Lesson 2.2
Mystery Mouths
Lesson Overview

Students read the book *Mystery Mouths* to learn about various traits, such as sharp teeth or long beaks, that can help organisms meet their needs and survive in different environments. Partners make inferences as they read and then discuss those inferences. After reading, students return to the book to discuss how the structure of particular teeth are good for particular functions. The purpose of this lesson is for students to construct ideas about structure and function in the context of traits that help organisms meet particular needs in their environment.

**Anchor Phenomenon:** Over the past 10 years, the snails with yellow shells have not survived as well as the snails with banded shells.  
**Investigative Phenomenon:** Living things have different types of mouths.

**Students learn:**

- Some traits involve structures with specific functions that help organisms meet their needs for survival in a given environment.  
- Scientists can observe the structure of an animal’s teeth to make inferences about what that animal eats.  
- When you make an inference, you figure something out based on what you read or observe and what you already know.
Introducing Mystery Mouths

Students are introduced to the book *Mystery Mouths* and return to the sense-making strategy of making inferences.

**Instructional Guide**

1. **Return to the Investigation Question.** Draw students’ attention to the Investigation Question on the board.

   🔄 We are still trying to figure out why some organisms in a population are more likely to survive than others in their environment.

   🔄 You engaged in the Hummingbird Model. What happened when the hummingbirds tried to meet their need of getting food?
   
   [It was harder for some hummingbirds to get food and easier for others.]

   🔄 The birds had different traits for the structure of their beaks, and that made a difference in how easy it was for each hummingbird to get nectar.

2. **Set purpose for reading.** Hold up a copy of *Mystery Mouths*.

   🔄 We will keep thinking about how an animal’s traits can make it easier or harder for it to meet its needs for survival by reading about how different kinds of animals meet their need for food in their environments.

3. **Discuss the sense-making strategy of making inferences.**

   🔄 Just like when you read *Earthworms Underground*, you will make inferences as you read to help you better understand the book.

4. **Read aloud page 3 and model making an inference.** Hold up the book so students can see the picture.

   • Have students observe the mouth that is pictured.
What is the structure of each tooth—how is each tooth shaped?
[Two long, pointy teeth on the side. Teeth that are not very pointy in the front. Short, wide, pointy teeth in the back.]

- Ask students to make inferences about what the animal might eat, based on the traits they observed.

Remember that when you make an inference, you figure something out based on what you read or observe and what you already know.

The two long, pointy teeth on the side of the animal’s mouth—that tooth structure is a trait. What can you figure out about what this animal eats, based on what you observed about its traits and what you already know about what animals eat?

Have partners discuss and then call on several students to share their ideas. If appropriate, support students by offering your own inference as a model.

I observe this animal has some long, sharp teeth. I know that sharp teeth can really chew food that is tough, such as meat. So, I can make the inference that this animal eats meat.

5. Project page 20, Making Inferences When Reading: Mystery Mouths, in the notebook. Read the directions aloud.

- Step 1: Make inferences as you read Mystery Mouths to help you understand the book. Remind students that they recorded their inferences on a similar page when they read Earthworms Underground.

- Step 2: In the table below, record the page number and what you observed or read. In the first column, write “3” to indicate that you are reading page 3. In the second column, write “Lots of teeth, some are very long and sharp.”

Point out that the second column includes both what students observed and read since students may make inferences based on what they observe in the photographs or read.

- Step 3: Then, record the inference you made. In the last column, write “This animal eats meat.”

6. Read aloud pages 4–5 of Mystery Mouths.

- Pause after reading page 4 and have students check their inferences. Ask students to consider their inferences in comparison to what the text says about wolves and the traits they have to help them meet their needs and survive.

You may have made an inference that is similar to what the book says, or you may have made an inference that is different.

Making inferences is a way of thinking about what you read. As long as you are using what you already know and what you observe or read to make your inference, it doesn’t matter if your inference turns out to be correct.
• **Read page 5 aloud and connect traits for tooth structure to environment.** Point out that wolves’ pointy teeth help them survive in their environment.

7. **Read page 6 aloud and have partners discuss questions in the text.** Read page 6 aloud and pause after each question posed in the text. Have partners briefly discuss and then call on several students to share their ideas.

