Pre – Museum Visit Activity

Objectives and Overview
This is a test of the student’s ability to remember words in a 20-word list based on their position in the list. The teacher will read the list at a rate of one word per second while the students listen. Then the subjects will write down as many words as they can remember. Data will be collected and analyzed from all students.

Time Frame
1 class period (45 min)

Background
This exercise is a test of the impact of the words first heard (primary) and those heard last (recency) from a list read aloud. The results of this kind of experiment usually result in a graph with higher numbers of words at the beginning and end of the list. This graph is called a "serial-position curve." Words read first and words read last are remembered better than words read in the middle of a list.

This type of experiment provides evidence that there are two types of memory processes. It is thought that memory is good for the words read last because they are still in short term memory - this is the recency effect. Memory is good for the words read first because they made it into long term memory - this is the primacy effect.

It is also possible that some words in the list will be easy to recall for other reasons. For example, if someone recently dropped a hammer on his or her toe, they may find that the word "hammer" was easy to remember. Or perhaps, the last name of someone in the group of subjects is "King", and then everyone would remember the word "king".

Materials
1 list of words
1 notebook/student
1 timing device
**Procedure**

1. Enlist all students in your class to serve as your experimental “subjects.” Testing 10 students at a time will make the data collection and calculations easier.

2. Tell them that you will read a list of 20 words and that their job is to remember as many of the words as possible. They will need to concentrate on listening as carefully as possible in complete silence with no distractions. They will not have time to write anything during your recitation.

3. Ask the students to predict if the position of the word in the list will have an impact on their memory. List some of the predictions on the board.

4. Read the list of 20 words at a rate of one (1) word every second. Immediately after you finish reading the list, ask your “subjects” to write down the words that they can remember.

   **Words**

   cat apple ball tree square head house door box car
   king hammer milk fish book tape arrow flower key shoe

5. Now analyze the results of the memory study. You can collect the lists of words that your students wrote or you can just ask them to tell you which words that they remembered.

6. To do this, assign a "position" to each word that you read. So, "cat" was word #1, “apple” was word #2, “ball” was word #3, “shoe” was word #20. You can make up a grid with these numbers in advance and it can be part of your initial explanation. The words can be added later when students check their results.

   Calculate the percent of recall for each of the 20 words. For example, if you had 10 subjects and 7 of them remembered the word "cat", then "cat" (word #1) had a percent recall of 70%.

7. Display the results on the board or on an overhead projector
   - Find out if there was better recall of any particular words on your list.
   - Was there better recall of words that were read first or last?

8. Ask the students to plot the class results: the X-axis will be word position and the Y-axis will be % recall. Elementary students can construct a bar graph, and secondary and middle school students can use a point graph. Ask the students to identify the patterns they see in their graphs.
Exercise 1: Now and Then with Distractions
1. You can try the previous experiment again with a slight twist after you return from your Koshland Science Museum visit. Ask a new set of students to remember the same set of words. However, immediately after you finish reading the list, distract your students by having them count backwards from 100 by threes (100, 97, 94, 91, etc.) or sevens (100, 93, 86, 79, etc.) for about 15-30 seconds.

2. Plot your serial position curve again. Do you see any changes? Usually, distraction causes people to forget the words at the end of the list. Did it happen to your subjects? Your students could also try this exercise on people of different ages to see the effect of age on the recency/primary effect.

Exercise 2: Real Choices
During their visit to the Koshland Science Museum your students played the Brain Garden game and found that certain choices produced flowers in the brain – or promoted brain development. Ask your students to discuss and make a list of the activities in which they are engaged (school subjects, hobbies, athletics and sports, extracurricular activities, friendships and family relationships) and evaluate them on their “weed- or flower-producing” potential. Then ask them to find and list three new activities that might enhance brain growth.

These activities have been adapted by Kitty Lou Smith from the University of Washington website on Neuroscience for Kids, http://faculty.washington.edu/chudler/neurok.html.