Lesson 1.3
Earthworms Underground
Lesson Overview

Students read *Earthworms Underground*, a book that focuses on how earthworms meet their needs for survival in their environment. Students are introduced to the sense-making strategy of making inferences, and they make inferences as they read. After reading, students return to the book to focus on one need that earthworms must meet in their environment and discuss how earthworms’ traits can help them meet their needs for survival. Students are introduced to the Concept Mapping discourse routine. They engage in discussing relationships between key science words, which prepares them to create and record their own concept maps in Chapter 2. The purpose of this lesson is for students to begin exploring the idea that organisms have traits that help them survive.

**Anchor Phenomenon:** Over the past 10 years, the snails with yellow shells have not survived as well as the snails with banded shells.

**Everyday Phenomenon:** Earthworms survive underground.

**Students learn:**

- Earthworms, like other organisms, have many needs for survival, including the needs for air, water, food, and for avoiding predators.
- Earthworms, like other organisms, have traits that help them meet their needs for survival in their environment.
- Organisms have traits that you can observe, such as color or size.
- Just like scientists make inferences based on their observations and what they already know, readers also make inferences.
Introducing Earthworms Underground

Students are introduced to the book *Earthworms Underground* and the sense-making strategy of making inferences.

Instructional Guide

1. **Return to the Investigation Question.** Remind students of the Investigation Question.

   We are still thinking about this question: *What makes organisms in a population more likely to survive or less likely to survive?*

2. **Connect to the previous lesson.** Remind students about the Needs for Survival investigation they did in the previous lesson.

   What ideas do you have right now about what makes organisms more likely to survive or less likely to survive?

   Have a few students share their ideas.

3. **Set purpose for reading.** Hold up a copy of *Earthworms Underground*.

   Today, you will continue thinking about what makes organisms more likely to survive or less likely to survive. You’ll do this as you read about how one type of organism, earthworms, survive underground.

4. **Assign pairs and distribute books.** Distribute one copy of *Earthworms Underground* to each pair.

5. **Briefly review the table of contents.** Have students turn to page 3, Contents. Point out the titles of the different sections.

   In the Contents, we see that earthworms have a lot of needs. Just like the organisms you investigated, earthworms need to meet their needs in their environment. They need food and water, they need to stay cool, and they need to avoid predators.
6. Read aloud page 4 and discuss the word environment. Have students turn to page 4 and follow along as you read aloud.

I read that every place on Earth is an environment and that there are many kinds of environments. I also read that earthworms live in an underground environment.

7. Define environment and post the vocabulary card. Hold up the environment vocabulary card.

The word environment means all the living and nonliving things in an area. We have been thinking about how living things survive in their environments.

Post the environment card to the Vocabulary section of the classroom wall.

What are some of the living and nonliving things you see in the earthworms’ underground environment? [Dirt, roots, earthworms.]

8. Introduce making inferences when reading.

In order to help you understand what you read, you will make some inferences as you read. Just like scientists make inferences based on their observations and what they already know, readers also make inferences.

In reading, an inference is something you figure out based on what you read and what you already know. An inference is not written in the book.

I read that earthworms can survive and meet their needs underground. I already know that one need organisms have is getting food. So I can figure out, or make an inference, that earthworms get their food underground.

This page doesn’t say that earthworms get their food underground, but I figured that out based on what I read and what I already know.

9. Read page 5 aloud and model making an inference. Have students turn to page 5 and follow along as you read aloud. Explain that you will make some inferences together before students continue reading and making inferences themselves.

I read that earthworms can survive and meet their needs underground. I already know that one need organisms have is getting food. So I can figure out, or make an inference, that earthworms get their food underground.

This page doesn’t say that earthworms get their food underground, but I figured that out based on what I read and what I already know.

10. Project and introduce notebook page 8, Making Inferences When Reading: Earthworms Underground. Have students turn to page 8 in their notebooks. Explain that students will record their inferences as they read. Read the directions aloud.

