



Hands-on Neuroscience Activity 2

Topic and Learning Objective:

I will be teaching the students about the different lobes of the brain along with their functions. I am hoping the kids will take away what each piece of their brain does along with how important their brain is to them.

Alignment with NGSS Grades 3-5

Science and Engineering Practices

Developing and Using Models

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop a model to describe phenomena. (4-PS4-2)
- Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2)

Crosscutting Concepts

Cause and Effect

- Cause and effect relationships are routinely identified. (4-PS4-2)

Systems and System Models

- A system can be described in terms of its components and their interactions. (4-LS1-1),(4-LS1-2)

Materials:

Model Clay, brain model, ball, coins

Detailed Description:

I will be having them build the lobes along with using different examples such as playing a song (temporal lobe), stand on one leg for balance (cerebellum), discuss animalistic instinct vs human feelings, also talk about Phineas Gage and his role in the discovery that frontal lobe is responsible for personality (frontal), show a funny picture to utilize their vision (occipital lobe), have them poke each other to demonstrate tactile information (parietal lobe), and then I will have them take a few deep breaths (brainstem). I am also hoping to get to talk about the right vs left brain. We will play a game where I read off characteristics of right brain vs left brain and have them step to right or left to see what side they lean towards. I will also have them go outside and see if they are more right footed or left footed. Using this I will explain the difference between the two sides and have them color in their sides (WS) based off of their description of their sides.

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How will you conclude the lesson to enforce the learning objective: I will add in many fun facts as well as have them tell me what each lobe does for them and how it is used in everyday life. I am hoping the brain quiz at the beginning will allow the main information of the brain parts to stick!

FUN FACTS: weighs 3lbs, 60% fat, 75% water, 2% of your body weight but using 20% of your energy, faster than the fastest computer

- Temporal lobe= auditory, speech perception [play a song, google translate a sentence]
- Occipital lobe=visual stimuli and info, face recognition [expresses, spongebob picture for colors]
- Parietal lobe= tactile info, pressure, touch, pain [poke each other]
- Frontal lobe= reasoning, motor skills, cognition, decision making, personality [talk about us vs animals (do they feel bad?), Phineas Gage example]
- Brain stem= regulation of cardiac and respiratory function, sleep cycle
- Cerebellum= “little brain”, coordination of motor movements, balance system, posture [have them test their balance by standing on one foot, test their posture by balancing a book on their heads]

Right side vs. left side:

- What does your right brain do? What does your left brain do? What side do you use the most?
- Contralateral organization
Right side → left body /Left side → right body

What science process skills will this lesson exercise?

This will make them use their critical thinking and problem solving to make their complicated brain!

Safety precautions: balancing can be tricky