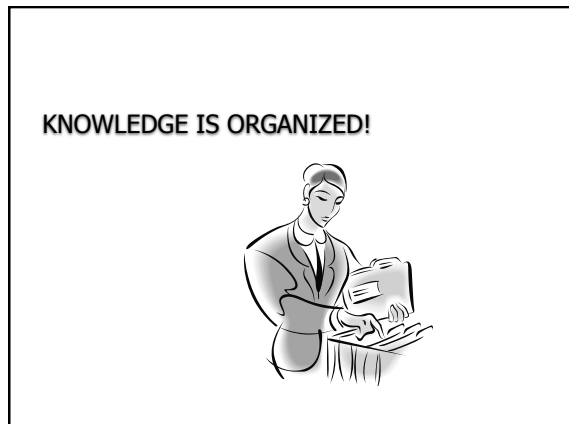


Balloon	Planets
Button	Fluff
Globe	Teeth
Snow	Sun
Linen	Marshmallows
Ivory	Cotton
Basketball	Vanilla Ice Cream
Clouds	
Paper	
Moon	
Heads	

<u>ROUND</u>	<u>WHITE</u>
Balloon	Snow
Button	Linen
Globe	Ivory
Basketball	Clouds
Moon	Paper
Heads	Fluff
Planets	Teeth
Sun	Marshmallows
	Cotton
	Vanilla Ice Cream

YM-CAD-MVF-BITV


YMCA-DMV-FBI-TV



Memory & Recall Made Fun

PRIMARY THEME

Memory is not a thing, but an ongoing process. This discovery means that memory is neither fixed nor permanent. It can be improved through better teaching and learning strategies.



- ### Research on Memory
- We have many types of memory and some types work better for us than others.
 - Memory is **NOT FIXED**; it's malleable. Factual knowledge and semantic knowledge is less fixed than procedural and episodic knowledge.
 - Our working memory holds 3 to 4 items.
 - Memories are stored in many areas of the brain. Fragments of a single memory can be scattered throughout the visual and auditory cortex and other areas and then combined at recall.
 - Knowing something does **NOT** mean you can recall it. Much of what we know is not stored in easily accessible pathways.

- ### (More) Research on Memory
- We commonly create - both purposely and unpurposely - false memories that we believe to be true but that are not.
 - Memory can decline with age but memory loss is not necessarily a byproduct of aging.
 - It's healthy to forget things; much of our input is irrelevant.

Memory & Recall Made Fun

RESEARCH FINDINGS

Stress in the Classroom: The Impact of Cortisol (a stress-related hormone) on Learning and Memory

Cortisol Levels ↑ Higher
↓ Lower

Best for novel, highly complex, pattern-dependent material (i.e., language, math and music) or for low background learners.

LOW STRESS

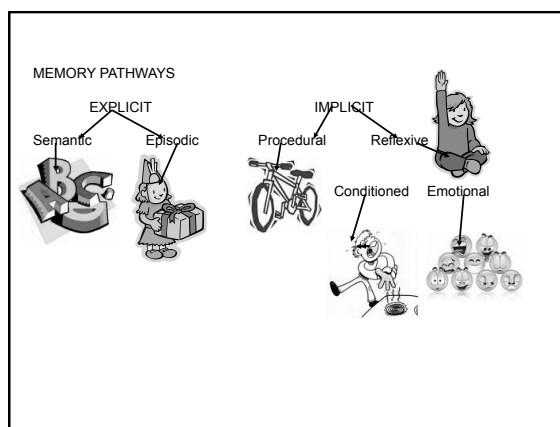
Appropriate for most all other subjects.

MODERATE STRESS

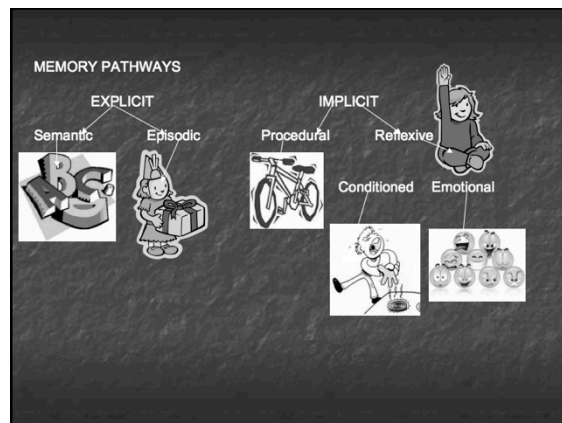
Better for review or test rehearsal once material has already been learned.

HIGH STRESS

Memories are stored in multiple pathways.



Before we look at the memory pathways, let me tell you a personal story about one of (one of!) the times I got dumped by a boyfriend...



Mind/Body State is Important

- ♦ High levels of stress impair memory.
- ♦ Moderate levels of stress enhance memory.
- ♦ To maximize the likelihood of recall, match the original location (e.g. same room) when remembering.
- ♦ To maximize the likelihood of recall, match the original mind/body state in which the learning occurred. For example, if you learn and review under low stress, it's likely you'll underperform in a high-stress test condition.

Strategies to Enhance Episodic Memory (the "where" path)

- ♦ You can't avoid an episodic memory since you're always somewhere.
- ♦ The best you can do is try and reduce the chance for contamination (too much content in one location).
- ♦ In your classroom this means taking advantage of different spatial locations.
 - ♦ Have student review by rotating their desks in a different direction (desk arrangement).
 - ♦ Study different units with different student groupings.
 - ♦ Teach in different areas of the room (different teaching spots).
 - ♦ Take notes in different colors.
 - ♦ Review the material with a mind map.
 - ♦ Print information on different colors of paper.
 - ♦ Stand up to learn new information.

Strategies to Enhance Semantic Memory

- ♦ This form of memory relates to words, facts, pictures and what we usually call "school learning."
- ♦ Use memory devices like mnemonics.
- ♦ Rhymes work! Ask student teams to create rhymes that reflect key ideas.

Strategies to Enhance Procedural Memory

- ♦ This form of memory relates to actions, procedures and movements. Content can be imbedded into movement.
- ♦ Use the body or movement to demonstrate a concept (e.g. student in Michigan use their hand to show where in the state they live).
- ♦ Teach with hands-on learning.
- ♦ Use drama, role play and simulations.
- ♦ Spell words with your body like YMCA.
- ♦ Incorporate manipulatives and models.

Strategies to Enhance Reflexive Memory

- ◆ This form of memory reflects automated pathways like in a handshake.
- ◆ Create strong sensory experiences.
- ◆ Use significant repetition like flashcards.
- ◆ Use continuous call-response repetition.
- ◆ Have partners quiz each other over and over again with numerous regroupings.

Memory & Recall Made Fun

PRIMARY THEME REVISITED

Memory is not a thing, but an ongoing process. This discovery means that memory is neither fixed nor permanent. It can be improved through better teaching and learning strategies. Since our students don't know all we know about improving memory, it's up to us to engage it.

One definition of intelligence is a person being able to use

MORE memory pathways (episodic, semantic, procedural, reflexive) to store a single concept.