Cognitive Approaches to Learning

Memory’s Beginnings

- Atkinson and Shiffrin (1968)
  - Encoding
    - Converting information into a form that can be entered into memory
  - Storage
    - Retaining information over varying periods of time
  - Retrieval
    - Locating and accessing specific information when it is needed at later times
The Standard Memory Model

Squire’s Taxonomy of Long-Term Memory

- Unknown capacity (huge)
- Unknown amount of time (unlimited)
Explicit Versus Implicit Memory

- Explicit
  » Declarative
  » LTM knowledge that can be retrieved and then reflected on consciously.

- Implicit
  » Nondeclarative, Procedural
  » Knowledge that can influence thought and behavior without any necessary involvement of conscious awareness.

Episodic vs. Semantic Memory

- Episodic (Autobiographical)
  » Stores personally experienced events
    – (e.g., your 10th birthday)
  » Flashbulb Memories
    – Vivid memories of what we were doing at the time of an emotion provoking event.
    – The research is mixed…

- Semantic
  » Stores general world knowledge
    – (e.g., concepts, categories, facts)
Availability Versus Accessibility

- **Availability**
  
  *The memory trace exists / was encoded into long term memory.*

- **Accessibility**
  
  *Degree to which the memory trace can be retrieved now.*

Forgetting

- **Retroactive Interference**
  - New info interferes with old info (e.g., a busy signal erases memory of a phone number).

- **Proactive Interference**
  - Old info interferes with new info (e.g., walking today to where you parked your car yesterday).
Retrieval Failure

- *When a memory is lost in the system versus lost from the system.*
  - Occurs when the information is *available*, but not *accessible*.

- Tip of the Tongue States
  - *When a person is temporarily unable to remember some shred of information that they know is stored in LTM*

Retrieving Information from Memory

- Retrieval Cues
  - *Stimuli that are associated with information stored in memory and aid in recall when recall is not spontaneous*

- Context-Dependant Recall
  - *Material learned in one environment or context is easier to remember in a similar environment or context*

- State-Dependant Recall
  - *It is often easier to recall material stored in LTM when our internal state is similar to that which existed when the information was first entered into memory*
The Levels-of-Processing Model

- Proposed originally by Fergus Craik and Robert Lockhart (1972).
- Suggests that memory is not specifically stored in three or more stores but instead varies along a continuous dimension in terms of depth of encoding
  » Semantic Processing
  » Acoustic Processing
  » Physical Processing
  » Self-reference effect

Levels of Processing

- Shallow Processing
  » Verbally repeating a word
- Medium Processing
  » Semantic
- Deep Processing
  » Self-Reference
Organizational Schemes

- Memorization occurs with structure in some meaningful relationship

- Mnemonics
  » A technique or device that uses familiar associations to enhance the storage and recall of information in memory

- Propositional Networks (a.k.a. Concept Maps)

A Propositional Network