

Active Learning + Proactive Teaching

Deep and Flexible Student Learning



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Today's Mantra: Fostering Deep & Flexible Learning



Anticipation Guide

Directions: Please read each statement and decide if you **Agree** or **Disagree** with the statement, or how might you want to **Edit** the statement.

1. Anyone can teach.
2. Active, or deep learning in students is fostered by note taking and discussions with fellow students.
3. Technology allows teachers to teach more powerfully, more efficiently, and with less effort.

Overview

1. Introduction
2. Learning First
3. Program & Course Integration
4. Examples & Strategies
5. Conclusion

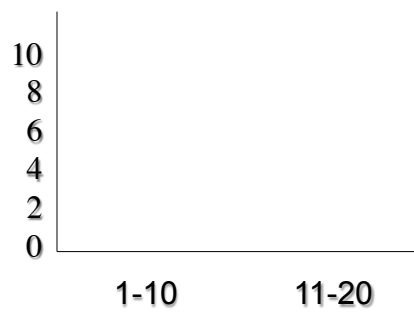


Learning First



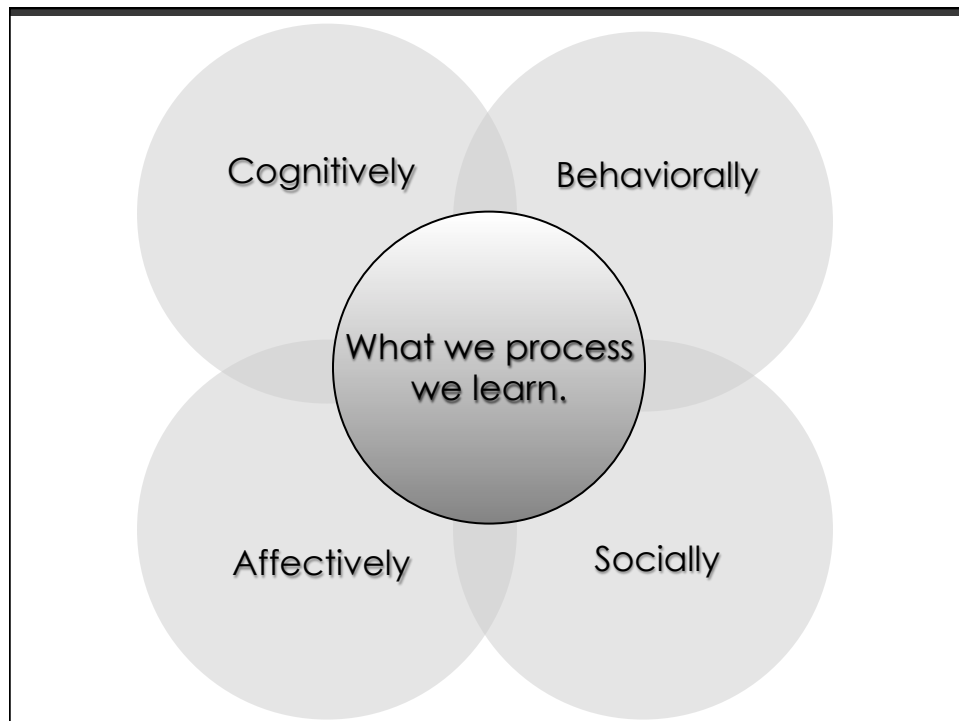
processing

Activity #1



Activity #1

- Meaningful Learning
 - Elaborative Learning
 - Imagery
 - Self-Generation
 - Self-Reference Effect
 - Encoding Specificity
 - State-dependent
 - Context-dependent
 - Transfer-Appropriate Processing
- Processing



7 Principles for Developing Deep & Flexible Learning

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

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

processing →

Active Learning Strategy



processing

Strategy Oral Explanations

- Opportunity for students to (a) communicate their understanding of various ideas, concepts, and procedures, and (b) apply this understanding to a problem or situation of choice.
- Explain key ideas, concepts, and procedures from class in a 10-min video (no notes, no post-processing)
- The preparation and explaining (processing) is more important than the video (product).



