Institutional Research Career and Academic Development Award

Active Learning to Proactive Teaching

November 6, 2023

I. Anticipation Guide

1. Active learning involves students doing things and thinking about the things they are doing.
2. Active learning-based classes result in more student learning than lecture-based classes.
3. Active learning fosters greater learning in small STEM classes focused on problem solving.

II. Active Learning: A Changing Perspective

a. What is active learning?

b. Active Learning Research

Freeman et al. (2014)	**Theobald et al. (2020)**
• Active Learning vs Lecture Courses • UG STEM Courses • Exam Scores & DFW Rates **AL → ↑ Exams & ↓ DFWs**	• Active Learning vs Lecture Courses • UG STEM Courses • Exam Scores & DFW Rates **AL → ↑ Exams & ↓ DFWs** **Larger gains for students from underrepresented groups** (i.e., narrowed achievement gap)

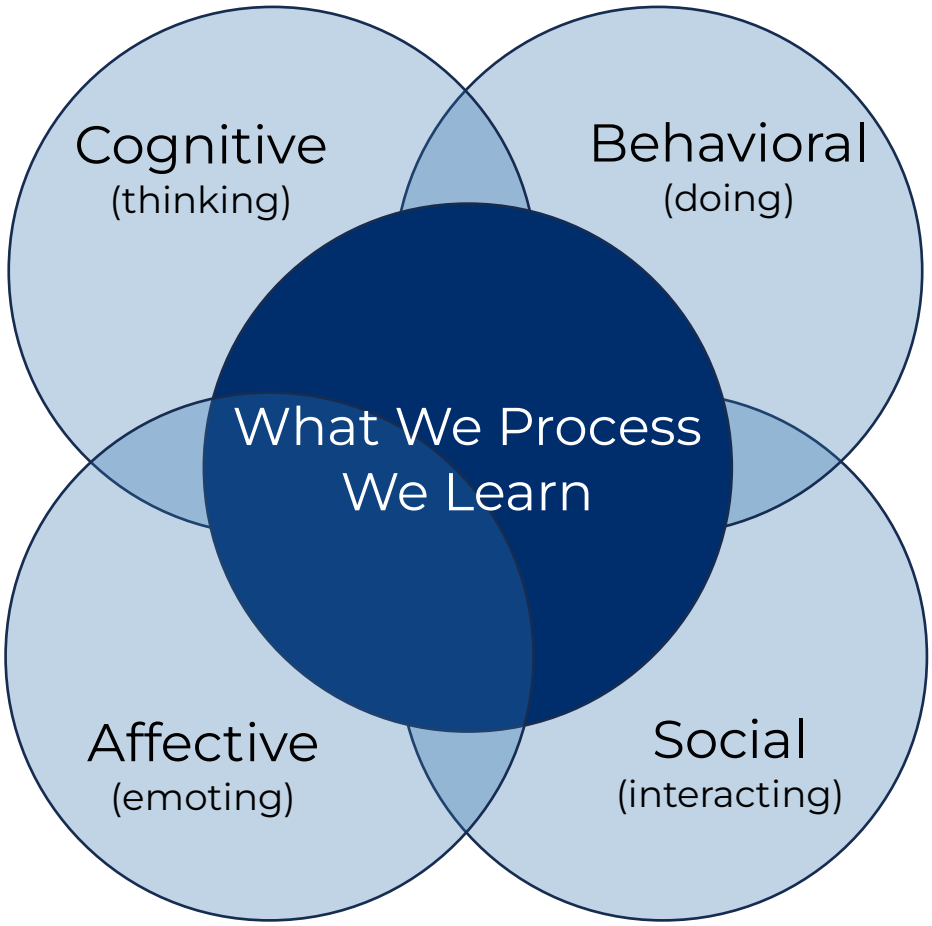
c. Active Learning Generations

First Generation

Second Generation

d. Active Learning Defined

Active learning fosters **strong and flexible knowledge** through cognitive, social, behavioral, and affective **processing** of one's **knowledge and experience**.



III. Debriefing the Anticipation Guide

a. Key Concepts

- **Activation:** Activation results in an increased level of stimulation of students' prior knowledge

- **Priming:** Activated prior knowledge is more readily accessible for immediate processing.

