

How Memory Works: A Literature-Based Lesson Plan for Grades 9-12

Length of lesson: one class period

Primary Sources: CNNfyi - Your Brain, at <http://www.cnn.com/fyi/interactive/news/brain/lp.memory.html>* and the Georgia Institute of Technology – Human Memory, at http://www.cc.gatech.edu/classes/cs6751_97_winter/Topics/human-cap/memory.html.

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TEKS POTENTIALLY ADDRESSED THROUGH THIS LESSON

§112.34. Biology, Grades 9-11: 3A, 3B, 3D, 3F

§112.72. Health Science Courses, Grades 10-12

PERFORMANCE OBJECTIVES

Students will be able to: (1) explain the significance of finding the brain's remembering mechanism; and (2) participate in a memory study using written words and images.

CONCEPTS

High school students should know that scientists rely on technology to enhance the gathering and manipulation of data. New techniques and tools provide new evidence to guide inquiry and new methods to gather data, thereby contributing to the advance of science.

High school students should recognize and use connections among mathematical ideas, understand how mathematical ideas interconnect and build on one another to produce a coherent whole and recognize and apply mathematics in contexts outside of mathematics.

MATERIALS

- CNNfyi .com article: "Making Memories" <http://www.cnn.com/fyi/interactive/news/brain/memory.html>)
- Blank note cards
- Magazines

TEACHER PREPARATION

Depending on computer access at schools, teachers may need to reserve computers in advance for this lesson, or print off copies of the article for student use.

* CNNfyi.com updates the site in the early evening, so students may have difficulty finding it without the URL. You can find the lesson plan by going to the Subject Areas page and clicking PREVIOUS in the square for Today's Lesson Plan.

ENGAGEMENT

Ask students to raise their hands if: (1) they know their home address, (2) they remember the name of their second-grade teacher, and (3) they remember what they had for dinner last night. Lead a discussion about which was the easiest to remember and which was the most difficult to remember. Why might that be?

EXPLORATION

1. Ask the following and make class notes that can be referred to at the end of the experience:
 - Do you think personal experiences play a role in memory? Explain your answer.
 - How do we use our memories?
 - What do you know about Alzheimer's disease?
2. Divide students into pairs. Have each student create 10 flash cards with random words and 10 flash cards with images from magazines.
3. Direct one student to show the note cards with the words to another student for 15 seconds. Time them and tell them when to change to the next card. Have the student who was shown the words recall all the words that they can. The partner should record how many they get correct. Repeat this procedure with the other person in the group.
4. Repeat the procedure using the note cards with images.
5. Have students calculate the percentage of the words they remembered and the percentage of the images they remembered. Students can calculate the percentage by dividing the total number remembered by the total number shown and multiplying by 100.
6. Ask students to find the average percentage for the class on word recall and image recall.

EXPLAIN

Have the students read the "[Making Memories](#)" article and ask:

1. What similar studies were conducted at Harvard and Stanford Universities?
2. Why is it significant that the part of the brain affecting memory is identified? How can advertising companies use this information to their advantage?
3. What is Alzheimer's disease? How can this new research help people with Alzheimer's disease?
4. Harvard neuroscientist Anthony Wagner used "magnetic resonance imaging," or MRI, machines to study memorization of words and pictures. He concluded that words or pictures that caused strong activity in the brain were remembered better. Why do you think this is so?

ELABORATE

Students can create rhythm patterns and see if their partner can repeat the pattern. If yes, they can continue to add to the pattern until the other student cannot remember it. Ask students to write down how many beats they were able to remember. Discuss these results and compare them to the tests done with visuals. Tally the class and see if some students have better memories for rhythm and some for visuals. Ask the class to draw conclusions about what their findings may say about individual students' learning strengths.

EVALUATE

1. Students write a brief essay explaining which set of note cards he or she remembered best. Students should consider why they think that they remembered the set the best. Be sure to have students include whether they believe this is a fair test and explain why it is or is not.
2. Students create memory tests with specific instructions as to what materials are used, length of time and procedures. Try the tests out on the class and discuss the results.