

Learning Theory: Some Principles and Applications

Joshua A. Danish
IU Learning Sciences

How do people learn?

- Think-Pair-Share
 - Jot down a few notes
 - Discuss with a neighbor
 - Share out

How might this inform your teaching?

- Next to your definition of how people learn, how might this inform your teaching?

The literature: how do people learn

- First, let's be clear that knowledge is often thought of as:
 - **Memories:** tied to a specific experience, include emotions, senses, etc.
 - **Facts:** definitions
 - **Practices or procedures:** ways of acting, and may build on facts

These develop naturally from experience, and learning often comes from making sense of them. Reflection turns memories into other kinds of knowledge.

This is what we most frequently test. But without understanding their use, they are meaningless.

This is the kind of knowledge we want to develop: knowledge that supports action in the world.

The literature: how do people learn?

- People learn by connecting new ideas to what they already know.
- Cognitive theory:
 1. New ideas connect to old ideas (what students already know)
 2. New ideas need to move from working memory to long-term memory
 3. Learned ideas tend to be retrieved just as they were stored
 4. Multiple approaches / modalities / examples support more robust understanding
 5. Reflection supports elaboration
 6. Practice supports learning
 7. Feedback is key

The literature: how do people learn?

- People learn by connecting new ideas to what they already know.
- Sociocultural theory:
 1. The ideas we are interested in are socially situated:
 - Ways of acting in the world
 - Within specific contexts
 - Mediated by “tools”
 - Human activity is goal directed
 2. Tools are “appropriated”
 - Through practice
 - Tied to goals
 - Tied to contexts

How can we support learning?

Some basic cognitive principles:

1. New ideas connect to old ideas (what students already know)
2. New ideas need to move from working memory
3. Learned ideas tend to be retrieved just as they were learned
4. Multiple approaches / modalities / examples support understanding
5. Reflection supports elaboration
6. Practice supports learning
7. Feedback is key

Sequence each lesson thoughtfully to connect new ideas to old ideas when you retrieve them.

“Chunk” ideas into smaller, meaningful units.

Note: they need to do the thinking, so provide opportunities

But make sure students see how they are connected.

As students try out new ideas they need clear, concise feedback on when / how they are right or wrong.

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- Sociocultural theory:

1. The ideas we are interested in are socially situated

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- Mediated by “tools”
- **Human activity is goal directed**

2. Tools are “appropriated”

- Through practice
- Tied to goals
- Tied to contexts

Tools are useful for specific goals, in particular contexts. Help students see them as tools and not goals.

Start by helping students see the goals of key ideas. Ideally, tie to their own goals (e.g., being a good teacher,

Students will be more likely to use ideas that they see as actually helpful in specific circumstances.

Summary of some key learning theory principles and their application by Joshua Danish (<http://www.joshuadanish.com>)

Principle		Application
1	New ideas connect to old ideas (what students already know)	Help surface existing ideas. Sequence the curriculum to build on earlier ideas (help make connections explicit).
2	New ideas need to move from working memory to long-term memory	Chunking: break big ideas into smaller meaningful parts and give students opportunities to practice / remember / connect them.
3	Learned ideas tend to be retrieved just as they were stored	Think about how you want ideas retrieved (what context / activity) and provide multiple ways of exploring key ideas.
4	Multiple approaches / modalities / examples support more robust understanding	Provide multiple opportunities to explore key ideas that are different in meaningful ways. Support students in seeing that they are connected. Learning styles are not real, but students have preferences and multiple modalities can support learning.
5	Reflection supports elaboration	Provide students with guidance and opportunity to think about how ideas are connected, what they mean, etc.
6	Practice supports learning	Students need to encounter and try using ideas repeatedly to remember them.
7	Feedback is key	In exploring their new ideas, students benefit from clear and concise feedback on what and how they are using them correctly or not.
8	Human activity is goal directed	Help students see the goals within the discipline, and connect to their existing goals.
9	Human activity is tool mediated	Help students see key ideas as tools that are useful for their goals, not as the goal.
10	Human activity involves action in the world	Help students engage in action (teaching, designing, talking, writing) that mirrors actual real-world practices. Provide feedback in socially meaningful ways.
11	Human activity is contextually bound	Think about the contextual factors that matter and help students see them.
12	Ideas are appropriated when we see their value.	Give students opportunities to see the value in what you are teaching for their career / life goals and they'll be more likely to appropriate / use those ideas.

Let's try it out!

1. Think of a big idea in your course:
 1. What is it?
 2. What makes it important?
 3. What makes it hard to learn?
2. How do these principles help you answer these questions?
3. How can these principles help you think about how to teach this idea?

Thanks!

- jdaniel@Indiana.edu
- @jdaniel