Lesson 1.6
Explaining Why There Are No Caterpillars
Lesson Overview

Students learn that monarch caterpillars eat milkweed plants and consider which habitats are conducive to the caterpillars’ survival. They begin by observing and comparing images of the Field and the Garden to learn about the plants that live in each place. Partners gather evidence about the food that caterpillars eat by searching in the *Handbook of Plants* book and by watching a video of a caterpillar eating. From this evidence, students conclude that monarch caterpillars need to eat milkweed plants to live. Then, students observe and compare the plants in the Field to the Garden, discovering that there are no longer any milkweed plants growing in the Garden. The lesson closes with a set of Explanation Language Frames to help students articulate the habitats in which a monarch caterpillar can or cannot live. The purpose of this lesson is for students to discover and explain why there are no monarch caterpillars living in the Garden.

**Anchor Phenomenon:** There are no monarch caterpillars in the Mariposa Grove community garden since a vegetable garden was planted.

**Investigative Phenomenon:** Monarch caterpillars eat a type of plant.

**Students learn:**

- Monarch caterpillars can only live where there are milkweed plants for them to eat.
Searching for What Caterpillars Need

Students look for the kind of food a monarch caterpillar eats by watching a video and reading *Handbook of Plants* with a partner.

Instructional Guide

1. **Revisit the Chapter 1 Question.** Remind students that the children in Mariposa Grove want to know why there are no monarch caterpillars since the Field was made into the vegetable Garden. They want to figure out how they can make the Garden into a place where the caterpillars can live again.

Point and read the Chapter 1 Question aloud.

Why are there no monarch caterpillars since the Field was made into the Garden?

2. **Review key concept.** Remind students that they are learning to be scientists so they can help the children in Mariposa Grove.

We have learned about what animals need to live in a habitat. Remember, a habitat is a place where a plant or animal lives and grows.

Can you think of an animal we have looked at and where it might live?

Why can that animal live in that habitat? [Because its food is there.]

Point to the key concept as you read it aloud.

Animals can only live in a place that has the food they need.

We do not know what types of food the monarch caterpillars need. We are going to figure that out today.
3. Play the *Caterpillar Eating* video.

One way that scientists gather information is by watching videos of the things they are studying.

We want to learn more about what caterpillars eat, so we will watch a video of a monarch caterpillar. Observe carefully what the caterpillar is doing.

- Play the video and have students think to themselves about what they observed.

Think about what you observed the caterpillar doing. Let’s watch the video again. What do you observe the caterpillar doing?

- Play the video a second time and invite students to share what they observed.


We observed a monarch caterpillar eating a plant in the video, but we still do not know what kind of plant that is.

Remind students that, in the last session, they read *Handbook of Plants* to learn more about the types of plants that different animals eat.

Scientists sometimes read to help answer their questions. We can use *Handbook of Plants* to help gather more information about our question *Why are there no monarch caterpillars since the Field was made into the Garden?*

5. Set a purpose for Partner Reading.

Remember that scientists set a purpose before they read something to help them think about what they want to figure out.

Our purpose for reading the reference book again is to figure out what kind of food a monarch caterpillar eats.

6. Set expectations for partner work. Let students know that they will read the reference book with a partner to figure out the kind of food a caterpillar eats. Explain that pairs will place a sticky note on the page that has information about caterpillars and what they eat.

7. Revisit the Partner Reading Guidelines. Point to the Partner Reading Guidelines chart and reread each guideline aloud. Depending on your students’ familiarity with this routine, you may choose a student to help model expectations.

- Sit next to your partner.
- Put the book between you.
- Take turns reading and listening.
8. Distribute a copy of *Handbook of Plants* and a sticky note to each pair. Give students time to browse through the book with their partners. Circulate as students work to listen to their conversations and observe where each pair places its sticky note.

9. Gather students back together in the discussion area. After pairs have had time to browse through the book together, gather them back in the discussion area.

