

Evaporation Fridge

Aims

- To test out evaporation fridges that could be used to keep foodstuffs cold in varying weather conditions.
- To be able to carry out a series of scientific experiments and understand how to make it a fair test.



Background

- Keeping food cold in a hot environment is a challenge, especially in poor areas where people may not be able to afford electricity – and therefore fridges.
- Invented by Emily Cummins, evaporation fridges use the sun's energy to keep food cool. Humans sweat to keep themselves cool – so do evaporation fridges!
- They work by using a material such as sand or wool soaked in water that is packed in between two cylinders or pots. The water then evaporates and the heat energy is transferred away from the inside pot or cylinder – which makes the inside become cooler.



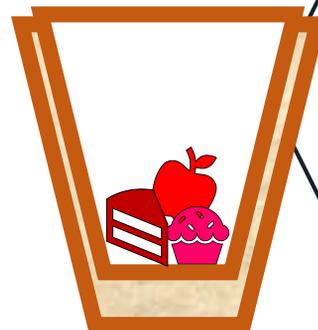
Context:
Exploration



Location:
Africa

How to Make

- Put wet sand at the bottom of one clay pot.
- Put the second clay pot inside the first, and pack wet sand around the edges.
- Place your foodstuffs or temperature datalogger inside the clay pot, and place the wet tea-towel over the top.
- When you place your fridge in a certain spot, place an additional data logger next to it so you can keep track of the temperature of the surrounding environment and compare this to that of your fridge,



Activity

- Place your evaporation fridge in particular places for a set time (you decide!):
 - On a windowsill
 - Outside in the wind
 - Inside in the shade
- Predict in which condition your fridge will work best.
- In between the start of each new mini experiment, re-water your sand. To make it a fair test, you will need to renew the sand each time, with the same amount of water.
- Use your datalogger to record the temperatures over time.
- Consider:
 - Under which condition does the fridge work best?
 - Does this support your prediction? Why?

Suggested kit:

Clay pots x2 • Wet sand • Mini temperature datalogger x2 • Foodstuffs • Wet tea-towel

Careers



International Aid/ Development Worker

You work with communities that face challenges such as lack of water and food. Part of your job is to work to implement sustainable solutions to these issues.

Inventor

Like Emily Cummins, you could be an inventor. Your job is to focus on sustainable and innovative designs that could change the world.



Designer

You could be a designer that looks specifically at developing third world countries. The challenges you face include designing for the many that cannot afford it, not the few that can afford it.