- Step 1: Make inferences as you read Earthworms Underground to help you understand the book.
- Step 2: In the table below, record the page number and what you read.
- Step 3: Then, record the inference you made.

Point out that the first row is already started with the page number and the idea that you read.
On page 7, I read that if an earthworm dries out, it is not likely to survive.

So I can figure out, or make an inference, that if an earthworm goes above ground, it will dry out and not be able to survive.

11. **Model recording the inference.** In the third column, write the inference you just agreed upon. Write “If an earthworm goes above ground, it will dry out and not be able to survive.” Have students record this inference in their notebooks.

**Teacher Support**

**Rationale**

Providing More Experience: About Daily Written Reflections

Daily Written Reflections are open-ended, optional prompts that you can use with students to jump-start each lesson. You can ask students to write their responses, or you can use the prompts as the basis for a discussion. Daily Written Reflections can also be used at other times in the day or as homework. The prompts encourage students to reflect on what they’ve been learning, activate prior knowledge, make connections, and practice using science vocabulary. Responses can also be a good window into students’ thinking. Let students know that for this kind of writing, it is more important to focus on recording their ideas rather than on perfect spelling or punctuation. Daily Written Reflections are meant to be brief—allow about 5–10 minutes for students to respond.

**Instructional Suggestion**

Providing More Experience: Today’s Daily Written Reflection

*What happens when a plant or animal can’t meet its needs?* This prompt (on page 6 in the Investigation Notebook) asks students to think about what they read and recorded about the needs of a particular organism during the previous lesson. Encouraging students to respond to this prompt can help them connect what they did in Lesson 1.2 to reading more deeply about one organism’s needs for survival: the earthworm.

**Background**

About the Book: *Earthworms Underground*

*Earthworms Underground* focuses on how earthworms meet their needs in their underground environment. The book is designed to provide students with a view of the earthworm in its natural habitat. Students learn that earthworms have needs, including the need for water and food, the need to protect themselves, and the need to reproduce. The book describes how earthworms’ traits and behaviors allow them to meet each of their needs. Through reading this book, students begin to learn about the connection between an organism’s traits and how the organism survives in its environment. *Earthworms Underground* introduces important content and provides context for students’ investigations of what organisms need to survive.

**Rationale**

**Literacy Note: Approach to Reading**

Skillful readers use a variety of strategies to actively engage with informational text. This unit is designed so the responsibility of reading science text can be gradually released to students. This allows students to read more independently as the unit progresses, and they become increasingly familiar with the concepts and vocabulary in the unit. In this unit, the sense-making strategy of making inferences helps students make sense of what they are reading.
Whenever possible, model how to use this strategy by thinking aloud about how you make inferences as a reader. Students will have multiple opportunities to learn about and practice this strategy through a gradual-release model; you initially provide a high level of direction and support, and that level of support decreases over time in order to promote students’ independence.

Background

Science Note: Habitat vs. Environment
Students may have learned previously that organisms need to live in a specific habitat, which provides the things they need to survive. In this unit, we guide students to think in terms of an organism’s environment, rather than its habitat. We define environment to have a larger scope than habitat. For instance, an environment could include all the things an organism needs to survive and the predators that eat that organism. An environment can be thought of as encompassing a larger space than a habitat; an environment includes the things that can help an organism survive, as well as the things that could make it harder for an organism to survive.

Possible Responses

Investigation Notebook
Making Inferences When Reading: Earthworms Underground (page 8)

Answers will vary. Examples:

Page 7
If an earthworm goes above ground, it will dry out and not be able to survive.

Page 10:
Earthworms eat organisms in the soil.
There are a lot of little bugs in soil for earthworms to eat.

Page 15
Sometimes a bird catches a worm.
An earthworm’s hairs aren’t always strong enough to protect it from a bird.
Partner Reading

Partners read *Earthworms Underground* and record inferences in their notebooks as they read.

