Lesson 4.1

Seeing Like a Shrimp and Smelling Like a Snake
Lesson Overview

The class receives a new message from the Rain Forest Conservation Group that reveals highway lights have recently been installed in the rain forest. Students consider how more light could affect the Tokay geckos’ vision. Students then discuss a series of a scientist’s observations regarding how well a Tokay gecko and an Emerald Tree Skink, another lizard that lives in the same part of the rain forest, see in bright light. Students focus on how each lizard reacts to prey that is nearby. This leads students to wonder if the Tokay gecko can see, and therefore recognize, its prey in bright light. These activities provide motivation for students to begin wondering why animals react differently despite the same amount of information from light getting to their light receptors. Students then read Seeing Like a Shrimp and Smelling Like a Snake, a book about animals with particularly amazing senses. The purpose of this lesson is to introduce students to the idea that animals process information from their environment in different ways and to have students begin to wonder about the role animals’ receptors play in this variation.

Anchor Phenomenon: The population of Tokay geckos in a rain forest in the Philippines has decreased since the installation of new highway lights.

Investigative Phenomenon: An Emerald Tree Skink reacts to prey in a lit terrarium but a Tokay gecko does not.

Students learn:

• Animals can react in different ways to the same amount of information from the environment.
• Some animals have a more sensitive sense of hearing, touch, smell, taste, or vision, than other animals.
• Different animals have different kinds of receptors.
Reading: Seeing Like a Shrimp...

Students read two entries in the book *Seeing Like a Shrimp and Smelling Like a Snake* and practice asking questions independently.

**Instructional Guide**

1. **Return students' Investigation Notebooks.**

2. **Set the purpose for reading.**

Let’s read to find out more about how animals sense information about their environment in different ways. This could help us start to figure out why the nighttime highway lights are causing a problem for the gecko.

3. **Introduce the book.** Hold up a copy of *Seeing Like a Shrimp and Smelling Like a Snake* and let students know that this book is about how different animals sense information from their environment. Explain that the book has information about five different animals, but that students will only read about two.

4. **Review the Asking Questions When You Read chart.** Draw students’ attention to the Asking Questions When You Read chart and remind students that as they read today, they should practice each of these questions.

5. **Introduce the notebook page.** Have students turn to page 64, Asking Questions When Reading: *Seeing Like a Shrimp and Smelling Like a Snake*, in their notebooks. Read the directions out loud.

6. **Review the reading task.** Let students know that the notebook page will help them ask questions as they read. Point out that it has the same layout as the notebook page they used when reading *Crow Scientist*.

- As they read, students will ask on-topic questions and record these in the first column.
- Students will record any information that helps them answer their questions in the second column.
- After reading, students will record other ways they can investigate their questions.
- After a brief discussion, students will record any new questions they have.
7. **Distribute books and have pairs choose entries to read.** Explain that everyone will read the first entry about the mantis shrimp, and then pairs will choose one more entry to read. Have students flip through the book to decide which other animal they will read about.

8. **Pairs read and complete the first and second columns of the notebook page.** Have pairs begin reading. Circulate and assist students as necessary. Remind students to record questions in their notebook.

9. **Students complete the third column of the notebook page.** As pairs finish reading, focus their attention on completing the third column.

10. **Pairs discuss one or two of their questions.** Have pairs each discuss one or two of their questions, including any information they read that helps answer the question, and any other ideas they have for investigating the question.

11. **Introduce the next part of the notebook page.** Focus students’ attention on page 65, the New Questions section of Asking Questions When Reading: Seeing Like a Shrimp and Smelling Like a Snake, in the notebook.

Now that you have discussed your questions and heard someone else’s questions, you can probably think of new questions to ask. We will record those questions in our notebooks as well.

12. **On-the-Fly Assessment: Partners discuss questions and record new questions after reading.** Give students time to complete the notebook page. As you circulate, look to see how students have completed each column on page 64, as well as added their questions to page 65. This will help you guide the discussion when students share their questions with the class.

13. **Acknowledge asking and discussing questions as a way to better understand text.**

By asking questions as you read and then thinking about and discussing those questions, you are really thinking carefully about the ideas in the book. This helps you understand the book.
Embedded Formative Assessment

On-the-Fly Assessment 11: Asking Questions

Look for: At this point in the unit, students have had several opportunities to ask on-topic questions and to read to find information that helps them answer those questions. However, this is only the second time that students have engaged in thinking about how else to investigate their questions and add any new questions they have. After students read, look for whether or not they have recorded other ways to investigate their questions and recorded one or two new questions, based on their partner discussions.

Now what? If students are having difficulty thinking of other ways to investigate their questions, choose a student question and pose it to the class. Questions that are not easily and/or completely answered by the text are good questions for this activity. Have a class discussion in which students make suggestions about how else to investigate the question. You can also point out the ways that students have investigated questions throughout the unit (by using the Sim, making a model, etc.), to prompt students’ thinking. You may want to discuss controlling a variable if students bring up ideas about a hands-on way to investigate. If, after reading and discussing their questions, students are having difficulty coming up with a new question, consider doing a demonstration of how discussing a book with a partner can lead to new questions. As you circulate, look for a pair that has come up with new questions, based on their conversation. Ask that pair if they would be willing to have their conversation and come to their new questions again, this time as the rest of the class watches. After the pair demonstrates, point out ways in which the pair’s discussion helped them think of new questions. Alternatively, you could call on a volunteer to be your partner and demonstrate discussing the book with that student. As you demonstrate, model thinking aloud to ask a question based on something your partner said.

