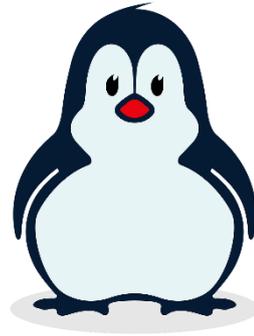


Blubber Glove Experiment

Marine mammals like seals, penguins, dolphins and walrus need to keep warm in very cold waters. To do this they have a thick layer of fat called “blubber”. In this experiment we test the effectiveness of blubber for keeping warm.



GREEN-SCHOOLS
STAY HOME - WATER

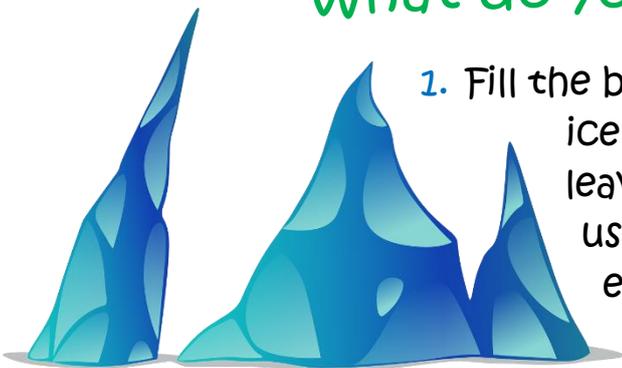
Set up time: 15 minutes **Wait time: Varies**

What do you need?

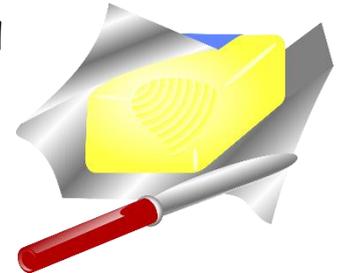
1. 2 large bowls or 1 basin
2. Cold water
3. Ice-cubes (lots)
4. 1lb butter or margarine (soft, at room temperature)
5. 4 x plastic zip-lock bags (you can wash & reuse them after!)
6. Towel
7. Assistant (optional)
8. Stop-watch (or phone stop-watch) (optional)
9. Thermometer (optional)

What do you do?

1. Fill the bowls (or basin) with cold water and ice – it should be about two-thirds full, leave some space at the top. If you are using two bowls, make sure you put an equal number of ice-cubes in each bowl – the more ice the better!



2. Use a spoon to empty the butter/margarine into one of the zip-lock bags.
 3. Next, put one hand in another clean zip-lock bag so that it's like a glove. Now put your "gloved" hand into the bag with the butter.
 4. Use your free hand to help pat your gloved hand so that the butter spreads evenly around it. To be sure there's no mess you can use tape to seal the inner bag to the outer bag (but remember it's a glove – so don't seal the inside bag shut!)
 5. If you have a thermometer, check the temperature of the water in your bowl(s).
 6. Next, make a second glove by putting one new zip-lock bag inside the other, but this time there's no butter!
 7. Put your butter glove on one hand and your empty glove on the other.
 8. Put both hands into the ice water at the same time – ask your assistant to start the stop-watch!
 9. When one hand starts to become uncomfortably cold, take it out of the water and make a note of the time – but leave the other hand in until that starts to become uncomfortable too, and when you take it out, note the time.
- Note:** Don't let yourself get too cold! If it starts to hurt take your hands out straight away.



Questions

1. Which glove helped you to stay warm for longer?
2. If you have a thermometer you can use it to check the temperature inside each glove while they're in the water (you will need an assistant to do this).
What temperatures do you record?
3. Why do you think it was important to use the empty glove and not just your bare hand?
4. What other things could you use for this experiment besides butter?



Explanation:

Fat is an excellent **insulator** – that means it keeps heat from escaping. In this experiment, the fat in the butter acts in much the same way as the blubber does for marine mammals, and stops the warmth from your hand leaching out into the icy water.

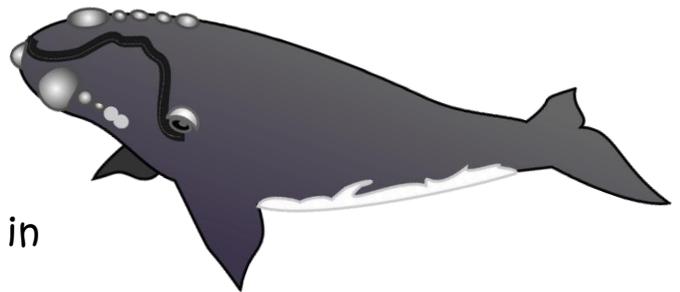


See a demonstration of a similar experiment here:

<https://www.stevespanglerscience.com/lab/experiments/blubber-gloves/>

Did you know?

In the 19th century, blubber from whales was used to light oil lamps in cities, make candles and soaps.



Traditionally, it was also an important and nutritious food source for Inuits and other people living in the Arctic regions.

Unfortunately, due to ocean pollution, blubber now contains high levels of toxic chemicals that have built up in the food chain which is bad for animals and humans.