

# CIC Lesson Plan

Lesson Name \_\_\_\_\_ Remember this? \_\_\_\_\_

Developed by \_\_\_\_\_ Kayte Fischer, Ryan Olf \_\_\_\_\_ For Grade \_\_\_\_\_ 5 \_\_\_\_\_

Dates Available \_\_\_\_\_

## Related CA Science Standards and Vocabulary

*Specific standards and new vocabulary related to lesson*

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### CA Science Standard(s):

The brain is made up of neurons, which work together in clusters to form memories. Scientists can test theories about how the brain works using fMRI images.

### Vocabulary/Definitions:

Neuron- brain cells; they connect to each other to make a net and send signals  
mnemonic- having to do with memory; “mnemonic devices” help you to remember things  
fMRI- “function Magnetic Resonance Imaging” - a way to look at brain cell activity; bright colors indicate neurons sending signals to each other

## Introduce and Engage

*Making personal connections, engaging curiosity, building connections to kids’ experiences*

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### Personal Introduction: *What do you do for work, hobbies, play? Why are you interested in this topic?*

We have both worked with brains – Kayte with neurons, and Ryan with computer models. Memory is a cool topic because everyone has one and each person can experiment on him/herself. Most science is objective, meaning people try their best not to get involved in the results, but investigating memory is something we have to get involved to figure out how our own minds work!

### Building Connections to Kids’ Experiences: *Can you think of an experience most kids would have related to your topic? Is there something to show that will grab their attention? Or can you pose a mystery with a question about something they see everyday?*

How do you remember things? Can you remember what you were doing when 9/11 happened? Can you remember what you had for lunch last Tuesday? Can you remember the name of the yellow cartoon character that is square and lives under the ocean? Why is it harder to do some of these than others?

We will briefly talk about recall v. recognition, then have students go stations with various smells, sounds, tastes, feels, and emotions and see what they recognize or recall. What sense seems to trigger the most memories? Which one makes it easiest to recall what the objects are? Why do you think this is? Can you think of things that trigger memories for you?

## Learning Experiences

*Any combination of demonstrations, hands-on activities, and pictures that helps kids explore new ideas. Describe specific experiences in the order you plan, including instructions you need to give students. What kids will see, do, hear, touch, taste or make.*

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1. Brain map/fMRI images – We will distribute a “brain map” with the areas of the brain indicated on a picture of the brain. We will discuss how different parts of the brain help to form memories and how they connect to make a complete story that you remember. The students will be asked to think about how these areas might interact and draw a diagram of it. After this is done, we will



explain and show an fMRI scan, indicating the areas of the brain involved in the particular scan. We will talk about how scientists make theories of how the brain works based on these scans.

2. Memory chain (optional) – Each student will receive a numbered card (or two) with a “memory” on the back. These will be one word, and are seemingly random; for example, cards might have “yellow,” “banana,” “slip,” and “fall” on them. The students will get in line in order of the numbers and then pass a “pulse” down the line (via hand squeezes or shoulder touches). When each student is pulsed, he/she will read his/her card. After everyone has read his/her card, we will discuss what this train of memories might mean. If there is time, we may either reorder the memories or have a couple students read their second memory in the chain and see what difference it makes to the overall story.

### **Sharing Experiences & Building Ideas**

*What kids will share about experiences and how to help them interpret experiences to build ideas and vocabulary.*

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#### **Invitation to Share and/or Discussion Questions:**

In each of the above activities, the students will be asked what they thought about it. Appropriate questions are indicated in the previous sections.

#### **Summary and Closing Ideas:**

We will ask the students what they learned and if they had ideas for new experiments that could be done on their memories. We will close with some experiments that scientists are trying right now.

### **Follow-On Activities**

*Ideas for follow-on activities, your favorite kid books, things to notice*

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Some ideas:

1. Students could make up memory experiments like the stations and try them on their siblings, parents, and grandparents to see if memories are affected by age. Are there any other things that might influence memory? (sleep, attention, similar memories?)
2. Some topics that might be interesting to discuss include: short term v. long term memory, computer memory, attention, impact of drugs on memory (for better or worse)
3. Students could think of their favorite memory and then try to map it on the brain map.
4. Students could try coming up with mnemonic devices to try to memorize things they're studying in class. Does a color pattern make it easier to remember something? How about a song?

### **Materials and Preparation in Classroom**

*required materials and classroom set-up for complete lesson.*

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#### **Volunteer Brings:**

Memory station items (sounds, smells, etc), and a worksheet to guide activities.

Brain map worksheet.

Laptop with fMRI images on it.

Memory chain cards.

#### **Classroom Needs:**

A TV or projector with S-video input (to play the fMRI animation on).

Space for kids to line up and make the memory chain.

#### **Set-Up Requirements:**



**Community Resources for Science**  
*practical support for great science teaching*

Places to have stations would be good.

