



Animal Senses: Teaching Guide

Introduction

Students observe, analyze, interpret and use data to think about and compare two types of animal vision and construct a model based on the data. Students then apply this model to make predictions about animals based on where their eyes are located on their head.

Subject: Science

Grade: 4

Key Concept: Organisms: Structure and Processes

Please see the end of this lesson for academic standard alignment.

Objective: Construct an argument about depth perception and eye placement and what is the best arrangement for a predator.

Making observations, using data to construct an argument and making predictions based on a model are key elements of science. Students need these skills to understand the importance of using data to construct arguments and make predictions and to develop skills to critically examine whether arguments are based on a solid model of scientific reasoning.

Materials needed (per group of students):

1. 1 Liter containers (such as large yogurt containers)
2. pieces of paper
3. party blowers

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Instructions:

Show students pictures of various animals and ask them what they notice about the location of their eyes. How are they similar or different? Then have them create a chart with names of animals on one side that have eyes in front of their heads (binocular vision) and those who have eyes on the side of their heads (monocular vision). What patterns do they see in the kinds of animals that have the two different kinds of vision?

In the Jan/Feb 2018 issue of *Kind News*[™] magazine, there was an experiment to show students what a field of vision is; if you haven't already, do this activity with your students:

1. Divide students into pairs. Have one partner stand and stare straight ahead at a spot on the wall. Have the other partner walk up slowly behind the student staring ahead. When the student staring ahead can see the other student coming up from behind, instruct them to yell stop.
2. Explain that the area a person can see when they look straight ahead is called their **field of vision**.
3. After this activity, ask students how having eyes on the side of one's head could be helpful.

Then follow it with this hands-on activity:

4. Have students work in pairs or small groups. Instruct students to place a 1 liter container bottom up, crumble up a piece of paper and place it on top.
5. Then have students take turns closing one eye and, using the party blower, try to aim and hit the paper off the container. (This replicates monocular vision).
6. Have students try again without closing an eye (binocular vision).
7. Have students describe their experiences. What did they observe? Which is easier? Which type of vision would work better for a predator and why? Students should find that binocular vision -- two eyes that focus together to better determine location (necessary for catching prey) -- is easier.

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Assessment:

Have students look at more photos of predator and prey species and construct an argument based on the model they have learned. Example question:

Pick one animal and using what you understand about animal vision, explain why you think this animal is a predator or prey species.

At the end of the lesson:

Ask students to reflect on one of these questions: “What surprised you most about this lesson?” “What would you like to learn more about?” You can do this with the whole group, in a sharing circle or related class meeting format, by having students fill out index cards or another format you choose. Consider adding additional activities or lessons based on what they say they’d like to learn more about. Please share with us student responses and stories about changes in attitude or behavior you observe by adding to your report about this reading or by emailing Readers@RedRover.org.

Next Generation Science Standard (NGSS)

[4-LS1-2](#). Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

This lesson was inspired by [Animal Senses: How Animals See, Hear, Taste, Smell and Feel](#) by Pamela Hickman; illustrated by Pat Stephens, 1998 Kids Can Press.

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