deSTEMber

SCIENCE ★ TECHNOLOGY ★ ENGINEERING ★ MATH

PRESENTED BY: girlstart

Keeping Warm

If you could wear a jacket underneath your skin to keep you warm, would you? Discover how whales use their blubber as an insulator to protect them from the freezing ocean temperatures. Explore the cause and effect of heat transfer as you experiment with your very own blubber!

TEKS:
K.6A Use the five senses to explore different forms of energy such as light, heat, and sound.
1.6A Identify and discuss how different forms of energy such as light, heat, and sound are important to everyday life.
2.6A Investigate the effects on an object by increasing or decreasing amounts of light, heat, and sound energy.
3.6A Explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life.
4.6B Differentiate between conductors and insulators.
5.6A Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.

Materials:

- Bowl
- Cold water
- Ice
- Kitchen mitten
- Paper towels
- 3-Sandwich sized plastic bags
- Shortening (optional)

How To

1. Pour cold water into the bowl and add ice. Make sure the water is cold.
2. In one hand wear the kitchen mitten, and wear the baggie around the mitten so that the mitten doesn't get wet.
3. Now, dip both hands into the water for about a minute. Than take your hands out and dry them. Which hand was colder? Why?
4. Take the second baggie and fill it 1/3 of the way with shortening.
5. Take the third baggie and turn it inside out and put it inside the second baggie. Now you can zip the first baggie to the second one so that your hands don't get messy!
6. Now put one hand inside the double baggies with shortening. Dip your bare hand and your hand with the shortening baggies into the cold water for another minute. Does it feel any colder? How is it different from the mitten?

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Why Does it Work?

Blubber is the layer of fat under the skin of sea mammals, which is built up by their food consumption and acts as an insulator. In the experiment, when you put your hand into the mitten or baggie, you were actually making an insulator for your hand. An insulator is a material that delays the transfer of heat, sound or electricity from one place to another. In our case heat is traveling and heat always travels from hot to cold! The mitten and the shortening are both insulators that slow down the transfer of heat from your hand to the water. Similarly, sea mammals at the Poles use blubber to slow down the amount of heat loss while they are in the water!

Career Connection:

Marine biology is the study of plants and animal life in the seas ecosystems. ***Marine biologists*** do projects such as impact studies, growth and reproduction, ecological effects, and research. Marine biologists usually obtain a Bachelor of Science degree with a stream in marine biology for vast employment opportunities.

Resources: http://www.howstuffworks.com/zoology/marine-life/whale.htm

