



## Garden in a jar

The cactus house is one of the greenhouses that are studied as part of the eco-sensor project. An easy way to learn more about cacti and the type of environment that they live in is to make a garden in a jar.

Class Standard	3 <sup>rd</sup> -6 <sup>th</sup> Class
Subject	Cacti and the desert
Strand	Living things
Strand Unit	Plant and animal life

### Introduction:

A garden in a jar is a mini-ecosystem and it illustrates quite nicely how an ecosystem works. It aids us in identifying the impact that living things have on their environment and how the environment impacts living things.

A garden in a jar is a closed system like the Earth with processes such as photosynthesis, transpiration, and respiration occurring all the time. Just like any other ecosystem, the plants use sunlight as a source of energy to make food. After they are watered initially, water will evaporate and condense against the side of the container, running back down into the compost; a mini water cycle. This activity is suitable for 3<sup>rd</sup>-6<sup>th</sup> classes depending on the level of detail into these processes you wish to include. Fish bowls or biscuit jars are ideal to grow miniature gardens in. If you can't get these, a glass bottle with a neck wide enough for you to fit your hand in will work. You will also need a lid if you would like the system to be closed like the Earth.

Cacti are plants which are adapted to extremely warm and arid conditions. They are succulent plants and most grow on the ground (All cacti are succulents but not all succulents are cacti). They are therefore ideal for growing in these 'gardens in a jar'. Pick out species of cacti and succulents that you like and make sure that there are plenty of colours. Furthermore, they should be small plants that don't grow too quickly. Try mimicking the desert ecosystem in the jar.

N.B. Don't fertilize the plants. They will grow too quickly and will have to be replaced.

### What do you need?

- Fish bowl/biscuit jars/bottle/large jar/old aquarium with a lid. Make sure that it is deep enough so that the plants won't be sticking out of the top.
- Miniature plants, 5 is probably enough
- Fine gravel

- Compost
- Charcoal
- Water spray bottle

What to do:

- 1) Place gravel in the bottom of the jar (about 2 inches deep). This gravel will ensure that any extra water can drain away and not drown the plants.
- 2) Add a thin layer of charcoal; this will keep the ecosystem smelling fresh if the environment becomes too moist.
- 3) Place 2-3 inches of compost on top. Spread it evenly and ensure that it's moist.
- 4) Using either your hand or a long forked stick you can plant the plant's roots in the soil. Make sure that the roots are covered in the soil.
- 5) Plant the tallest plants at the back or in the middle and the low growing ones at the front.
- 6) Add water but take care not to over water. One small cupful a week is a guideline. You should only water when the surface of the topsoil is dry.
- 7) Put a lid on top so that the ecosystem is closed. Make sure that air can still get into the container or the plants will die.
- 8) The garden should be placed near the light but not directly in the sunlight.
- 9) It may take up to two weeks to balance the atmosphere in the ecosystem.
- 10) You will need to prune the garden to keep it looking nice. If plants get too big, take them out of the bottle and replant them in a flower bed.
- 11) You will probably need to replant all the plants at the end of the growing season as they will not all stay miniature.

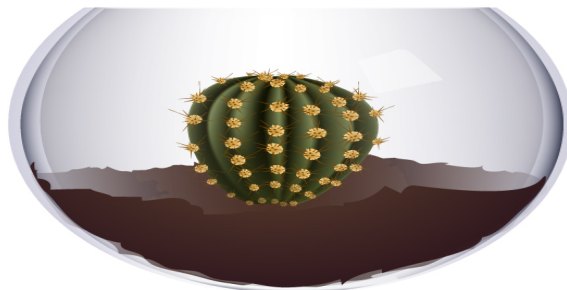


Figure 1