"How People Learn"
Some highlights from the research literature

Research says that…

✓ **Motivation is essential for student learning**.
- Without motivation, students may not wish to expend the effort and energy to learn.
- Motivation depends on students' background.
- We can affect students' motivation.

✓ **Learning is an active mental process.**
- Students need to actively construct their understanding rather than passively listening.
- Students need <u>timely and specific</u> feedback on their understanding in order to create an accurate mental model.

✓ **Students learn by building on what they already know.**
- Students come into the classroom with existing ideas.
- Many existing ideas can form the productive underpinnings of new learning.

✓ **"Expertise" requires…**
- Ideas to be connected and organized in a logical way (i.e., a filing cabinet, not a messy desk), and
- The ability to monitor /examine own thinking.

✓ **Remembering ideas is improved by….**
- Repeated opportunities to remember something, spaced in time.
- The number of other ideas that are mentally connected to that idea.
- Thinking deeply about the idea.

The challenge for teachers

How do I motivate students?
Connect to their interests.
Highlight relevance of material.
Use real-world examples.
Choose challenging activities.
Boost confidence.

How do I promote active learning?
Use a group or individual activity
Challenge them to solve a problem.

How do I provide feedback?
Give specific written or verbal feedback
Give feedback quickly, in-class or on take-home assignments
Consider using peer feedback

How do I find out and connect to what they already know?
Formative assessments (quiz, clicker questions, discussions)
Read articles and literature
Start from common experiences or ideas
Use relevant examples / metaphors

How do I help students organize and connect ideas?
How do I help students develop ability to monitor and evaluate their thinking?

E.g., concept maps, reflective assignments…

How do I help students improve remembering?

"Cycling back" to an idea repeatedly, over time
Emphasizing connections among ideas
Providing opportunity to use the idea to solve complex problems