



## Creating a Biodome

### Materials

For each group:

- 2 plastic bottles (2L) with a hole drilled into the lid of one
- Several types of seeds
- Soil (3-4 cups)
- Sand (3-4 cups)
- Rocks, wire, plastic cups, string, foil, ice cream sticks etc.
- Crickets (from pet store) or local insects

For the whole class:

- Duct tape
- Hot glue
- String
- Scissors to cut the bottles in half
- Butterfly nets, plastic cups etc to catch bugs
- Drill (to make hole in bottle lids)
- Water



*Original source link:*  
[teachengineering.org](http://teachengineering.org)

### Instructions

This activity will take several days to finish, with several sessions building the biodome, watching it and watering it when necessary.

1. In each group, one of the two plastic bottles (**bottle 1**) will have the bottom cut off and about **20cm of string** run through it. The other plastic bottle (**bottle 2**) will have the **top cut off**.
2. Turn **bottle 1** upside down and fill the bottom with small rocks (about 1cm deep). Once this is done, fill the next 5cm-ish with dirt. Make sure the top of the **string** pokes out above the dirt.
3. Sprinkle some seeds onto the dirt in **bottle 1** and decorate the top of the dirt with a few more rocks.
4. Fill the bottom of **bottle 2** with water, and place **bottle 1** (lid-down) on **bottle 2** so that the lid is just above the water, but the **string** sits in the water. Sprinkle some water into **bottle 1**.
5. Seal up **bottle 1** with the **top half of bottle 2**, tape the bottles together to create the biodome – though keep in mind the top of the biodome will need to be removed through the experiment.



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### Diagram of Biodome

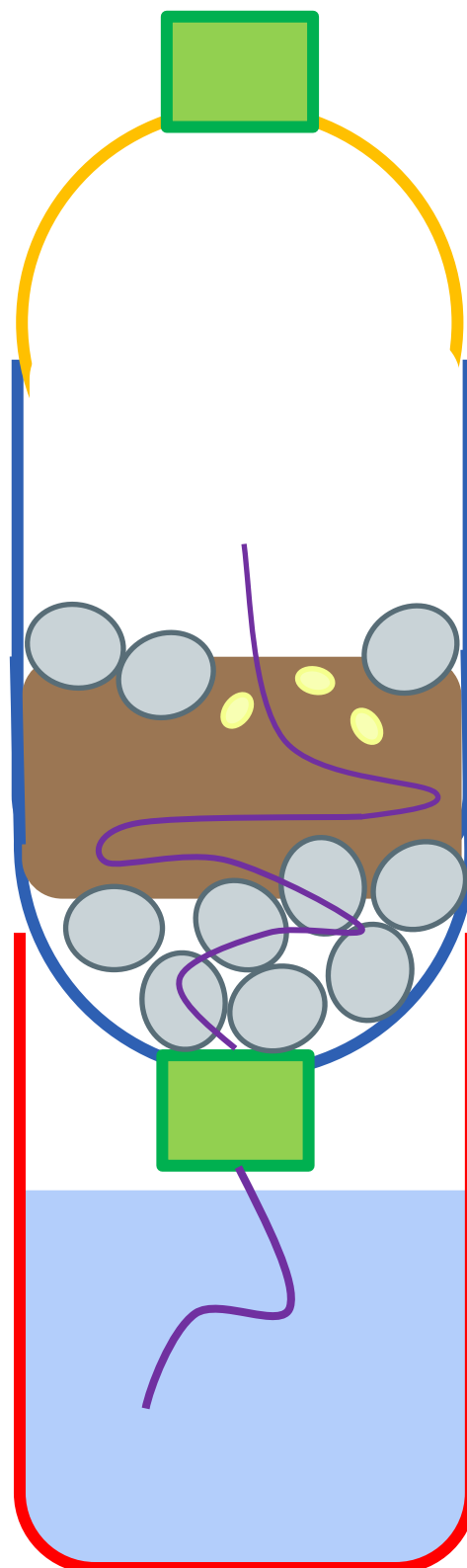
The top of bottle 2 will seal the ecosystem stored in bottle 1, making a biodome!



**Bottle 1!** This is the bottle that will hold the ecosystem. It has dirt to grow plants in, and the rocks at the bottom allow for water drainage. Seeds and eventually bugs will be put into the ecosystem here.



**Bottle 2!** This bottle will act as a water reservoir for the ecosystem above it. Water can be wicked up by the string to travel to the dirt, but if there is too much water it will drain in here





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### Instructions

Once the biodome is built, it is to be left upright in a sunny place for a few days to let the plants grow.

Watch the biodome over the next few days. What do you notice? Does the bottle mist up? How long does it take before you notice a plant growing?

When the plants have begun sprouting and some leaves have popped out, you can add worms and insects into the biodome and seal it up again.

What do you notice over the few days after some insects and bugs were added? Can you spot some worms in the dirt or some roots from the plants? Does anything change? How do the insects, plants and water interact?