

# A World in a Bottle

**Goal:** To observe how living organisms survive in a closed environment

**Material:**

- Gravel
- Soil
- Moss plant
- Plastic spoon
- Charcoal
- Spray bottle
- Large rubber band
- 2 vascular plants
- Plastic wrap
- Pre-cut, clear plastic bottle

**Procedure:** In this lab, you will place plants in moist soil in a bottle that will be sealed. This setup is called a terrarium.

1. Spread about 2.5cm of gravel on the bottom of the precut bottle. Sprinkle a spoonful of charcoal over the gravel
2. Use the spoon to layer about 8 cm of soil over the gravel and charcoal. Tap it a bit to pack the soil.
3. Scoop out 2 holes in the soil. Remove vascular plants from their pots. Gently place their roots in the holes. Then pack the loose soil firmly around the plant stem.
4. Fill the spray bottle with water. Spray the soil until you see water collecting in the gravel.
5. Cover the soil with moss plant including the area around the stems of vascular plants and spray them lightly with water.
6. Tightly cover the terrarium with the plastic wrap. Secure the cover with a plastic band. Place it in bright indirect light.
7. Observe for 2 weeks. Record your observations. If its sides fog, move to an area with different amount of light. You may need to move it a few times. Note any changes you make in the location.

**Observation:**

1. List all the biotic and abiotic factors that are a part of your ecosystem.
2. Were any biotic or abiotic factors allowed to enter the ecosystem? If so which ones?
3. Draw a diagram showing the interactions between the biotic and abiotic factors.
4. Suppose a plant eating insect were added to the terrarium. Predict whether it would be able to survive. Explain your prediction.