

The Brain & Skull: “Wonders of the Brain”

GOAL

The goal of this lesson is to make the students aware that the human brain is an amazing organ. It allows us to invent, create, and imagine. The differences between human and animal brains are what allows us to do these things. The human brain is protected by the skull, but we need to help protect it by making good safety and health choices. The most obvious of these is wearing a helmet when engaging in activities that require additional head protection.



Set-up:

- Human skull
- Human brain and sheep brain in sealed plastic box
- 6 model human brains divided into two hemispheres
- Cray-Pas (student quality oil pastels)
- CD Player with instrumental music (or live music if possible)
- Two-pocket folders for each student



PROCEDURE

Engage (5 minutes)

- Display a human skull. The students will have already seen this skull in the previous lesson. The top of the skull is removable; by doing so, it reveals that the skull is about a quarter of an inch thick.
- Put the skull top on top of your head, and explain to the students that this is what protects your brain from injury.
- Emphasize how important it is to protect the brain from injury by wearing additional protection like a bicycle or football helmet, or a batting helmet while hitting in baseball or softball.

Explore (10 minutes)

- Ask the students how the human brain is different from an animal brain.
- To illustrate the difference, show the class a real human brain and a real sheep brain. Before doing so, make sure that all the students are willing to view the brains. Some students will be uneasy and hesitant, and should not be forced to participate. Model brains should be made available for these students. The real brains are in sealed glass boxes, so there is no chance of



PROCEDURE

contamination.

- The students should observe that the human brain has a much larger frontal lobe than the sheep brain, and is larger in general. • Ask the students what makes us different from sheep, or other animals. What can they (the students) do that other animals cannot?

Explain (10 minutes)

- The large prefrontal cortex region of the human, the part behind our foreheads, is where we create, imagine, and think. It is what sets humans apart from animals. We can write stories, make music, draw, paint, and color. We can do math or learn about other people and other places, just by using our brains. We take it for granted, but the magic of our brains make it possible to do anything we can imagine.
- Distribute the six model brains throughout the class, letting all the students examine them.
- The brains are divided into two hemispheres, and are pretty realistic. Point out that the brain is composed of a variety of different structures that work together to let us think and feel and move. Tell students that they will learn the names and jobs of some of these structures in later lessons.

Expand (25 minutes)

- Pass out drawing paper and Cray-Pas to the students. Ask them to draw a picture of the brain as they see it.
- Encourage use of multiple colors. Place the model brains where the students can study them while they draw.
- Instrumental music can be either played on a cd or performed by the instructor.
- Explain to the students that the brain is what makes composing and performing music possible, and what makes their drawing and imagination possible. Our brains are truly things of wonder.

Evaluate (10 minutes)

- Collect the students' work if desired. These drawings are interesting to look at, but since they are impressionistic works instead of anatomical studies, there is not much to evaluate. Alternatively, pass out the two-pocket folders and explain to the students that these will be their Brain Explorer folders. Ask that their names be prominently placed on the front side, and allow them to decorate the folders with any brain-themed illustration. These folders will be used to store all student Brain Explorer work in the classroom, and allow a portfolio-type assessment at the end of the semester. A designated storage container should be provided for the folders.

- **Key Cognitive Skills:**
Observing, Comparing, Describing, Recording.
- **Vocabulary Terms:**
Brain(review)
Skull(review)
Frontal Lobe Area
Hemisphere
Interpretation
- **Specific Outcomes:**
 - Students will observe a human skull and note that it is about 1/4” thick.
 - Students will discuss the need to wear bicycle, football and batting helmets to augment the skull’s protection.
 - Students will compare a human brain to a sheep brain.
 - Students will note the increased frontal lobe area in the human brain and examine a detailed model of a human brain.
 - Students will draw their own creative interpretation of a human brain.

PROJECT 2061 BENCHMARKS FOR SCIENTIFIC LITERACY

1 B Scientific Inquiry:

Scientific investigations may take many different form, including observing what things are like...Investigations can focus on physical, biological, and social questions. Describing things as accurately as possible is important in science because it enables people to compare their observations with those of others

6 C Basic Functions:

Models help children to see and touch the internal organs and to know where they are located in the body. Questions about familiar body systems can be useful in getting students to start thinking about systems generally. They can then begin to understand that each organ affects and is affected by others.

6 D Learning:

Learning means using what one already knows to make sense out of new experiences or information, not just storing the new information in one’s head.

6 E Physical Health:

Children should explore ways in which good health can be promoted.

12 D Communication Skills:

Make sketches to aid in describing and comparing objects...

Group Work Evaluation Form

Group # _____ Activity _____

Name of group members _____

Did you work well together? Put a check where you think your group deserved one, and then add up the checks to get your group score. Each check is worth one point.

1) Everyone did something to help. _____

2) We did the best job we could. _____

3) We worked well together. _____

4) We respected each other. _____

Our group score is: _____

As a group, we need to work on _____
