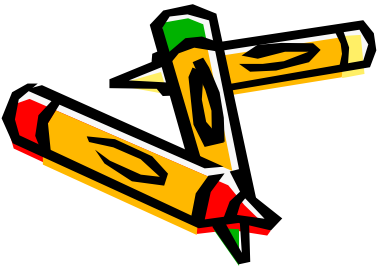
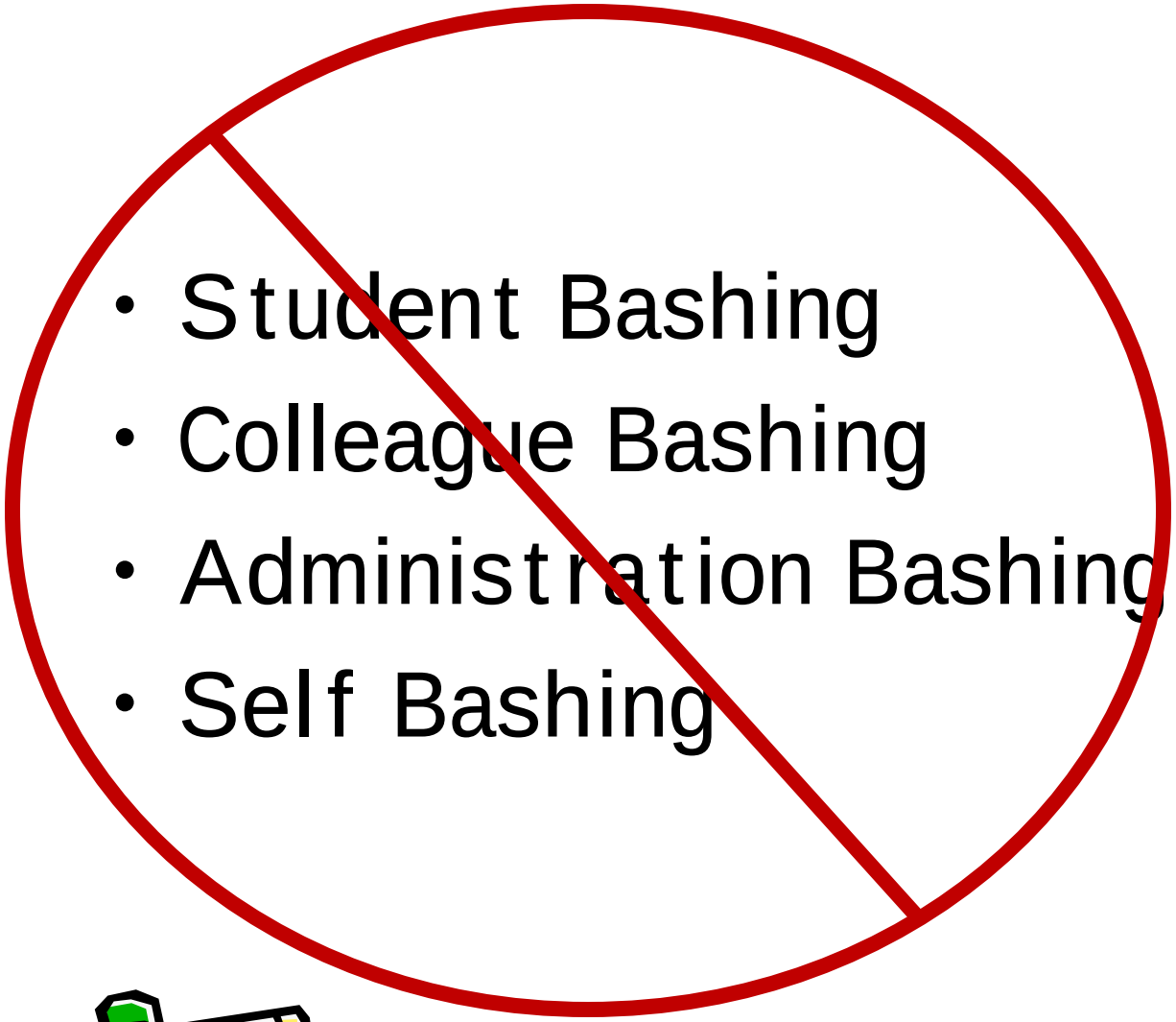
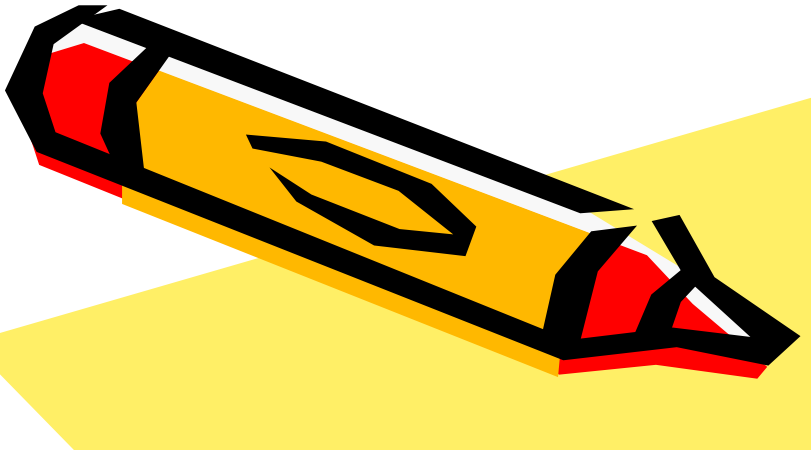
# Master Teacher Program- Values

