

RESOURCE LIBRARY
ACTIVITY : 1 HR

Whales: Benefits of Blubber

Students conduct a series of experiments to test the effectiveness of blubber as insulation.

GRADES

3 - 5

SUBJECTS

Biology, Mathematics

CONTENTS

1 Link, 1 Video, 1 PDF

OVERVIEW

Students conduct a series of experiments to test the effectiveness of blubber as insulation.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/whales-benefits-of-blubber/>

Program



DIRECTIONS

1. Build background.

Go to the provided National Geographic Animals website. Show students the photos of humpback whales and point out their range on the map. Discuss the science of blubber—how and why it helps animals like whales stay warm in icy conditions and how it helps animals remain buoyant.

2. Watch the video.

Watch the Crittercam video of humpback whales breathing, herding, and feeding.

3. Divide students into small groups and distribute the worksheet.

Divide students into small groups of three and give each group a copy of the worksheet *Whales: Benefits of Blubber*. Have students take turns as researcher, timer, and recorder.

4. Have students prepare for an experiment.

Have the student whose role is researcher put on a pair of tight-fitting latex gloves and, on top of those, a pair of large rubber dishwashing gloves. One dishwashing glove should be empty. Have students fill the other with vegetable shortening.

5. Have students conduct the experiment.

Have students use a thermometer to measure the temperature in a bucket of ice cold water. The researcher should plunge both hands into the bucket. The timer—the student with a stopwatch—should time how long the researcher leaves each hand in the water before removing it due to cold. The student whose role is recorder records the time. Ask: *Which hand gets colder first? How much sooner?*

6. Have students calculate averages.

Have students take turns putting their hands in the water, and then calculate the average times in ice water for the "blubber-protected" and the unprotected hand. Discuss the results as a class.

Extending the Learning

Have students experiment with other variables, such as water of different temperatures, varying amounts of vegetable shortening, or other kinds of insulating materials. Make sure they test only one variable at a time.

OBJECTIVES

Subjects & Disciplines

Biology

- Mathematics

Learning Objectives

Students will:

- explain how and why blubber helps animals stay warm and buoyant
- collect data during an experiment to test the relationship between temperature and body heat insulation
- analyze collected data

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Hands-on learning
- Visual instruction

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
 - Analyzing
 - Understanding

National Standards, Principles, and Practices

NCTM PRINCIPLES AND STANDARDS FOR SCHOOL MATHEMATICS

- Number & Operations (3-5) Standard 2:

Understand meanings of operations and how they relate to one another

NATIONAL SCIENCE EDUCATION STANDARDS

- **(K-4) Standard C-3:**

Organisms and environments

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Bucket
- Ice water
- Latex gloves
- Pencils
- Rubber dishwashing gloves
- Stopwatch
- Thermometers
- Vegetable shortening

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector, Speakers
- Plug-Ins: Flash

PHYSICAL SPACE

- Classroom

GROUPING

- Small-group instruction

BACKGROUND & VOCABULARY

Background Information

Most whales have a thick layer of blubber—up to one foot thick—that helps keep their bodies at 100–102° Fahrenheit. Blubber helps whales maintain this temperature even in cold ocean water and at depths of up to 1,000 meters (approximately 3,280 feet). Blubber also helps whales remain buoyant, because it is lighter than water.

Prior Knowledge

[]

Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
blubber	<i>noun</i>	thick layer of fat under the skin of marine mammals.
buoyant	<i>adjective</i>	capable of floating.
variable	<i>noun</i>	piece of data that can change.

For Further Exploration

Websites

- [National Geographic: Crittercam—Interactive Missions](#)



© 1996–2020 National Geographic Society. All rights reserved.