AmplifyScience

Animal and Plant Defenses:

Spikes, Shells, and Camouflage

Investigation Notebook

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Developed by the Learning Design Group at the University of California, Berkeley's Lawrence Hall of Science.

Amplify Science Elementary is based on the *Seeds of Science/Roots of Reading*® approach, which is a collaboration between a science team led by Jacqueline Barber and a literacy team led by P. David Pearson.

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Safety Guidelines for Science Investigations

1. **Follow instructions.** Listen carefully to your teacher's instructions. Ask questions if you do not know what to do.

2. **Do not taste things.** No tasting anything or putting it near your mouth unless your teacher says it is safe to do so.

3. **Smell substances like a chemist.** When you smell a substance, do not put your nose near it. Instead, gently move the air from above the substance to your nose. This is how chemists smell substances.

4. **Protect your eyes.** Wear safety goggles if something wet could splash into your eyes, if powder or dust might get in your eyes, or if something sharp could fly into your eyes.

5. **Protect your hands.** Wear gloves if you are working with materials or chemicals that could irritate your skin.

6. **Keep your hands away from your face.** Do not touch your face, mouth, ears, eyes, or nose while working with chemicals, plants, or animals.

7. **Tell your teacher if you have allergies.** This will keep you safe and comfortable during science class.

8. **Be calm and careful.** Move carefully and slowly around the classroom. Save your outdoor behavior for recess.

Safety Guidelines for Science Investigations (continued)

9. **Report all spills, accidents, and injuries to your teacher.** Tell your teacher if something spills, if there is an accident, or if someone gets injured.

10. **Avoid anything that could cause a burn.** Allow your teacher to work with hot water or hot equipment.

11. **Wash your hands after class.** Make sure to wash your hands thoroughly with soap and water after handling plants, animals, or science materials.

Name: _____ Date: _____

Animals Doing What They Need to Do to Survive

Directions:

1. Choose one kind of animal.
2. Visualize the animal doing each thing it needs to do to survive.
3. In each box, draw the animal doing one thing it needs to do to survive.
4. Label your drawings.

Name: _____ Date: _____

Exploring Structures Used to Defend

Directions:

1. Draw a structure that worked to defend the clay.
2. Label your drawing.

Name: _____ Date: _____

Planning a Spikes Model

Directions:

1. Draw your plan for the Spikes Model in the box.
2. Label your drawing.

Name: _____ Date: _____

Writing About One Defense

Directions:

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

_____

_____

_____

_____

_____

_____

Name: _____ Date: _____

Writing About One Defense (continued)

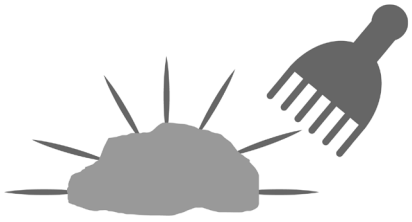
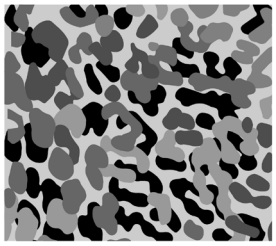
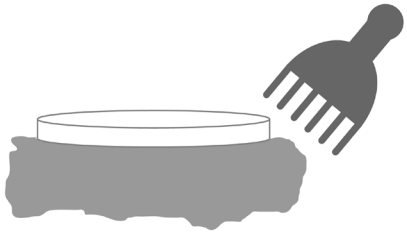
Name: _____ Date: _____

Defending the Food Supply

Directions:

1. Circle which defenses your plan uses.
2. On the next page, draw how you will use the materials to create a way to defend the food.
3. Label your drawing.

My design will use:

spikes	camouflage	shell or armor
		

Name: _____ Date: _____

Defending the Food Supply (continued)

_____

_____

_____

Name: _____ Date: _____

Explaining Parent and Offspring Defenses

Part 1

Directions:

1. Write a sentence to explain how the sea urchin parent defends itself.
2. In the box below, draw the sea urchin parent using its defense.
3. Label your drawing.

sea urchin parent

_____

_____

_____

Name: _____ Date: _____

Explaining Parent and Offspring Defenses (continued)

Part 2

Directions:

1. Write a sentence to explain how the sea urchin offspring defends itself.
2. In the box below, draw the sea urchin offspring using its defense.
3. Label your drawing.

sea urchin offspring

_____

_____

_____

Name: _____ Date: _____

You can use this page to write notes or make drawings.

Name: _____ Date: _____

Modeling Checklist

Directions:

1. Use the checklist to see if your model does what it needs to do to explain your idea.

- ☐ Did I choose an idea to explain?
- ☐ Did I include parts that are important for explaining?
- ☐ Did I leave out parts that do not matter for explaining?

Name: _____ Date: _____

Writing About Your Model

Directions:

1. Write a sentence to explain how your model works.
2. In the box on the next page, draw your model.
3. Label your drawing.

_____

_____

_____

_____

_____

_____

Name: _____ Date: _____

Writing About Your Model (continued)

Glossary

defend: to protect or keep safe
defender: proteger o mantener seguro

defense: what a living thing has or does to protect itself
defensa: lo que tiene o lo que hace un ser viviente para protegerse

model: something scientists make to answer questions about the real world
modelo: algo que los científicos crean para responder preguntas sobre el mundo real

observe: to use any of the five senses (sight, hearing, smell, taste, touch) to learn more about something
observar: usar cualquiera de los cinco sentidos (vista, oído, olfato, gusto, tacto) para aprender más sobre algo

offspring: living things that come from parents
descendencia: seres vivientes que provienen de padres

predator: an animal that hunts and eats other animals
depredador: un animal que caza y come otros animales

Glossary (continued)

scientist: someone who learns about the natural world
científico/a: alguien que aprende acerca del mundo natural

structure: a part of an object or a living thing that does something
estructura: una parte de un objeto o de un ser viviente que hace algo

survive: to stay alive
sobrevivir: mantenerse vivo

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Your Investigation Notebook

Scientists use notebooks to keep track of their investigations. They record things they learn from other scientists. Sometimes they draw or make diagrams. They record ideas and information they want to remember.

Your Investigation Notebook is a place for you to keep track of:

- investigations you do in class.
- what you learn from reading science books.
- your questions, predictions, and observations.
- your explanations and the evidence you find to support those explanations.
- your ideas!

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