- Continuous improvement and quality
- Positive and respectful attitude
- Open participation and exchange
- Confidentiality for participants
- Discovery and Innovation
- The value of mentoring




• Student Bashing
• Colleague Bashing
• Administration Bashing
• Self Bashing



# How People Learn

India Lane
The University of Tennessee

# First, consider this…

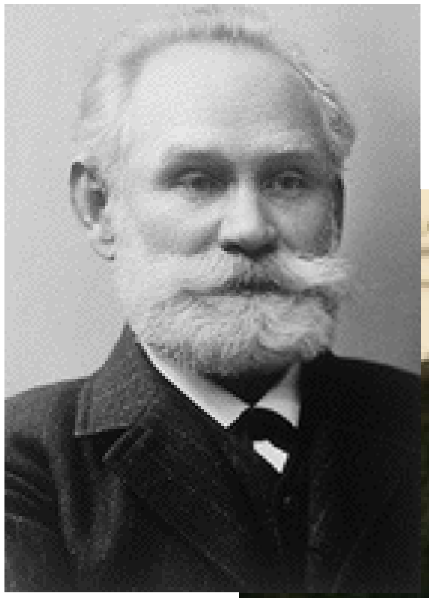

# …or this?

# Or this?

# What is Learning?

# What is Learning?

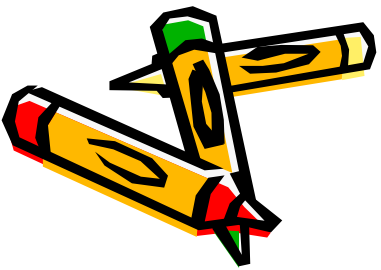
- Behavioral models
- Mental "muscle" models



# What is Learning?

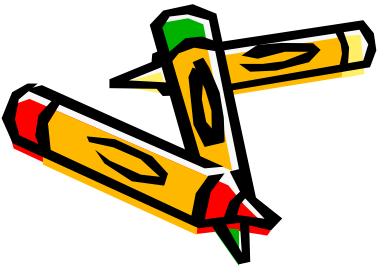
- Behavioral models
- Cognitive Psychological models
- Neuroscientific models

# Why do we care?

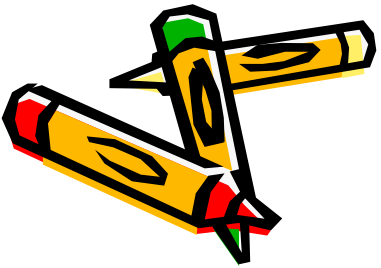


# What the Best Teachers Do

- No. 6. Effective teaching reflects an understanding of human learning

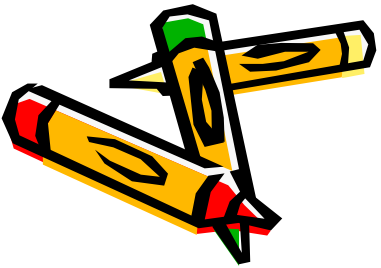


# Now take out a piece of paper…



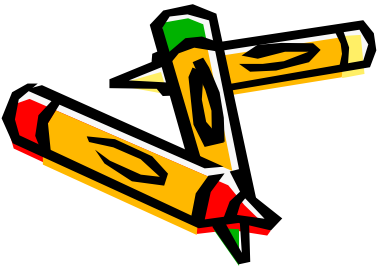
# What do we know about learning?

- Must acknowledge prior knowledge and preconceptions
- Must develop deep foundational knowledge
- Must fit into conceptual framework
- Must be organized within framework
  - Retrieval
  - Transfer



# Prior knowledge

- Consider pretests or quizzes
- Draw out misunderstandings
- Use questions, assessments that reveal student understanding

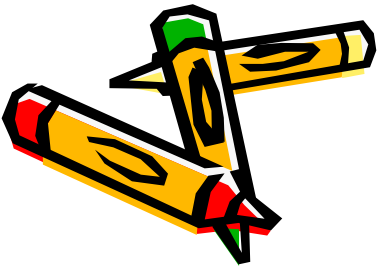


# Deep Foundations

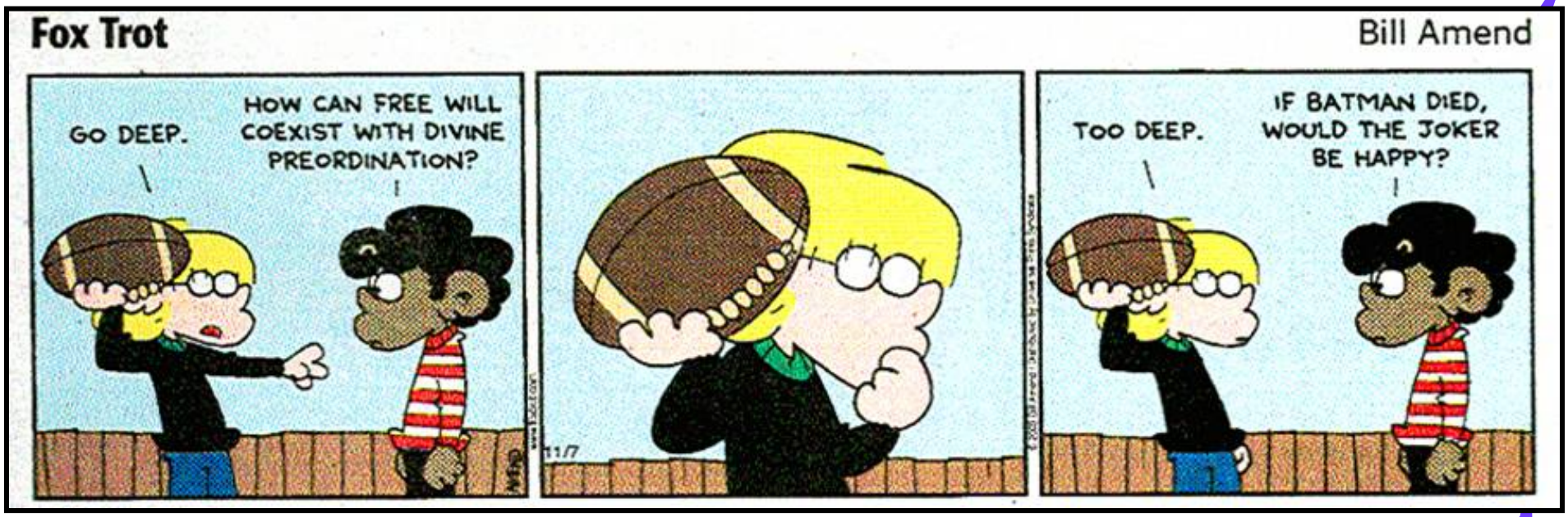
- Teach fewer things in depth
- Emphasize key concepts