10. Collect the copies of *Handbook of Plants*.

Teacher Support

**Background**

**Literacy Note: Using a Reference Book**

By this point in the unit, students have been introduced to the idea that reference books are not intended to be read cover to cover. Rather, people search for the information they need, and then read the relevant sections carefully. In this lesson, more responsibility for using the reference book is released to students. After they search for the plant that monarch caterpillars eat by paging through the book, you will introduce the index. Reading reference materials for a purpose is authentic to how scientists and engineers use reference materials, and it encourages students to read complex texts both purposefully and carefully.
Discovering What Caterpillars Need

The teacher reads aloud the "Milkweed" section of the reference book and models how to use an index to find information.

Instructional Guide

1. Invite partners to share. Remind students that the purpose for reading the reference book again was to figure out what kind of food a monarch caterpillar eats. Ask one or two pairs of students to share what they found about what caterpillars eat. Encourage students to display where they placed the sticky note in their books and to share how they found the page where they placed the sticky note. Then, collect the copies of *Handbook of Plants*.

2. Introduce use of an index.

   - I noticed that many of you turned the pages of the book and carefully observed the pictures on each page. That is one strategy you can use to find the information you are looking for in a book.

   - Sometimes looking at every page takes a long time. A faster strategy we can use to find the information we are looking for is to use the index.

3. Display *Handbook of Plants* big book and turn to the index.

   - The index is a list at the back of a book that tells us about the kinds information we can find in the book.

4. Model using the index to find the entry about caterpillars.

   - We are looking for information about caterpillars, so I am going to read down this list until I find the word *caterpillars*.

   Read the first few index entries and pause after you read the word *caterpillars*.

   - I see that I can find information about caterpillars on pages 20 and 21 of this book.
5. Turn to pages 20 and 21. Read the text on these pages aloud, pointing to the pictures that correspond to the text as you read. Highlight that the caterpillars on these pages are called monarch caterpillars. Reread the final sentence on page 21 aloud.

- Milkweed is the only food they eat.
- Milkweed is a kind of plant.
- If milkweed plants are the only food that monarch caterpillars eat, what do monarch caterpillars need to have in the place where they live? [Milkweed plants.]

Teacher Support

Background

Literacy Note: About Text Features
Text features (headings, tables of content, bold print, illustration, captions, graphs, etc.) are the visual elements of a text that are used to organize information and highlight important ideas. Learning to use these features is a strategy that students can employ to locate and make sense of information in informational texts. Each time students use *Handbooks of Plants*, they have an opportunity to learn more about and to use text features of informational texts.

Background

Science Note: About Milkweed Plants
Monarch caterpillars hatch from eggs laid on milkweed plants. Milkweed constitutes a monarch caterpillar’s entire diet, even water. Many species of milkweed plants contain cardiac glycosides, toxins poisonous to many animals. Eating the leaves of milkweed plants in the larval stage makes monarchs poisonous to predators, even after metamorphosing into butterflies. Adult monarchs warn predators they are poisonous with their orange color.

Rationale

Literacy Note: *Milkweed Plants* vs. *Milkweed*
You may notice the term *milkweed plants* is used in this lesson as opposed to *milkweed*. Using the term *milkweed plants* helps reinforce that milkweed is, indeed, a type of plant. It also avoids any potential confusion stemming from how the word *milkweed* takes the same form in the singular and plural. This will be especially important in Activity 3 during the Explanation Language Frame activity.
Searching for What Caterpillars Need

Students look for the kind of food a monarch caterpillar eats by watching a video and reading Handbook of Plants with a partner.

Instructional Guide

1. **Revisit the Chapter 1 Question.** Remind students that the children in Mariposa Grove want to know why there are no monarch caterpillars since the Field was made into the vegetable Garden. They want to figure out how they can make the Garden into a place where the caterpillars can live again.

Point and read the Chapter 1 Question aloud.

¿Por qué no hay orugas monarcas desde que el campo fue convertido en el jardín?

2. **Review key concept.** Remind students that they are learning to be scientists so they can help the children in Mariposa Grove.

