

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

Subject

Ecology

Grade level

6-8

Duration

Two or three class periods

Objectives

Students will

- research a marine invertebrate and create an illustrated report; and
- contribute to a classroom exhibit.

Materials

- Computer with Internet access
- Print resources about ocean life and marine invertebrates
- Paper, pens, pencils
- Paint, markers, other art supplies as needed

Procedures

1. Write the following categories on the board: fish, mammals, and invertebrates. Explain that most marine animals fall into one of these three groups. Ask students to name as many characteristics as they can for each category, including how the animals move, reproduce, breathe, and eat, and their physical characteristics. Examples:

Fish

- have skeletons
- swim with fins
- breathe underwater using gills
- are covered with scales
- are cold-blooded (temperature changes with surrounding water)
- lay eggs

Mammals

- breathe air through lungs (must come to surface to breathe)
- are warm-blooded (temperature stays the same despite surroundings)
- give birth to live young
- nurse babies with milk

Invertebrates

- have no backbones
- may have an exoskeleton (hard protective shell)
- may have tentacles

2. After reviewing these characteristics, ask students to name examples of each group featured in the video. Write the animals in the appropriate categories. The video includes the examples below.

Fish: basking shark, blacksmith fish, salmon, herring, rockfish, handfish, leafy sea dragon
Mammals: seal, sea otter, white-sided dolphin, orca

Invertebrates: jellyfish, sea slug, lobster, crab, octopus, shrimp, squid, sea squirt, anemone, sea urchin

3. Tell students that they will focus on marine invertebrates. Remind them that there are many kinds of invertebrates, which have different characteristics. In fact, invertebrates are some of the most unusual and extraordinary creatures in the ocean.
4. Have students work in pairs to research a marine invertebrate. Pairs can choose an animal from the video, or focus on another species they may find in their research. For each invertebrate, students will create an illustrated report that includes the information below.
 - Name of animal species
 - Size (length or height and weight; give a range)
 - Physical characteristics
 - Where does this animal live?
 - How does it move?
 - What does it eat?
 - How does it eat? (How does it capture its prey or gather its food?)
 - How does it breed?
 - How does it defend itself?
5. Students may conduct research using print and Internet resources. These Web sites may be helpful:

- Ocean Animals (see "Invertebrates")
<http://mbgnet.mobot.org/salt/animals/index.htm>
- Picture Guide to Marine Invertebrates
<http://www.oceanoasis.org/fieldguide/findit/invertebrates.html>
- Sea World: Animal Bytes (see "invertebrates")
http://www.seaworld.org/AnimalBytes/animal_bytes.html
- Yahoo!igans: Invertebrates
http://www.yahooigans.com/Science_and_Nature/Living_Things/Animals/Invertebrates/
- Secrets of the Ocean Realm: Sea Dwellers
<http://www.pbs.org/oceanrealm/seadwellers/index.html>

- Life on the Rocky Shore (Tidepool Animals)
<http://library.thinkquest.org/J001418/animals.htm>
 - Invertebrates (Photos only)
<http://www.divebums.com/FishID/Invertebrates.html>
 - AquaFacts: Marine Invertebrates
http://www.vanaqua.org/Visitor_Information/AquaFacts/Marine_Invertebrates.htm
 - Species: Who They Are (see Anemones, Blue Crabs, Horseshoe Crabs, Jellyfish, Octopus, Squid, and Cuttlefish)
<http://209.251.35.100/animals/species/index.html>
6. When they have gathered enough information, have students write a brief report about their invertebrate and create a colorful illustration, painting, or 3-D model. They must label or highlight important parts of their animal.
 7. Have students hang their illustrations around the classroom or on a designated bulletin board. Have them present strange but true or other interesting facts about their invertebrate.

Evaluation

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

3 points: Students were highly engaged in class discussions and named several species in the video; worked cooperatively and researched both print and Internet resources effectively; created an engaging, thorough invertebrate summary and an illustration highlighting several facts from their research.

2 points: Students were engaged in class discussions and named at least one species in the video; worked somewhat cooperatively and researched both print and Internet resources somewhat effectively; created a complete invertebrate summary and an illustration highlighting some facts from their research.

1 point: Students participated minimally in class discussions and did not name any species in the video; did not work cooperatively and showed poor research skills in both print and Internet resources; created an incomplete invertebrate summary and an illustration highlighting few or no facts from their research.

Vocabulary

exoskeleton

Definition: The hard covering or shell of a crustacean's body

Context: Lobsters have soft bodies, so their exoskeletons protect them from predators.

invertebrates

Definition: Animals without a backbone, such as the octopus, sea anemone, and starfish

Context: Marine invertebrates have different forms of movement, including jet propulsion and drifting with currents.

jet propulsion

Definition: A form of movement used by some marine animals that involves sucking water into the body and forcing it out through a hole

Context: Octopus and squid use jet propulsion to move through the ocean.

tentacle

Definition: A thin, flexible structure (not an arm) that sticks out around the head or mouth of an animal such as a squid and jellyfish. It can be used to catch prey or sting predators.

Context: Squid have eight long arms and two tentacles.

Academic Standards

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

This lesson plan addresses the following standards for grades 5-8:

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

Credit

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