# Cognitive Load Theory
# New Information

- Limited ability to hold more than 5-9 elements
- Limited ability to process more than 2-4 elements at a time
- New information is lost rapidly

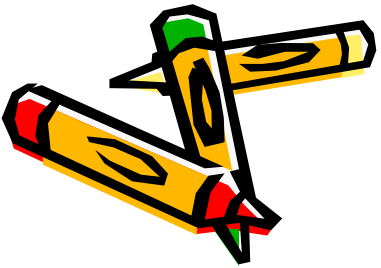


# Go Deep?


Fox Trot
Bill Amend
GO DEEP.
HOW CAN FREE WILL COEXIST WITH DIVINE PREORDINATION?
TOO DEEP.
IF BATMAN DIED, WOULD THE JOKER BE HAPPY?

# Building a Conceptual Framework

- Give the "Big Picture"
- Teach discipline-specific thought processes
- Model the thinking
- Use lots of examples, ideally in different contexts



# Ex:Legal Precedent

History of Higher Education

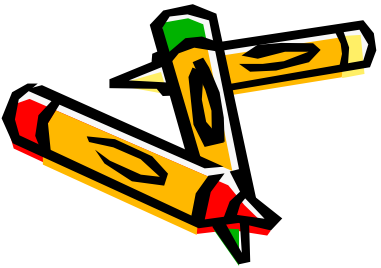
Higher Ed Law

Educational Policy

Read Chronicle article

Faced with actual cases

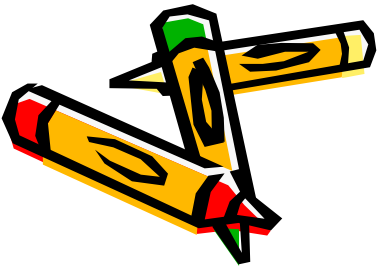
Ok, maybe now I get it!



