Learning Theories and Metacognition

College Teaching Seminar Series

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Learning Objectives

- Explore major learning theories to describe their pros and cons
- Reflect on what learning theories appeal to you as a learner & instructor
- Define metacognition and its role in learning & teaching
- Develop strategies to apply metacognition to your teaching
Learning Theory

learning
/ˈlɛrnɪŋ/ 🔊

noun
noun: learning

the acquisition of knowledge or skills through experience, study, or by being taught.
"these children experienced difficulties in learning"

pedagogy
/ˈpedəɡæjɪ/ 🔊

noun
noun: pedagogy; plural noun: pedagogies

the method and practice of teaching, especially as an academic subject or theoretical concept.
"the relationship between applied linguistics and language pedagogy"

Paradigms

Behaviorism
Cognitivism
Humanism
Constructivism
*Design-based
*21st Century Skills

But how?!

https://www.learning-theories.com/
https://www.google.com/search?q=Dictionary
Learning Theory

- Arrange yourself in groups as directed
- Each group has one learning theory to explore
- Read the information provided and answer the following two questions:
  1) Summarize the theory in one sentence.
  2) What are the pros and cons of the theory for the instructor/student?
- Share what you learned with the group
Food for thought:

Which learning theory/ies resonate/s with your past experiences as a learner?

● Give an example of a learning activity or teacher you can recall.
● Do you feel this approach was effective? Why or why not?
  ○ Could the instructor have done something differently?
  ○ What about you as a learner?

Which learning theory/ies resonates with you as an instructor? Why?
What is *metacognition*?

**met·a·cog·ni·tion**

/ˌmedəˌkägˈniSH(ə)n/ (prn)

*noun*  **PSYCHOLOGY**

awareness and understanding of one’s own thought processes.
What do the data suggest?

Students learn to monitor and direct their own progress, asking questions such as “What am I doing now?,” “Is it getting me anywhere?,” “What else could I be doing instead?” This general metacognitive level helps students avoid persevering in unproductive approaches... (Perkins and Salomon, 1989)

Table 2 Change in the MSLQ from T0 to T1

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<tr>
<th>Section</th>
<th>Subscale</th>
<th>Number of participants, T0</th>
<th>Number of participants, T1</th>
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<td>High score</td>
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<td>Time and Study Environment</td>
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<td>Help Seeking</td>
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$^a$Statistically significant at the 0.05 level (Marginal Homogeneity Test)

$^b$Statistically significant at the 0.01 level (Marginal Homogeneity Test)
Students can use metacognition to succeed in their courses

- **Study smarter**
  - Avoid procrastinating
  - Form a peer study group
  - Have a plan

- **Self-assess**
  - Keep up with course material, check-in regularly
  - Is everything clear?
  - Is there a topic you need help with?

*What steps, processes, or conclusions lead you to choose the answer you did?*

*What additional factors (confusion about course materials, poorly matched learning strategies, outside factors) contributed to your overall challenges?*
Be mindful of metacognition in your teaching

Metacognition-based active learning strategies & assessments

- Pre-assessment
- “Muddiest point”
- Retrospective post-assessments
- Reflective journals
- Discuss student misconceptions
- Moderated class/group discussion
- Model metacognition for your students

(Tanner, 2017) https://doi.org/10.1187/cbe.12-03-0033
Put it into action!

- What do I know? ➔ Assess
- What don’t I know? ➔ Ask
- What do I do about it? ➔ Adapt

Adapted from:
http://www.queensu.ca/teachingandlearning/modules/students/24_metacognition.html
Mix & Match: What makes a learner successful?

| ✓ misconception/prior knowledge? | subject inventories, discussion |
| ✓ motivation | relevance to students, real world application |
| ✓ metacognition | self/peer assessment, reflect on work, analyze study habits |
| ✓ organization of knowledge | concept mapping, transparent course organization |
| ✓ practice & feedback | have clear goals, model tasks, provide timely feedback |
| ✓ feeling of belonging | be flexible, check your assumptions, establish ground rules |

Adapted from: http://www.cirt.umich.edu/sites/default/files/instructor_resources/research_based_principles_teaching_learning.pdf
Applying what you know

Design a small project or short activity for undergraduates that incorporates metacognition & describe in a few sentences.

- What Learning Theory/ies does the activity align with?
- Describe the metacognitive component
- How will you assess if your students succeeded?
Ticket Out the Door: Muddiest Point

What questions do you still have?

What was unclear?

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