Memory Strategies for Educators
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Outline
- Defining memory and brief neuroanatomy primer
- Strategies to consider for helping your students

Defining Memory
- Memory is the most common and persistent deficit following acquired brain injuries
- Memory is a complex process
  - It can impact past and future recall
  - Disruption to ANY of these can lead to memory deficits

Defining Memory

- Memory
  - Short-Term Memory
  - Long-Term Memory
- Sensory Memory
- Explicit (Declarative)
  - Episodic
  - Semantic
- Implicit (Nondeclarative)
  - Procedural

Neuroanatomy of memory

- Frontal Lobes
  - Short-term memory (working memory) and Retrieval
- Subcortical region (e.g., hippocampus, amygdala, striatum)
  - Learning, declarative memory (facts, events)
- Cerebellum, basal ganglia (also subcortical)
  - Procedural memory for motor learning

Memory Problems

- A memory deficit might look like trouble remembering or it might look like......
  - She frequently misses appointments-avoidance, irresponsibility.
  - He says he’ll do something but doesn’t get around to it.
  - She talks about the same thing or asks the same question over and over-annoying perseveration.
  - He invents plausible sounding answers so you won’t know he doesn’t remember.

- (Capuco & Freeman-Woodpert)
Translating Research to Practice

Considerations
- Severity of impairment
- What needs to be remembered? Appointment? Facts?
- Preferences, meaning
- Trial and error from clinician

Strategies
- Orientation/External Aides
- Errorless learning
- Spaced Retrieval
- Chaining
- Association/Keyword retrieval
- Mnemonics
Orientation and Memory

- External Aides
- Memory Notebook with Calendar
- Pictures of Staff
- Memory Log/Individualized Daily Schedule
- Behavior reward chart/tokens earned
- Tablets & phones

Memory Log/Daily Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Staff/Teacher</th>
<th>Activities</th>
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Daily Tasks/Homework

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<th>Thursday</th>
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<th>Saturday</th>
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Errorless Learning

- Cue freely as needed
- Frequent repetition
- Present information in actual context/setting
- Avoid quizzing
- Do not allow guessing or trial-and-error

Errorless Learning

- Most basic: make statement & ask student to recall statement without delay

  - My name is Dr. D. What is my name? Or Did I say my name was Sally or Dr. D?
  - You live in Baltimore. Where do you live?
  - This place is called STP. What is it called?

Severely Impaired Memory

- Orientation
  1. Your name is __________. What is your name?
  2. Your age ______ year old. How old are you?
  3. Your home is __________. Where was you born?
  4. Your phone number is __________. What is your phone number?

- Place
  1. You are in Baltimore. Which day are we in?
  2. You are at STP right now. Where are you?

- Injury
  1. The date of your injury was ______. When was your injury?
  2. You have a ________ (what kind of injury do you have?)
Errorless Learning

• More complex: simple command with conditional clause attached, indicating when command should be executed

  • When you pick up the phone, say, "Hello, my name is Kevin." What should you say when you pick up the phone?

  • Before you sit down, feel for the back of the chair. What should you do before you sit down?

Spaced Retrieval

• Identical to errorless learning except student is asked to retain information for progressively longer periods of time

  • Give name and ask to repeat after increasing intervals
  • E.g., 15 sec, 30 sec, 45 sec
  • Duration only increases based on performance and until each prior level is mastered

Chaining

• Used to retrain students to perform sequence of steps by procedural memory

  • Each item learned automatically, as an isolated unit
  • Then mechanically linked with items before and after
  • Completion of 1 step in sequence serves to reinforce step that came before it
Chaining

- Verbal or visual; helpful to also incorporate motor movements
- **Forward**
  - Teacher provides 1st step; guides student
  - Once able, 2nd step introduced; student guided to perform both together
  - Once successful, 3rd step introduced; student guided to perform all 3 together
  - Continues until all steps are complete
- **Backward**
  - Identical, cueing for steps reversed last to first
  - Vanishing cues
    - process for teaching new information in which prompts are provided and then gradually removed

Association

- Paired Associate (PA) learning
  - 2 items (a Stimulus and Response item) paired as stimuli (e.g., CALENDAR-SHOE)
  - When items pairs are committed to memory, presentation of first word (the stimulus word) should evoke the second word (the response word)
    - Presenting CALENDAR should elicit a response of SHOE

Keyword Method

- Paired-associate learning
  - mediating word (“key” word) is used to associate two items
  - Often used to learn foreign language
  - English word that sounds like some part of foreign
    - Spanish carta sounds like the English cart
    - cart is the **keyword**
    - link keyword with English meaning of foreign word by forming an interactive image
    - carta means letter, so visualize a letter inside a cart
Mnemonics

- Acronym - list of initial letters of critical words
- representing the Great Lakes as HOMES
- Narrative Story Method
- create story that contains all words in a to-be-remembered list
- Rhymes and Alliterations
- Chunking (phone numbers are great examples of chunking)
- Method of Loci

Imagery Mnemonic: The Method of Loci
- Ascertain student recalls a familiar place
- house
- Think of different landmarks
  - bathroom, kitchen, hall
- Train students to “go around” landmarks in particular order
- Best for simple words lists, like vocab
- Imagine items in certain places of house
**Circling Back - Summary**

- Gather as much information as possible about the child – Neuropsychology evaluations, speech and language evaluations, medical documents, PT and OT evaluations
- These challenges are dynamic, multi-variate, and evolving
- Brain injuries are individual and diverse
  - There are some commonalities but each one is unique
  - It is important to individualize and fade accommodations as necessary

**Summary**

- It is important to individualize and fade accommodations as necessary
- As most are aware, the Universal Design for Learning (UDL) provides a framework
  - Under the engagement guideline you can find options related to supporting different areas of functioning
    - [http://udlguidelines.cast.org/](http://udlguidelines.cast.org/)
- Teachers play a key role!

**APPS to consider**

- To name a few...
  - Evernote
  - Pictello
  - iProcrastinate
  - InClass
  - Index Card
  - Google Calendar
  - Flashcards Deluxe