# Remember this?

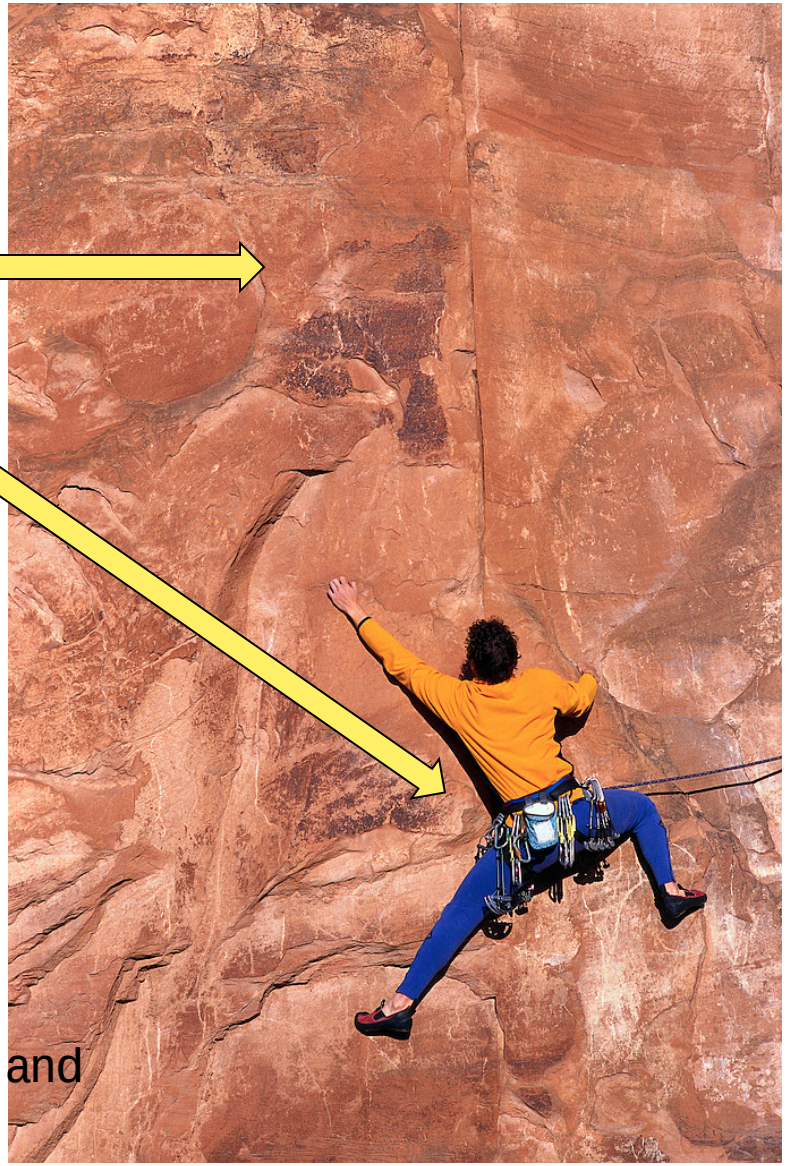

# Cognitive Load Theory
# Long term capacity

- No known limitations to long term memory
- Simple ideas are added to form more complex schema
- Expertise comes from organized knowledge that become automated, one element “items” in working memory



# What's the right "load"?

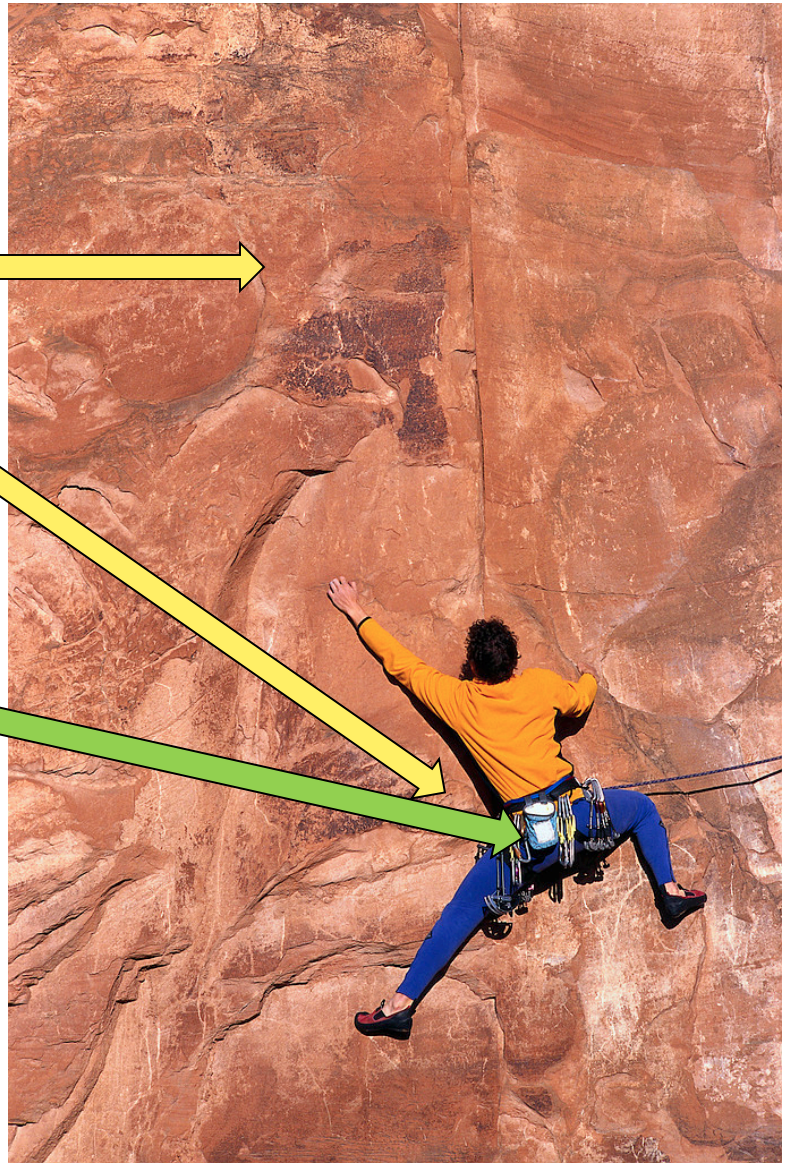
- Intrinsic load



Adapted from Danielson and Bender, 2010

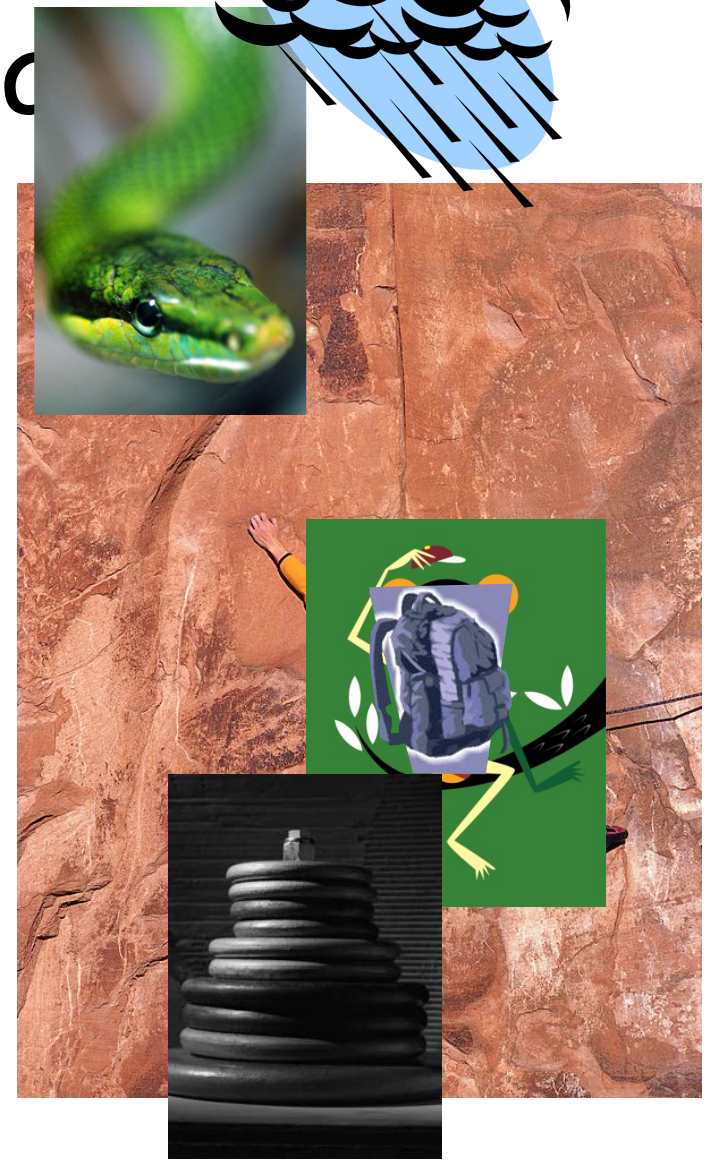
# What's the right "load"?

