Lesson 2.7
Explaining Defenses
Lesson Overview

Students construct oral and written explanations about how living things use their defenses for survival. Partners browse the reference book and choose an animal or plant defense to discuss and write about using the Explanation Language Frame. The teacher posts a new key concept to help students consolidate their understanding of animal and plant defenses, before leading students in the Survival Role-Play movement routine to act out their understanding. Then, the teacher guides students in a Shared Writing to explain to the aquarium director how Spruce the Sea Turtle can use her defenses to survive in the ocean. The class adds explain to the What Scientists Do chart and reflects on the practices they have engaged in during their work thus far as aquarium scientists. Included in this lesson is the second Critical Juncture Assessment, which provides an opportunity to assess students’ understanding of how living things use body structures to avoid being eaten. The purpose of this lesson is for students to apply their understanding of how living things use their defenses for survival by constructing an explanation about how Spruce the Sea Turtle can use her defenses to survive once she is released back into the ocean.

Anchor phenomenon: Spruce the Sea Turtle will survive in the ocean.
Investigative phenomenon: Animals can avoid being eaten.

Students learn:

- Animals and plants have defenses, structures that keep other animals from eating them.
- Scientists explain how and why things happen.
Explaining a Defense in Spikes, Spines, and Shells

Students review the animal and plant defenses they have modeled. Partners choose one defense to write about in the Investigation Notebook.

Instructional Guide

1. Revisit the Investigation Question.

We have been working as aquarium scientists to learn about animal and plant defenses.

Point to the Investigation Question on the board.

We have learned many things to help answer our question: How do animals and plants defend themselves?


We have figured out that animals and plants can defend themselves using shells, spikes, and camouflage. All these defenses make it harder for the animals and plants to be eaten by other living things.

3. Revisit the Explanation Language Frame and introduce writing to explain. Point to the frame you placed in the pocket chart or on the whiteboard and read it aloud.

_____ can survive because it uses _____ to _____.

In Chapter 1, we used these words to explain how animals and plants use their structures to do what they need to do to survive.

We can also use these words to explain even more about how animals and plants do what they need to do to survive. Now we can use these words to help write our explanation about how animals and plants use their structures to defend themselves.
We will use our notebooks to think and write more about how animals and plants defend themselves.

4. **Project the notebook page.** Project page 6, Writing About One Defense, of the Investigation Notebook. Read the directions aloud.

- Step 1: Choose one animal or plant from *Spikes, Spines, and Shells*.
- Step 2: Write a sentence to explain how that living thing defends itself.
- Step 3: In the box on the next page, draw that living thing using its defense.
- Step 4: Label your drawing.

5. **Display the *Spikes, Spines, and Shells* big book.** Remind students that they have used this book several times.

You and your partner will use this book to gather information about how one animal or plant defends itself. Then, you can write what you learned about defenses in your notebooks.

6. **Project Writing Planner: Explaining Animal and Plant Defenses and read the directions aloud.** Let students know that this writing planner is very similar to the Explanation Language Frame you just revisited. Point to and read aloud the Explanation Language Frame on the writing planner.

<table>
<thead>
<tr>
<th>Name: ___________________________</th>
<th>Date: __________</th>
</tr>
</thead>
</table>

**Writing Planner: Explaining Animal and Plant Defenses**

Directions:
1. Draw a living thing in the box.
2. Circle the words for the living thing’s defense and how the defense is used.
3. Write the name of the living thing and the words you circled to complete the sentence.

<table>
<thead>
<tr>
<th>Living Thing</th>
<th>Defense</th>
<th>How the Defense Is Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>a shell</td>
<td>not be found</td>
<td></td>
</tr>
<tr>
<td>spikes</td>
<td>not be caught</td>
<td></td>
</tr>
<tr>
<td>camouflage</td>
<td>not be broken into pieces</td>
<td></td>
</tr>
<tr>
<td></td>
<td>not be eaten</td>
<td></td>
</tr>
</tbody>
</table>

____ can survive because it uses _____ to _____.

Read aloud each column of the table, and point out how some columns include several words or choices, just like the Explanation Language Frames.
7. Model how to use the Writing Planner: Explaining Animal and Plant Defenses student sheet to plan a sentence. Let students know they will use the table to plan their sentence, and then use their plan to fill in the language frame below the table.

- Turn to the Contents page of *Spikes, Spines, and Shells*.

We have learned that the Contents page shows a reader where to find information in the book.

- Point out and read aloud the “Shells and Armor,” “Spikes and Spines,” and “Camouflage” headings on the Contents page. Remind students how to locate each section by finding the page number and then turning to that page in the book.

I want to write about an animal that uses camouflage. I see that information about the lava lizard begins on page 8.

