



Education and Research: Testing Hypotheses

Lesson Plan—Who's New in the Deep Sea?

Summary

This activity helps familiarize students with the technology and methods scientists use to study the deep sea, and teaches students how technology informs scientists about remote environments. Based on observation, students make possible connections between organisms and their habitat using near-real-time data via the *Eye in the Sea* (EITS) underwater camera system. Further, they are encouraged to pose and investigate their own questions about the ocean.

Key Concepts

- Habitats determine which living organisms can survive there
- Technology, such as *Eye in the Sea* (EITS), allows scientists to find previously unknown marine life in remote and hostile environments such as the deep sea
- Observation is an important tool for gathering scientific information

Objectives

Students will be able to:

- **Make specific observations** about organisms and their habitats using video clips
- **Generate questions** related to the deep sea environment
- **Use the Internet** as a resource for scientific information

Materials

- Computers with Internet access and Excel
- *Eye In the Sea* video clips downloaded onto computers, or broadband access to the EARTH Web site and Flash Media Player
- EITS lessons on bioluminescence, environmental adaptations, and animal adaptations provided by Dr. Edie Widder (see EARTH Web site, [2006 workshop schedule](#))
- Pictorial animal identification key
- *EITS Video Review Sheet*
- Presentation materials (PowerPoint, paper, pens, markers, etc.)

Procedure

Introduction

1. Place a group of random items the students are familiar with (e.g., books, pencils, camera, fork, etc.) on a tray and cover them with a cloth. Tell the students they will have 30 seconds to view the items before they will be covered. Once recovered, ask the students to write down as many of the items they can recall.
2. Perform the same recall activity, but this time, place items on the tray the students are less familiar with (e.g., science tools, automotive parts, etc.).

The purpose of these activities is to acknowledge the value and purpose of an important scientific tool: *Observation*.

Part I

1. Divide students into groups of 2 – 4. Assign each group a video clip.
2. Show students one of the video clips as a group. Explain that many video clips like these have not been reviewed by anyone before. They may be the first people to see these pictures. They will look at these images and make observations that will be sent back to the scientist who is studying them.
3. Generate a list of questions that the students have about the deep sea. Keep this list to use during the closure activity.
4. Have the students watch their video clips once, all the way through, noting things they find interesting and writing down any questions that may arise.

Part II

Show the students the background information provided by Dr. Edie Widder and explain that the purpose is to observe the clips and document the organisms that appear.

Part III

1. Hand out the *EITS Video Review Sheet*. Encourage the students to view the video a minimum of three times in order to carefully answer the questions.
2. Share the results via jigsaw or whole-class collaboration.

Closure

1. Refer to the original list of student generated questions on the deep sea. Ask students which questions were answered. Determine if there are any still unanswered or any new questions.
2. Challenge the students to follow up on their questions.

Assessment

Review the student answers to the Video Review Sheet and the Excel Tally Sheet:

- Did students generate questions about the deep sea and look for student generated questions about the deep sea?
- Did students make specific observations about organisms and the deep sea environment utilizing EITS technology?
- Did students use the Internet as a resource for scientific information?

Have the students create a Venn Diagram comparing the deep sea to another habitat they are familiar with. (e.g., tide pools or another aquatic habitat, land habitat, or outer space.)

Interdisciplinary Extensions

- Choose an organism in the video and write a short story using this organism as your main character
- Create a list of descriptive words after viewing the video; using a poetry structure of your choice, write a poem
- Write a play/script for any one minute section of the video
- Create dialogue for the organisms in the video; act this out with puppets or people
- Write a letter sharing your scientific discoveries with a:
 - Pen pal
 - Scientist, like Dr. Widder
 - Neighboring school
- Research the origins of myths involving sea creatures
- Create or choose a piece of music as the score for your video selection

Additional Resources

Harbor Branch Oceanographic Institute—Bioluminescence
www.biolum.org

Harbor Branch Oceanographic Institute—Exploring the Ocean Frontier
www.at-sea.org

Bioscience Explained
www.bioscience-explained.org/ENMAIN/index.html

Ocean Explorer
www.oceanexplorer.noaa.gov/explorations/04deepscope/background/eyeinsea/eyeinsea.html

Monterey Bay Aquarium Research Institute (MBARI)
www.mbari.org/education/earth/