

Lesson Plan

NEUROHEADWAY

Neuroscience Into Education

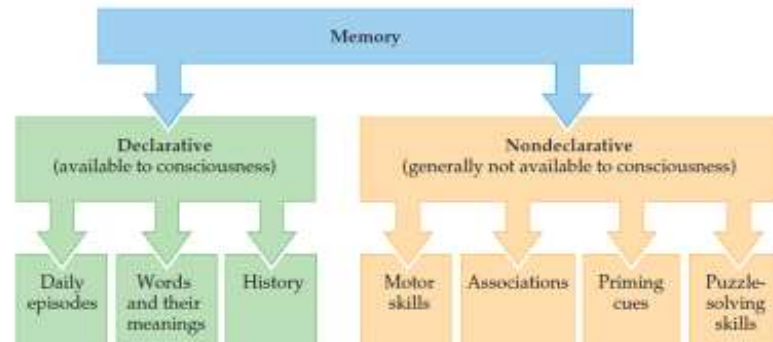
LESSON PLAN

How is memory formed? LO: To understand the process of memory formation	Explain to children where and how is the memory formed. They should understand the role of the individual neurons and their connectivity for the memory formation.	Go over power point, completing set activities. Children to train with memorizing tasks and problems.	Children should distinguish different types of memories they have acquired (declarative and nondeclarative). They should self-evaluate the ability to memorize after exercising in memory tasks.	I can distinguish different types of memory formation. I can create a scheme of how two neurons increase and decrease their connectivity. I can relate different experience to positive and negative context. I know the value of memory formation and how it affects the quality of life in patients.
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Power point Example

Memory is composed of 2 major memory types:

- Declarative memory about recollected events and facts (what did you do yesterday)
- Nondeclarative memory about automatic skills (you can drive a bike)



Episodic memory is the declarative memory of autobiographical events about times, places and associated emotions (who, what, when, where, why knowledge) that can be explicitly stated. It is the collection of past personal experiences that occurred at a particular time and place.

Memory classification

- Declarative Memory
 - Ability to recount what one knows, to detail the time, place, and circumstances of events; often lost in amnesia
- Procedural Memory
 - Ability to recall a movement sequence or how to perform some act or behavior
- Implicit Memory
 - Unconscious memory: subjects can demonstrate knowledge, such as a skill, conditioned response, or recalling events on prompting, but cannot explicitly retrieve the information
- Explicit Memory
 - Conscious memory: subjects can retrieve an item and indicate that they know that the retrieved item is the correct item



Brain and Memory

Average Brain Weights (in grams)

Species	Weight (g)
human	1,400
whale	7,800
elephant	4,800
giraffe	680
orangutan	370
cat	30
rat	2

Average number of neurons in the brain = 100 billion

Number of neurons in honey bee brain = 950,000



Every neuron is connected to other 1,000 - 10,000 neurons

The connections between the neurons are responsible for the memory formation

All of these animals form memories which help them to navigate in the environment

Inability to remember is called amnesia

- Amnesia
 - Partial or total loss of episodic memories for a period of time
 - People with amnesia forget episodic events (like what happened yesterday) but they preserve their motor skills (like driving a bike)
- Causes
 - Head injury (head trauma incident)
 - Alcohol drinking
- Types
 - Anterograde - inability to create new memories (what will happen after the incident)
 - Posterograde - inability to recall memories before onset of amnesia (what happened before the incident).

