

Learning vs. Retention: Implications for Educators

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No Disclosures

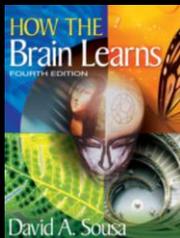


Objectives

By the end of the lecture, the audience will be able to:

- define learning and retention.
- differentiate between rote and elaborative rehearsal.
- apply the principles of Primacy-Recency to his/her teaching episode.

How The Brain Learns



Primacy-Recency Effect

Remember best = 1st part
Remember 2nd best = Last part
Remember least = just past middle

Known since the 1880's (Hermann Ebbinghaus)

Primacy-Recency Effect

1st items in working memory – reach functional capacity



Primacy-Recency Effect

Later info exceeds capacity and is lost



Primacy-Recency Effect

At end of learning episode, items in learning memory are sorted or chunked

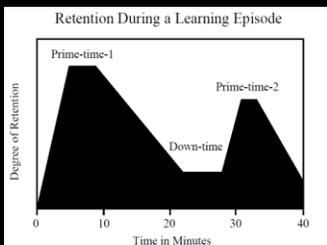


Primacy-Recency Effect

Additional processing of arriving final items

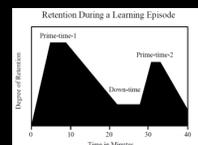


Primacy-Recency Effect



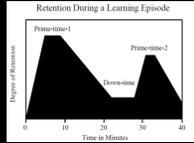
Primacy-Recency Effect

New Information should be taught first



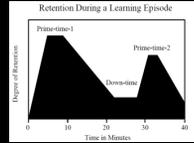
Primacy-Recency Effect

Practice or review during down-time



Primacy-Recency Effect

Closure at Prime-Time-2



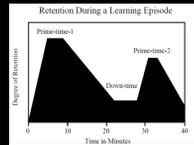
Primacy-Recency Effect

Closure: For the next 30 seconds try to recall the important findings of a lateral patellar dislocation. I'll ask you how those findings relate to the mechanism of injury.

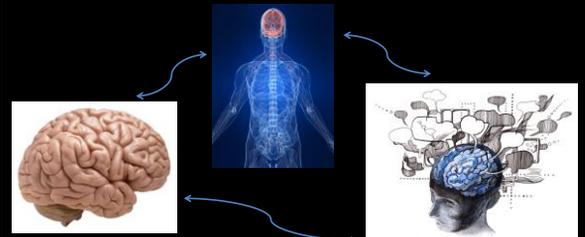


Primacy-Recency Effect

Closure does not necessarily mean review.



Learning



Learning

206-555-1234

23-44-67

The customer's name is Mary Smith

Learning

Differential Diagnosis for an MRI finding

Causes of Nephrocalcinosis

Muscles that make up the quadriceps mechanism

Retention



Retention



Retention: Factors

This slide details factors of retention. It includes an image of a person reading, a diagram of a head with floating letters, and a diagram of memory systems. The memory diagram shows 'Sensory Memory' (with icons for sight, touch, smell, taste) leading to 'Short-Term Memory' (with icons for rehearsal, chunking, organization), which leads to 'Long-Term Memory' (with icons for rehearsal, chunking, organization). A 'Rehearsal' arrow loops back from Long-Term to Short-Term Memory. A 'Learning Styles' box lists: Visual (pictures, diagrams, charts), Auditory (listening, speaking, reading aloud), Kinesthetic (hands-on, role-play, physical activity), and Reading/Writing (reading, writing, note-taking).

Rehearsal

Repeat again what you hear; for by often hearing and saying the same things, what you have learned comes complete into your memory

- from the Dialectics

Rote and Elaborative Rehearsal

Rote Rehearsal = store information EXACTLY as it is entered into working memory

- Multiplication tables
- Telephone numbers
- Procedural steps

Rote and Elaborative Rehearsal

Elaborative Rehearsal = Associate new learning with prior knowledge via relationships

More complex process that assigns meaning to the new information

Rote and Elaborative Rehearsal

A student uses rote rehearsal to memorize the various tendons that attach to the ischial tuberosity. She uses elaborative rehearsal to correctly interpret a hamstring avulsion injury.

Rote and Elaborative Rehearsal

If a student receive insufficient training in elaborative rehearsal, he will resort to rote rehearsal for nearly all processing.

Rote and Elaborative Rehearsal

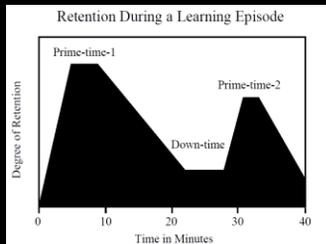
DDx for child with limp.
Foot, ankle, knee, hip, back, etc.

Does that help a child who comes into the ER with multiple bruises and refusal to bear weight.

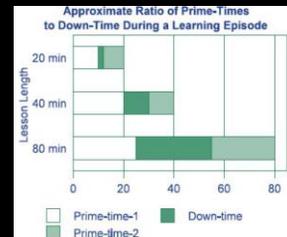
Rehearsal and Retention

Rehearsal is necessary but not sufficient for long-term storage. (No long-term retention without rehearsal).

Primacy-Recency Effect



Retention vs. Teaching Episode Length



Retention vs. Teaching Episode Length

Episode Time	Prime-Times		Down-Time	
	Total Number of Minutes	Percentage of Total Time	Number of Minutes	Percentage of Total Time
20 minutes	18	90	2	10
40 minutes	30	75	10	25
80 minutes	50	62	30	38



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Thank You
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References

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