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Penguin Huddle Experiment

Stem Activities




Ages: 3-5



Less than 30 minutes



Grownup needed



How do penguins survive in the extreme cold of polar environments? They have a unique warming technique—huddling. Penguins gather in tight groups, supporting each other to minimise heat loss. This behaviour isn't just about staying warm; it increases their collective chances of survival. Let's explore how penguins use this "huddling strategy" to cope with severe weather!

Materials Needed

- 6-8 test tubes
- Warm water
- Test tube rack (optional)
- 2 thermometers



Step-by-step tutorial

Step 1

Pour warm water into each test tube.



Step 2

Place one test tube separately with a thermometer inside it, then group the remaining test tubes together with a thermometer in the middle test tube.



Step 3

Wait patiently and observe the thermometers. What do you notice?



The Science Behind It:

The isolated test tube cools down faster, while the grouped test tubes cool more slowly—this is exactly why penguins huddle together. Penguins reduce heat loss by gathering in groups. In freezing conditions, they press together, making physical contact to form a tight cluster. This reduces the impact of wind on their bodies and maintains warmth through body heat exchange. Meanwhile, penguins take turns standing at the group's periphery and interior, ensuring each penguin gets enough warmth. Through this collective behaviour, penguins can survive in extremely low temperatures.