explanation	30 pts
4.	Essential Content Application	30 pts

Oral Explanations

Practice Retrieving
Challenge

Varied Tasks

- Principle Level
 Control
- Awareness & Cntl
 Scalaboration
 Awareness & Cntl
 Scalaboration
 Awareness
 Scalaboration
 Sc
- Prior Know & Exp
 Scaring
- Develop Feedback
 Competence

Choice

- - - ❀ Curiosity

- Segmenting
- Scaffolding
- Managing Load
- Æ Examples
- Feedback
- Review

		Disagree Agree			Agree		 some words are not easy to 	
Item	Statement	1	2	3	4	5	6	understand for international
1	The <i>Introduction</i> provided organization and context to the lesson, and piqued student interest.	۲	0	0	0	0	0	students.
2	The Activities engaged students in <i>cognitively</i> constructing knowledge.	٠	0	0	0	0	0	 Some aspects of "institutions"
3	The Activities engaged students in <i>socially</i> constructing knowledge.	٠	0	0	0	0	0	are still a little fuzzy, but I think
4	The <i>Closure</i> stressed the essential aspects of the lesson and provided a path forward.	۲	0	0	0	0	0	over spring break (picking an
5	Overall, the class was well constructed and executed, resulting in student learning.	۲	0	0	0	0	0	institution and describing the characteristics of it) will be really
6	What aspects of the content addressed in class are still confusing?							helpful in making this more clear.
7	What elements of the instruction were particularly.							 groups of 2 limit discussion, larger groups lead to richer discussions
	effective in stimulating learning?							 Working in small groups was particularly effective in learning because it permitted the ability to exchange thoughts, ideas,
8	Other comments/thoughts?							and construct understanding together from both of our perspectives and understanding of the readings. Also the Silence
	Submit							article was awesome! cats =

Daily Evaluation	ons
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- Practice Retrieving
 Challenge
- Varied Tasks
- Principle Level Tontrol
- Prior Know & Exp
 Scaring

- Choice
- - - ❀ Curiosity

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