

# Oceans



**Episode:**

Humphrey the Lost Whale

**Activity:**

**Insulation Experiment**

**Learner  
Objective:**

Students will make a prediction as to which type of medium provides the most insulation. The students will then conduct an experiment using the mediums listed below. The results will be graphed to determine which medium provides the most insulation.

**Materials  
Needed:**

Gallon size ziploc bags  
Buckets for water  
Ice  
Paper towels for clean up  
Cotton  
Shortening (like crisco)  
Utensil for scooping shortening  
Recording sheets  
Graph

Feathers  
Cooler for ice  
Timer  
Soil  
Duct tape  
Water

**Steps:**

This experiment can be conducted in two ways

**First**

1. Have students divide into partners
2. Put shortening in a ziploc bag filling about half-way.
3. Use a second ziploc bag to turn inside out, and match the two sets "ziploc" zippers - so the ziplocs match and can be zipped together.
4. You may also want to put duct tape where the two bags join together to insure they will stay together.
5. Students place their hand inside the bag (like a mitten). Then place their gloved hand in ice cold water, making sure the water level does not go above the top of the bag.
6. Students place their "ungloved" hand in the ice cold water.
7. Students discover the difference in the temperature of each of their hands.
8. Using the timer, have each partner time how long the ungloved hand can stay in the water (60 seconds maximum) VS how long the the gloved hand can stay in the water.
9. Record the results of each partner
10. As a class, graph all the results

**Second**

1. Have students divide into partners
2. Students record the temperature of the ice cold water using a thermometer
3. Put shortening, feathers, soil, cotton, water each into a different ziploc bag using the method described in steps 3 and 4 above.

4. Place a thermometer in the bags of feathers, soil, cotton and water.
5. Record the temperature at predetermined intervals.
6. Graph the results to determine which is the best insulator.

**Assessment:**

This activity has a built-in assessment. The teacher can “see” clearly that the student pairs can conduct the experiment and record the data on recording sheets and graph results. For additional assessment have each student pair write a report of their findings or use drawings to report their findings.