- **Spread of Activation:** Activated prior knowledge increases the activation of closely related knowledge.

b. Key Concepts in Action

- **Activation**
- **Priming**
- **Spread of Activation**

Activate Relevant Prior Knowledge

Use Production-based Activities,
NOT Reception-based Activities

Solve, Answer, Explain, Discuss, Apply

Solve a problem.
Answer a question.
Explain a concept.
Discuss an issue.
Apply a strategy.

c. 1-Minute Free Write: What do you see?

d. Start Each Class with a Routine

- ☐ Hello
- ☐ Priming Activity
- ☐ Debrief End-of-Class Evaluation
- ☐ Any Questions?
- ☐ Review (Production, NOT Reception)

e. End Each Class With a Routine

- ☐ Recall or Apply Relevant Content/Skills
- ☐ End-of-Class Evaluation (Reflection & Feedback)
- ☐ Bye

III. The Big Picture

Objectives → Strategies → Processing → Connecting → Meaning → Learning

IV. Meaning and Learning

a. Experiment

b. What do the results tell us about learning?

c. Conclusions

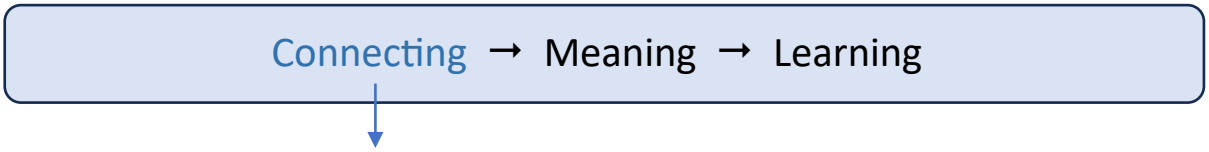
1.

2.

3.

4.

d. Making Meaning



- New Knowledge vs Prior Knowledge

- Meaningful Learning

- Elaborative Learning

- Integrated Learning

e. Write a 1-sentence summary of the Meaning and Memory section.

V. Strategies and Processing

a. Experiment

1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

b. What do the results tell us about learning?

c. Conclusions

1.

2.

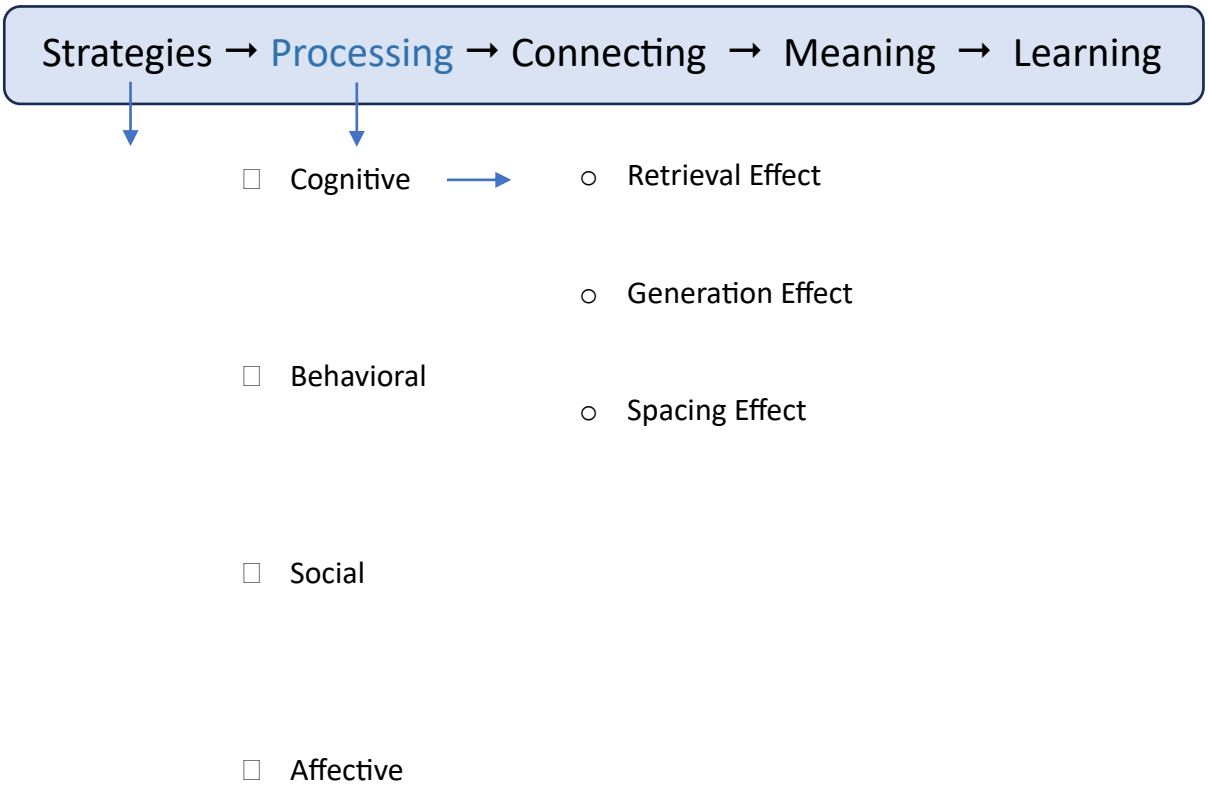
3. Connecting Fosters Meaning

4. Meaning Fosters Learning

5. Memory is Organized

6. Memory Imposes Limits

d. Processing Knowledge and Experience



e. Write a 1-sentence summary of the Meaning and Memory section.

VI. Closure

a. What are 2 take-aways from today's workshop?