**Instructional Guide**

1. **Have partners read and discuss inferences.** Remind students that they will continue reading with their partners. Then, they will record inferences in their notebooks.

   As you read with your partners, you can talk about your inferences. Inferences are based on what you read and what you already know. Since everyone knows different things, you will probably make different inferences than your partners.

2. **Partners read.** Circulate and provide support as necessary.

3. **On-the Fly-Assessment: Students record inferences as they read.** Circulate and listen in as partners discuss and record their inferences.
4. **Project Discussing Inferences.** Explain that students will now choose one of their inferences to discuss with their partners. Read aloud the projected sentence frames and let students know that they should use this language, along with what they recorded in their notebooks, when they discuss the inferences they made.

**Discussing Inferences**

I read that ______________.
I already know that ______________.
So, my inference is ______________.

5. **Whole-class share.** If time remains, call on several students to share the inferences they made.

**Embedded Formative Assessment**

**On-the-Fly Assessment 2: Making Inferences About Earthworms Underground**

**Look for:** This is students’ first opportunity to make inferences when reading. Look for students to combine something they read in the book with an idea from their background knowledge to make an inference (page 8, Making Inferences When Reading: *Earthworms Underground*, in the Investigation Notebook). Their inferences 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?** Students who are struggling to make inferences from the text might need more support with this way of thinking by using a more familiar context. You can provide an example of a tree without leaves and ask students to make an inference about what season it is. Guide students toward separating out the observation (seeing no leaves) from the idea that some trees lose their leaves in the winter (or fall) in order to form an inference that the season must be winter or fall. You can then guide students toward a similar understanding by using *Earthworms Underground*. Reread a passage from the text with students and think aloud as you explain how you use what you read, combined with an idea you know, to make an inference.
Teacher Support

Background

**Literacy Note: Making Inferences**
Making inferences is a sense-making strategy that is useful in both science and reading. Readers make inferences by connecting what is stated in the text with their background knowledge. Scientists make inferences by looking at the available information and connecting it with other information and ideas. Students will have many opportunities to learn how to make inferences. They will participate in lessons in which making inferences is modeled by the teacher, practice the strategy themselves, and reflect on its usefulness. Students will have many opportunities to learn about and practice making inferences throughout the unit. In this lesson, you model making inferences before students make their own inferences. Then, students discuss their inferences with a partner, including the background knowledge they used to make each inference.
Making Inferences When Reading: *Earthworms Underground*

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

<table>
<thead>
<tr>
<th>Page number</th>
<th>I read that . . .</th>
<th>My inference is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page: 7</td>
<td>If an earthworm dries out, it is not likely to survive.</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 Earthworms Underground

Students are introduced to the book *Earthworms Underground* and the sense-making strategy of making inferences.

Instructional Guide

1. **Return to the Investigation Question.** Remind students of the Investigation Question.

   ¿Todavía estamos pensando en esta pregunta: ¿Qué hace que algunos organismos en una población tengan más probabilidades de sobrevivir o menos probabilidades de sobrevivir?

2. **Connect to the previous lesson.** Remind students about the Needs for Survival investigation they did in the previous lesson.

   ¿Qué ideas tienen en este momento sobre qué hace que los organismos tengan más probabilidades de sobrevivir o menos probabilidades de sobrevivir?

   Have a few students share their ideas.

3. **Set purpose for reading.** Hold up a copy of *Earthworms Underground*.

   Hoy seguiremos pensando en qué hace que los organismos tengan más probabilidades de sobrevivir o menos probabilidades de sobrevivir. Tengan esto en mente mientras leen sobre cómo un tipo de organismo, las lombrices, sobreviven bajo tierra.

4. **Assign pairs and distribute books.** Distribute one copy of *Earthworms Underground* to each pair.

