

# Teaching the Way People Learn

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## *Module 5: Designing “memorable” learning experiences*

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This handout accompanies the video for Module 5. Use the handout to review information from the video and to record discussion.

----- **Section 1** -----

- Formal schooling is built on the assumption that students learn content, skills, and concepts that will help them throughout life.
- To be effective thinkers, students must first possess the background knowledge needed to be literate in today's society.
- Students also must strive to become lifelong learners, creative problem solvers who can engage in inquiry and discovery.
- In this module we now begin to focus on how the *teacher* can bring students to mastery in a given domain.
- Learning depends fundamentally on memory processes.

**Stop and Jot 1:** Why might there be a reciprocal relationship between memory and learning?

----- **Section 2** -----

- To deal with the complexities of living and learning, we need to know what information is important to remember, and what information we can reasonably send to the recycle bin.
- Scientists suggest that the memory system has three components that hold information for different lengths of time: sensory, working (short-term), and long-term memory.
- Sensory memory (SM)
  - SM is considered to be an automatic response and is outside of cognitive control.
  - SM is in high resolution and detail oriented.
  - Input is continuously replaced by new memory once the previous information decays.
  - SM capacity is largely influenced by genetics.
  - Information once lost from sensory memory is gone for good.
- Working memory (WM)
  - To move information from sensory memory into working memory, we must pay attention to it.
  - Paying attention involves directing not only our senses but also our minds toward whatever we need to learn and remember.
  - WM is where we hold attended-to information for a short time while we are trying to make sense of it. It's where our "thinking" occurs.
  - Rather than being a single entity, WM has several sub-components for holding and working with different kinds of information.
  - Information that makes its way to WM doesn't last very long, unless we consciously continue to work with it in some manner.
  - WM's key function is that of central executive for the memory system.
  - WM has a limited capacity.

*Digit-span experiment* - The experiment consists of trials of an increasing series of numbers to remember and recall. Read the sequence of numbers on the screen aloud, pausing for about a second between each number. Then write down the numbers in order on the lines below.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_

- The number of pieces of information we can hold in WM depends on how much information each piece includes and whether we can easily make associations among the pieces.
- Long-term memory (LM)
  - LM holds information much longer than WM does, perhaps a day, a week, a month, a year, or a lifetime.
  - There is probably no such thing as someone running out of LM.

- The process of storing new information in LM usually involves drawing on “old” information already stored.
- We often have considerable conscious control over how we put things in LM.
- Much of the knowledge stored in LM is interconnected.

*Associations.* Write down the first word that comes into your head. Then write down the first word that that word reminds you of. Continue writing down the first word that each successive word brings to mind until you've generated a list of 10 words.

**Beach**

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- Information in LM appears to be encoded in a number of ways – as words, physical characteristics, and meanings.
- Explicit vs. implicit knowledge
  - Explicit knowledge can easily be recalled and explained.
  - Implicit knowledge can't consciously be recalled or explained but that nevertheless affects our behavior.
  - Knowledge can be so dim that it affects us only in very subtle ways.
- Psychologists haven't yet come to consensus about the duration of LM.
- Although our sensory, working, and long-term memory systems are distinct from one another, they are interrelated in important ways.

**Stop and Jot 2:** To rehearse and integrate the information you just learned, create a graphic organizer (i.e., concept map, visual model) that portrays your understanding of the memory processes.

-----**Section 3**-----

- Rehearsal is the process of repeating information to oneself or others in an effort to commit it to memory.
- Rehearsals that are spaced over time and elaborative are more effective.
- Generating information in response to some kind of prompt significantly improves recall of that information.
- Enactment involves physically acting out information or ideas (e.g., role-playing).
- The production effect describes improvements in memory that arise when words are produced aloud rather than silently read.
- Effort after meaning refers to the thinking that one engages in to make sense of stimuli in the environment.
- People often remember information better when it is presented in the form of pictures rather than words (e.g., Artful Thinking).
- Children younger than age 8 generally do not exhibit better memory for pictures than for words.
- Emotional arousal influences what we pay attention to. This can affect both immediate as well as long term memory.

**Stop and Jot 3:** You have now seen and heard about 7 different research-based effects that lead to better memory. Rank the effects below from most useful for you and your classroom to least. The blank line at the front of each strategy is for your ranking.

\_\_\_\_ Rehearsal

\_\_\_\_ Generation

\_\_\_\_ Enactment

\_\_\_\_ Production

\_\_\_\_ Effort after meaning

\_\_\_\_ Pictorial representation

\_\_\_\_ Emotion

What do you especially like about the top two or three?

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#### Section 4

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- Mnemonics can take the form of acrostic sentences, acronyms, rhymes, or peg words.
- Mnemonic strategies are highly effective at aiding recall across age groups and for students with and without special needs.
- Sometimes making things just a bit more difficult may actually lead to better learning.
- From time to time you may want to think about how to make tasks harder in certain ways, especially if the difference is not noticeable to students.
- Chunking aids memory by grouping items in an organized way so that they can be retrieved more easily than items in an unstructured list.
- Each chunk must be manageable enough for students to keep a few chunks in mind at a given time.
- Interleaving is the process of intentionally ordering learning tasks or materials so that the same task is not done several times in a row. (abc, cab, bac) vs. (aaa, bbb,ccc).

### **Go and Grow**

Without referring back to the video or handout, what are **three** valuable points you take away from this module?

What are **two** things you would like to do “tomorrow” with the information you learned?

Assignment: What is **one** question you have and would like to research? For the next time you meet, prepare a brief summary of your findings to share with others who may have the same question.