

**Lesson Plan for Class 3**  
***Long Term Memory and Study Habits (90 min)***

**Learning Objectives:**

*Students will be able to:*

- Describe strategies that can be used to enhance the encoding and retrieval of information.
- Apply the metacognitive aspects of learning how to learn to memory tasks in their everyday lives

Before class:

Students will read:

([https://www.canyons.edu/resources/documents/academics/onlineeducation/Psych126TextbookFinalV1\\_2.pdf](https://www.canyons.edu/resources/documents/academics/onlineeducation/Psych126TextbookFinalV1_2.pdf) Ch. 4 Memory p. 61-93)

**1. PRE-CLASS KAHOOT QUIZ AND DISCUSSION (10 min)**

- a. Start with a Kahoot quiz ([https://kahoot.it/challenge/06786977?challenge-id=460ae35c-b8f8-4831-a326-900f60325ea0\\_1716489823494](https://kahoot.it/challenge/06786977?challenge-id=460ae35c-b8f8-4831-a326-900f60325ea0_1716489823494)) – (SEE END OF DOCUMENT FOR KAHOOT QUESTIONS) to assess everyone's understanding of the readings
- b. Discuss the correct answers

**2. STUDY STRATEGY POLL (25 min)**

- a. Use mentipoll to ask students about study strategies <https://www.menti.com/>

I am going to list off a number of strategies for studying. Vote for the methods that you typically use when studying for your classes.

1. Reading the material over and over
2. Spreading out your studying over many days
3. Staying up late the night before to pull an all nighter
4. Using flashcards to test your knowledge
5. Cramming right before the test
6. Mixing up material from different classes rather than studying for just one class at a time
7. Rewriting your notes
8. Coming up with questions to test your understanding
9. Memorizing definitions of key terms
10. Applying the information to your own life
11. Making the material memorable to you with personal connections to your life
12. Studying in a quiet place with no distractions

- b. Watch a video about effective study habits  
[https://www.youtube.com/watch?app=desktop&v=3d73Qsr-Hm4&ab\\_channel=UQxThink101](https://www.youtube.com/watch?app=desktop&v=3d73Qsr-Hm4&ab_channel=UQxThink101)
- c. Think-pair-share: what surprised you about the video?

**3. DEEP PROCESSING DEMONSTRATION (10 min)**

(adapted from McCabe, 2014)

- a. Demonstration:

Students view 18 words one at a time for 2 seconds each ( see attached Demo ELAB' presentation)

For each word, they answer a yes/no "orienting question" that represents processing at a shallow/orthographic (e.g., "Is it typed in capital letters?"), medium/phonological (e.g., "Does it rhyme with 'shock'?"), or deep/semantic (e.g., "Does it fit in the sentence 'The \_\_\_\_ was building a nest.'") level.

After a brief filled delay, students are given 60 seconds to recall and write down the words. The instructor then asks for a show of hands to tally which level of recall was highest.

- b. Discussion: Why was the deep/semantic level of processing most effective for remembering? How can be this effect used to improve study habits?

#### **4. ACTIVITY: SPACING EFFECT (25 min)**

- a. Research Demonstration: Spacing Effect

##### **Research Demonstration: Spacing Effect**

(based on Learning and Memory Strategy Demonstrations for the Psychology Classroom (2014) by Jennifer A. McCabe

<https://teachpsych.org/Resources/Documents/otrp/resources/mccabe14.pdf>)

Think-pair-share (5 min): "Do you often find yourself cramming for the exams? Why do students cram?"

A lot of learning methods, including cramming, are based on repetition. Now we will demonstrate one of the effects related to it.

Give out the Handout (see below) which will be folded so that students cannot see the answers: "Do not unfold or flip the paper just yet"

"You will hear a list of words, try to remember as many words as you can. Expect that most of the words would appear twice in the list"

Put the following words (without the #s) in a Powerpoint show with one word per slide. Read the list at a pace of one every 3 seconds changing the slides at the same time.

- |               |              |
|---------------|--------------|
| (1) Vessel    | (19) Leather |
| (2) Household | (20) Leather |
| (3) Household | (21) Artist  |
| (4) Tower     | (22) Witness |
| (5) Message   | (23) Witness |
| (6) Basket    | (24) Pattern |
| (7) Basket    | (25) Bottle  |
| (8) Fashion   | (26) Empire  |
| (9) Justice   | (27) Empire  |
| (10) Justice  | (28) Pattern |
| (11) Artist   | (29) Cousin  |
| (12) Supper   | (30) Giant   |

- |              |             |
|--------------|-------------|
| (13) Fashion | (31) Giant  |
| (14) Ticket  | (32) Supper |
| (15) Ticket  | (33) Remark |
| (16) Remark  | (34) Habit  |
| (17) Cousin  | (35) Habit  |
| (18) Message | (36) Bottle |

“Now, count backward by 3’s from 245 for 18 seconds”

“Try to recall and write down as many words as possible in any order, in 2 minutes”

“Now, unfold the sheet. Within the list, ignoring the first four words. 16 words were presented twice. Eight words were presented in a spaced fashion, in that there were other words between the two presentations of that word. Eight words are presented twice in a row, in other words -- in a massed fashion. *Which of these forms of repetition is more like cramming?*”

“Check off the words you wrote down in the corresponding column. Calculate the total in each column”

“Now, please enter your results in a Google form [bit.ly/Spacing\\_Effect](https://bit.ly/Spacing_Effect)”. After they entered the results, download and open the Results.