8. **Suggest stopping points for making inferences.** Point out that a new animal’s mouth is introduced on page 7. Let students know that stopping when a new animal skull is introduced is a good place to make an inference when they are reading with their partners.

9. **Prompt students to think in terms of structure and function as they read and make inferences.**

   We were able to make inferences about the function of the wolves’ back teeth by thinking about their structure. Since their back teeth have a flat structure with jagged edges, and teeth shaped like that are good for cutting off big pieces of meat and chewing them up, we can infer that in order to survive, wolves need to eat meat, not plants or other softer foods.

### Teacher Support

#### Instructional Suggestion

**Providing More Experience: Today’s Daily Written Reflection**

*What did you learn from the Hummingbird Model?* This prompt (on page 18 of the Investigation Notebook) asks students to reflect on the model from the previous lesson. Thinking about the variation in beaks within a population of hummingbirds, as well as how that variation may affect a hummingbird’s ability to get food, helps students build toward understanding how the traits an organism has can affect its likelihood of survival.

#### Background

**Literacy Note: About the Book**

*Mystery Mouths* introduces students to the concept of structure and function by providing them with the opportunity to observe the traits of various animal mouths. First, students are shown a photograph of a mouth and asked to examine it. Then, they turn the page and learn what kind of animal has such a mouth and what the structures in the mouth allow the animal to do. Students also examine skulls, including fossil skulls, and compare them to the mouths of animals with similar structures. This book conveys essential content about structure and function. In addition, the format of this book makes it ideal for helping students make inferences from the text and the visual representations. This experience with making inferences supports students in their firsthand and secondhand investigations.

#### Background

**Literacy Note: Making Inferences**

In this lesson, students make inferences by observing photographs of various animals’ mouths in the book *Mystery Mouths*. This is similar to the practice of scientists who observe the actual skulls and fossils of animals. This is students’ second time engaging in the sense-making strategy of making inferences as they read. In this lesson, you model making inferences based on the text and then guide students in doing so. Students then make inferences with
their partners as they read. The way in which the text is organized, with a photograph of a skull and questions about the structure of the mouth, should help students make inferences. As the unit progresses, you will provide less guidance and teacher modeling, and students will engage in making inferences more independently.

Background

Crosscutting Concept: Systems and System Models Across Chapter 2
There are several opportunities in Chapter 2 to connect to the crosscutting concept of Systems and System Models. As students continue to consider how different traits can make it more likely or less likely for organisms to survive in an environment, it can be helpful to frame this in terms of how the organism’s trait is helpful for getting the food that is present in its environment, an important part of the system to consider when thinking about the helpfulness of the trait. Throughout Chapter 2, students will engage with several examples of organisms and the constraints and affordances of environments as they investigate why the snails with yellow shells in the study area are not surviving as well as the snails with banded shells. In this lesson, the book *Mystery Mouths* provides a few examples of organisms interacting with their environments that you could use as the basis for a discussion of systems. To highlight the crosscutting concept of Systems and System Models and extend the lesson, you could choose to reread the pages of the book that show each organism in its environment and prompt students to consider how its traits help it survive, given the food sources that exist in its environment.
Partner Reading

Partners read *Mystery Mouts* and record inferences as they read. Then, students choose one inference and discuss it with their partners.

Instructional Guide

1. **Distribute books.** Distribute one copy of *Mystery Mouts* to each pair of students. Remind students that they will record inferences on page 20 in their notebooks.

2. **Have partners read and discuss inferences.** Encourage students to make and record their inferences after they observe each mouth and before they turn the page to read more about each mouth.

3. **On-the-Fly Assessment: Students make inferences when reading.** Have partners continue reading. Circulate and listen to how students are using what they observe and what they already know to make inferences as they read. Notice what students decide to record in their notebooks.

4. **Project Discussing Inferences.** Explain that students should choose one inference they made and discuss it with their partners. Read aloud the sentence frames and encourage students to use this language as they discuss the inferences they made.

**Discussing Inferences**

- I observed/read that ____________.
- I already know that ____________.
- So, my inference is ____________.
5. Whole-class share. If time permits, call on several students to share the inferences they made.