Oral Explanations Fostering Deep & Flexible Learning

- Clarify and communicate their understanding
- Explain key ideas and concepts in a 10-min video
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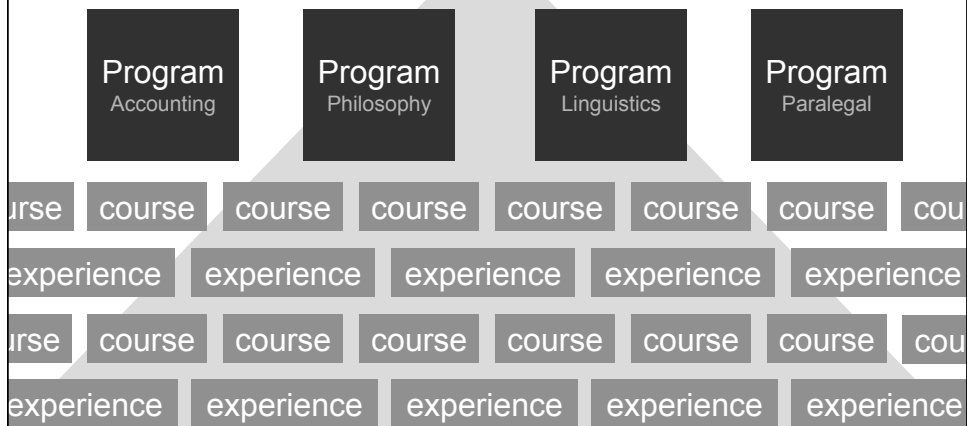
Program and Course Design and Assessment Part 1: Top Down



curriculum map

Program and Course Design and Assessment

Institution • Schools • Colleges • Departments



Fostering Deep and Flexible Learning

communication

- What do we want our students to know, to be able to do, and to value? [outcomes]
- Is the program organized so that students who complete the courses will be able to know, do, and value in appropriate ways?[design]
- How do we know what students know, can do, and value when they finish courses and the program? [assessment]
- How do we modify the program and/or courses to advance students' knowing, doing, and valuing based on the data collected? [improvement]

communication

Program Assessment (Biology Major)

(Academic) Program Goals: Graduates have

- (1) Knowledge of biological concepts, processes, systems, and techniques; and,
- (2) Knowledge and skills sufficient to enter graduate school or biology profession.

Student Learning Outcomes: Students can

- (1) *Describe* fundamental biological processes and systems;
- (2) *Demonstrate* proper laboratory practice, use of equipment, and techniques;
- (3) *Perform* appropriate analysis of data and draw valid conclusions from the data;
- (4) *Locate, use, and evaluate* scientific literature, including journals; and,
- (5) *Communicate* findings of research in appropriate formats.

Curriculum Map

Course	O1	O2	O3	O4	O5
105/L	I	I	I	I	
205/L	I	I		I	
215	R		I		I
324/L	R&A	R&A		I	I
435	M&A		R	R	R
445/L		M&A	R	R	R
455			M&A	M&A	M&A

