

Sugar Cube Karst

These activity notes are designed for use along with the accompanying slides which contain explanatory images etc.

Year Group: S1-S6

Length: 5-10 minutes to set up models which then need to dry *ideally overnight*

10-15 minutes for the investigation/description of features step

Room requirements: A classroom space with desks for students to work at, access to water is useful. This lesson uses food products so any relevant allergies should be considered.

Summary:

Karst landscapes are landscapes where the topography is formed by the dissolving of rock (usually limestone). This activity uses sugar (dissolved by water) to demonstrate some of the features formed; including sinkholes, sinking streams, closed depressions, subterranean drainage, and caves.

Equipment:

- White sugar cubes
- Royal icing* + knife to spread
- Plate/tray to contain water
- Cocktail stick
- Pipette
- Warm water + colouring (optional)

Instructions:

In this model, the sugar cubes represent carbonate rocks, like limestone. The sugar is dissolved in the water as it passes through the cubes, creating internal structures. In the same way – over much longer timescales – caves, sinkholes, and underground streams can form in carbonate rock units.

This topography creates a distinctive landscape known as **karst**.

1. Build the sugar cubes in to a 3D block to represent the landscape, using a small amount of royal icing to cement the blocks together (make sure there are some gaps).
2. Cover the outside of the block with a thin layer of royal icing, and leave to dry.
3. Place the model landscape on a plate or in a tray that is propped up/raised at one end so that the model is on a slope (this helps the water drain away).
4. Make a couple of holes in the royal icing layer on top.
5. Using a pipette, put 3-4 drops of water (can be coloured blue for added effect) on to the top surface of the model and observe what happens.
6. Repeat step 4. several times, allowing the water to soak in each time. Eventually water will start to flow out the bottom of the landscape – an underground stream has formed.
7. The water should start to dissolve the sugar and holes and caves will form in the landscape (to see the structures that have formed inside, it is best to let the model dry out for 10-20 minutes in a warm place, then break it open carefully).