

K-1: The Senses

THE BRAIN: PROTECTION

Written by

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Activities from the *K-1: The Senses Teacher's Guide* may be used alone or with integrated unit components. The Learning Brain: Senses unit is comprised of the guide, a PowerPoint® slide set, "What Sound Is It?" for use with the activity, "Our Sense of Hearing," and a student storybook, *Making Sense!* (available as a PowerPoint® file and in PDF format). All files are available free-of-charge at BioEd Online (www.bioedonline.org).

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THE BRAIN: PROTECTION

Guiding Questions

What protects the brain? Why does the brain need to be protected?

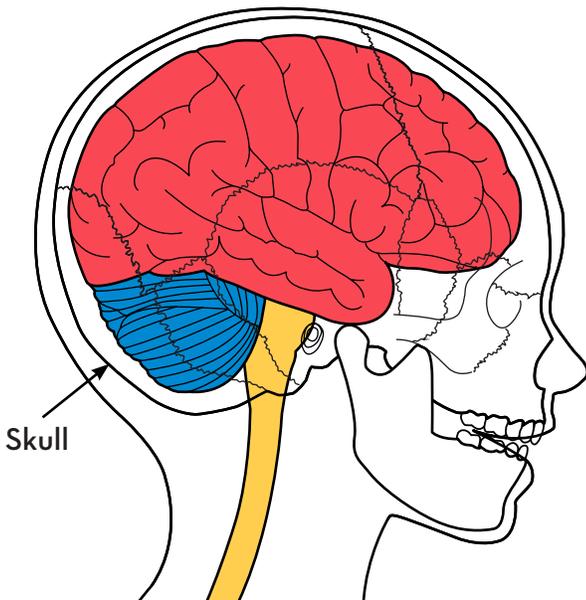
Concept

- The skull protects the brain.

Time

Setup: 5 minutes

Class: 1–2 sessions



The brain is 80% water, and it is fragile. It is enclosed within the skull dome, or cranium, a bony shell that protects the brain and forms the shape of the head.

Animal brains fit snugly inside their skulls, which have a size and shape to afford maximum protection. Animal brains are further protected by a cushion of fluid and a covering of three thin, tough membranes, called the meninges.



Still, our brains are vulnerable to injury. For safety, helmets should be worn when skateboarding, riding a bicycle or playing contact sports, such as hockey, baseball or football. Seat belts should be worn at all times when riding in a motor vehicle, to protect the brain from injury during a collision.

MATERIALS

Teacher (See Setup)

- 120-cm sheet of butcher paper or poster board to make a classroom human body diagram
- Copy of the student pages



Optional: Brain and skull model

Per Student

- Pair of scissors
- Science notebook
- Tape
- Copy of the three student pages (make sufficient numbers of handouts, based on the size of your class)

SETUP

Before class, create a life-sized outline of a child on butcher paper (use a student model or draw the outline free-hand). Be sure the head is turned to the right to match the illustration on “Brain Diagram 2.” This will serve as a classroom human body diagram.

Display the diagram on a wall or bulletin board in the classroom. You will add information to it throughout the unit, as students learn more about the brain and senses.

This activity is teacher-directed and is best presented as whole-class instruction.

PROCEDURE

1. Ask students, *What protects the brain?* Discuss their answers. Then, have students place their hands on their heads and ask, *What do you feel?* Tell students that the hard surface is the skull, which is made of several bones.
2. Distribute a copy of “Brain Diagram 2” to each student. Instruct students to cut out the brain and glue it into their notebooks.
3. Distribute a copy of “Skull Diagram” to each student. Have students cut out the skull and arrange it over the brain in their notebooks.
4. Ask, *Does the skull fit over the brain?* After students have discovered the correct orientation for the skull, have them tape down the top of the skull over the brain. Discuss ways in which we protect our brains and skulls in everyday life. Examples include using helmets while riding bicycles and wearing seat belts while riding in a motor vehicle.
5. If available, display a brain/skull model. Show

Seat Belts and Child Safety

The Centers for Disease Control and Prevention report that motor vehicle crashes are a leading cause of death for children in the U.S. In fact, one-third of children who died in crashes in 2011 were not buckled up. Seat belts should be worn for every trip, even for short distances!



students how the brain sits inside the skull. Ask, *How is the model like a real brain and skull? How is it different?* Give students time to make their own observations.

