| Student experiment (1st - 4th grade) | **Conserving warmth** | **Time:** max. 15 min. |
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**Safety:**

**Instruments:**

- jar with threaded lid (large)
- jar with threaded lid (small)
- drinking glass
- tape
- a large cork
- aluminum foil
- scissors
- thermometer

**Chemicals:**

- warm water

**Experiment:**

- Wrap two layers of aluminum foil around the small jar. Make sure that the shiny side faces inwards. Use tape to fasten the foil firmly.
- Pour warm water into the jar and into the small drinking glass. Put the lid on the small jar.
- Place the cork in the bottom of the large jar and balance the small jar on top of it. Screw the top onto the larger jar.
- Remove the small jar after ten minutes. Measure the temperature in both it and the drinking glass. What do you observe?

**Advice for the teacher:**

After ten minutes the temperature in the drinking glass is perceptibly cooler than in the small jar.

The pupils should learn that air and cork are both poor heat conductors. They insulate the small jar from heat loss. The drinking glass on the other hand releases heat in every direction, since it is not insulated.

Tip:
A thermos bottle can be used in parallel with this experiment. A thermos keeps drinks cold or warm. Just like the pupils' heat-conserving device, a thermos is constructed of two containers with tight seals. The inner container has a double wall with an airless space (vacuum) between it. Warmth can only enter or exit the bottle very slowly, because there are no air particles in the vacuum to transport the heat back or forth. The only place where heat can escape is the top of the bottle, where the double wall is welded together with the external shell of the thermos.


Recorded by: S. Markic, N. Poppe, I. Eilks; University of Bremen
Translated by: N. Giles, University of Bremen