Mous-icles
Outdoor Activity

In this activity, students are challenged to keep a ‘mouse’ from freezing in the winter. This is an engaging activity to help students consider how small animals stay warm in the winter. Extend your learning by considering insulating material and how animals lose heat to their surroundings. This activity is great for younger children but also works really well with junior and even senior high students.

Instructions

Materials:

☐ Film canisters or pharmaceutical containers (one for every student)

☐ Water

1. Collect film canisters or pharmaceutical containers and fill each one 2/3 full of tap water. It is beneficial to wrap them with coloured duct tape and attach bright flagging tape, as tails, to increase visibility in the snow.

2. Gather the students outdoors and distribute one canister (mouse) to everyone. The most ideal conditions are once there is a significant amount of snow on the ground, however, learning can be made in all winter conditions.

3. Challenge your students to find a safe spot for their mouse to spend the day. Ensure they know that they cannot leave anything with their mouse (e.g. a mitt or toque) and they have to be able to find it at the end of the day (or designated time).

4. At the end of the day or after a good amount of time (e.g. the morning) have your students collect their mice and discuss the findings. Conduct an inventory on how well the mice survived the cold (how many were completely frozen, partially, or not at all). Ask if there are any theories to why some survived and others didn’t.

Discussion

If there is deep snow (over 30 cm) then students should begin to conclude that the warmest place for the mice is at the bottom of the snowpack. Introduce students to the word insulation. Insulation is the opposite of conduction: a material that doesn’t conduct heat or cold well is consequently a good insulator. Some students may have chosen to place their mouse where it was exposed and could benefit from the heat from the sun. Discuss the benefits and challenges of relying on this heat source for mice.

Learning Extension

In this activity, students are challenged to keep a 'mouse' from freezing in the winter. This is an engaging activity to help students consider how small animals stay warm in the winter. Extend your learning by considering insulating material and how animals lose heat to their surroundings. This activity is great for younger children but also works really well with junior and even senior high students.

Instructions

Materials:

☐ Insulating Material (wool, nylon, cotton, Styrofoam, socks, mitts, etc.)

☐ Fastening material (tape, pins, twine, etc.)

☐ Thermometers

1. Display all the learning extension material and have your students create an insulating 'jacket' for their 'mouse'.

2. Fill all the canisters with hot water (from the tap) and distribute them to the students. Remind them that their mouse is rapidly cooling down already!

3. Record the temperature of the tap water.

4. Have students quickly place their mice in their insulating containers.

5. You may choose to have each student insert a thermometer into their container – or periodically open and check the temperature of their mouse. Recording their temperatures every 10-15 minutes over a 2 hour (+) time will give them some interesting data.

6. Here comes the math. Have your students plot their data on graph paper. They can also compare the results of other students and graph them as well.

Discussion

Have your students consider the following questions:

- Based on your graphs, who made the best 'mouse insulator'?
- Which materials make the best insulator? The poorest?
- How would you improve your mouse insulator?
- Did your mouse cool at a constant rate over time or did it cool faster during a portion of the experiment time?
- *(optional)* Using the same insulating materials, vary the size of the mice. Try larger containers and see how the temperature varies over time. What might this indicate about larger animals and their tolerance to cold temperatures.