What College Teachers Should Know About Memory and Attention

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Memory Theory
The Three Memory Systems

- Sensory Memory
  - Information loss
  - Transfer

- Short-Term Memory
  - Forgetting
  - Rehearsal

- Long-Term Memory
  - Retrieval
  - Transfer
  - Forgetting
The Three Memory Processes:

- Retrieval
- Transfer
- Long-Term Memory

Forgetting
Working memory
Multistore model/verbal WM
7 ++ 1?
Attention
the key to memory
Memory *without* attention?
Change Blindness

[www.viscog.com](http://www.viscog.com)

Daniel J. Simons

See also: Rensink, O’Regan, & Clark, 1997

Simons & Ambinder, 2005
Effortful, attentive practice: Useful
Passive exposure: Not so much

Observing examples isn’t enough – students need explicit explanation and multiple opportunities to practice
Prior knowledge drives the acquisition of new knowledge

(also, this is one of the main mechanisms of expertise)
What does this actually mean?
An example
Basketball Memory Case Study
List of 20 top NBA players*

Bill Russell  
Tim Duncan  
Jerry West  
Magic Johnson  
Wilt Chamberlain  
Moses Malone  
Hakeem Olajuwon  
Julius Erving  
Michael Jordan  
Kobe Bryant

Bob Pettit  
Elgin Baylor  
Kevin Garnett  
Charles Barkley  
Larry Bird  
Karl Malone  
Lebron James  
Kareem Abdul-Jabbar  
Oscar Robertson  
Shaquille O'Neal

* From Insidehoops.com
Bill Russell *
Experts have better memories – primarily because of rich, meaningfully organized existing knowledge.

1. They can organize incoming information much more strategically
2. They have more cues for retrieval
It pays to know what students know – *before* you add to what they know.
Forget about traditional concepts of short-term memory.

It’s not relevant to the vast majority of classroom practice.
BUT: Working memory is somewhat relevant to design of learning activities. Not in the sense of seven plus or minus one...just keep an eye on competing demands for cognitive resources.
Pay a lot of attention to the *testing* and *spacing* effects
AND: Consider the reasons we remember things in the first place

(and try to take advantage of those reasons)
Suggested Strategies
Strategy 1: Ask Students to Respond
Strategy 2: Promote Practice and Automaticity
Strategy 3: Stay Within Working Memory and Attention Limits
Strategy 4: Discourage Divided Attention
Strategy 5: Harness the Testing Effect
Strategy 6: Encourage Spaced Study
Strategy 7:  Tie In to What Students Know
Strategy 8: Tie In to What Students Care About
Strategies, collected…

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- **Strategy 7:** Tie In to What Students Know
- **Strategy 8:** Tie In to What Students Care About
Thank you – and keep up the good work!

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