I=introduced; R=reinforced; M=mastered; A=assessed

105/L
205/L
215
324/L
435
445/L
455

www.manoa.hawaii.edu/assessment/

Learning First Part 2



processing

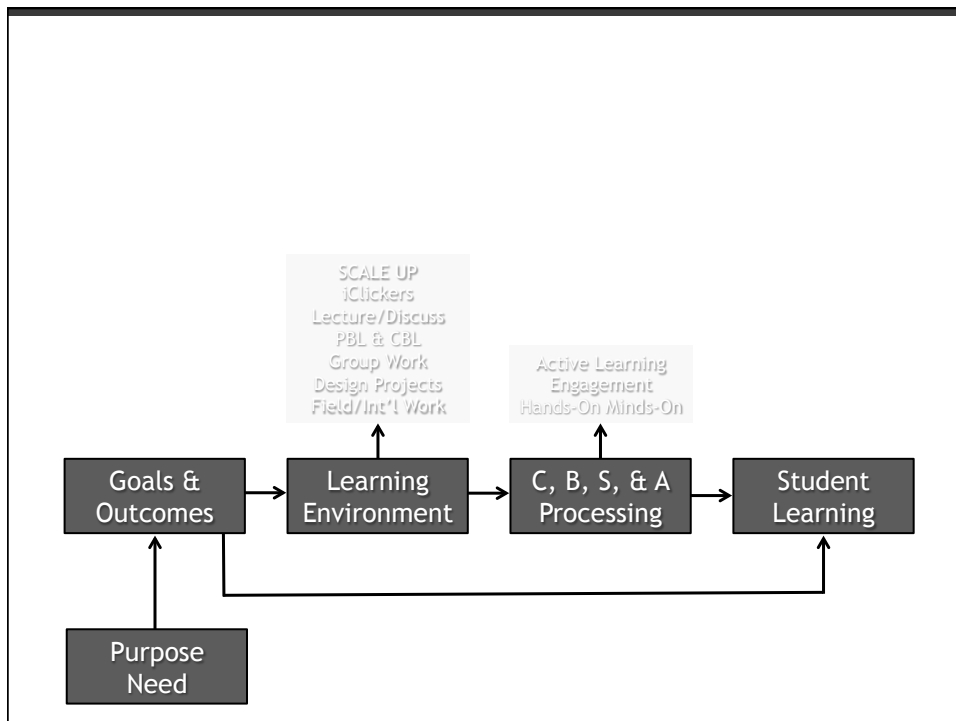
words →

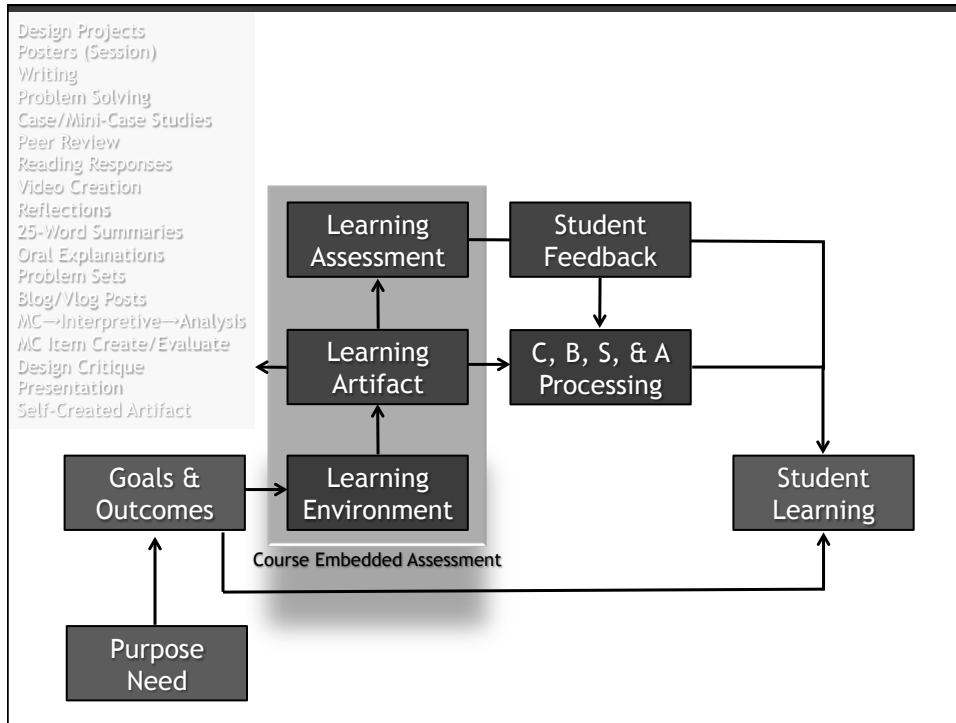
What does the activity tell us?

