Topic: Specialized Functions of the Human Brain

Grades: K-2

Number of Instructors Needed: 2-6

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| Goals: | Students will be able to visually identify specialized regions of the human brain and also be able to describe the function of each distinct region. |
| Objectives: | After a quick warm-up round of questions, the class will be divided into 5 small groups where they will rotate with that group between 5 separate stations, each for a different brain region. At each station, an instructor will explain the role of that region and students will complete an activity demonstrating that function and color in the region on their *Brain Map*. After completing all stations, each small group will complete the task of filling in a plastic brain mold with colored play dough to spatially distinguish each region. |
| Materials: | * *Brain Map* handout
* Crayons
* Jelly beans (check for allergies first)
* 5 clear plastic brain molds (Amazon.com)
* Play Dough
* A small/medium box with a hand-sized hole cut in the side
* A variety of small objects with different textures and shapes
* laptop
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| Warm up (3-5 minutes): large group | **Introduction** (our names, what a graduate student does)**Questions to the class:** What is the brain/what makes you think/what part of your body makes you think? What does the brain do? What things do you need you brain for? What would you do if you didn’t have a brain? Who has a brain? Do fish have brains? Do giraffes? Do rocks have brains? |
| Transition:  | Instructor: “Every animal you can think of has a brain, but human brains are the most unique .Today we’re going to show you guys all the different jobs that the brain does and where in the brain these jobs get done.”Pass out the *Brain Map*  handout to all students. 1.     Handout (learning) – *Brain Map* with labeled functional areas to be colored specific colors (to match colors of regions in play dough of models)2.     Activities (applying) – Each station will focus on (a) specific brain region(s) on their map. At each one, they will color the region(s) specific color(s) (crayons provided), and do an activity that demonstrates functions the region of focus helps to perform.Whole class example: Start by advising the students that they will need to *pay attention* in order to learn about the brain. For this they will need to use a special part of their brain called the (pre)frontal cortex. Explain that this is the part of the brain the students use when they are paying attention to their teacher. Have them color the part of the brain on their worksheets labeled “Paying attention/Making decisions” with a green crayon. (Pre)frontal cortex = green |
| Breakout activity (23 minutes, 4 minutes per station):5 stations (5 groups of 4-5) | Stations* Move and Balance: Motor cortex = orange, Cerebellum = purple
	+ Movement
		- do five jumping jacks, catch a ball and throw it back, five more jumping jacks, spin around 3 times, do three pushups. Tired yet? You just used your motor cortex!
	+ Balance
		- give each student a book to balance on their head as they walk across the room
		- have them hop on one foot across the room
* Hearing and speaking: (Primary) auditory cortex = blue, Broca’s area = white (will explain left/right dimorphism while building model, but they will use white crayons to color this region)
	+ Instrument sound clip identification
		- Drums
		- Violin
		- Guitar
		- Piano
	+ Tongue-twisters(say them 3x fast)
		- Peter Piper picked a peck of pickled peppers, how many pickled peppers did Peter Piper pick?
		- Sally sells seashells by the seashore
		- Black bug bit a big black bear. But where is the big black bear that the big black bug bit?
		- bubble bobble, bubble bobble, bubble bobble
* Touch: Primary sensory cortex = yellow
	+ Describing object texture
		- Different textiles present in shoe boxes with holes for their hands, so that the only information they have access to describe the objects inside is touch-based
* Smell & taste: Bottom of primary sensory cortex = pink
	+ Jellybean demo
		- Give them each a jellybean of the same color, but don’t let them look them. Then have them hold their nose and chew the jellybean and see if they can point to which color they have on a sheet. Then let them let go of their nose and see if they can identify what color they got. Explain how important smell is for taste.
		- Tell them they will each get a small package of jellybeans at the end with their “Brain Facts” cards.
* Seeing: Visual cortex = red
	+ Optical illusions: who thinks you use your brain to see?  Who thinks you only use your eyes? What if I told you that your brain could trick you into seeing things that aren’t real, even though your eyes are working perfectly?
		- Muller-lyer - which line is longer? <http://www.optics4kids.org/home/content/illusions/muller-lyer-illusion/>
		- Gradients - which side is darker? <http://www.optics4kids.org/home/content/illusions/gradients/>

Colors - how many colors are there in this picture? <http://www.optics4kids.org/home/content/illusions/color-illusion/> |
| Bring it together (10 minutes): students remain in small groups  | Build a Brain!1. Volunteers at each station provide their final group with play dough matching each color on their completed map and a brain mold. Facilitate their group filling in each side of the mold, but let the kids take the lead as much as possible.
2. Key things to address: Broca’s area is only in the left hemisphere. Talk about left and right brain-specific functions while they build.
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| Wrap up(5 minutes): large group | 1.     Volunteers clean up, dissemble brain molds2.     Hand out Brain Facts! Take-home sheet  |