5. **Briefly review the table of contents.** Have students turn to page 3, Contents. Point out the titles of the different sections.
En el Contenido vemos que las lombrices tienen muchas necesidades. Al igual que los organismos que investigaron, las lombrices tienen que satisfacer sus necesidades en su ambiente. Necesitan alimento y agua, necesitan mantenerse frescas y necesitan evitar depredadores.

6. **Read aloud page 4 and discuss the word environment.** Have students turn to page 4 and follow along as you read aloud.

7. **Define environment and post the vocabulary card.** Hold up the environment vocabulary card.

8. **Introduce making inferences when reading.**

9. **Read page 5 aloud and model making an inference.** Have students turn to page 5 and follow along as you read aloud. Explain that you will make some inferences together before students continue reading and making inferences themselves.

10. **Project and introduce notebook page 8, Making Inferences When Reading: Earthworms Underground.** Have students turn to page 8 in their notebooks. Explain that students will record their inferences as they read. Read the directions aloud.
• Step 1: Make inferences as you read *Earthworms Underground* to help you understand the book.

• Step 2: In the table below, record the page number and what you read.

• Step 3: Then, record the inference you made.

Point out that the first row is already started with the page number and the idea that you read.

En la página 7 leí que si una lombriz se seca, no es probable que sobreviva.

Así que puedo resolver, o inferir, que si una lombriz sale a la superficie de la tierra se secará y no podrá sobrevivir.

**11. Model recording the inference.** In the third column, write the inference you just agreed upon. Write “If an earthworm goes above ground, it will dry out and not be able to survive.” Have students record this inference in their notebooks.

**Teacher Support**

**Rationale**

**Providing More Experience: About Daily Written Reflections**

Daily Written Reflections are open-ended, optional prompts that you can use with students to jump-start each lesson. You can ask students to write their responses, or you can use the prompts as the basis for a discussion. Daily Written Reflections can also be used at other times in the day or as homework. The prompts encourage students to reflect on what they’ve been learning, activate prior knowledge, make connections, and practice using science vocabulary. Responses can also be a good window into students’ thinking. Let students know that for this kind of writing, it is more important to focus on recording their ideas rather than on perfect spelling or punctuation. Daily Written Reflections are meant to be brief—allow about 5–10 minutes for students to respond.

**Instructional Suggestion**

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

*What happens when a plant or animal can’t meet its needs?* This prompt (on page 6 in the Investigation Notebook) asks students to think about what they read and recorded about the needs of a particular organism during the previous lesson. Encouraging students to respond to this prompt can help them connect what they did in Lesson 1.2 to reading more deeply about one organism’s needs for survival: the earthworm.

**Background**

**About the Book: *Earthworms Underground***

*Earthworms Underground* focuses on how earthworms meet their needs in their underground environment. The book is designed to provide students with a view of the earthworm in its natural habitat. Students learn that earthworms have needs, including the need for water and food, the need to protect themselves, and the need to reproduce. The book describes how earthworms’ traits and behaviors allow them to meet each of their needs. Through reading this book, students begin to learn about the connection between an organism’s traits and how the organism survives in its environment. *Earthworms Underground* introduces important content and provides context for students’ investigations of what organisms need to survive.
Rationale

**Literacy Note: Approach to Reading**
Skillful readers use a variety of strategies to actively engage with informational text. This unit is designed so the responsibility of reading science text can be gradually released to students. This allows students to read more independently as the unit progresses, and they become increasingly familiar with the concepts and vocabulary in the unit. In this unit, the sense-making strategy of making inferences helps students make sense of what they are reading. Whenever possible, model how to use this strategy by thinking aloud about how you make inferences as a reader. Students will have multiple opportunities to learn about and practice this strategy through a gradual-release model; you initially provide a high level of direction and support, and that level of support decreases over time in order to promote students’ independence.