Embedded Formative Assessment

On-the-Fly Assessment 3: Making Inferences About Mystery Mouths

Look for: This is students’ second opportunity to make inferences when reading. Look for students to clearly combine the text and/or photographs with an idea from their background knowledge to make an inference. This inference should be something that is not explicitly stated in the text. Students’ inferences may vary widely, and that is okay in the context of this practice. To engage in the practice of making inferences, it is most important that students can combine what they read with their own ideas to draw a conclusion.

Now what? Mystery Mouths is designed to support students in making inferences. If students need more support in making inferences as they read, you can guide them through another example from the book. Read page 7 with students and ask them describe the bird’s beak. Then, have students discuss what a beak like that might be good for. You may want to think aloud as you make an observation, think about what you already know, and then make an inference. For example, you could say “I observe that this beak is long and pointy. I already know that long and pointy things can be good for digging. So, I can make the inference that this bird digs around somewhere to find its food.” Then, have students read about the beak’s structure and discuss what they found out by using the Discussing Inferences sentence frames. Encourage students to use this language to explain their thinking.

Teacher Support

Rationale

Literacy Note: Approach to Making Inferences
Skillful readers use the sense-making strategy of making inferences to actively engage with the text. With each book, the reading scaffolds are lessened, which allows students to read more independently as the unit progresses. At this point in the unit, students have had several opportunities to make inferences. When students read Earthworms Underground, they were provided with a high level of modeling and support in making and recording their inferences. In this lesson, the text is designed for students to be able to make inferences independently, and students record their inferences with little guidance.

Possible Responses

Investigation Notebook
Making Inferences When Reading: Mystery Mouths (page 20)
Answers will vary. Examples:

Page 7
a bird with a long sharp beak
It eats small things, like bugs. It might poke around in the dirt with its beak.

Page 11
teeth that aren’t very sharp
This animal eats food that is soft.

Page 15
long mouth with lots of sharp teeth
This animal eats some kind of meat that is tough.
Making Inferences When Reading: *Mystery Mouths*

Directions:
1. Make inferences as you read *Mystery Mouths* to help you understand the book.
2. In the table below, record the page number and what you observed or read.
3. Then, record the inference you made.

<table>
<thead>
<tr>
<th>Page number</th>
<th>I observed/read that . . .</th>
<th>My inference is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Introducing Mystery Mouths

Students are introduced to the book *Mystery Mouths* and return to the sense-making strategy of making inferences.

Instructional Guide

1. **Return to the Investigation Question.** Draw students’ attention to the Investigation Question on the board.

   Todavía estamos tratando de descubrir por qué algunos organismos en una población tienen más probabilidades de sobrevivir que otros en su ambiente.

   Participaron en el Modelo de colibrí. ¿Qué pasó cuando los colibríes trataron de satisfacer su necesidad de conseguir alimento? [Para algunos colibríes era más difícil conseguir alimento y para otros era fácil].

   Las aves tenían diferentes rasgos para la estructura del pico y esto marcó una diferencia en lo fácil que fue conseguir néctar para los colibríes.

2. **Set purpose for reading.** Hold up a copy of *Mystery Mouths*.

   Vamos a seguir pensando en cómo los rasgos de un animal pueden hacer que sea más fácil o más difícil que satisfaga sus necesidades de supervivencia, al leer sobre cómo diferentes tipos de animales satisfacen su necesidad de alimento en sus ambientes.

3. **Discuss the sense-making strategy of making inferences.**

   Igual como cuando leyeron *Lombrices bajo tierra*, van a hacer inferencias mientras leen para ayudarles a comprender mejor el libro.

4. **Read aloud page 3 and model making an inference.** Hold up the book so students can see the picture.

   - Have students observe the mouth that is pictured.
¿Cuál es la estructura de cada diente? Es decir, ¿cómo es la forma de cada diente?
[Dos dientes largos y puntiagudos a los lados. Dientes que no son muy puntiagudos al frente. Dientes cortos, anchos y puntiagudos en la parte de atrás].

• Ask students to make inferences about what the animal might eat, based on the traits they observed.

