

## D5: SOLAR ENERGY

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### Overview

In this activity, the students learn the essentials about solar energy by making their own solar powered heater. It is a good follow up to activities students may have previously carried out in **B5 ACTIVITY 1 (I): WHAT COLOUR SURFACES ABSORB HEAT?**

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### Suggested approaches:

- Recap on earlier activities from **B5: HEAT ENERGY BY RADIATION**.
  - Ask the students to outline the function of each of the items listed for making a solar heater before constructing it.
  - Have the students draw up a flow chart indicating the role of each of the items to be used in constructing the heater. This will make the construction more interesting and easier to 'fault-find' if it malfunctions.
  - Alternatively, let students construct the heater and then assign a functional role to each item.
  - Once the 'solar heater' is registering temperature, pose some questions:
    - ① *Does the temperature of the water in both bowls change?*
    - ① *Why is this?*
    - ① *Which bowl records the highest water temperature?*
    - ① *How is the solar powered water heater helping to increase the temperature?*
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### Resources:

- The [SEAI website](#) has information on the use of Solar Energy for solar heat and solar electricity.
- SEAI has information on [other sources of renewable energy](#).

## D5 ACTIVITY 1: SOLAR ENERGY

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### Background

How can we design and make solar panels?

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### Equipment required:

- Two wash basins
  - Three small white bowls
  - Water
  - Three thermometers
  - Cling film
  - Tin foil
  - One small tin of black gloss paint
  - One small tin of black matt paint
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### What to do:

1. Paint one bowl with black matt paint, the other one with black gloss paint. Leave the third unpainted.
2. Line the inside of each wash basin with tin foil.
3. When the paint is dry place the same quantity of water from the cold tap in all three bowls and leave them outside in direct sunlight for three minutes.  
**? Ask the students to guess why you are doing this.**
4. Take a note of the temperatures of the water in the three bowls.
5. Place the bowl painted with the matt paint in one wash basin and the bowl painted with the gloss paint in the other basin. Place the third bowl in the open air beside it.  
**? Ask the students to guess the purpose of this bowl.**  
Remember, all three bowls should be placed in direct sunlight.
6. Using cling film, tightly cover the top of the wash basins containing the black painted bowls so that no air can get in.  
**? Ask the students to guess why you have done this.**  
**? What difference would it make if air got in?**
7. Record the temperature in both bowls at 15-minute intervals for a double class or throughout one day.
8. Graph the temperature changes on a chart.

## D5.1 DISCUSSION POINTS: SOLAR ENERGY

Comment on the graph drawn.

- ? What information did it contain?**
  - ? Were you surprised by the outcomes?**
  - ? Was there any difference in the temperature readings between the bowl painted with a matt finish and the bowl painted with a gloss finish?**
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### Resources:

- [SEAI solar heat information.](#)