How Students Learn: Strategies for Teaching from the Psychology of Learning

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Pashler, McDaniel, Rohrer, & Bjork, 2009

Learning Styles: Concepts and Evidence
Seven Principles for Good Practice in Undergraduate Education

(Gamson & Chickering, 1991)

• Contact
• Reciprocity
• Active
• Feedback
• Time on task
• High expectations
• Diverse talents
What behaviors illustrate or are good examples of something an unmotivated student might do?
Attribution

How do we describe the “cause” of behavior???
- Internal (dispositional)
- External (situational)
Learned Helplessness
Place “Smart” and “Effort” in Proper Place

# Problems Solved

Trial 1

Trial 3

Standard
Carol Dweck, 2006

- **Entity** – fixed, less risk

- **Incremental** – growth, accepting challenge
What is one issue or concern you have with respect to your students and creating an effective learning environment?
Stage Theory of Learning

Atkinson-Shiffrin model, 1968
Recht & Leslie (1988)

- **Good Readers**
- **Poor Readers**

Items Correct

- **High Knowledge**
  - Good Readers: 20
  - Poor Readers: 10

- **Low Knowledge**
  - Good Readers: 0
  - Poor Readers: 3

Fill Columns
Multitasking

Controlled...

Automatic...

http://www.youtube.com/watch?v=vJG698U2Mvo
Last Serny, Flingledobe and Pribin were in the Berdlindk trepperin gloopy caples and cleaming burly greps. Suddenly, a ditty strezzle boofed into Flingledobe’s tresk. Pribin glaped. “Oh Flingledobe,” he chifed, “that ditty strezzle is tunning in your grep!”
Power of Social Norms

Cialdini...

Please help:

1. Help the environment
2. Benefit Society
3. Save money
4. Others are doing it
Practice at Retrieval (IFAT)

There is nothing like a surprise quiz to get you going!!!
Teach Metacognition

- CATS
- SQ4R
- Chapter Questions
- Flash Cards
- Quizzing
Types of CATs

- Minute Paper (check understanding at end of class session)
- Muddiest Point (check understanding at end of class session)
- One-Sentence Summary (check understanding at end of class session)
- Directed Paraphrasing (check understanding of a concept)
- Lecture Checks (Mazur’s Technique)
- Card Passing (very good for sensitive topics)
What have you done to help your students to learn?
Levels of Concern vs. Degree of Learning
Proportion of ideas recalled

Retention Interval For Final Test

Retained at 5 Minutes:
- SSSS: 0.90
- SSST: 0.80
- STTT: 0.60

Retained at 1 Week:
- SSSS: 0.40
- SSST: 0.50
- STTT: 0.70
The Effect of Overlearning on Long-Term Retention

ROHRER, TAYLOR, PASHLER, WIXTED, & CEPEDA, 2005

Proportion of items recalled

Retention Interval For Test

<table>
<thead>
<tr>
<th>Retention Interval</th>
<th>Overlearners</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Week</td>
<td>.70</td>
<td>.30</td>
</tr>
<tr>
<td>4 Weeks</td>
<td>.70</td>
<td>.30</td>
</tr>
<tr>
<td>9 Weeks</td>
<td>.70</td>
<td>.30</td>
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What the Brain Needs to Learn

- Exercise
- Sleep
- Oxygen
- Hydration
- Food (glucose)

That sets the stage.....THEN there must be...
What the Brain Needs to Learn

That sets the stage.....THEN there must be...

• Belief that something can be learned
• Importance of Material
• Attention
• Encoding
• Retrieval cues
• Correct Level of Anxiety
Selected References