- Turn to page 8 of *Spikes, Spines, and Shells* and point to the picture of the lava lizard. Model drawing a quick sketch of a lava lizard in the empty box in the first column.

What defense does the lava lizard use to survive?
[Camouflage. It is a light color with speckles to blend in.]

- Circle the word *camouflage* in the second column.

What does the lava lizard use camouflage to do?
[Hide. Not be found.]

- Circle the phrase *not be found* in the third column.

8. Model using the writing planner to complete a sentence. Model referring to the reference book to spell “The lava lizard,” and then write it in the first blank. Let students know they should write the word “The” to begin their sentence. Show students how they can use the words they circled on the table to fill in the second and third blanks. Point to and read aloud the completed sentence.

The lava lizard can survive because it uses camouflage to not be found.

Now I can use what I just wrote on the writing planner to help write in the notebook about how a living thing defends itself.

Explain that students will copy the sentence they write on the writing planner into their notebooks. Remind them to pay close attention to writing the sentence in their notebook the way they planned it on the writing planner.

9. Distribute materials. Distribute one copy of *Spikes, Spines, and Shells* to each pair of students. Distribute one copy of Writing Planner: Explaining Animal and Plant Defenses to each student. Have students write their name at the top of the sheet. Distribute Investigation Notebooks and assist students in finding pages 6–7, as needed.
10. Critical Juncture Assessment: Students discuss and write. Circulate and observe as students work. As you have the opportunity, ask them to explain how a particular animal survives.

How does this living thing’s structures help it survive where there are animals that try to eat it?

11. Gather students together in the discussion area. Have students bring their Investigation Notebooks with them. Invite volunteers to share their sentences about their living thing and its defense.

12. Prompt students to identify a new pattern.

When we investigated how animals and plants do what they need to do to survive, we observed a pattern. Remember that a pattern is something similar that happens over and over again.

We observed the pattern that animals and plants that get what they need survive, and animals and plants that do not get what they need do not survive.

Now we have been investigating: How do animals and plants defend themselves? We have used models to investigate different defenses, and we have observed animal and plant defenses in videos and the book Spikes, Spines, and Shells. What pattern have we observed? [The animals and plants we have observed have defenses. Animals and plants use their structures to defend themselves. Different animals and plants have different types of structures, but they all use their structures to defend themselves.]

13. Summarize the discussion and post the key concept.

We learned that animals and plants have special defensive structures, such as shells, spikes, or camouflage.

Post the key concept on the wall and read it aloud.

Animals and plants have defenses, structures that keep other animals from eating them.

Embedded Formative Assessment

Critical Juncture Assessment 2: Students’ Understanding of Defensive Structure and Function

Assess understanding: Questioning students as they talk and write about how living things survive in the presence of animals attempting to eat them provides an opportunity for you to assess students’ understanding that living things have body structures that prevent animals from finding or eating them. The Clipboard Assessment Tool is available as a reference for the relevant questions and a place to record notes on students’ responses. In general, students who understand these ideas should identify a relevant structure (spikes, shell or armor, or camouflage due to color or body shape) and describe a function consistent with that structure (poking an animal that is attempting to eat that living thing, blocking the teeth or claws of predators, or matching the environment to conceal the animal).

Tailor instruction: If many students are not showing evidence of understanding of how living things use body structures to avoid being eaten, we recommend offering additional instruction after Activity 1 of Lesson 2.8. You can play the videos from Lessons 2.3–2.6 that show animals’ defenses, and then discuss with students what structure each animal has and how that structure helps prevent it from being eaten. Compare the videos to the models from each respective lesson. (See the Augmenting Instruction: Differentiating in Response to Critical Juncture Assessment 2 note in the Teacher Support tab of Activity 1 of Lesson 2.8 for more information.) If a smaller number of students are not showing evidence of understanding these ideas, you can lead a similar activity with just that subset of students.

Teacher Support

Rationale

Literacy Note: Explanation Language Frames
In this activity, students choose an animal or plant they have read about and explain how that animal or plant defends itself. Students practice using the language frame (_____ can survive because it uses _____ to _____) both orally and in writing. Practice using this language frame prepares students to participate in the Shared Writing in Activity 3. Students will use the same language frame to explain how Spruce the Sea Turtle can survive where there are sharks.

Instructional Suggestion

What One Teacher Did: Making the Writing Planner on Chart Paper
One teacher knew her students needed additional support transferring the sentence they planned onto the notebook page. On a piece of chart paper in a landscape orientation, she made a chart-sized version of the Writing Planner: Explaining Animal and Plant Defenses student sheet. She then used this chart to model filling in the table and completing the sentence, rather than using the projected version. This way, she was able to project the notebook page and have the writing planner chart posted next to it as she modeled transferring her sentence from the writing planner to the notebook page.
Possible Responses

Investigation Notebook
Writing About One Defense (pages 6–7)

Answers will vary, but the sentence should use the structure of the Explanation Language Frame: _____ can survive because it uses _____ to _____.