Teacher Support

Background

About the Book: Seeing Like a Shrimp and Smelling Like a Snake
This engaging book explores all five senses, focusing on a different animal for each sense. Students read about a mantis shrimp’s vision, a star-nosed mole’s sense of touch, a catfish’s sense of taste, a fennec fox’s sense of hearing, or a snake’s sense of smell. These fascinating examples of animal senses help students understand that vision (and other senses) can be different for different animals and that some animals are more sensitive than others. The book also highlights each sense in humans, and includes hints about the ways vision can be different in nocturnal versus diurnal animals. This will help students figure out the mystery they are presented with in the unit—why nighttime highway lights are causing problems for nocturnal Tokay geckos. This book also sets the context for students’ final investigations, inviting them to consider how different animals have different sensitivities to information about their environment.

Rationale

Literacy Note: Asking Questions When Reading
In this lesson, students have the opportunity to practice all of the elements of the Asking Questions strategy independently. At this point, students have had multiple opportunities to learn about and practice this strategy. Decreasing teacher support toward the end of the unit promotes students’ independence with the strategy.
Rationale

Pedagogical Goals: Why Students Read About Only Two Animals

*Seeing Like a Shrimp and Smelling Like a Snake* is a context-setting book that invites students to consider the broad idea of how different animals sense their environment in different ways. As students read, they learn that receptors play a role in how animals sense their environment differently. It is not important that students read about each of the five animals to understand this idea. Having students read the first entry and then choose one other entry allows them some choice in what they read about and provides an opportunity for rich discussion with others after reading.

Rationale

Pedagogical Goals: Why All Students Read the Mantis Shrimp Section

Having all students read about the mantis shrimp in *Seeing Like a Shrimp and Smelling Like a Snake* provides them with an initial exposure to the idea that some animals are active during the day (diurnal) while other animals are active at night (nocturnal). Understanding this will help students solve the problem of why more light makes it harder for the Tokay gecko to see. While students will not discuss the idea in this lesson, it is helpful to make sure all students are exposed to the idea here. Students will delve into this concept more deeply in the following lessons.

Possible Responses

Investigation Notebook

*Asking Questions When Reading: Seeing Like a Shrimp and Smelling Like a Snake* (pages 64–65)

Answers will vary.
Asking Questions When Reading: Seeing Like a Shrimp and Smelling Like a Snake

1. As you read the book, record questions you have in the first column.
2. If you find the answers to your questions as you read, record your answers in the second column.
3. In the third column, think of other ways you could investigate your questions.
4. On the next page, record any new questions you have after reading.

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<tr>
<th>Question</th>
<th>Information from the book that helps answer my question</th>
<th>Other ways to investigate my question</th>
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Asking Questions When Reading: Seeing Like a Shrimp and Smelling Like a Snake (continued)

New Questions


Lesson 4.1
Seeing Like a Shrimp and Smelling Like a Snake
Lesson Overview

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Anchor Phenomenon: The population of Tokay geckos in a rain forest in the Philippines has decreased since the installation of new highway lights.
Investigative Phenomenon: An Emerald Tree Skink reacts to prey in a lit terrarium but a Tokay gecko does not.

Students learn:

- Animals can react in different ways to the same amount of information from the environment.
- Some animals have a more sensitive sense of hearing, touch, smell, taste, or vision, than other animals.
- Different animals have different kinds of receptors.
Students read two entries in the book *Seeing Like a Shrimp and Smelling Like a Snake* and practice asking questions independently.

**Instructional Guide**

1. **Return students’ Investigation Notebooks.**

2. **Set the purpose for reading.**

3. **Introduce the book.** Hold up a copy of *Seeing Like a Shrimp and Smelling Like a Snake* and let students know that this book is about how different animals sense information from their environment. Explain that the book has information about five different animals, but that students will only read about two.

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Possible Responses

Investigation Notebook
Asking Questions When Reading: Seeing Like a Shrimp and Smelling Like a Snake (pages 64–65)

Answers will vary.
Hacer preguntas al leer:
Ver como una langosta y oler como una serpiente

1. Mientras lees el libro, apunta las preguntas que tengas en la primera columna.
2. Si encuentras las respuestas a tus preguntas mientras lees, apunta tus respuestas en la segunda columna.
3. En la tercera columna, piensa en otras maneras en las que podrías investigar tus preguntas.
4. En la página siguiente, apunta cualquier pregunta nueva que tengas después de leer.

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<th>Pregunta</th>
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Hacer preguntas al leer: 
*Ver como una langosta y oler como una serpiente* (continuación)

Preguntas nuevas

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