

Lessons 4–6

Animal Body Parts

Prepare

In this lesson set, students explore the Phenomenon Question **How do pond animals use their body parts to survive?** In Lesson 4, students use models, observe photographs, and view videos to describe the ways animals use their body parts to perform different functions. In Lesson 5, students narrow their focus as they describe animals' protective body parts and determine the relationship between the properties of a body part and the body part's function. In Lesson 6, students apply their new knowledge to explain the ways animals' body parts work together to help the animals survive.

Student Learning

Knowledge Statement

Animals have body parts with different functions. Animals use their body parts in ways that help the animals survive.

Concept 1: Body Parts

Focus Question

How do plants and animals use their body parts to survive in their environment?

Phenomenon Question

How do pond animals use their body parts to survive?

Objectives

- Lesson 4: Use models, observe photographs, and view videos to describe the ways animals use their body parts.
- Lesson 5: Observe animal body parts to describe the relationship between the properties of animal body parts and their functions.
- Lesson 6: Explain that animal body parts work together to help the animals survive in a pond environment.

Texas Essential Knowledge and Skills Addressed

- 2.4A **Collect, record, and compare information using tools, including** computers, hand lenses, rulers, plastic beakers, magnets, collecting nets, notebooks, and **safety goggles** or chemical splash goggles, **as appropriate**; timing devices; weather instruments such as thermometers, wind vanes, and rain gauges; **and materials to support observation of habitats of organisms such as terrariums and aquariums.** (Introduced)
- 2.9A **Identify the basic needs of** plants and **animals.** (Introduced)
- 2.10A **Observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs.** (Addressed)

English Language Proficiency Standards Addressed

- 1C Use strategic learning techniques such as concept mapping, drawing, memorizing, comparing, contrasting, and reviewing to acquire basic and grade-level vocabulary.
- 4A Learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots, and base words.
- 5G Narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired.



Materials

		Lesson 4	Lesson 5	Lesson 6
Student	Science Logbook (Lesson 4 Activity Guide)	•		
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	Porcupine puzzle (1 per group)			•
	Crayfish Body Parts Knowledge Deck™ card (1)			•
Teacher	Classroom crayfish tanks (2), related crayfish materials (See Lesson 4 Resource A.)	•		
	Quills, Shell, and Scales Station (2 stations per class): 2" diameter plastic egg (1); modeling clay (0.5 lb); color copy of each quills, shell, and scales photograph in Lesson 4 Resource C (1); station procedure sheet (1); sequin ribbon (1 piece, 12" length); safety goggles (1 per student at station); scissors (1); tape; pointed toothpicks (50)	•	•	
	Hands, Claws, and Beak Station (2 stations per class): color copy of each hands, claws, and beak photograph in Lesson 4 Resource C (1); station procedure sheet (1)	•		
	Mouth and Nose Station (2 stations per class): computer or tablet (1), color copy of each mouth and nose photograph in Lesson 4 Resource C (1), station procedure sheet (1)	•		
	Painted Turtle Photograph (Lesson 5 Resource)		•	
	Crayfish Body Parts Knowledge Deck poster			•
Preparation	10 Days Before: Order crayfish. (See Lesson 4 Resource A.) Note that some states require permits or have additional restrictions that may prolong ordering times.	•		
	Prepare crayfish and tanks. (See Lesson 4 Resource A.) Temporarily remove the aquarium shelter from each tank before introducing crayfish to students for observation.	•		
	Set up animal body part stations. (See Lesson 4 Resource B.)	•		
	Cue heron video, minnow video, and porcupine video: http://phdsci.link/1456 , http://phdsci.link/1457 , and http://phdsci.link/1458 .	•		
	Cue crayfish video (optional): http://phdsci.link/1507 .	•		

	<p>Use materials from the Quills, Shell, and Scales Station to set up the protective animal body part stations before Lesson 5. Each model in the Quills, Shell, and Scales Station will form one of the protective animal body part stations: Porcupine Quills Station, Mussel Shell Station, and Minnow Scales Station. For most class sizes, set up two sets of each station.</p>		•	
	<p>Prepare porcupine puzzles. (See Lesson 6 Resource.)</p>			•

Lesson 5

Objective: Observe animal body parts to describe the relationship between the properties of animal body parts and their functions.

Launch 5 minutes

Display the photograph of a turtle (Lesson 5 Resource).



Allow students to observe the photograph for a few moments, and then ask them to Think–Pair–Share in response to the following questions.

- Which body part do you think protects the turtle?
 - *I think the shell protects the turtle.*

Agenda

Launch (5 minutes)

Learn (25 minutes)

- Visit Protective Animal Body Part Stations (17 minutes)
- Describe Protective Animal Body Parts (8 minutes)

Land (5 minutes)

► Why do you think that body part is good at protecting the turtle?

- *I think the shell is good at protecting the turtle because it covers most of the turtle's body.*
- *It's good at protecting the turtle because it is probably hard like the mussel shell.*

Record students' descriptions of the turtle's shell on the classroom board. Explain that they identified some of the properties of a turtle's shell, such as what the body part looks like and feels like. Summarize that a turtle's shell has properties that make it good at protecting the turtle. 