Recuerden que cuando hacen una inferencia, están resolviendo algo según lo que han leído u observado y la información que ya conocen.

Los dos dientes laterales en la boca del animal son largos y puntiagudos. Esa estructura de los dientes es un rasgo. ¿Qué pueden averiguar acerca de la alimentación de este animal, basándose en lo que observaron sobre sus rasgos y en la información que ya conocen sobre lo que comen los animales?

Have partners discuss and then call on several students to share their ideas. If appropriate, support students by offering your own inference as a model.

Yo observo que este animal tiene unos dientes largos y afilados. Yo sé que los dientes afilados pueden masticar comida dura, como carne, así que puedo inferir que este animal come carne.

5. Project page 20, Making Inferences When Reading: Mystery Mouths, in the notebook. Read the directions aloud.

• Step 1: Make inferences as you read Mystery Mouths to help you understand the book. Remind students that they recorded their inferences on a similar page when they read Earthworms Underground.

• Step 2: In the table below, record the page number and what you observed or read. In the first column, write “3” to indicate that you are reading page 3. In the second column, write “Lots of teeth, some are very long and sharp.”

Point out that the second column includes both what students observed and read since students may make inferences based on what they observe in the photographs or read.

• Step 3: Then, record the inference you made. In the last column, write “This animal eats meat.”

6. Read aloud pages 4–5 of Mystery Mouths.

• Pause after reading page 4 and have students check their inferences. Ask students to consider their inferences in comparison to what the text says about wolves and the traits they have to help them meet their needs and survive.

Puede ser que hayan hecho una inferencia similar a lo que dice el libro o puede ser que hayan hecho una inferencia diferente.

Hacer inferencias es una manera de pensar sobre lo que leen. Mientras estén usando la información que ya conocen y lo que observan o leen para hacer una inferencia, no importa si su inferencia resulta ser correcta o no.
- Read page 5 aloud and connect traits for tooth structure to environment. Point out that wolves’ pointy teeth help them survive in their environment.

7. Read page 6 aloud and have partners discuss questions in the text. Read page 6 aloud and pause after each question posed in the text. Have partners briefly discuss and then call on several students to share their ideas.

8. Suggest stopping points for making inferences. Point out that a new animal’s mouth is introduced on page 7. Let students know that stopping when a new animal skull is introduced is a good place to make an inference when they are reading with their partners.

9. Prompt students to think in terms of structure and function as they read and make inferences.

Teacher Support

Instructional Suggestion

Providing More Experience: Today’s Daily Written Reflection

What did you learn from the Hummingbird Model? This prompt (on page 18 of the Investigation Notebook) asks students to reflect on the model from the previous lesson. Thinking about the variation in beaks within a population of hummingbirds, as well as how that variation may affect a hummingbird’s ability to get food, helps students build toward understanding how the traits an organism has can affect its likelihood of survival.

Background

Literacy Note: About the Book

*Mystery Mouths* introduces students to the concept of structure and function by providing them with the opportunity to observe the traits of various animal mouths. First, students are shown a photograph of a mouth and asked to examine it. Then, they turn the page and learn what kind of animal has such a mouth and what the structures in the mouth allow the animal to do. Students also examine skulls, including fossil skulls, and compare them to the mouths of animals with similar structures. This book conveys essential content about structure and function. In addition, the format of this book makes it ideal for helping students make inferences from the text and the visual representations. This experience with making inferences supports students in their firsthand and secondhand investigations.

Background

Literacy Note: Making Inferences

In this lesson, students make inferences by observing photographs of various animals’ mouths in the book *Mystery Mouths*. This is similar to the practice of scientists who observe the actual skulls and fossils of animals. This is students’ second time engaging in the sense-making strategy of making inferences as they read. In this lesson, you model making inferences based on the text and then guide students in doing so. Students then make inferences with
their partners as they read. The way in which the text is organized, with a photograph of a skull and questions about the structure of the mouth, should help students make inferences. As the unit progresses, you will provide less guidance and teacher modeling, and students will engage in making inferences more independently.