Hemos aprendido acerca de lo que necesitan los animales para vivir en un hábitat. Recuerden, un hábitat es un lugar donde vive y crece una planta o un animal.

¿Se les ocurre un animal que hemos mirado y dónde podría vivir?

¿Por qué ese animal puede vivir en ese hábitat? [Porque su comida está allí].

Point to the key concept as you read it aloud.

Los animales solo pueden vivir en un lugar que tenga la comida que necesitan.

No sabemos qué tipos de comida necesitan las orugas monarcas. Vamos a averiguar eso hoy.
3. Play the Caterpillar Eating video.

- Una manera en la que los científicos reúnen información es viendo videos de las cosas que están estudiando.

- Queremos aprender más acerca de qué comen las orugas, así que veremos un video de una oruga monarca. Observen atentamente lo que está haciendo la oruga.

  • Play the video and have students think to themselves about what they observed.

- Piensen en lo que observaron haciendo a la oruga. Veamos el video de nuevo. ¿Qué observan haciendo a la oruga?

  • Play the video a second time and invite students to share what they observed.


- Observamos una oruga monarca comiendo una planta en el video, pero aún no sabemos qué tipo de planta es.

Remind students that, in the last session, they read Handbook of Plants to learn more about the types of plants that different animals eat.

- Los científicos a veces leen para ayudar a responder sus preguntas. Podemos usar el Manual de plantas para ayudar a reunir más información acerca de nuestra pregunta ¿Por qué no hay orugas monarcas desde que el campo fue convertido en el jardín?

5. Set a purpose for Partner Reading.

- Recuerden que los científicos definen un propósito antes de leer algo, para ayudarles a pensar acerca de lo que quieren averiguar.

- Nuestro propósito para leer el libro de referencia de nuevo es averiguar qué tipo de comida come una oruga monarca.

6. Set expectations for partner work. Let students know that they will read the reference book with a partner to figure out the kind of food a caterpillar eats. Explain that pairs will place a sticky note on the page that has information about caterpillars and what they eat.

7. Revisit the Partner Reading Guidelines. Point to the Partner Reading Guidelines chart and reread each guideline aloud. Depending on your students’ familiarity with this routine, you may choose a student to help model expectations.

  • Sit next to your partner.
  • Put the book between you.
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8. Distribute a copy of *Handbook of Plants* and a sticky note to each pair. Give students time to browse through the book with their partners. Circulate as students work to listen to their conversations and observe where each pair places its sticky note.

9. Gather students back together in the discussion area. After pairs have had time to browse through the book together, gather them back in the discussion area.

10. Collect the copies of *Handbook of Plants*.

Teacher Support

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2. Introduce use of an index.

Noté que muchos de ustedes pasaron las páginas del libro y observaron detenidamente las imágenes en cada página. Esa es una estrategia que pueden usar para encontrar la información que están buscando en un libro.

A veces, mirar cada página demora mucho tiempo. Una estrategia más rápida que podemos usar para encontrar la información que estamos buscando es usar el índice.

3. Display *Handbook of Plants* big book and turn to the index.

El índice es una lista en la parte de atrás de un libro que nos habla acerca de los tipos de información que podemos encontrar en el libro.

4. Model using the index to find the entry about caterpillars.

Estamos buscando información acerca de las orugas, así que voy a leer hacia abajo esta lista hasta que encuentre la palabra *orugas*.

Read the first few index entries and pause after you read the word *caterpillars*. 
5. Turn to pages 20 and 21. Read the text on these pages aloud, pointing to the pictures that correspond to the text as you read. Highlight that the caterpillars on these pages are called monarch caterpillars. Reread the final sentence on page 21 aloud.

El algodoncillo es la única comida que comen.

El algodoncillo es un tipo de planta.

Si las plantas de algodoncillo son la única comida que comen las orugas monarcas, ¿qué necesitan tener las orugas monarcas en el lugar donde viven? [Plantas de algodoncillo].

Teacher Support

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