Tell students they will revisit the models from the Quills, Shell, and Scales Station, the station with body parts used for protection, to further explore the Phenomenon Question **How do pond animals use their body parts to survive?**

Learn 25 minutes

Visit Protective Animal Body Part Stations (17 minutes)

Ask students to Think–Pair–Share in response to the following question.

► Why are protective body parts important?

- *They're important because they keep the animal safe.*
- *Protective body parts cover an animal's body so the animal won't get hurt.*

Confirm that the purpose of protective animal body parts is to keep animals safe. Hold up each model from the Quills, Shell, and Scales Station and ask students to share what they discovered about how the animals use their body parts. As students share, record their responses on a class chart.



Teacher Note

Students discuss the properties of body parts by describing how they look and feel.

Sample class chart:

Body Part	How does the animal use the body part?
<i>Quills</i>	<i>To poke animals</i>
<i>Shell</i>	<i>To cover its body</i>
<i>Scales</i>	<i>To cover its body</i>

Divide the class into groups, and ask students to turn to the charts in their Science Logbooks (Lesson 5 Activity Guide). Explain that groups will briefly revisit each model at three separate stations, and they will closely observe the models again. While at each station, students should write words to describe what the body part looks like and what they think it feels like.

As students work, circulate to support teamwork and encourage detailed observation. 🧑🧑🧑

Sample student response:

Body Part	Looks Like	Feels Like
 Quills	<i>Pointy</i> <i>Long</i>	<i>Sharp</i> <i>Hard</i>
 Shell	<i>Round</i>	<i>Hard</i>

🧑🧑🧑 **Differentiation**

Students who need support to describe the properties of the body parts may benefit from the following prompts:

- What does it look like?
- What do you think it feels like?
- What makes it good at protecting the animal?

Consider providing some students with a small bank of descriptive words to choose from (e.g., *soft, hard, bumpy, smooth, sharp, pointy, flat, round, opens and closes*) (5G).

 <p>Scales</p>	<p><i>Flat</i></p>	<p><i>Hard</i></p>
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Describe Protective Animal Body Parts (8 minutes)

After each group visits all three stations, bring the class back together. 🧠 Tell students to refer to the responses in their Science Logbooks (Lesson 5 Activity Guide) as they answer the following questions.

- ▶ Why are quills, a shell, and scales good for protection?
 - *The quills, scales, and shell are all hard.*
 - *The scales and shell cover the animal's body.*
 - *The quills are pointy, sharp, and long, so it's hard to get close to the animal's body without getting poked.*

As students describe the properties of the body parts, record responses on the class chart.

Sample class chart:

Body Part	How does the animal use the body part?	What does the body part look like and feel like?
<i>Quills</i>	<i>To poke animals</i>	<i>Sharp, pointy, hard, long</i>
<i>Shell</i>	<i>To cover its body</i>	<i>Hard, round</i>
<i>Scales</i>	<i>To cover its body</i>	<i>Hard, flat</i>

Point out that each station has a model of a protective body part that is hard.

- ▶ Why do you think quills, a shell, and scales are all hard?
 - *I think they're all hard so they don't break easily.*
 - *A shell has to be hard so it can protect something soft, like skin.*



Content Area Connection: English

Highlight for students that they gathered information from more than one station or source to describe protective body parts. Consider asking the following questions: What did you learn about protective body parts when you visited all three stations? Would you have learned as much about protective body parts if you had visited just one station?



Check for Understanding

Students use models to describe the relationship between the properties of protective animal body parts and their functions.

Evidence	Next Steps
Students use models to describe the properties of protective body parts (e.g., hard, sharp, pointy) and to describe the relationship between the properties of protective body parts and how animals use the body parts to protect themselves and survive.	If students struggle to connect the properties of a body part with the body part’s function, ask questions such as these: What might hurt an animal that has a soft body in a pond environment? How do sharp quills help a porcupine stay safe?

Highlight student responses that describe the relationship between the properties of protective body parts and their functions. Summarize that the properties of the body parts help make the parts good at protecting the animals. 

Land 5 minutes

Tell students to place a pencil on their desk. Ask them to pick up and hold the pencil with one hand. Then tell them to place the pencil back on their desk.

Next, prompt students to again pick up and hold the pencil with one hand, but this time tell them not to bend any part of their hand, including their fingers.

- ▶ Was it easier to pick up the pencil the first or the second time? Why?
 - *It was easier to pick up the pencil the first time because I could bend my fingers.*
- ▶ What makes your hand good at picking up objects like pencils?
 - *My fingers can bend, which lets me pick up objects.*
 - *I can move my fingers to hold objects in them.*



Teacher Note

To promote student understanding, this module uses *good for* or *good at* instead of *related to* when describing the relationship between structure and function.

Work with students to make the connection that, like the protective body parts students observed at the stations, hands have properties that make them good at their function. Summarize that the properties of different body parts make the parts good at different functions.

Optional Homework

Students observe how pets, neighborhood animals, or family members use their body parts. Students identify the function of one body part and describe the properties that make it good at that function.