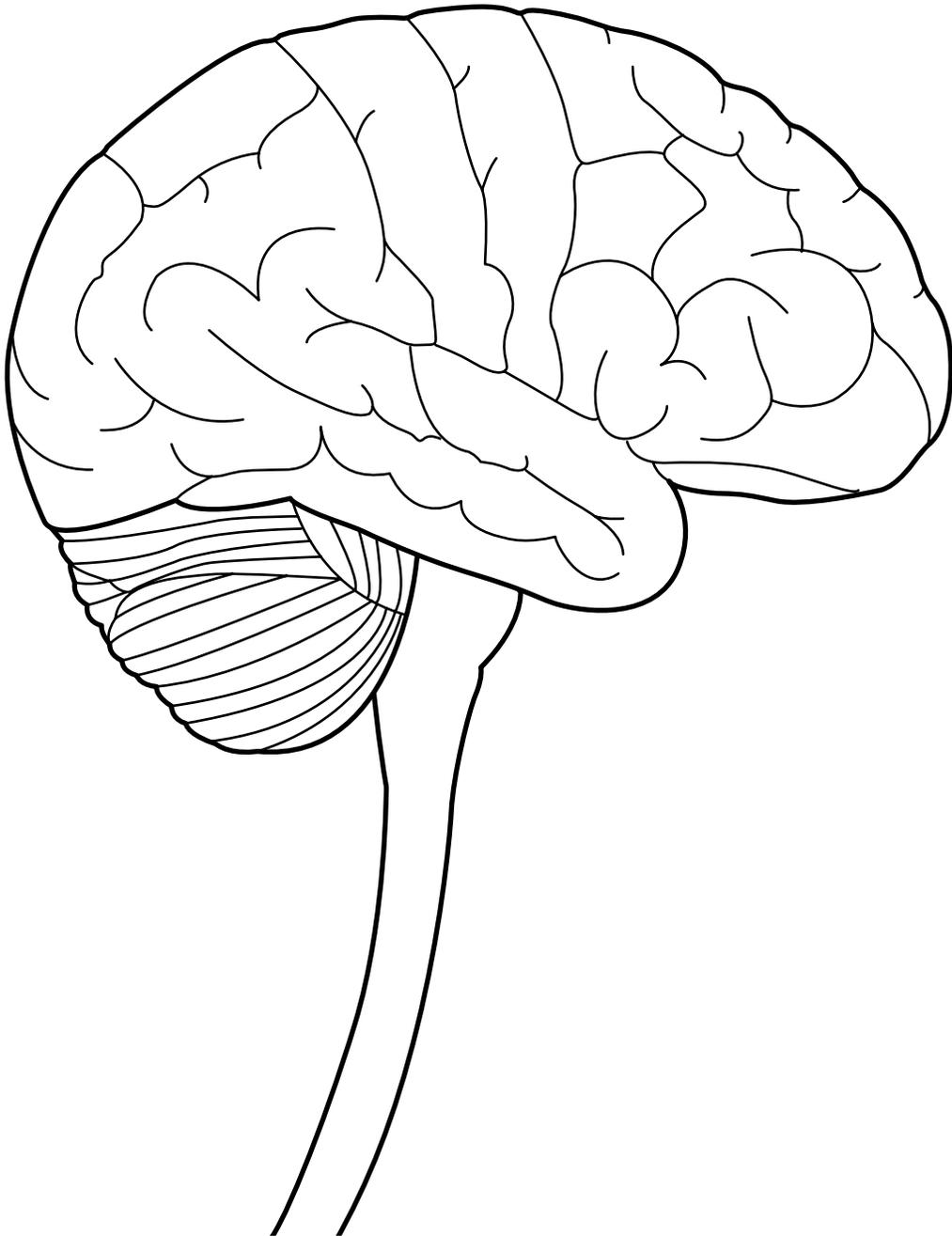
6. Ask students, *What comes next, over the skull?* Give each student a copy of the “Head” page and ask the class where it might belong. Students will discover that it fits right over the skull. Next, have each student color the face to match his/her own features, as much as possible. Have them tape it into place.
7. Have students examine their final layer, the face and external features. Lead a class discussion of what they know about each sensory organ. Ask, *What do your eyes, ears, nose, mouth and skin tell you about the world?*
8. Refer to the life-sized student outline created earlier. Show students a copy of “Brain Diagram 2,” and ask where on the outline it should be located. Cut out the brain and tape it appropriately inside the head on the drawing.
9. Explain that students will learn more about how each sensory organ communicates with the brain to help us understand what is happening around us.

