Lesson 5.1
Planning an Investigation of Your Senses
Lesson Overview

Students explore one of their own senses in order to understand how humans use their sensory structures to help gather information about their environment. First, students consider how the sensitivity of their senses compares to other animals’ senses. Then, in small groups, they revisit an excerpt from the book Investigating Animal Senses in order to review the scientific practice of changing only one variable at a time during an investigation. Finally, they use the provided materials to design an investigation about their structures and receptors that are involved in one sense. In the next lesson, they will complete this investigation. Students’ final plans for their investigations along with their conclusions will be assessed as part of the rubrics included in Lesson 5.2. The purpose of this lesson is for students to plan a successful investigation about human senses that changes only one variable at a time.

Anchor Phenomenon: Humans use their senses to get information about their environment.

Students learn:

- People use their senses of smell, hearing, and touch to gather information about their environment.
- Scientists consider carefully which variable will be the one they will change in an investigation.
Changing One Variable

Students reread a portion of *Investigating Animal Senses*, focusing on the importance of changing only one variable in an investigation.

**Instructional Guide**

1. Set purpose for returning to *Investigating Animal Senses*. Explain that reading and discussing parts of *Investigating Animal Senses* will help students plan their investigation.

2. Designate pairs and distribute books.

3. Introduce the notebook page. Have students turn to page 92, Changing Variables in Investigating Animal Senses, in their notebooks. Review the directions.

4. Pairs read and work in their notebooks. Direct students to read only pages 8–9 and 16–18 of the text, while answering the questions in their notebooks.

5. Have a few students share their answers with the class. Guide students to understand that changing only one variable is important in a scientific investigation so that they can tell if that change had an effect.

6. Preview investigations of human senses.

Now that we’ve reviewed how to set up an investigation that changes only one variable, it’s time to design your investigation about the sense of hearing, smell, or touch.

**Teacher Support**

**Instructional Suggestion**

**Science Practices: Controlling Variables**

Ensuring that an experiment is a fair test is a crucial part of investigation design and gathering reliable data to use as evidence. When scientists set up experiments, they control as many variables as possible in order to isolate the one variable they are studying—they try to keep all other variables the same so they can be sure that any difference between the two treatments is a result of the one variable they are investigating. Because students have not had much
experience setting up controlled experiments in the past, even with the practice they’ve had throughout the unit, many will have difficulty designing investigations that change only one variable at a time. They may require more review or more modeling of investigations that illustrate the practice of choosing only one variable.

Possible Responses

Investigation Notebook
Changing Variables in *Investigating Animal Senses* (page 92)

Getting Ready to Investigate (pages 8–9)

*Why is it important to choose your investigation materials carefully?*
So you can be sure that you only change one thing at a time.

Investigating the Guinea Pig (pages 16–18)

*What were the students trying to find out?*
They were trying to find out if the guinea pig used its sense of smell or vision to find its food.

*What did the students find out from the smell test?*
The students found out that the guinea pig used smell to find food.

*Why were the students unsure about what they learned from the vision test?*
They were unsure because they changed more than one thing at a time in their investigation. They allowed the guinea pig to see its food and at the same time they put the food up high. Because of this, they couldn’t tell if the guinea pig didn’t eat its food because it doesn’t use vision to find its food or because it was scared of heights.
Changing Variables in *Investigating Animal Senses*

1. Read pages 8–9 and 16–18 in *Investigating Animal Senses*.
2. Discuss and answer the questions below.

**Getting Ready to Investigate (pages 8–9)**

Why is it important to choose your investigation materials carefully?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

**Investigating the Guinea Pig (pages 16–18)**

What were the students trying to find out?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

What did the students find out from the smell test?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

Why were the students unsure about what they learned from the vision test?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
Lesson 5.1
Planning an Investigation of Your Senses
Lesson Overview

Students explore one of their own senses in order to understand how humans use their sensory structures to help gather information about their environment. First, students consider how the sensitivity of their senses compares to other animals’ senses. Then, in small groups, they revisit an excerpt from the book *Investigating Animal Senses* in order to review the scientific practice of changing only one variable at a time during an investigation. Finally, they use the provided materials to design an investigation about their structures and receptors that are involved in one sense. In the next lesson, they will complete this investigation. Students’ final plans for their investigations along with their conclusions will be assessed as part of the rubrics included in Lesson 5.2. The purpose of this lesson is for students to plan a successful investigation about human senses that changes only one variable at a time.