## Spacing effect demonstration

[Sign in to Google](#) to save your progress. [Learn more](#)

\* Indicates required question

How many words that were presented in a spaced manner did you remember? \*

Your answer \_\_\_\_\_

How many words that were presented in a massed manner did you remember? \*

Your answer \_\_\_\_\_

**Submit** [Clear form](#)

Never submit passwords through Google Forms.

Ask students: “What can we do with the class data to compare the two results?”

“What do you notice about these data?”

“Balch’s (2006) results showed that students recalled significantly more distributed/spaced words (47.8%) than massed words (34.5%). Did the class data show the same general results?”

“Going back to study habits, what are the implications of spacing effect for better learning? Have you ever noticed your instructors using this effect in your courses? Do you use this effect in your own studies?”

Example answers:

Instructors often use quizzes as a way to introduce spaced repetition into the course to help their students learn more effectively, which has been shown to increase knowledge durability. Students can additionally assist learning by using additional tools based on spaced repetition, such as flashcards in Anki or Quizlet apps that can help you to distribute the repetition over time.

“The spacing effect refers to the memory advantage of distributing study time with breaks in between, as compared to massing or cramming study time into only one session, holding total study time constant. This effect is found in larger window of time and in different species”.

Homework assignment: “Fill out a brief one-page research report to articulate the research questions addressed, describe the experimental procedures employed, and evaluate possible relevances and implications of their findings in the scope of our class, in your lives, and beyond”

IF EXTRA TIME LEFT:

Q: What is the goal of counting back? (A: to avoid contamination effect due to items in short-term memory)

Q: The first four word are not included in the recall total. Why? (A: to avoid contamination from the primacy effect).

HANDOUT (fold so that students cannot see the answers)

Spaced presentation	Check if remembered	Massed presentation	Check if remembered
Message		Basket	
Fashion		Justice	
Artist		Ticket	
Supper		Leather	
Remark		Witness	
Cousin		Empire	
Pattern		Giant	
Bottle		Habit	
	Total:		Total:

**5. HOMEWORK ASSIGNMENTS (20 min) – Explain assignment and provide examples of study plan-- students can begin in class**

- a. Spacing Effect Research Report: fill out a brief one-page research report to articulate the research questions addressed, describe the experimental procedures employed, and evaluate possible relevance and implications of these findings in the scope of our class, in your lives, and beyond (due 10/16).
- b. Read Chapter 4 Memory Textbook Pg 93-94 and Noba Project Memory Encoding, Storage, Retrieval: <https://nobaproject.com/modules/memory-encoding-storage-retrieval#content>
- c. Design a study plan that will allow you to learn effectively (due 10/15). The plan should do the following things:
  - Describe specific ways that you can compensate for the limitations of attention and working memory.
  - Describe specific plans to apply at least two effective learning strategies.
  - Describe ways that you will use metacognition to become aware of your level of understanding.
  - Identify potential obstacles and describe methods for overcoming them.

## Pre-class Kahoot Quiz

What brain region is essential for memory consolidation but does not store memories?



Correct  
+913

Next

▲ Amygdala ✕

◆ Hippocampus ✓

● Cerebellum ✕

■ Prefrontal cortex ✕

Which effect explains the tendency to remember items at the beginning and end of a list?



Answer streak 2  
+954

Next

▲ Tip-of-the-tongue phenomenon ✕

◆ Primacy and recency effects ✓

● Proactive and retroactive interference ✕

■ Automatic encoding ✕

Where have recent studies detected working-memory signals?



Answer streak 3  
+872

Next

▲ Hippocampus and cerebellum ✕

◆ Amygdala and temporal lobe ✕

● Medial temporal lobe and prefrontal cortex ✓

■ Occipital lobe and parietal lobe ✕

What type of interference occurs when new information disrupts the recall of old information?



Answer streak 4

+ 852

Next

▲ Retroactive interference ✓

◆ Proactive interference ✗

● Retrieval failure ✗

■ Primacy effect ✗

Which brain structure is associated with enhanced retention of memory, especially during emotionally charged events?



Answer streak 5

+ 958

Next

▲ Hippocampus ✗

◆ Amygdala ✓

● Cerebellum ✗

■ Temporal lobe ✗