- Intrinsic load
- Germane (relevant) load



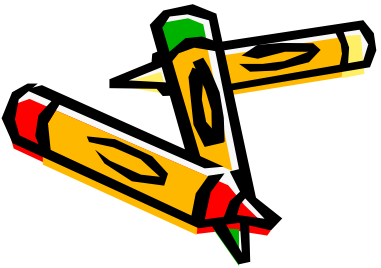
# Overloc

- Examples of extraneous load



# Overload

- Reduce extraneous load
  - Show complete or partial examples with solutions
  - Avoid split attention
  - Minimize confusing redundancy
- Optimize germane load
  - Vary learning tasks



# Review:What do we know about learning?

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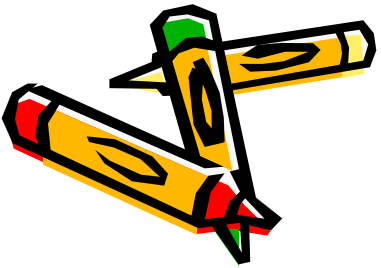
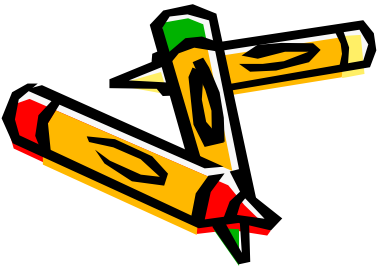


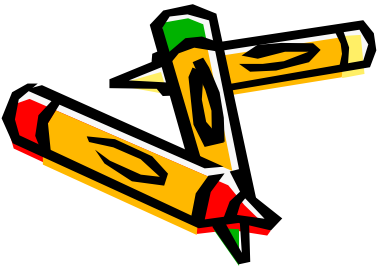
# How People Learn

- What makes it STICK?



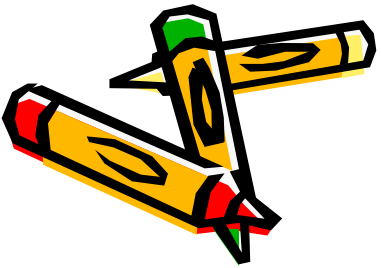
# Learning for Long-term Retention or Transfer

- Solid initial learning
- Deep understanding
- Meaningful chunks or patterns
- Incorporating new elements into existing schema
- Time on task
- Practice
  - Retrieval
  - In context
  - Different applications



# Additional Strategies

- Weaving concepts
  - Integrate course concepts
  - Creates “desirable difficulties” (Bjork)
- Spacing
  - Revisit concepts multiple times
  - Provide “multiple windows of entry” (Daniel)

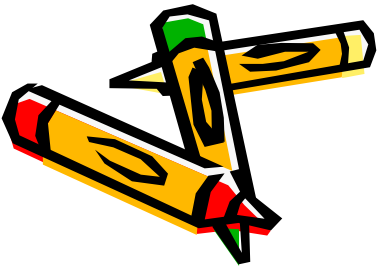


# The Importance of Reflection

# Metacognition

- Thinking about thinking
- Thinking about learning

- How did I finally get it?



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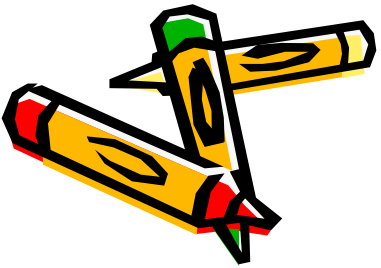

