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K-1: The Senses

Using All the Senses to Understand Our World

Written by

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Activities from *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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Baylor College of Medicine

 ISBN: 978-1-888997-87-3

First edition. Printed in the United States of America.

ISBN: 978-1-888997-87-3

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TEACHER RESOURCES FROM THE CENTER FOR EDUCATIONAL OUTREACH AT BAYLOR COLLEGE OF MEDICINE

Development of The Learning Brain educational materials was supported by grant number 5R25DA033006 from the National Institutes of Health, NIH Blueprint for Neuroscience Research Science Education Award, National Institute on Drug Abuse (NIDA), administered through the Office of the Director, Science Education Partnership Award program (Principal Investigator, Nancy Moreno, Ph.D.). The activities described in this book are intended for school-age children under direct supervision of adults. The authors, BCM, NIDA and NIH cannot be responsible for any accidents or injuries that may result from conduct of the activities, from not specifically following directions, or from ignoring cautions contained in the text. The opinions, findings and conclusions expressed in this publication are solely those of the authors and do not necessarily reflect the views of BCM, image contributors or the sponsoring agencies.

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ACKNOWLEDGMENTS

The authors gratefully acknowledge the support and guidance of William A. Thomson, Ph.D., BCM Center for Educational Outreach; and C. Michael Fordis, Jr., M.D., BCM Center for Collaborative and Interactive Technologies. The authors also sincerely thank J. Kyle Roberts, Ph.D., and Alana D. Newell, M.Ed., who guided field test activities and conducted data analyses. We also are grateful to the Houston-area teachers and students who piloted the activities in this guide.

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Funding provided by:

NIH Blueprint for Neuroscience Research

SEPA SCIENCE EDUCATION PARTNERSHIP AWARD
Supported by the National Institutes of Health

NIDA NATIONAL INSTITUTE ON DRUG ABUSE
National Institutes of Health
U.S. Department of Health and Human Services

Using All the Senses to Understand Our World

Guiding Questions

How do we use our senses to understand our surroundings? What types of input are provided by the different senses?

Concepts

- *Senses work together to provide information about conditions inside and outside of the body.*
- *Sensory information is communicated to the brain, which interprets the signals detected by sense organs.*

Time

Setup: 15 minutes
Class: 30 minutes

Like all other forms of life, we humans must interact with our surroundings to obtain water and nutrients, protect ourselves from danger and reproduce. Our senses allow us to obtain the information we need for survival. Senses also work within our bodies to provide cues about the state of our internal organs and positions of our muscles and limbs.

Simple one-celled organisms, such as the amoeba, detect light, acidity, temperature and other characteristics of their environment over much of their external surfaces. More complex animals have evolved special cells, called receptors, which respond to specific aspects of the environment. Receptors translate information about the physical world and conditions inside the body into impulses that travel along nerve cells, or neurons. Most receptors are specialized to respond best to a particular kind of stimulus. For example, the simple nerve endings in the skin respond to pressure or temperature, while rods and cones, receptors in the back of the eye, react only to the presence of different kinds of light.

Specific regions within the brain receive and integrate information detected by sensory receptors. Through this process, we are able to interpret and react to the environment. Senses enable us to participate in the world—to learn, to achieve, to discover, to communicate. In this culminating activity, students use as many senses as possible to figure out what is inside "mystery" bags.

MATERIALS

Teacher Materials (see Setup)

- 12 brown paper lunch bags
- 6 cups of plain, unsalted popcorn, popped and cooled
- 6 cups of plain, salted popcorn, popped and warmed (or freshly popped)
- Classroom human body diagram (see the activity, "The Brain: Protection")
- Measuring cup
- Tape or staple r

Optional: Project "The Five Senses" page when reviewing the primary senses (item 7)

Per Student

- Hand lens
- Science notebook

SETUP

This activity will lead students to think about the basic scientific questions, "What do you think is happening?" and "How do you know?" Students will use as many senses as possible to figure out the contents of "mystery" bags" (two prepared bags per group of four students).

Label six paper lunch bags with the letter "A," and six paper lunch bags with the letter "B."

Prepare at least six cups of microwave popcorn. Place one cup of warm, salted popcorn in each of the six bags marked "A." Previously popped popcorn can be warmed in a microwave for a few seconds.

In each of the six bags marked "B," place one cup of cooled, unsalted popcorn. To keep students from peeking, tape or staple the bags closed.

Conduct the activity with students in groups of four.

PROCEDURE

1. Place one bag "A" and one bag "B" on the table or floor in front of each group of students. Direct students not to touch the bags or look inside until instructed to do so.
2. Ask, *What do you think is in the mystery bags?* Give students time to respond. Then, direct them to pick up each bag from the top and shake it gently. They should listen carefully to the sounds produced. Repeat the question, *What do you think is in the mystery bags?* Most students now will be able to determine that the bags contain small objects, and some may guess that the bags contain popcorn. Follow by asking, *How did you know?* Students should mention sound as a clue. Some also may have smelled the popcorn.
3. Have students smell the bags, still without opening them. Repeat the questions, *What do you think is in the bag? Why?* Students should mention that they used the sense of smell to identify the contents of one or both of the bags. If necessary, allow students to open the bags just enough to smell the contents.
4. Ask, *What is different about the two bags?* Let students touch the bags again. This time students should notice that one bag feels warmer. Ask, *Which sense enabled you to notice the temperature difference between the bags?* [touch, which includes pressure sensors and temperature receptors]
5. Now ask, *Is either batch salted or flavored? Which sense or senses would allow you to determine this?* [taste, smell and vision] Allow students to open the bags and remove some of the popcorn to observe with hand lenses. They may notice tiny salt crystals on some of the kernels. Have students draw and label the two kinds of popcorn in their notebooks.
6. Finally, allow students to confirm which batch is salted by sampling one kernel from each bag. Have them describe the flavors of each popcorn sample.
7. Conclude with a class discussion about how students

were able to solve the popcorn mystery. Be sure to reinforce the concept that senses collect information from inside and outside the body and transmit it to the brain. Briefly review the primary senses that students have explored throughout this unit (vision, hearing, smell, taste, touch).