RECOMMENDED RESOURCES

- Chudler, Eric. “Neuroscience Coloring Book.” Neuroscience For Kids. Washington University, Web. 13 Feb. 2015. <https://faculty.washington.edu/chudler/experi.html>
- Guillain, Charlotte. *Our Brains (Our Bodies)*. (2010) Heinemann Educational Books. ISBN: 978-1432936013

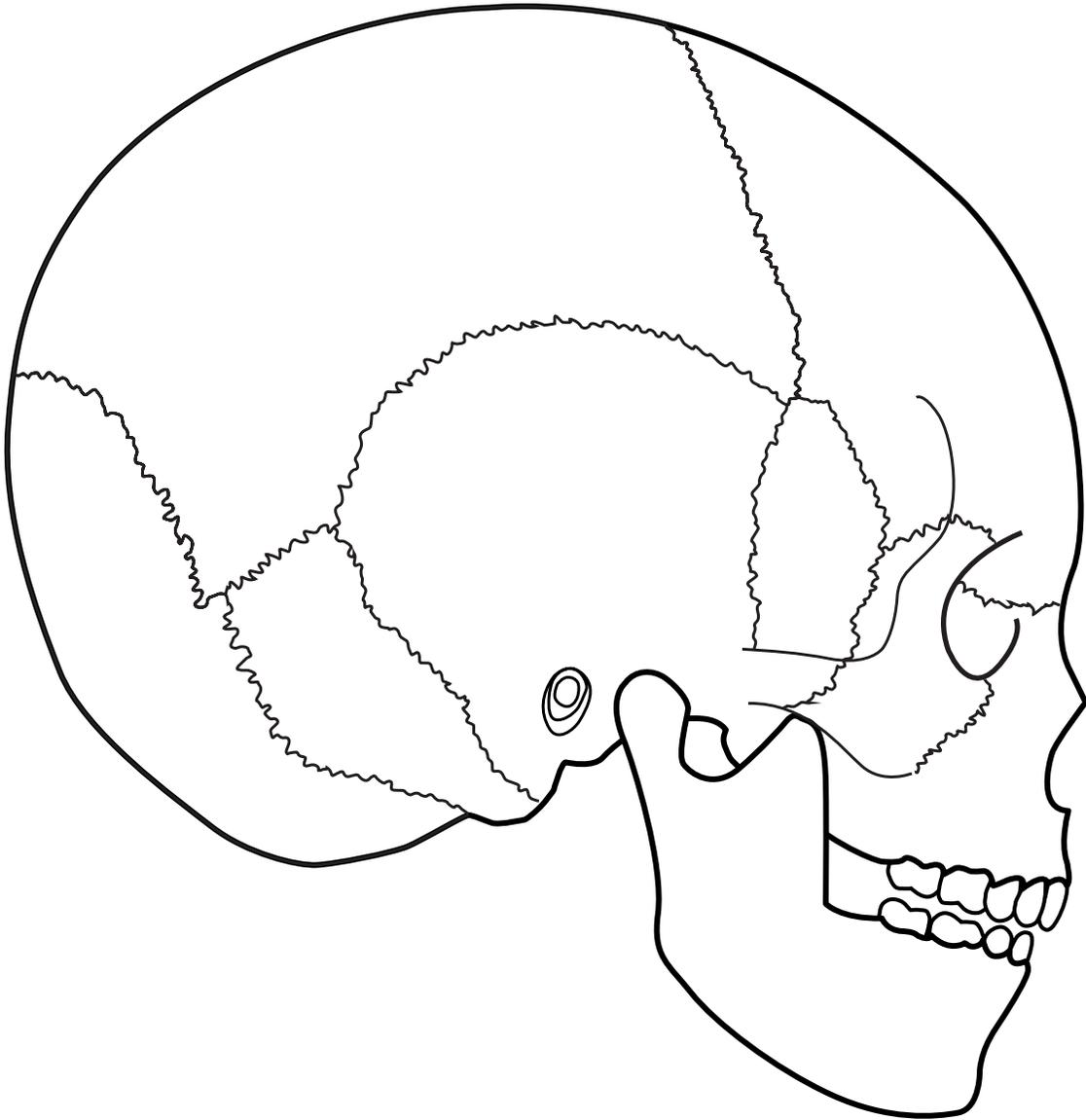


Brain Diagram 2



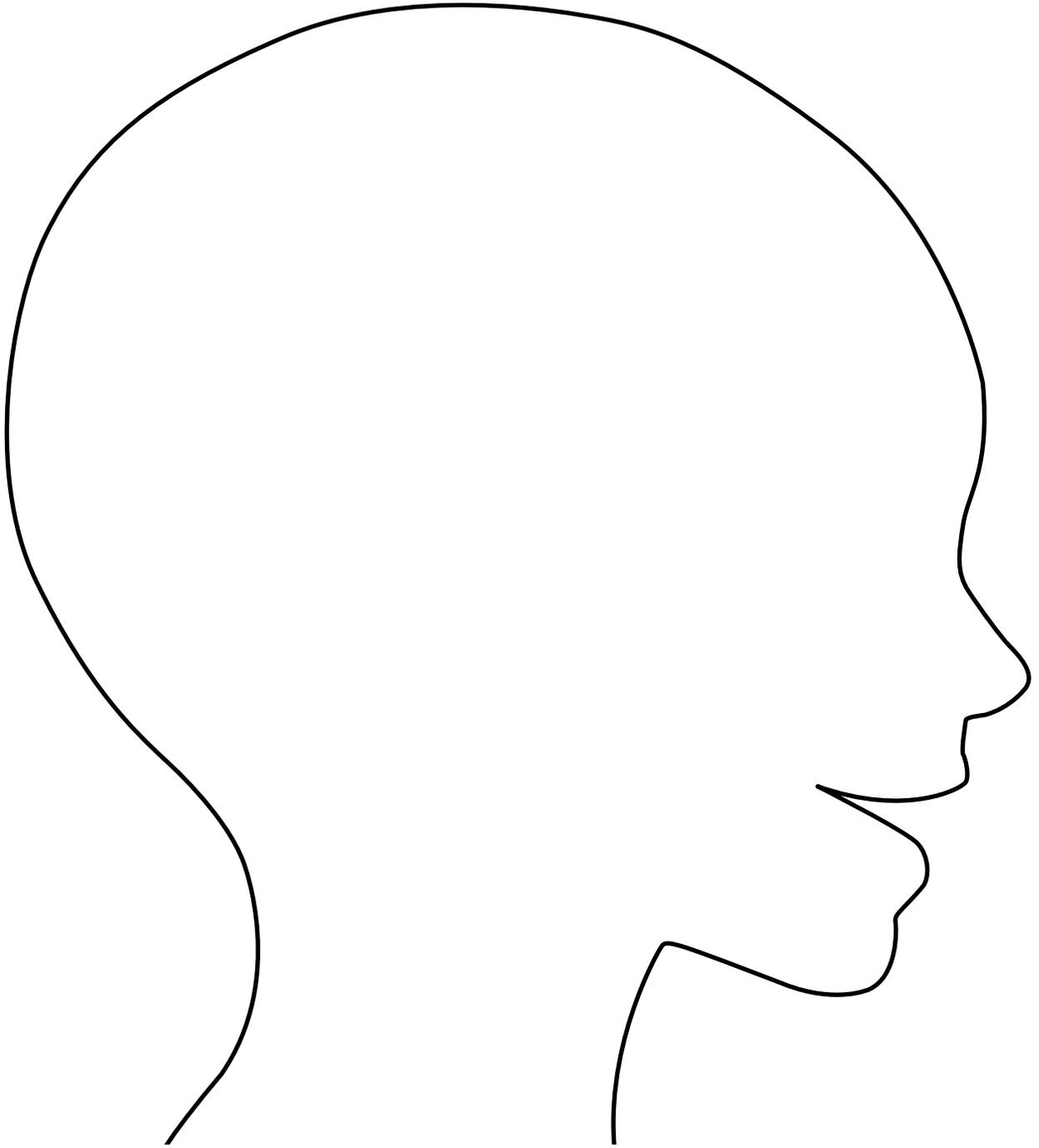


Skull Diagram





The Head





My Science Journal

Name _____

Drawing

Key Words to Use

I Observed...
