STEM at HOME

SCIENCE ★ TECHNOLOGY ★ ENGINEERING ★ MATH

PRESENTED BY: girlstart

Animal Blubber

Whales and seals and polar bears, oh my! These animals all use a layer of fat called blubber to keep warm in cold waters. See how long you can hold your hand in ice water using a "blubber glove!"

**We recommend that you do this activity before Seal Pups.*

TEKS:

SCI 4.6 B: The student is expected to differentiate between conductors and insulators of thermal and electrical energy.

SCI 5.5 A: The student is expected to classify matter based on measurable, testable, and observable physical properties, including the ability to conduct or insulate thermal energy or electric energy.

SCI 7.12 A: The student is expected to investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants.

Materials:

- Ice
- Large bowl
- 4 sandwich-sized plastic baggies
- Shortening (about 1 cup)
- Towel
- Water

How To:

1. Add approximately one cup of shortening to one plastic baggie.
2. Turn a second baggie inside-out and place it inside the bag filled with shortening.
3. Zip the two bags together so that the shortening cannot escape from between the two baggies.
4. Distribute the shortening throughout the sealed space between the two baggies. This represents your blubber glove!

5. Turn a third baggie inside-out and place it inside the fourth baggie.
6. Zip these two baggies together. This represents your plain glove.
7. Fill a bowl with water and ice and place a towel underneath. This ice water represents Arctic ocean water.
8. Place the blubber glove on one hand and the plain glove on your other hand. Place both hands into the bowl of ice water and observe the difference!
9. Can you think of any other materials that you think might protect your hands from the icy cold waters? What about cotton balls, sand, or butter? Use the plain glove to test them out!

STEM Explanation:

Some animals that live in the Arctic spend their lives in subfreezing temperatures and swimming through frigid waters. How are they able to survive? The secret lies in their blubber. Blubber is a thick layer of body fat that comprises up to 50% of some marine mammals. In fact, this blubber can be anywhere from a few inches to a foot thick! But how does blubber keep these animals so warm? Well, it turns out that fat is an amazing insulator. This means that fat keeps heat in and cold out. Even when surrounded by super cold water, fats stay at a constant temperature, protecting the Arctic animals' bodies from the freezing cold. The "blubber glove" that you created insulated your hand from the ice water just like animal blubber! The Inuit are skilled hunters and rely on Arctic animals as their primary source of food, as not many plants are able to grow in freezing temperatures. Some common animals the Inuit hunt are whales, caribou, polar bears, and seals!

Career Connection:

Thermal engineers specialize in thermodynamics. Thermodynamics is the study of heat energy changing into other energies like chemical, mechanical and electrical. Thermal engineers can work with heating/cooling equipment or at power companies such as gas, electric, and nuclear.

Resources:

https://littlebinsforlittlehands.com/blubber-experiment/
https://www.forksoverknives.com/wellness/extreme-nutrition-the-diet-of-eskimos/https://www.firstpeoplesofcanada.com/fp_groups/fp_inuit3.html
https://www.athropolis.com/arctic-facts/fact-seal-uses.htm