# Formative Assessments

- Test understanding
- Provide feedback
- Allow practice

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- Test understanding
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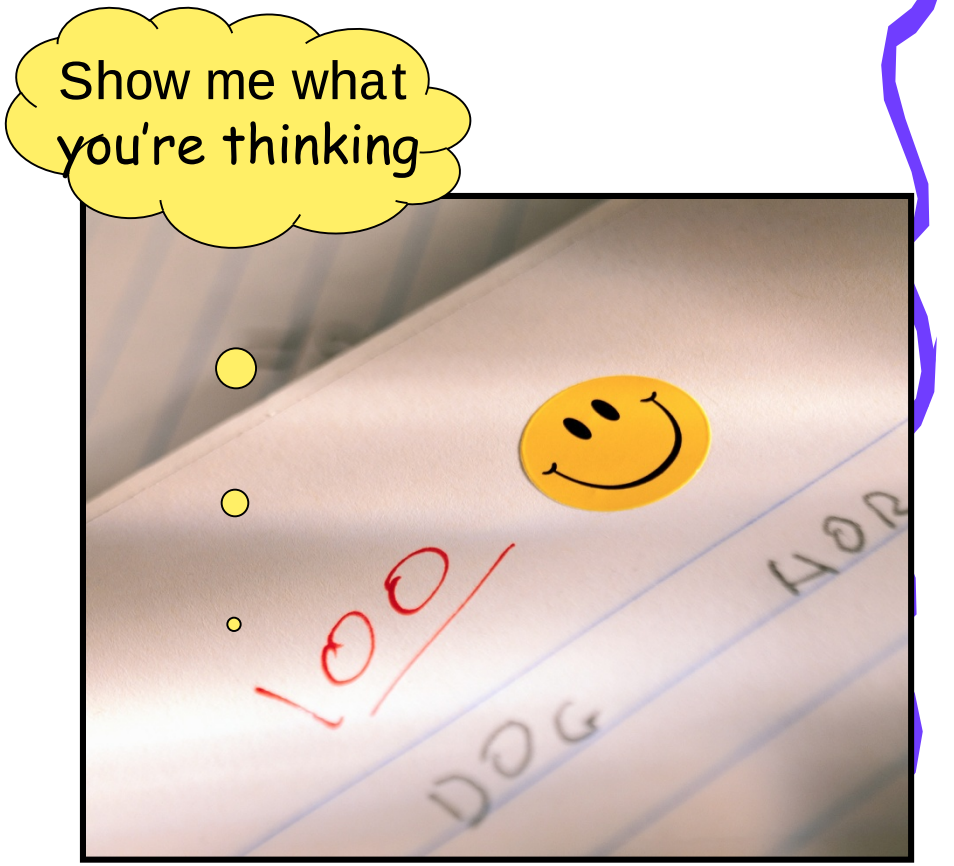
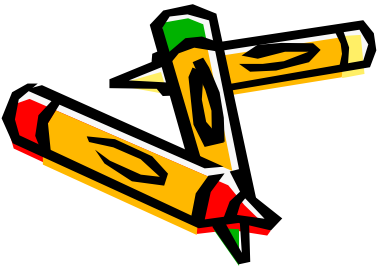
- Allow practice

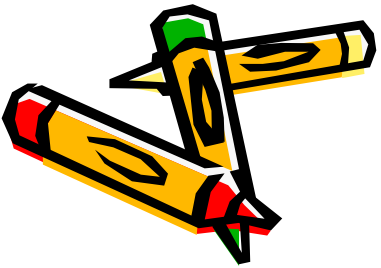


# What the Best Teachers Do

- No. 6. Effective teaching reflects an understanding of human learning
- No. 7. Effective teaching is designed to give prompt feedback



One more key element to retention, retrieval and transfer…



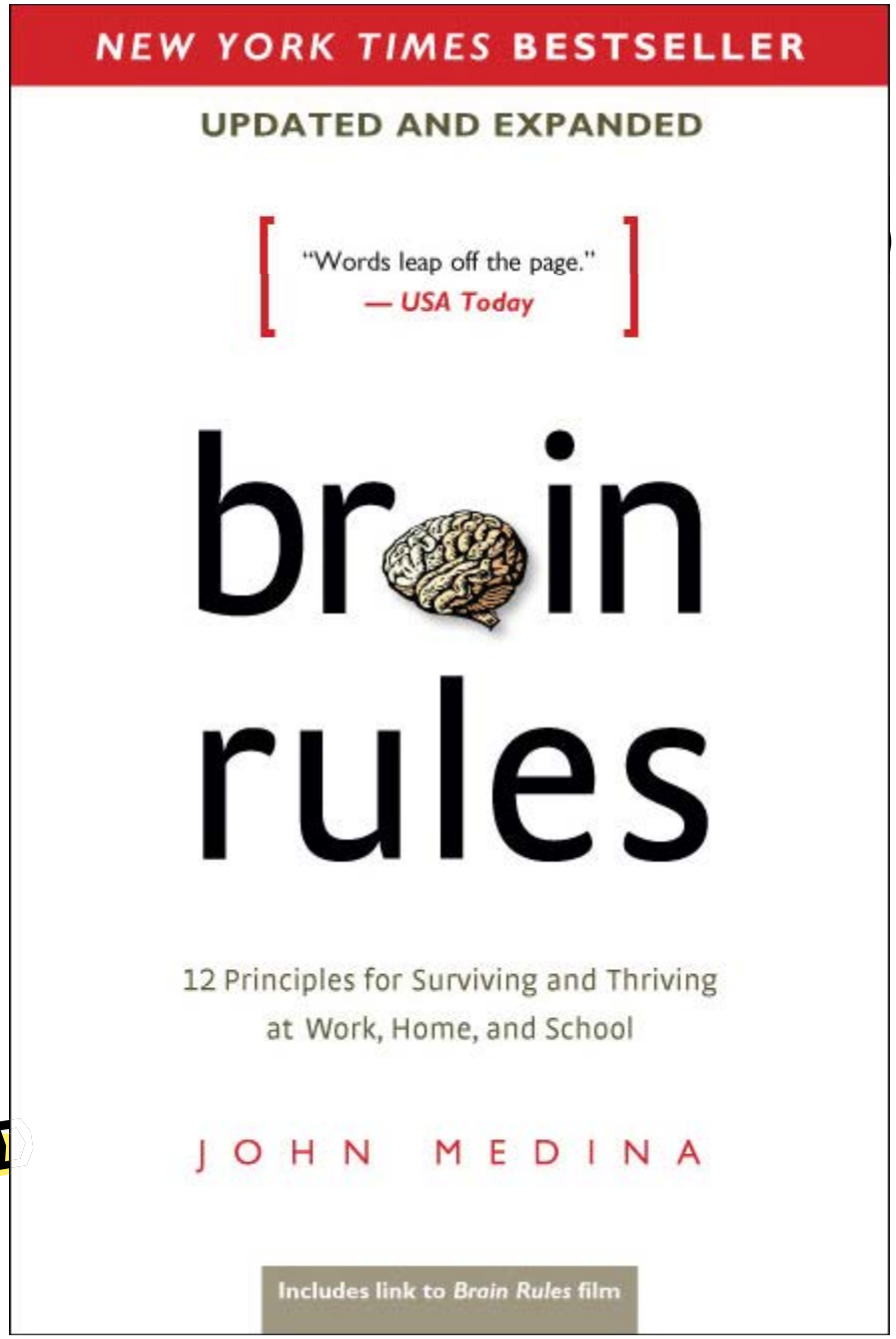
- Did you *Ask* "Why?"

