

The Brain & Skull: “*Brain Trace*”

GOAL

The goal of this lesson is to reinforce the students’ knowledge of brain anatomy and terms, and make them more aware of how the brain’s structures are situated in relation to one another.



Set-up:

- 6 small plastic brain models
- 6 brain trace kits
- Piece of stiff white backing paper for each student
- Several colors of construction paper
- Sample of a completed project for demonstration purposes



PROCEDURE

Engage (5 minutes)

- Ask the students what they learned about brain anatomy last week. Display a model brain, and have different students identify the structures they created for the clay brains.
- Write the brain anatomy terms on the board as they are identified. Include any terms the students do not recall.

Explore (5 minutes)

- Divide the class into six groups of four to five students apiece.
- Distribute the plastic brain models, and ask the students to find and identify all the anatomical terms written on the board in the corresponding location on the models. Every member of the group should be able to do this.

Explain (5 minutes)

- Display a brain trace kit, and a completed example of the project. Explain how to use the kit to create a two dimensional representation of a brain.
- Distribute a brain trace kit to each group, along with several different colors of construction paper, glue sticks, a piece of heavier white paper for each group member, and scissors.
- Encourage paper conservation and sharing.



PROCEDURE

Expand (25 minutes)

- Students manipulate the brain trace kits.
- Encourage the students to closely observe the brain models to see how the different structures lie in relation to one another. Discourage the students from simply asking “is this good?”, insisting that they use the proper anatomical terms in their question.
- Remind the students that each structure needs to be a different color, to contrast with surrounding structures. Warn against excess glue stick usage.
- After the structures have been properly situated and glued, ask the students to label each correctly. The labels should be written on the white paper outside the glued structures, with arrows drawn to identify the appropriate structures.
- After these have been checked for accuracy and excess glue, a second hemisphere should be traced, cut out, illustrated with gyri and sulci, then glued onto one side of the first hemisphere so that it can be opened like a door.
- When opened, the bottom hemisphere and the corpus callosum should be visible. The gyri and sulci drawn on the upper hemisphere can be labeled as well. Illustrate this process by manipulating the demonstration project.
- Make sure that each student writes their name on the finished project.

Evaluate (10 minutes)

- Have a few volunteer students come to the front of the room and display their finished projects. Each student should identify the different brain structures in their project. Gently correct any mis-identification of structures.
- Students who do not want to come to the front of the room may stay at their desks while the instructor holds up their project.
- Collect the students’ work and correct any omissions and mislabeling. Return the projects before the next lesson and have them placed in the Brain Explorer folders.
- Leave enough time to collect the brain trace kits, the glue sticks, scissors, and excess construction paper. A large plastic bag is the best way to collect the excess construction paper. Make sure that all the brain trace kit pieces are in each bag.

- **Key Cognitive Skills:**
Observing, Comparing, Organizing, Applying.
- **Vocabulary Terms (review):**
Hemisphere
Corpus Callosum
Brain Stem
Cerebellum
Gyri
Sulci
- **Specific Outcomes:**
 - Students will review anatomical terms used in the last lesson: hemisphere, cerebellum, corpus callosum, brain stem, gyri, and sulci.
 - Students will trace the shapes of these structures onto construction paper, cut them out and assemble them in the correct relationship to one another.
 - Students will label all structures correctly.
 - Students will trace, illustrate, and affix a cover hemisphere to their collage, creating the illusion of a three dimensional brain.

PROJECT 2061 BENCHMARKS FOR SCIENTIFIC LITERACY

1 C The Scientific Enterprise:

In doing science, it is often helpful to work with a team and share findings with others. All team members should reach their own individual conclusions, however.....

2 A Patterns and Relationships:

Patterns can be made by putting different shapes together.....

9 C Shapes:

Many objects can be described in terms of simple plane figures and solids. Shapes can be compared in terms of concepts such as parallel and perpendicular, congruence, similarity, and symmetry. Symmetry can be found in reflection, turns, or slides.

11 B Models:

A model of something is different from the real thing but can be used to learn something about the real thing.