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Writing Planner: Explaining Animal and Plant Defenses

Directions:
1. Draw a living thing in the box.
2. Circle the words for the living thing’s defense and how the defense is used.
3. Write the name of the living thing and the words you circled to complete the sentence.

<table>
<thead>
<tr>
<th>Living Thing</th>
<th>Defense</th>
<th>How the Defense Is Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>a shell</td>
<td>spikes, camouflage</td>
<td>not be found, not be caught, not be broken into pieces, not be eaten</td>
</tr>
</tbody>
</table>

__________________________ can survive because it uses ___________________________ to ________________________________.
Explaining a Defense in Spikes, Spines, and Shells

Students review the animal and plant defenses they have modeled. Partners choose one defense to write about in the Investigation Notebook.

Instructional Guide

1. Revisit the Investigation Question.

| Question: Hemos estado trabajando como científicos y científicas de acuarios para aprender acerca de las defensas de los animales y las plantas. |

Point to the Investigation Question on the board.

| Question: Hemos aprendido muchas cosas para ayudar a responder nuestra pregunta: ¿Cómo se defienden los animales y las plantas? |


| Question: Hemos averiguado que los animales y las plantas se pueden defender usando corazas, púas y camuflaje. Todas estas defensas hacen que sea más difícil para los animales y las plantas ser comidos por otros seres vivientes. |

3. Revisit the Explanation Language Frame and introduce writing to explain. Point to the frame you placed in the pocket chart or on the whiteboard and read it aloud.

| Question: ________ puede sobrevivir porque usa ________ para _________. |

| Question: En el Capítulo 1, usamos estas palabras para explicar cómo los animales y las plantas usan sus estructuras para hacer lo que necesitan hacer para sobrevivir. |
También podemos usar estas palabras para explicar aún más acerca de cómo hacen los animales y las plantas lo que necesitan hacer para sobrevivir. Ahora podemos usar estas palabras para ayudar a escribir nuestra explicación acerca de cómo los animales y las plantas usan sus estructuras para defenderse.

Usaremos nuestros cuadernos para pensar y escribir más acerca de cómo se defienden los animales y las plantas.

4. **Project the notebook page.** Project page 6, Writing About One Defense, of the Investigation Notebook. Read the directions aloud.

   Paso 1: Elijan un animal o una planta de **Púas, corazas y otras partes protectoras**.

   Paso 2: Escriban una oración para explicar cómo se defiende ese ser viviente.

   Paso 3: En el cuadro de la página siguiente, dibujen ese ser viviente usando su defensa.

   Paso 4: Identifiquen y nombren las partes de su dibujo.

5. **Display the Spikes, Spines, and Shells big book.** Remind students that they have used this book several times.

   Usarán este libro para reunir información acerca de cómo se defiende un animal o una planta. Luego, pueden escribir lo que aprendieron acerca de las defensas en sus cuadernos.

6. **Project Writing Planner: Explaining Animal and Plant Defenses and read the directions aloud.** Let students know that this writing planner is very similar to the Explanation Language Frame you just revisited. Point to and read aloud the Explanation Language Frame on the writing planner.

<table>
<thead>
<tr>
<th>Ser viviente</th>
<th>Defensa</th>
<th>Cómo se usa la defensa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>una coraza</td>
<td>no ser encontrado/encontrada</td>
</tr>
<tr>
<td></td>
<td>púas</td>
<td>no ser atrapado/atrappada</td>
</tr>
<tr>
<td></td>
<td>camuflaje</td>
<td>no ser roto/rota en pedazos</td>
</tr>
</tbody>
</table>

____ puede sobrevivir porque usa ______ para ________.
Read aloud each column of the table, and point out how some columns include several words or choices, just like the Explanation Language Frames.

7. Model how to use the Writing Planner: Explaining Animal and Plant Defenses student sheet to plan a sentence. Let students know they will use the table to plan their sentence, and then use their plan to fill in the language frame below the table.

- Turn to the Contents page of *Spikes, Spines, and Shells*.

Hemos aprendido que la página del Contenido muestra a un lector dónde encontrar información en el libro.

- Point out and read aloud the “Shells and Armor,” “Spikes and Spines,” and “Camouflage” headings on the Contents page. Remind students how to locate each section by finding the page number and then turning to that page in the book.

Quiero escribir acerca de un animal que usa camuflaje. Veo que la información sobre la lagartija de lava comienza en la página 8.

- Turn to page 8 of *Spikes, Spines, and Shells* and point to the picture of the lava lizard. Model drawing a quick sketch of a lava lizard in the empty box in the first column.