# Motivation!!

- You've presented the "what"…
- So what?
- Now what?
- Who cares?

# Brain Rule #6

- "We don't pay attention to boring things"


NEW YORK TIMES BESTSELLER
UPDATED AND EXPANDED
"Words leap off the page."
— USA Today
brain rules
12 Principles for Surviving and Thriving at Work, Home, and School
JOHN MEDINA
Includes link to Brain Rules film

# Provide Motivation

- "Nothing taught by force stays in the soul."
  - Plato, The Republic

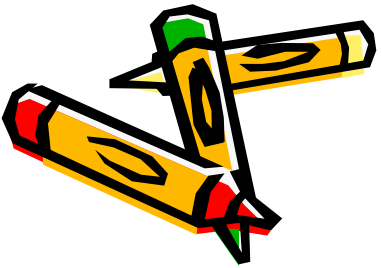

- Enthusiasm?
- Relevance?

# Motivation!!

- Enthusiasm*
- Relevance*

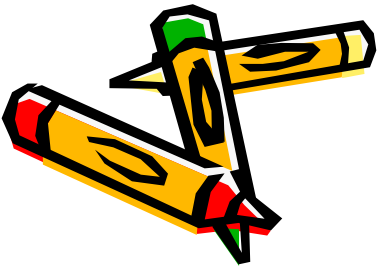
# Brain Rule # 12

- We are powerful and natural explorers.

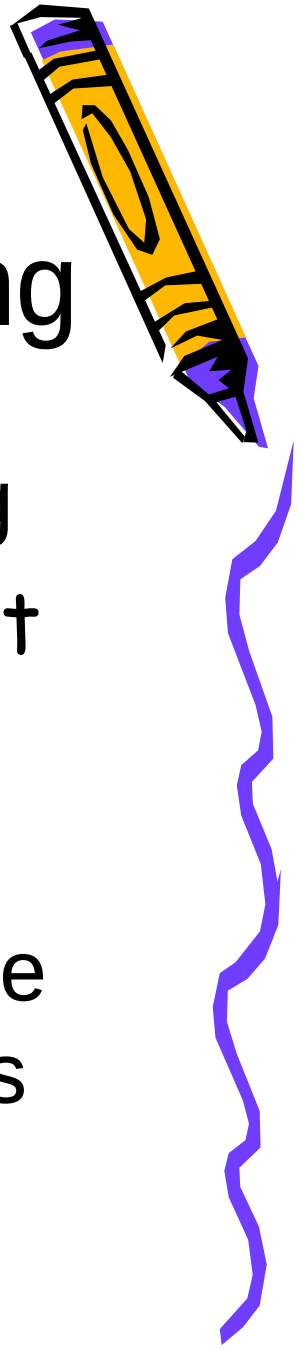


# Motivation!!

- Enthusiasm*
- Relevance*
- Clear and challenging expectations
- Confidence that students can succeed
- Safe environment

