



UNIVERSITY OF
NEW ENGLAND

Center for Excellence
in the Neurosciences

Cognition Outreach Modules

Middle School



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Repetition/ Learning and Memory

Activity: Number Task and Grocery List

Directions- Number Task

1. Ask the class to remember the following numbers:
12, 3, 15, 6, 8, 20, 1, 17, 5, 2
2. Give the class about a minute or so after you read them off.
3. Have them write down as many as they can remember.
4. Ask them what kind of methods they used to remember the numbers (repetition).
5. Once everyone is finished use the discussion points (pg 4) to discuss what is happening.

Directions- Grocery List

1. Ask the class to remember this grocery list:
Carrots, Chicken, Peanut butter, Bananas, Bread, Hot chocolate
2. Give the class about a minute or so then ask them to write down as many words as they can remember.
3. Ask them how they remembered the items on the list and what kind of memory needs to be used.
4. Tell them that if you make it into a story, it is much easier to remember, read them the story. Try to exaggerate movements and elaborate, the crazier the story, the easier it is to remember.
5. Read Passage:

I walked into my house yesterday and there were carrots growing out of the ceiling. As I walked around the corner, a chicken flew down the chimney and just barely missed my head. As the chicken flew over my head it dropped a banana peel right in front of me, and if it hadn't been for the sticky peanut butter floor I would have slipped. I walked across the hall to the bedroom, and as I turned the door nob, it turned into breadcrumbs. The door opened, and a waterfall of hot chocolate was falling from the ceiling fan.

Number Task and Grocery List Explanation

Number Task- Why?

Short Term Memory is like a workbench. It holds 5-9 pieces of information at a time and only for about 30 seconds. You can only fit so much information into your short-term memory, just as you can only fit so many tools at a workbench. The pre-frontal cortex is involved in storing information in short-term memory.

The rule of short-term memory is 7 plus or minus 2. After 30 seconds, unless you have processed the information into your long-term memory, it will be lost.

Grocery List- Why?

Since it takes a lot longer than 30 seconds to take a trip to the grocery store, you need a way to get that information into your long-term memory. You can use this for studying as well. When you exaggerate and elaborate stories you are more likely to remember them and will be able to recall them later on.

Repetition and Mnemonics are also two big ones. Repetition helps with retrieval; it is the most important thing you can do to get information into your long-term memory. So when you're studying, start early! This will ensure that information gets into your long-term memory for that test coming up!

Mnemonics is using letters and phrases to remember information. You have probably learned "Please Excuse My Dear Aunt Sally" for math rules or OCEAN for the great lakes.

(All of these activities can be further explained by using the Cognition: Learning and Memory Poster)

Sleep

Activity: How Many Hours?

Directions-

1. Divide the class into the hours they slept last night
 - a. All Nighters
 - b. Less than 4 hours
 - c. 4-6 hours
 - d. 7 hours
 - e. 8 hours
 - f. More than 8 hours
2. Then ask them to do the same number task as in the previous activity.
3. Compare the kids who got less hours of sleep and see how many numbers they were able to remember.
4. Once everyone is finished use the discussion points to discuss what is happening.

How Many Hours Explanation

Sleep is extremely important in memory! When you are sleeping your memories are being consolidated and organized. Growth hormone is also secreted during sleep and your immune system reboots itself.

If you are sleep deprived for long periods of time you will be irritable/ cranky, have short-term memory dysfunction, paranoia and hallucinations (depending on how many hours you go, this isn't common).

Multitasking

Activity: Monkey Business and Task Switching

Directions- Monkey Business

1. This can only be done if there is a projector and a computer is available.
2. Tell the kids to count how many times the players wearing white pass the ball.
3. Ask them if they saw the gorilla (for people who have not seen this video before, about half of them will miss it).
4. Did you notice the curtain changing colors or the player in black leaving the game?

http://www.youtube.com/watch?v=IGQmdoK_ZfY&feature=related

Directions- Task Switching

1. Ask the kids to take out a piece of paper and a pen or pencil.
2. Have them draw three horizontal lines on the page.
3. Have stop watch ready to record the times of the next two steps.
4. Copy the phrase- "Multi-tasking is worse than a lie" on the first line.
5. Copy the numbers 1-27 on the second line.
6. On the third line, for every letter you have to write a number, you alternate between them. Make sure you time this and show the kids how different the times are.

Example: M 1 U 2 L 3 T 4.....

Multitasking Explanation

Monkey Business Video- Why?

When you are completing a complex task, multitasking can be very bad. Your brain can only focus on one thing; this is what we call selective attention. Your mind is set to reach a goal, when you're doing your math homework and you are ready to start on your English homework, you're mind is in the process of goal shifting.

Task Switching- Why?

fMRI scans show that different parts of the brain were active depending on whether the subjects did single or multiple tasks. When subjects focuses on sorting, the hippocampus—the part of the brain responsible for storing and recalling information—was engaged. But when they were multitasking, that part of the brain was quiet and the part of the brain used to master repetitive skills was active.

Picture of an Active Hippocampus

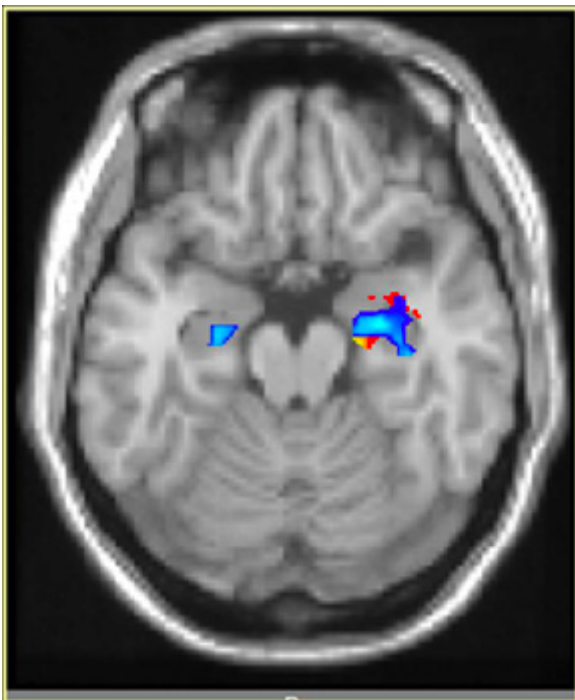


Image of a Hippocampus

