Invertebrate Viewing with Scope-On-A-Rope

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No Bones About It

OBJECTIVES

- To use Scope-On-A-Rope to heighten students' senses, hone their observation skills, and strengthen concepts such as magnification and scale.
- For students to gain an understanding of life science concepts: identification of characteristics and variation of organisms; structural adaptations of organisms; habitats and ecosystems.

BACKGROUND

Invertebrates are animals lacking a skeleton. (Animals with skeletons are called **vertebrates**.) Invertebrates can be soft-bodied or have hard, external shells called **exoskeletons**. They use these different body plans for support, locomotion, and protection from predators. They often look strange and different; sometimes it's even difficult to recognize them as animals. For example, corals and anemones (as in "Finding Nemo" photo below), are animals in the Phylum Cnidaria that are **sessile** organisms - they live attached to the bottom of the ocean. Coral is also considered a **colonial** organism, which means they live in close groups of hundreds, thousands, or perhaps millions of individuals (usually attached to one another). Other Cnidarians include jellyfish, which are able to swim around in the ocean (**vagile**). Since jellyfish don't have eyes or a mouth like we expect to find on most animals, they are often not recognized as an animal by children. This activity is intended to introduce students to a variety of invertebrates, particularly the marine invertebrates of the Louisiana coast. Some invertebrates, such as oysters and mussels, are economically important fisheries in Louisiana. Others animals, such as barnacles, are less well known but are both interesting and important for the coastal ecosystem.

How many animals do you see here?

MATERIALS NEEDED

Scope-On-A-Rope*
Transparencies and markers to make measuring grid (see instructions on SOAR website: http://www.scopeonarope.lsu.edu)
Ruler and/or measuring tape
Live animals such as snails, crabs, crawfish, barnacles, and anemones (seafood markets and pet shops are good sources of these animals)
Photos of animals, including vertebrates and invertebrates
Copies of "Invertebrate Worksheet" (attached)

*The Scope-On-A-Rope can be borrowed from LSU.

ACTIVITY

1. Begin with an introduction to animals using a photo like the one on the first page of this lesson plan. Do your students recognize the anemones and coral? Do they understand that they are alive and are animals? Discuss the differences between living and nonliving things with younger students.

2. If more instruction is needed, display the photos below using the 1x lens of SOAR. Can your students identify the animals? Can they recognize which ones are vertebrates and invertebrates? (See last page for answer key.)
3. Familiarize students with the live animals you have, some of which they may have never seen before. Hand out copies of "invertebrate worksheet".
4. Compare and contrast their skeletons, or lack thereof. Talk about the way that each animal holds itself up. Use SOAR (30x and 200x) to look up close at an exoskeleton (such as a crab or snail shell). Compare this to a bone. What are the similarities/differences?
5. Have the students describe the way in which the animal moves. Is it attached to something, does it walk, or can it swim around? Is it fast or slow?
6. Have the students guess how the animal eats. How does it catch its food? How does it chew, if it chews at all? Use SOAR (1x or 30x) to view the animal eating, if possible.
7. Discuss what type of environment and habitat each animal would best live in. How does this relate to how they move or what they eat?
8. Have the students guess the animals' dimensions (in centimeters), and then measure each animal as a group. Use SOAR to measure smaller animals on the screen. [TIP: Use the "Measure Up" activity from the SOAR website (http://www.scopeonarope.lsu.edu) to make measurements from the TV.]

1.

2.

3.

4.

5.

6.

LOUISIANA GRADE LEVEL EXPECTATIONS

	K	1st	2nd	3rd	4th	5th	7th
Science As Inquiry	4, 10	1, 2, 3, 6, 7, 11	1, 2, 6, 7, 8, 12	1, 2, 6, 7, 8, 15	1, 2, 7, 8, 9, 17	1, 6, 29	1, 6, 29
Life Science	22, 25	28, 32	27, 30, 35	35, 38, 39, 57	41, 48, 53	23, 27, 29	30, 32

ACTIVITY EXTENSIONS

ELA: Have your students write a paragraph describing their favorite animal from class. Have them include a physical description of the animal including how it moved and ate. Use the split screen view option with SOAR to compare/contrast items. For example, look at two different animals or two magnifications of the same animal.

Writing GLE's = K: 20, 24-25; Gr. 1: 26, 29; Gr. 2: 21, 24; Gr. 3: 22, 24; Gr. 4: 20, 23; Gr. 5: 18, 21

MATH: Measure each animal, and have the students graph length vs. width in all of the animals. Alternatively, have the students measure length and width in a lot of individuals of the same type of animal. For example, they could graph to see if there is a constant relationship between length and width in a bunch of crawfish.

Math GLE's = K: 14; Gr. 1: 20, 22; Gr. 2: 14, 17, 19; Gr. 3: 19, 25, 28; Gr. 4: 20, 22; Gr. 5: 18, 20

These fourth-graders eagerly watch barnacles filter feed.

PHOTO ANSWER KEY

1. potato beetle – insect; invertebrate with exoskeleton (Phylum Arthropoda, Class Insecta)
2. blue crab – crustacean; invertebrate with exoskeleton (Phylum Arthropoda, Class Crustacea)
3. dog – mammal; vertebrate (Phylum Chordata, Subphylum Vertebrata, Class Mammalia)
4. earthworm – segmented worm; soft-bodied invertebrate, no exoskeleton (Phylum Annelida)
5. garden snail – mollusk; invertebrate with exoskeleton (Phylum Mollusca, Class Gastropoda)
6. jellyfish – hydroid; soft-bodied invertebrate, no exoskeleton (Phylum Cnidaria, Class Scyphozoa)

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Name _____ Date _____

Invertebrate Worksheet

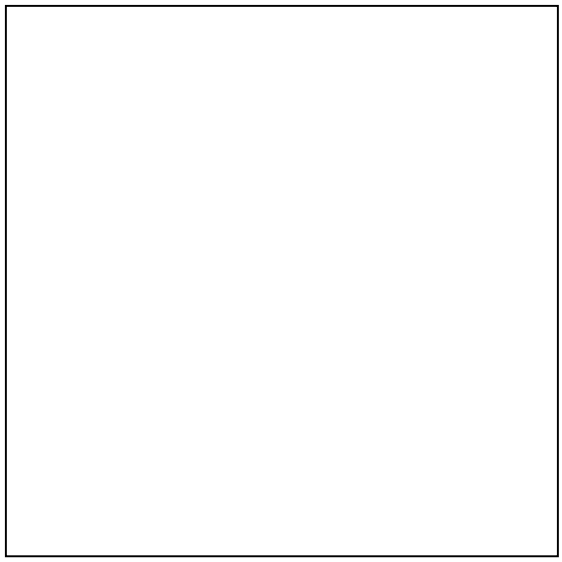
Draw your favorite invertebrate and Describe what it looks like:

_____

_____

_____

_____



How does this animal move around? _____

_____

_____

How does this animal catch and eat its food? _____

_____

_____

In what type of habitat do you think this animal lives? Why?

_____

_____

What structure supports this animal (instead of a backbone)?

_____

How big is this animal?

My estimate: _____ Actual size: _____