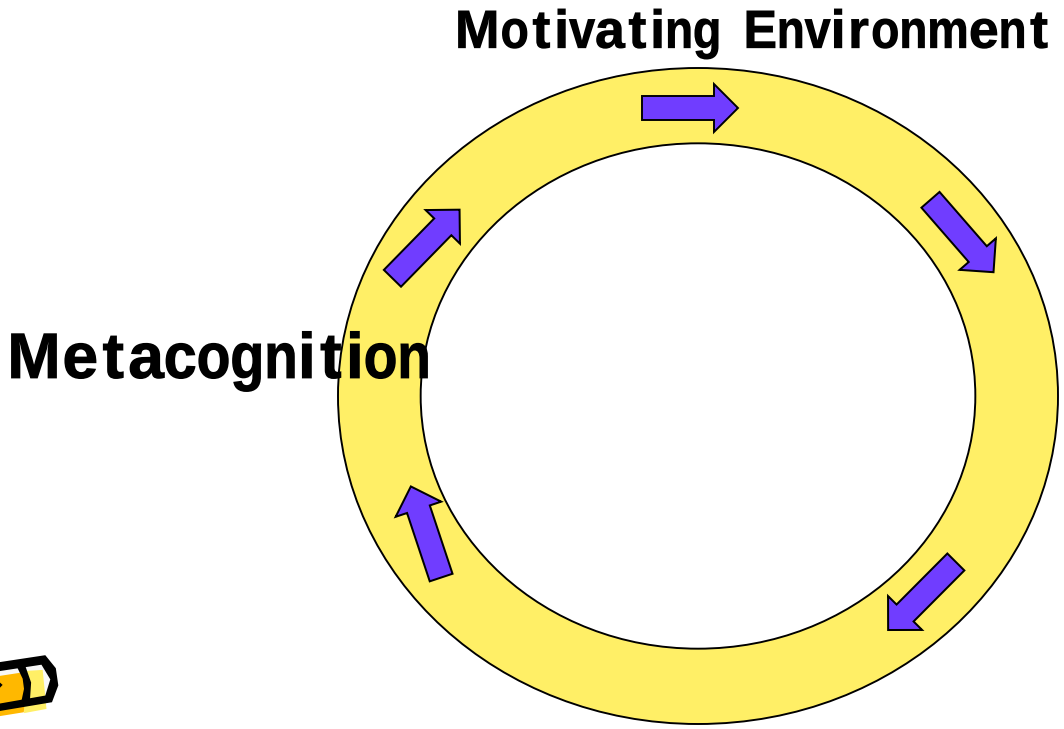


# Emotion, Stress and Learning



- At minimum, erodes joy of learning
- Clearly impairs brain's ability to put information into storage regions
- Impairs performance
- Impairs ability to generate possible reasons (e.g. differential diagnoses see *Pottier, 2013*)

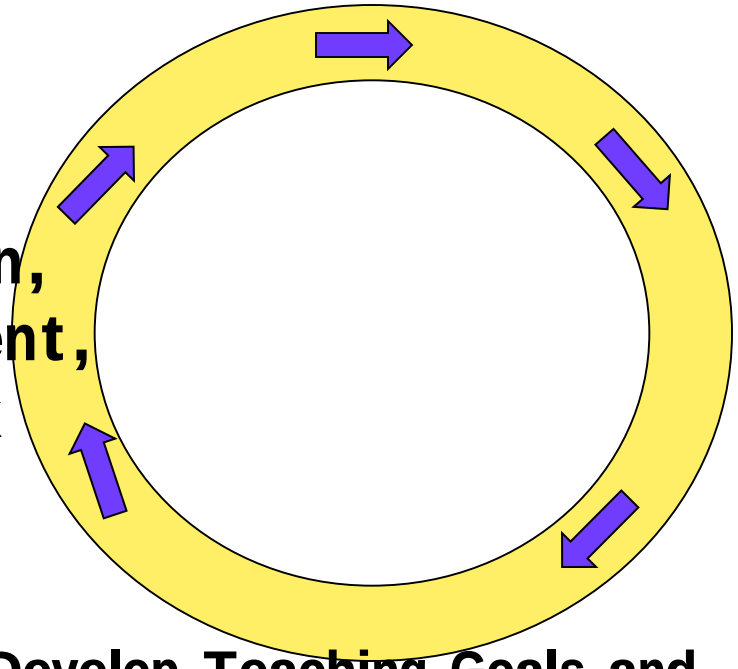
# Summary Circle of Learning




Richter and Timm, 2005

# Summary Circle - Teaching

**Motivating Environment for students**



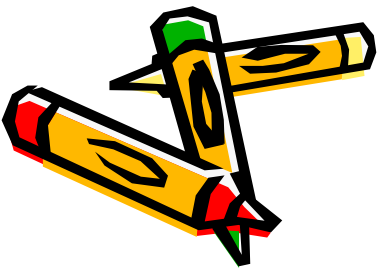
**Assessment of preexisting knowledge, context**

**Develop Teaching Goals and Content for expected outcomes; create conceptual framework**

**Reflection, Assessment, Feedback**

# How Does It all Start to Make Sense?

- Exercise 2



# Experts vs. Novices

- Recognize patterns of information
- Highly organized knowledge base
- Conditionalized to context
- Rapid retrieval of relevant knowledge
- May NOT be the best teachers.

# What about Learning "Styles"?

- Styles are probably better characterized as preferences
- Learners can utilize strengths and work on weaknesses
- Teachers can use multiple ways to present material
- Best "style" really depends on content to be learned, not person

# Brain Rules 5 and 11

- Every brain is wired differently
- Male and female brains are wired differently

# That said…

- Multisensory input enhances learning
- Vision trumps other senses

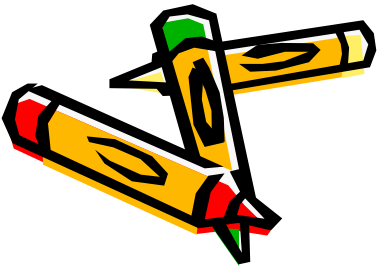
- More brain rules!

# Deliberate Practice

- Well defined task
- Immediate feedback
- Repeat

# Brain Rules Number 7

- “Repeat to Remember”



# Where More is More

- More ways something is learned
- More linkages and connections
- More opportunities for spaced retrieval
- More opportunities for deliberate practice
- More personal meaning

More Memory Pathways

# Summary

- Must acknowledge prior knowledge and preconceptions
- Must develop deep foundational knowledge
  - Within reasonable cognitive load
- Must fit into conceptual framework
- Must be organized within framework
  - Add simple elements
- Practice and Feedback develop expertise

and Requires Collaborative Motivation!!