8. Ask students to identify all parts of the body and nervous system that they used in during this investigation (eyes, nose, mouth, tongue, ears, fingers, brain, neurons, etc.).
9. Stimulate further discussion by asking, *How did the information get from your sense organs to your brain?* ["sense organs" being eye, ear, fingers, nose, etc.] Students should be able to communicate that information, such as vibration from shaking the bag of popcorn, was detected by a sense organ and transmitted to the brain. The brain compiled and made sense of all information gathered during this investigation. Refer to different areas on the classroom human body diagram to summarize students' ideas.
10. Have students revisit their notebook entries. Ask them to share what they have learned. Ask, *Why is the brain important?*
11. You may want to end the unit with a "popcorn" party.

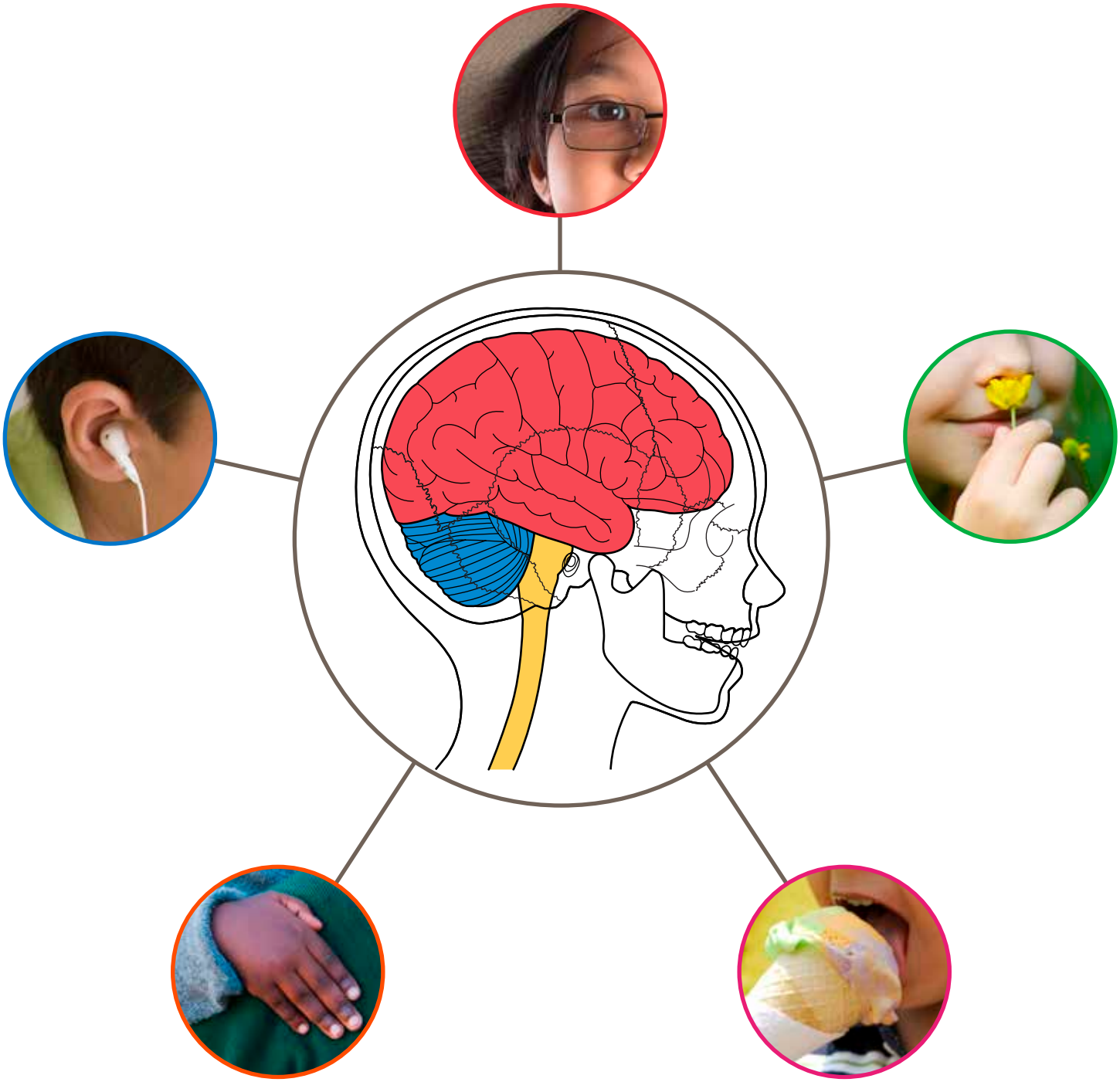
EXTENSION

Use additional flavors of popcorn in separate bags and have students make more observations. For instance, students can compare and contrast different kinds of popcorn in terms of appearance (color and shape), sound (while being shaken in a bag), aroma, flavor and temperature.

RECOMMENDED RESOURCE

- Rissman, Rebecca. *Using Your Senses (The Five Senses).* (2011) Heinemann Educational Books. ISBN: 978-1432954956

The Five Senses



My Science Journal

Name _____

Drawing

Key Words to Use

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I Observed...

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