¿Qué defensa usa la lagartija de lava para sobrevivir? [Camuflaje. Es un color claro con manchas para esconderse].

- Circle the word *camouflage* in the second column.

¿Para qué usa el camuflaje la lagartija de lava? [Ocultarse. No ser encontrada].

- Circle the phrase *not be found* in the third column.

8. Model using the writing planner to complete a sentence. Model referring to the reference book to spell “The lava lizard,” and then write it in the first blank. Let students know they should write the word “The” to begin their sentence. Show students how they can use the words they circled on the table to fill in the second and third blanks. Point to and read aloud the completed sentence.

La lagartija de lava puede sobrevivir porque usa camuflaje para que no la encuentren.

Ahora puedo usar lo que acabo de escribir en el planificador de redacción para escribir en el cuaderno acerca de cómo se defiende un ser viviente.

Explain that students will copy the sentence they write on the writing planner into their notebooks. Remind them to pay close attention to writing the sentence in their notebook the way they planned it on the writing planner.
9. Distribute materials. Distribute one copy of *Spikes, Spines, and Shells* to each pair of students. Distribute one copy of Writing Planner: Explaining Animal and Plant Defenses to each student. Have students write their name at the top of the sheet. Distribute Investigation Notebooks and assist students in finding pages 6–7, as needed.

10. Critical Juncture Assessment: Students discuss and write. Circulate and observe as students work. As you have the opportunity, ask them to explain how a particular animal survives.

¿De qué manera las estructuras de este ser viviente lo ayudan a sobrevivir donde hay animales que intentan comérselo?

11. Gather students together in the discussion area. Have students bring their Investigation Notebooks with them. Invite volunteers to share their sentences about their living thing and its defense.

12. Prompt students to identify a new pattern.

Cuando investigamos cómo hacen los animales y las plantas lo que necesitan hacer para sobrevivir, observamos un patrón. Recuerden que un patrón es algo similar que sucede una y otra vez.

Observamos el patrón de que los animales y las plantas que obtienen lo que necesitan sobreviven, y los animales y las plantas que no obtienen lo que necesitan no sobreviven.

Ahora hemos estado investigando: ¿Cómo se defienden los animales y las plantas? Hemos usado modelos para investigar diferentes defensas, y hemos observado defensas de animales y plantas en videos y en el libro *Púas, corazas y otras partes protectoras*. ¿Qué patrón hemos observado? [Los animales y las plantas que hemos observado tienen defensas. Los animales y las plantas usan sus estructuras para defenderse. Diferentes animales y plantas tienen diferentes tipos de estructuras, pero todos ellos usan sus estructuras para defenderse].

13. Summarize the discussion and post the key concept.

Aprendimos que los animales y las plantas tienen estructuras defensivas especiales, como corazas, púas o camuflaje.

Post the key concept on the wall and read it aloud.

Los animales y las plantas tienen defensas, o estructuras que evitan que otros animales los coman.

Embedded Formative Assessment

Critical Juncture Assessment 2: Students’ Understanding of Defensive Structure and Function

Assess understanding: Questioning students as they talk and write about how living things survive in the presence of animals attempting to eat them provides an opportunity for you to assess students’ understanding that living things have body structures that prevent animals from finding or eating them. The Clipboard Assessment Tool is available as a reference for the relevant questions and a place to record notes on students’ responses. In general, students who understand these ideas should identify a relevant structure (spikes, shell or armor, or camouflage due to color or body shape) and describe a function consistent with that structure (poking an animal that is attempting to eat that living thing, blocking the teeth or claws of predators, or matching the environment to conceal the animal).

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Possible Responses

Investigation Notebook
Writing About One Defense (pages 6–7)

Answers will vary, but the sentence should use the structure of the Explanation Language Frame: _____ can survive because it uses _____ to _____.

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<table>
<thead>
<tr>
<th>Animal</th>
<th>Defensa</th>
<th>Cómo se usa la defensa</th>
</tr>
</thead>
<tbody>
<tr>
<td>tortuga de mar</td>
<td>un caparazón</td>
<td>no ser encontrado/encontrada</td>
</tr>
<tr>
<td></td>
<td>púas</td>
<td>no ser atrapado/atrapada</td>
</tr>
<tr>
<td></td>
<td>camuflaje</td>
<td>no ser roto/rota en pedazos</td>
</tr>
<tr>
<td>cangrejo</td>
<td></td>
<td>no ser comido/comida</td>
</tr>
<tr>
<td>pez globo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pez león</td>
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</tr>
</tbody>
</table>

1. Encierra en círculos las palabras para tu animal, su defensa y cómo se usa la defensa.

2. Escribe las palabras que encerraste en círculos para completar la oración.

Asegúrate de comenzar tu oración con la palabra *El/La*.

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**Defensas de los animales y las plantas—Lección 4.2**

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