

Assignment Discovery Lesson Plan
Blue Planet: Seas of Life
Frozen Seas

Subject

Ecology

Grade level

6-8

Duration

Two or three class periods

Objectives

Students will

- research the behavioral and physical adaptations of an animal from the Arctic or Antarctic; and
- create a poster and make a presentation about the animal.

Materials

- Computer with Internet access
- Print resources about the Arctic and Antarctic (See procedure #7.)
- Poster board and construction paper
- Paint, pens, markers

Procedures

1. As a class, review the differences between the Arctic and Antarctic. On the board, create a list of the differences, as in the table below.

ARCTIC	ANTARCTIC
Region near the North Pole	Region near the South Pole
Ocean (covered with ice)	Continent (covered with ice)
Cold, dry, windy climate	Colder, windier, and drier than the Arctic

2. Ask students to give examples of Arctic and Antarctic animals featured in the video. Add these animals to the list, putting them in the correct geographic location.

ARCTIC	ANTARCTIC
Animals in the video: walrus, bowhead whale, beluga whale, polar bear, harp seal, hooded seal, ringed seal, arctic cod,	Animals in the video: seal, emperor penguin, chinstrap penguin, minke whale, humpback whale, fur seal, leopard

beluga whale, narwhal, copepods, walrus, soft-shell clam	seal, Weddell seal, krill
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3. Discuss conditions of the polar habitats that make survival difficult. Examples:
 - extreme cold
 - prey often scarce
 - fierce predators
 - ice cover for much of the year
 - darkness during much of year

4. Explain to students that they will research one animal from the Arctic or Antarctic. Their research should focus on behavioral or physical adaptations that help the animal survive in its extreme climate. Before students get started, define, review, and give examples of the following terms with them.
 - adaptation: A trait or modification that helps a plant or animal fit in and survive in its environment. Example: Giraffes have long necks to reach the leaves in the tall trees on the savanna.
 - behavioral adaptation: The particular behavior of an animal—such as the way it feeds, mates, breeds, or migrates—that helps it survive in the unique conditions of its environment. Example: Birds fly south in the winter because they can find more food.
 - physical adaptation: A characteristic or modification in an animal’s body that helps it survive in its habitat. Example: A male peacock’s bright feathers help it attract a mate.

5. Tell students they will work in pairs. Each pair will choose one Arctic or Antarctic animal, either from the video or from their research. After finishing their research, each pair will create a large diagram of their animal on poster board and give a brief presentation to the class.

6. Students should include the information below.
 - Name of animal
 - Size (length or height and weight; give a range)
 - Habitat and Distribution
 - Diet or prey
 - Main predators
 - Physical adaptations (Explain how each helps the animal survive.)
 - Behavioral adaptations (Explain how each helps the animal survive.)

7. Have students use print and Internet resources in their research. These Web sites may be helpful:
 - Sea World: Arctic Adaptations (polar bears, walruses, beluga whales, seals)
<http://www.seaworld.org/arctic/adapt.html>
 - Arctic Wildlife Portfolio
<http://www.mnh.si.edu/arctic/html/wildlife.html>
 - Sea World: Polar Bears
<http://www.seaworld.org/infobooks/PolarBears/home.html>

- Sea World: Penguins
<http://www.seaworld.org/infobooks/Penguins/home.html>
- Who Lives in Antarctica?
http://www.glacier.rice.edu/invitation/1_natives.html
- Antarctica: Journey to the Frozen Continent
<http://library.thinkquest.org/CR0215022/animals.htm>
- Antarctic Life Forms
http://polarmistexp.com/polarmist_web/antarctica/life_intro.html
- Enchanted Learning: Arctic Animals
<http://www.EnchantedLearning.com/coloring/arcticanimals.shtml>
- Enchanted Learning: Antarctic Animals
<http://www.EnchantedLearning.com/school/Antarctica/Animalprintouts.shtml>

8. The students should create large, colorful diagrams of their animals on poster board that label the animal's physical adaptations and include brief explanations of how each adaptation helps the animal survive. Somewhere on the diagram, students must list and briefly describe the animal's behavioral adaptations.
9. Have pairs present their posters to the class, sharing as much information as possible in a five-minute period.
10. Display the posters in one area of the classroom. Have the class decide on a title for this exhibit.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

3 points: Students were highly engaged in class discussions; created a clear, detailed poster of their animal with plentiful information on both physical and behavioral adaptations; and actively contributed to the presentation to the class.

2 points: Students participated somewhat in class discussions; created a mostly accurate poster of their animal that included information on some physical and behavioral adaptations; and contributed somewhat the presentation to the class.

1 point: Students participated minimally in class discussions; created a poster that included information on few, if any, adaptations; and did not work cooperatively in or contribute adequately to the presentation to the class.

Vocabulary adaptation

Definition: A trait or modification that helps a plant or animal survive in its environment

Context: Camels have many adaptations for life in the desert, including long eyelashes that protect their eyes from blowing sand.

behavioral adaptation

Definition: The particular behavior of an animal—such as the way it feeds, mates, breeds, or migrates—that helps it survive in the unique conditions of its environment

Context: Hibernation is a behavioral adaptation that helps some animals survive the winter, when food supplies are low.

blubber

Definition: A thick layer of fat on the bodies of large sea mammals that insulates them from cold and stores energy

Context: Whales, walruses, seals, and other arctic marine animals have a layer of blubber.

camouflage

Definition: Special coloring or marks that help an animal blend into its habitat, disguising it from predators or prey

Context: Its spotted coat is the cheetah's camouflage as it stalks prey on the African savanna.

migration

Definition: The movement of animals from one region or climate to another for breeding or in search of food or shelter

Context: Most migrations occur on an annual basis according to the changing seasons.

physical adaptation

Definition: A characteristic or modification in an animal's body that helps it survive in its habitat

Context: Sharks have sharp teeth, a physical adaptation that makes them fierce predators.

Academic Standards

This lesson plan addresses the following standards from the National Science Education Standards:

- Structure and function in living systems
- Regulation and behavior
- Populations and ecosystems
- Diversity and adaptations of organisms

Credit

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