

Compost in a Bottle

Equipment: Plastic bottles
Craft knife
Tape
Permanent marker
Gloves and aprons recommended
Tarpaulin or plastic sheeting
Trowels (optional)
Soil/compost
Fruit and vegetable scraps (chopped quite small)
A few tea bags and egg shells are good to!
Dry leaves and grass cuttings
Shredded Newspaper
Thermometer (optional)
**Compost activator/accelerant



**Activator or Accelerant is a chemical that speeds up the composting process but is not an essential ingredient. If used, recommend handling by adults only.

This activity is best carried out in Spring / Summer time, as during Autumn / Winter the natural decomposing process becomes dormant, and although will still work, will take much longer and the effects are not as visually dramatic for the children to monitor during a short period.

Preparation (before the workshop)

To make composters from bottles, ask each child to bring a clear, 2 litre plastic bottle (which has been thoroughly washed, and had the label removed) to the session.

The bottles need to be cut around the top to allow items to be placed inside – cut a seam around the top of the bottle, using a craft knife, leaving a closed section (roughly 1-2 cm) to act as a hinge for the top – this will be re-sealed once the bottles have been filled.

Ensure all tables and/or floor have been protected with newspaper/tarpaulin etc. to aid clearing up after the activity.



NB. Ensure a good mix of compostable 'kitchen' waste.

To prevent the mixture from getting too dry ensure that there are plenty of 'wet' ingredients like soft fruit not just root vegetables etc. which can be quite dry.

Do not add any cooked items, meat, fish or bread.

The Workshop

Have you ever wondered what goes on in a compost bin ? What helps to break down the organic matter (fruit and vegetable scraps) into compost ?

Explain to the children that in order for the compostable materials to be recycled there must be bacteria present to eat/recycle this. The bacteria are found in soil and so they need to have soil or compost in their bottles to allow the bacteria to get in (this is why compost bins need to have an open base and be located on top of soil in order to produce good compost).

In a 'real' composter there would be lots of other good minibeasts helping the process like worms etc.

Distribute the bottles to the children (either in pairs or one each) along with gloves, trowels and a small amount of soil/compost (in trays) and compostable materials (fruit and vegetables, garden waste, newspaper etc.).

The children should all put on gloves (these should remain on for the duration of the activity to protect against cuts from sharp edges on bottles and also from contact with soil and waste materials) and trowels can be used to place compost or soil in bottles.

Instruct the group to fill their bottles as shown in the diagram (below) using thin soil/compost layers alternate to waste layers. Ensure that each layer is visible as a distinct layer to make recording easier.

Once completed the contents can be covered in a final layer of compost activator and then the bottles can be sealed around the cut seam using tape. The uppermost limit of the bottle contents should be marked on the bottle with permanent marker so that changes can be observed and bottles can also be marked with names or initials for identification.

Bottles should be kept in a sunny spot like a windowsill or outside (during milder/warmer months) and monitored each week until changes are visible (lids should be removed occasionally to allow oxygen into the bottle to aid the rotting process). If it appears to dry, spray a small amount of water on the mixture to moisten (do not over wet).

Ultimately the level inside the bottles should decrease as the materials rot, and the changes in the visible materials can be monitored – some materials will rot faster than others and this can be recorded. The group may also like to make predictions that can then be tested over time as the experiment continues.

This experiment will run 3-4 weeks.

When all the food scraps have composted down add it to your garden.

Cut bottle here ----->



Top layer: *compost activator
Soil
Veg scraps
*Compost activator
Soil
Newspaper
*Compost activator
Soil
Veg scraps
*Compost activator
Soil
*Compost activator
Grass clippings
Soil
Dry leaves
Veg scraps
Bottom layer: soil

*activator is optional and not needed if the mix is right and the air temperature is mild.

Expanding the workshop for older children

Just as there is a cycle of life, there is a cycle of decomposition in which living materials break down and release their nutrients to again support life.

Many synthetic materials created by humans do not decompose – students could include odd pieces of synthetic material – ie. plastic and observe how this material does not decay.

Different organic materials decompose at different rates. Succulent materials containing water and nutrients, such as fruits and vegetables, decompose more rapidly than fibrous and woody materials.

As decomposition occurs, heat is generated, children may want to monitor this using a 'meat' style thermometer and record their findings on a graph?