Lesson Plan—Observing Deeply

Modified from "How to Read a Fish" Lesson Plan
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Summary

Students will explore how animals in the deep sea are adapted to living in that environment.

Key Concepts

- Animals and plants have a great variety of body plans and internal structures that contribute to their being able to make or find food and reproduce
- Scientists use technology to help them answer questions about the ocean

Objectives

Students will be able to:

- View video to **observe** and **collect data** on the body forms of deep-sea animals that are attracted to the *Eye in the Sea* instrumentation
- **Infer** how the bodily functions of deep-sea animals are controlled by their body forms

Materials

- Computers with Internet access
- *Eye In the Sea* video clips downloaded onto computers, or broadband access to the EARTH Website and Flash Media Player
- Copies of the student datasheet for each student group
- Background Information (one copy for each student)
- A variety of plastic fish with different body forms (about 5–10 models to use for demonstration purposes)

Procedure

1. Prior to the activity, make sure all of the video files, student worksheet, and web resources are copied onto the student computers.

2. Ask students to describe the deep ocean environment and write their ideas down on the board or overhead. Next, ask students to predict what kinds of animals they could expect to see if students could swim along the seafloor. Brainstorm the components of the deep-ocean habitat and the needs of living organisms in this environment. Jot student ideas down on the board regardless of accuracy.

3. Introduce the lesson by stating that the students are about to view a video of the deep-ocean environment within the Monterey Canyon, at about 1500' depth.

4. Direct students to write down at least ten observations (both qualitative and quantitative) while they view the video. (You should show the video multiple times to allow all students enough viewing time.)

5. Play the first video (05-18-2006 15:00) for the class. Ask students to share their observations.

6. Distribute the student datasheet to each group or student.

7. Introduce the most common animals found on the video (e.g., Sablefish, Rattail, Hagfish, Crab, Sleeper Shark, Finescale Mora) and direct students' attention to the animals listed on the Student Datasheet.

8. Ask students to identify a characteristic of each animal and predict how this body form helps them to survive in the deep ocean environment. Have a volunteers draw the body form on the board and write their predictions about how body form impacts animals' function on the board.

9. Distribute background handout to students. Direct students' attention to the variety of body forms described. Ask students to identify a characteristic of one of the animals they had identified in the video and describe the function that it has for the animal.

10. Using an animal in the video (or one that the students identify) direct students to make observations about the animal's body forms, using the datasheet as a guide. Begin with one animal, like the hagfish, and analyze the body forms of this animal as a whole class using the datasheet and the background information. (*Note: You may need to replay the video several times to get an adequate view of the fish's characteristics*.) You will need to address the vocabulary and use the model (plastic) fish to clarify any questions.

11. Once you are finished making observations about the hagfish's body forms, make predictions and conclusions by addressing Questions 5A-B and 6.

12. Assign two to three students per a group, if they are to share computers. (*Note: there are 22 available video files*.) Assign each group a different video file to view.

13. Allow students to use the remainder of the class period to work in groups to complete the assignment for their video.

14. Groups select one animal found in their video to summarize for and present their findings to the class.

Assessment

- **Product**—students select a familiar fish found in their watershed and characterize the body forms and functions. Students draw and label the body forms and their associated functions.

- **Performance**—randomly distribute fish models to each student. Students are to apply their understanding of the relationship of form and function to analyze and describe whether the fish would be able to thrive in the following environments:
    1. Open Ocean
    2. Shallow Reef
    3. Deep-sea (>1500m)

- **Performance**—assign students to a new video that contains footage and animals never identified before. Students are to make qualitative and quantitative observations of the animals in the video and infer how the fish feed, swim, etc.

Source: Adapted from an original activity, "*How to Read a Fish,*" by Margaret Olsen for the Ocean Society Fish Curriculum. The fish drawings are provided by Marsha Ward.