How important are our eyes for knowing where we are going and not getting lost?

Learning Set 2: How do eyes work?

Lesson 2.2: Can animals see things we cannot see? **SEL**

<table>
<tr><td>Lesson Overview (45 min)
This 45-min lesson could be integrated into the literacy block</td><td>
L2.2: Can animals see things we cannot see?
Lesson Snapshot

<u>Introduction:</u> Introduce the DQ, and reflect on what was learned in L2.1.
<u>Engaging in Text and Media:</u> Students analyze data and media about animals that can see things in more than one direction (Chameleon), in dim light (Owl, Wolf), ultraviolet light (Deer, European Starling), above and below water (Alligator), 360 degrees (Hammerhead), several miles away (Eagle), in different directions at the same time (snail), magnetic fields (migrating birds), mouse moving under the snow (fox).
<u>Arguing from Evidence</u>: Students argue that some animals must receive specialized information that is different from what humans are able to receive. They construct arguments about why the animals actually might need different information from the world around them.
<u>Wrap Up:</u> Students ‘toss the ball’ to review main information and one interesting thing they learned from the lesson. Review L2.1 questions on the DQB -- did they answer any more?

Learning Performances
Students obtain information from text and media to argue that animals’ eyes receive and interpret different information that humans’ eyes do. (Through the lens of structure and function.)

Building toward PE(s)
4-PS4-2 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
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.

SEL Goal - Development of Interest
We bring what we are interested in and then build, refine and change these interests over time. We can develop new interests because of experiences in school.
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<tr><td>Materials and Prep</td><td>
Materials

Slides for L2.2
Data on Animals for Groups
Laptops for Videos (Optional)

Embedded Language Supports

Media provides comprehensive input
Graphic organizer supports argumentation
Discourse moves from WIDA

Preparation

Print out data sheets for groups and send them the video links.
Preview videos
You may decide to explore the animals as a whole class.

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<tr><td><u>Lesson Component</u></td><td><u>How to Implement</u></td></tr>
<tr><td>What are kids figuring out?</td><td>
Students are figuring out that animals’ eyes have the capacity to capture different information, than human eyes can, and receive different information.

Look Fors
Look for students adding to, questioning, and evaluating, the evidence about function that is presented in an argument by other students.
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<tr><td>1 Introduction
(10 min)</td><td>
Introduction: Engage with Phenomenon and DQ, “Can animals see things we cannot see?”

Have students think back and share what they did and what they figured out in L2.1. Remind students that in Learning Set 1 they realized that they rely on their sight to understand the world around them and find their way. Say, “Animals rely on sight and other senses, too, but their eyes have different functions, right? Ask, “Why would this matter to the animal?”

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	○ Write down ***function*.** Ask the students what function might mean, and come up with a working definition for the word. (i.e., The action or purpose for a thing) ○ Ask students if the different abilities animals have to "see" the world are related to *function*. ○ Hold up an object (a pen, a phone, a cup). Have students describe the function of the object. ○ Go over the list of what the students can and cannot see. Ask if this list is related to the concept of ***function***. Ask a few students to explain why it might be useful to get different information. (For example, an animal might be able to see far away, that is a function that our eyes don't provide.) 2. Show students the slides of other animals. Share that these animals all have abilities to see in ways we cannot see and that students are going to learn more about each animal's eye ***function***, and make claims about why the function might be important for their survival. Introduce the lesson Driving Question -- *Can animals see things we can't see?*
2 **Engaging in Text and Media** (15 min)	**Engaging in Text and Media: Examine functions different animals' eyes have when seeing** 1. Give each group an animal to explore using the appropriate datasheet. Explain to students that they need to figure out (may project this slide): a. How does the way the animal sees differ from how we see? b. What evidence (data) shows that the animal sees differently than humans? c. How could gathering this different kind of information be useful for the animal? 2. Provide students with time to analyze the data and figure out answers to the three questions. Check-in with each group and support them to present what they think they have figured out about their animal. 3. If possible, allow each group to view videos of their animal in action and for more evidence of how they think it sees differently.
3 **Arguing from Evidence** (10 min)	**Arguing from Evidence: Argue that animals may have the need for special functions** Support students in arguing that some animals must receive specialized information from the environment. Press them to solicit peers' help to further construct arguments about why the animals actually might need different information from the world around them.
	**Discourse Move - Emphasize a particular idea** As students present their data about how the animal sees, press them to consider the importance of the **function** their animal's eyes have, and how this relates to behavior. *Why can your animal see this way but we cannot? Would the animal be able to see this way without a special structure?* Encourage the students to use evidence and scientific ideas in their answers.
4 **Wrap Up** (10 min)	**Wrap Up: Revisit Driving Question and toss a ball to review new ideas in the lesson** 1. Return to the lesson Driving Question: *Can animals see things we cannot see?* Ask students to share what they think they have figured out in answer to the question. Have students think about how what they learned relates to the Unit Driving Question. 2. Toss the ball: Have each student state one thing they learned in this lesson, and then toss the ball to another student. That student must repeat what the last student said, and then say another new idea they learned from the day. As each student throws the ball, the others must pay attention so they can repeat the last idea. 3. Peruse the DQB to see if there are any questions that can be addressed. Have students add any new questions they have.
Assessing Student Learning	**Look Fors** Look for students adding to, questioning, and evaluating, the evidence about function that is presented in an argument by other students. **Evidence Statement** The arguments incorporate as evidence the information obtained, that there is a specialized function of the particular animal eyes. The reasoning is that specialized information is needed for the animals to see things important for their survival (L2.1 and L2.2). Arguments use the CCC lenses of structure and function.