Background

**Science Note: Habitat vs. Environment**
Students may have learned previously that organisms need to live in a specific habitat, which provides the things they need to survive. In this unit, we guide students to think in terms of an organism’s environment, rather than its habitat. We define *environment* to have a larger scope than habitat. For instance, an environment could include all the things an organism needs to survive and the predators that eat that organism. An environment can be thought of as encompassing a larger space than a habitat; an environment includes the things that can help an organism survive, as well as the things that could make it harder for an organism to survive.

Possible Responses

**Investigation Notebook**
**Making Inferences When Reading: Earthworms Underground** (page 8)

Answers will vary. Examples:

Page 7
If an earthworm goes above ground, it will dry out and not be able to survive.

Page 10:
Earthworms eat organisms in the soil.
There are a lot of little bugs in soil for earthworms to eat.

Page 15
Sometimes a bird catches a worm.
An earthworm’s hairs aren’t always strong enough to protect it from a bird.
Partner Reading

Partners read *Earthworms Underground* and record inferences in their notebooks as they read.

**Instructional Guide**

1. **Have partners read and discuss inferences.** Remind students that they will continue reading with their partners. Then, they will record inferences in their notebooks.

   Mientras leen en parejas, pueden hablar sobre sus inferencias. Las inferencias se basan en lo que leen y en la información que ya conocen. Ya que todos sabemos cosas diferentes, es probable que hagan inferencias distintas a las de sus compañeros y compañeras.

2. **Partners read.** Circulate and provide support as necessary.

3. **On-the Fly-Assessment: Students record inferences as they read.** Circulate and listen in as partners discuss and record their inferences.
4. **Project Discussing Inferences.** Explain that students will now choose one of their inferences to discuss with their partners. Read aloud the projected sentence frames and let students know that they should use this language, along with what they recorded in their notebooks, when they discuss the inferences they made.

<table>
<thead>
<tr>
<th>Discutir inferencias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leí que _______________.</td>
</tr>
<tr>
<td>Ya sé que _______________.</td>
</tr>
<tr>
<td>Entonces, mi inferencia es _______________.</td>
</tr>
</tbody>
</table>

5. **Whole-class share.** If time remains, call on several students to share the inferences they made.

### Embedded Formative Assessment

**On-the-Fly Assessment 2: Making Inferences About *Earthworms Underground***

**Look for:** This is students’ first opportunity to make inferences when reading. Look for students to combine something they read in the book with an idea from their background knowledge to make an inference (page 8, Making Inferences When Reading: *Earthworms Underground*, in the Investigation Notebook). Their inferences 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?** Students who are struggling to make inferences from the text might need more support with this way of thinking by using a more familiar context. You can provide an example of a tree without leaves and ask students to make an inference about what season it is. Guide students toward separating out the observation (seeing no leaves) from the idea that some trees lose their leaves in the winter (or fall) in order to form an inference that the season must be winter or fall. You can then guide students toward a similar understanding by using *Earthworms Underground*. Reread a passage from the text with students and think aloud as you explain how you use what you read, combined with an idea you know, to make an inference.
Teacher Support

Background

Literacy Note: Making Inferences
Making inferences is a sense-making strategy that is useful in both science and reading. Readers make inferences by connecting what is stated in the text with their background knowledge. Scientists make inferences by looking at the available information and connecting it with other information and ideas. Students will have many opportunities to learn how to make inferences. They will participate in lessons in which making inferences is modeled by the teacher, practice the strategy themselves, and reflect on its usefulness. Students will have many opportunities to learn about and practice making inferences throughout the unit. In this lesson, you model making inferences before students make their own inferences. Then, students discuss their inferences with a partner, including the background knowledge they used to make each inference.
Hacer inferencias al leer: *Lombrices bajo tierra*

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

<table>
<thead>
<tr>
<th>Número de página</th>
<th>Leí que…</th>
<th>Mi inferencia es…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Página: 7</td>
<td>Si una lombriz de tierra se seca, no tiene muchas probabilidades de sobrevivir.</td>
<td></td>
</tr>
<tr>
<td>Página:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Página:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>