**Anchor Phenomenon:** Humans use their senses to get information about their environment.

**Students learn:**

- People use their senses of smell, hearing, and touch to gather information about their environment.
- Scientists consider carefully which variable will be the one they will change in an investigation.
Changing One Variable

Students reread a portion of *Investigating Animal Senses*, focusing on the importance of changing only one variable in an investigation.

Instructional Guide

1. **Set purpose for returning to *Investigating Animal Senses***. Explain that reading and discussing parts of *Investigating Animal Senses* will help students plan their investigation.

2. **Designate pairs and distribute books**.

3. **Introduce the notebook page**. Have students turn to page 92, Changing Variables in Investigating Animal Senses, in their notebooks. Review the directions.

4. **Pairs read and work in their notebooks**. Direct students to read only pages 8–9 and 16–18 of the text, while answering the questions in their notebooks.

5. **Have a few students share their answers with the class**. Guide students to understand that changing only one variable is important in a scientific investigation so that they can tell if that change had an effect.

6. **Preview investigations of human senses**.

   Ahora que hemos repasado cómo preparar una investigación que cambie solo una variable, es tiempo de que diseñen su investigación del sentido del oído, olfato o tacto.

Teacher Support

**Instructional Suggestion**

**Science Practices: Controlling Variables**

Ensuring that an experiment is a fair test is a crucial part of investigation design and gathering reliable data to use as evidence. When scientists set up experiments, they control as many variables as possible in order to isolate the one variable they are studying—they try to keep all other variables the same so they can be sure that any difference between the two treatments is a result of the one variable they are investigating. Because students have not had much
experience setting up controlled experiments in the past, even with the practice they’ve had throughout the unit, many will have difficulty designing investigations that change only one variable at a time. They may require more review or more modeling of investigations that illustrate the practice of choosing only one variable.

Possible Responses

Investigation Notebook
Changing Variables in *Investigating Animal Senses* (page 92)

Getting Ready to Investigate (pages 8–9)

*Why is it important to choose your investigation materials carefully?*
So you can be sure that you only change one thing at a time.

Investigating the Guinea Pig (pages 16–18)

*What were the students trying to find out?*
They were trying to find out if the guinea pig used its sense of smell or vision to find its food.

*What did the students find out from the smell test?*
The students found out that the guinea pig used smell to find food.

*Why were the students unsure about what they learned from the vision test?*
They were unsure because they changed more than one thing at a time in their investigation. They allowed the guinea pig to see its food and at the same time they put the food up high. Because of this, they couldn’t tell if the guinea pig didn’t eat its food because it doesn’t use vision to find its food or because it was scared of heights.
Nombre: ____________________________________  Fecha: ________________

**Cambiar variables en Investigar los sentidos de los animales**

1. Lee las páginas 8 a 9 y 16 a 18 en *Investigar los sentidos de los animales*.
2. Discute y responde las preguntas debajo.

**Prepararse para investigar (páginas 8 a 9)**

¿Por qué es importante elegir cuidadosamente los materiales de tu investigación?
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

**Investigar el cobayo (páginas 16 a 18)**

¿Qué estaban tratando de descubrir los estudiantes?
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

¿Qué descubrieron los estudiantes de la prueba del olfato?
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

¿Por qué los estudiantes no estaban seguros sobre lo que habían aprendido de la prueba de la visión?
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________