

What we know about how people learn

Please write down one question you have about today's reading.

Intended Learning Outcomes

By the end of this session, you will be able to:

- **describe** findings from learning and cognition research and **apply** them to improve your teaching
- **articulate** strategies and practices that will help you reflect on your own teaching
- **describe** important elements of a teaching philosophy

Big Ideas in Cognition Research

- Behaviorism – Cognitivism – Constructivism
- Mental Models/Prior Knowledge
- Misconceptions
- Perry's Stages of Intellectual Development
- Deep v. Surface Learning
- Motivation
- Learning Styles

*Which readings/topics resonated with you as a teacher (or as a learner)?
What do you have questions about?*

[Concept Map of Learning Theories](#)

Behaviorists--Cognitivists--Constructivists

- **Behaviorists** believe that events in the environment cause changes in the learner's behavior.
- **Cognitivists** believe that events in the environment cause a change in the learner's knowledge, which lead to a change in behavior.
- **Constructivists** believe that:
 - students are not tabula rasa – but bring schemas and (mis)understanding to class
 - students try to make their own meaning based on new info, and old schema
 - students' construction of meaning is supported by active learning opportunities.

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Jigsaw: Behaviorism--Cognitivism--Constructivism--(Constructionism)

Stage 1

In theory-homogeneous small groups:

- Discuss your classroom experiences with your assigned theory
- List some examples

Stage 2

In theory-heterogeneous small groups:

- Teach your peers about your learning theory
- Write down any notable take-always &/or questions.

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What can we learn from Piaget*?

Learners:

- *Construct* models
- *Assimilate info* - new info is slotted into mental model/ framework
- *Accommodate info* - encountered info requires that the existing framework be re-done/modified

Mental Models or Schema

- Mental representations of objects or patterns of action
- Formed by experiences / interactions with the world
- May include misconceptions
- Influence what we see and hear
- Require assimilation/ accommodation

2/7/2014

Check your understanding

The best way to determine your students' mental models is to:

- A. Ask them directly
- B. Give them a quiz
- C. Ask them to write several sentences about it
- D. Consult the educational literature

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Making Students' Thinking Visible

- Students create, talk, write, explain, analyze, judge, report, and inquire.
- These types of activities indicate what students know or do not know, what they are puzzled about, and what they might be curious about with regard to the course material.
- These activities stimulate the student's growth from concept awareness to concept acquisition

Vygotsky — Collins, Brown, Holum;
Bransford, Brown, Cocking

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Check your understanding

How can you best support students' progression from dualism to other stages of intellectual development?

- A. Be understanding and it (the transition) will just happen
- B. Demonstrate divergence of opinions between experts in your discipline
- C. Emphasize possibility of more than one right answer when appropriate
- D. Provide framework within which all 'right answers' must fall

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Check your understanding

The best way to facilitate deep learning for your students is:

- A. Assign lots of homework
- B. Mix different types of problems in the same lesson
- C. Have them create a concept map
- D. Explain concepts in-depth during lecture

Check your understanding

The best way to facilitate expert thinking in your students is to:

- A. assign activities that promote deep learning
- B. explain your thinking when solving problems
- C. 10,000 hours of deliberate practice

2/7/2014

Vernissage!

- In small groups, please develop a description of the key finding assigned to you.
- Identify and discuss *specific* activities/assignments that you might implement – and how they are supported by your finding.
- Prepare a "poster" on flip chart paper that includes your finding, definition and examples.
- Tape your poster to the wall.
- Visit the posters of others.



For the Vernissage and the Post-Session Assignment

Finding about how people learn	Example of how you have used or could use this finding in your own teaching
Learners construct their own knowledge (Shah, Brabrand) <i>Description:</i>	<ul style="list-style-type: none"> Add your examples here.
Learning depends on prior knowledge (Halpern) <i>Description:</i>	<ul style="list-style-type: none"> Add your examples here.
Successful learners develop mental models and strong frameworks of related concepts (Lang) <i>Description:</i>	<ul style="list-style-type: none"> Add your examples here.
Practice with feedback promotes learning (Halpern) <i>Description:</i>	<ul style="list-style-type: none"> Add your examples here.

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Post-Class Assignment

- Choose **two** of the seven findings on the Google doc.
- For each of your two chosen findings:
 - Write a short description (assign someone in your group to do this)
 - Provide examples of how you have used this finding in your teaching **or** could use it in the future.
- Enter your contributions on the Google Doc. Don't forget to include your name.

You will be able to view the submissions of others in the class

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