Program and Course Design and Assessment Part 2: Bottom Up



learning artifacts





Curriculum Map

Course	O1	O2	O3		
105/L	I	I	I	3. Exceptional 2. Acceptable 1. Marginal	44-50
205/L	I	I			35-43
215	R		I		< 34
324/L	R&A	R&A			
435	M&A		R	R	R
445/L		M&A	R	R	R
455			M&A	M&A	M&A


```

    graph TD
      LA[Learning Assessment] --> SFA[C, B, S, & A Processing]
      SFA --> SL[Student Learning]
      GO[Goals & Outcomes] --> SL
      LE[Learning Environment] --> SL
  
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Grading: Each Chapter Summary Statement is worth 50 points and will be graded using the following criteria:

- Structural Format (10 pts)
 - Is the summary 25 words or less?
 - Is the summary a coherent sentence, or sentences?
 - Does the summary avoid a simple listing of concepts, terms, or themes?
- Clarity of Thought and Expression (15 pts)
 - Are the ideas expressed well, well thought out, and integrated?
 - Does every word in the summary have a meaningful purpose?
 - Are correct grammar and syntax used?
- Delineation of Core Message (25 pts)
 - Does the summary accurately reflect the reading's central or essential message?
 - Are the reading's central or essential messages fully integrated?
 - Does the summary reflect an understanding of the reading?

Active Learning Strategies



processing

25-Word Summaries Fostering Deep & Flexible Learning

- Opportunity to engage in critical thinking and extract the essential meaning from a reading, lecture, video, movie, activity, or experience
- Summarize the meaning clearly and concisely, based on student's understanding, in 25 words or less.
- The summarizing (processing) is more important than the summary (product).

Colleges provide instruction, but should produce learning. Students and teachers should co-produce knowledge. Coherent education creates flexible, adaptable, interesting people. This shift will change everything. [25 words]

The first two sentences of the summary do a nice job of addressing essential elements of the article; the second two sentences seem to lose the focus. The first sentence is an explicit central theme, while the second sentence is more implicit. Given that you have identified two themes in the two sentences, how could you combine the two sentences? Often combining such sentences will result in the use of fewer words and allow you to increase the interrelationship between the various ideas (thus increasing their meaning).

The third sentence isn't really a central focus. The authors focus on student learning more than creating interesting people. The final sentence is more descriptive; that said, if you have the words to spare, the idea seems important to the authors.

25-Word Summaries

- Think critically and extract the essential meaning
 - Summarize the meaning clearly and concisely
1. Learning through practice at retrieval
 2. Learning through varied tasks
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Public Work Projects Fostering Deep & Flexible Learning

- Opportunity to create a public work that demonstrates a deep understanding of and adds value to the (6) Hallmarks of Cancer.
- Identify and research cancer hallmarks and then design and develop a public communication avenue.
- Students are evaluated for their progress as well as their product.

Cancer



Public Works Projects Fostering Deep & Flexible Learning

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internally

Motivating Students

1. Challenge
2. Choice
3. Control
4. Caring (interest/value)
5. Collaboration
6. Competence
7. Curiosity

Which of these
are present in
the public works
Cancer projects?

Poster Session

Fostering Deep & Flexible Learning

- Opportunity to select, research, organize, summarize, and communicate specific energy alternatives.
- Produce a conference-style poster and present the poster (discussion) in a public poster session.
- The researching, organizing, summarizing, and communicating (processing) are more important than the poster (product).



John Chermak, Virginia Tech, jchermak@vt.edu

Poster Sessions

Fostering Deep & Flexible Learning

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Twitter World Leader Fostering Deep & Flexible Learning

- Opportunity to explain, interpret, and analyze world leaders' actions/interactions and communicate in an online format adopting the relevant persona.
- Lead a fake/parody Twitter account of a world leader, Tweeting at least twice a day on where the leader is, what the leader is doing, who they are with, and what they may be thinking.
- Students are evaluated on the accuracy of their Tweets, communication style, interaction with other leaders, and timeliness of the Tweets.

The screenshot shows a Twitter thread. The first tweet is from **Plaid Alexis Tsipras** (@Plaid_Tsipras) posted 38 minutes ago, with the text: "Meeting in Brussels today with several key players in Europe to discuss the refugee crisis!". The second tweet is from **PA AyatollahKhamenei** (@Plaid_Khamenei) posted 1 hour ago, with the text: "Our enemies are not going to be happy after the elections; I am calling it now! #provemeright theiranproject.com/blog/2016/02/1...". The third tweet is from **Plaid Hassan Rouhani** (@Plaid_Rouhani) posted 2 hours ago, with the text: "In Tehran today. Our deepest sympathy goes to @Plaid_Turkey. We are saddened by the bombing that claimed many lives yesterday." Below these tweets is a reply from **Plaid Evo Morales** (@Plaid_Morales) dated 27 Aug 2015, with the text: "The environment is our biggest ally. I challenge other world leaders to talk more about #climatechange." To the left of the reply is a dark image of three fighter jets flying in formation. At the bottom left of the screenshot, there is a dark box containing the email addresses "joboyer@vt.edu" and "kpitcha@vt.edu".

Twitter World Leader Fostering Deep & Flexible Learning

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Design/Build Lab

Learning Environment (faculty course strategies):
Junior Architecture students design, develop, and implement a full-scale architecture build project, including imaging, fundraising, fabricating, and building.

Learning Artifact (student's processing and result):
Ideate and brainstorm possible problem solutions; work with and negotiate with clients; fundraise; fabricate and build a structure for community use (artifact).

Learning Artifact (student's processing and result):
Students assessed on imaging, fundraising, fabricating, and building performance via scoring guide.

Design/Build Lab

Fostering Deep & Flexible Learning

- Opportunity to ideate and brainstorm problem solutions, work with and negotiate with clients, and build a structure for community use.
- Opportunity to design, develop, and implement a full-scale architecture build project, including imaging, fundraising, fabricating, and building.
- The design, development, and implementation (processing) are equally important to the final project (product).



Keith/Marie Zawistowski
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Design/Build Lab Fostering Deep & Flexible Learning

1. Learning through practice at retrieval
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Closure



integration