**Background**

**Crosscutting Concept: Systems and System Models Across Chapter 2**

There are several opportunities in Chapter 2 to connect to the crosscutting concept of Systems and System Models. As students continue to consider how different traits can make it more likely or less likely for organisms to survive in an environment, it can be helpful to frame this in terms of how the organism’s trait is helpful for getting the food that is present in its environment, an important part of the system to consider when thinking about the helpfulness of the trait. Throughout Chapter 2, students will engage with several examples of organisms and the constraints and affordances of environments as they investigate why the snails with yellow shells in the study area are not surviving as well as the snails with banded shells. In this lesson, the book *Mystery Mouths* provides a few examples of organisms interacting with their environments that you could use as the basis for a discussion of systems. To highlight the crosscutting concept of Systems and System Models and extend the lesson, you could choose to reread the pages of the book that show each organism in its environment and prompt students to consider how its traits help it survive, given the food sources that exist in its environment.
Partners read *Mystery Mout**h**s* and record inferences as they read. Then, students choose one inference and discuss it with their partners.

**Instructional Guide**

1. **Distribute books.** Distribute one copy of *Mystery Mout**h**s* to each pair of students. Remind students that they will record inferences on page 20 in their notebooks.

2. **Have partners read and discuss inferences.** Encourage students to make and record their inferences after they observe each mouth and before they turn the page to read more about each mouth.

3. **On-the-Fly Assessment: Students make inferences when reading.** Have partners continue reading. Circulate and listen to how students are using what they observe and what they already know to make inferences as they read. Notice what students decide to record in their notebooks.

4. **Project Discussing Inferences.** Explain that students should choose one inference they made and discuss it with their partners. Read aloud the sentence frames and encourage students to use this language as they discuss the inferences they made.

**Discutir inferencias**

*Observé/Leí que ________________.*
*Ya sé que ________________.*
*Entonces, mi inferencia es ________________.*
Embedded Formative Assessment

On-the-Fly Assessment 3: Making Inferences About Mystery Mouths

Look for: This is students’ second opportunity to make inferences when reading. Look for students to clearly combine the text and/or photographs with an idea from their background knowledge to make an inference. This inference should be something that is not explicitly stated in the text. Students’ inferences may vary widely, and that is okay in the context of this practice. To engage in the practice of making inferences, it is most important that students can combine what they read with their own ideas to draw a conclusion.

Now what? Mystery Mouths is designed to support students in making inferences. If students need more support in making inferences as they read, you can guide them through another example from the book. Read page 7 with students and ask them describe the bird’s beak. Then, have students discuss what a beak like that might be good for. You may want to think aloud as you make an observation, think about what you already know, and then make an inference. For example, you could say “I observe that this beak is long and pointy. I already know that long and pointy things can be good for digging. So, I can make the inference that this bird digs around somewhere to find its food.” Then, have students read about the beak’s structure and discuss what they found out by using the Discussing Inferences sentence frames. Encourage students to use this language to explain their thinking.

Teacher Support

Rationale

Literacy Note: Approach to Making Inferences
Skillful readers use the sense-making strategy of making inferences to actively engage with the text. With each book, the reading scaffolds are lessened, which allows students to read more independently as the unit progresses. At this point in the unit, students have had several opportunities to make inferences. When students read Earthworms Underground, they were provided with a high level of modeling and support in making and recording their inferences. In this lesson, the text is designed for students to be able to make inferences independently, and students record their inferences with little guidance.

Possible Responses

Investigation Notebook
Making Inferences When Reading: Mystery Mouths (page 20)
Answers will vary. Examples:

Page 7
a bird with a long sharp beak
It eats small things, like bugs. It might poke around in the dirt with its beak.

Page 11
teeth that aren’t very sharp
This animal eats food that is soft.

Page 15
long mouth with lots of sharp teeth
This animal eats some kind of meat that is tough.
Hacer inferencias al leer: *Bocas misteriosas*

Instrucciones:
1. Haz inferencias mientras lees *Bocas misteriosas* para ayudarte a entender el libro.
2. En la tabla debajo, apunta el número de página y lo que observaste o leíste.
3. Luego, apunta la inferencia que hiciste.

<table>
<thead>
<tr>
<th>Número de página</th>
<th>Observé/leí que...</th>
<th>Mi inferencia es...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Página:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Página:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Página:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>