

Ecosystem in a Jar Experiment

Standard:

- **MS-LS2-3:** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
 - **MS-LS1-6:** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
-

Materials Required:

- Clear glass jar with a lid (e.g., mason jar)
- Small pebbles (for drainage)
- Activated charcoal (to prevent mold)
- Potting soil
- Small plants (such as moss, ferns, or small succulents)
- Water spray bottle
- Paper and pencil (for recording observations)

Safety Precautions:

- Handle glass jars carefully to avoid breakage and potential injury.
- Ensure that students wash their hands after handling soil and plants to minimize exposure to any potential allergens or bacteria.
- Remind students to use only a small amount of water to prevent mold, as an overly damp environment could result in fungal growth.
- Activated charcoal can produce dust, so pour carefully and avoid inhaling.

Procedure:

1. **Prepare the Jar:** Place a 1-inch layer of small pebbles at the bottom of the jar to create drainage.
2. **Add Charcoal:** Sprinkle a thin layer of activated charcoal over the pebbles to help filter the water and prevent mold.
3. **Add Soil:** Add a layer of potting soil over the charcoal, filling about one-third of the jar. Press the soil down lightly to create a stable base.
4. **Plant the Vegetation:** Carefully add small plants like moss or ferns, pressing them gently into the soil to secure them. Arrange them to avoid overcrowding, which allows each plant space to grow.
5. **Add Water:** Lightly mist the plants and soil with water using a spray bottle. Avoid over-watering; just enough to moisten the soil is sufficient.
6. **Seal the Jar:** Close the jar with its lid, creating a closed environment for your ecosystem.
7. **Place in Indirect Sunlight:** Place the jar in a spot that receives indirect sunlight. Direct sunlight may overheat the plants, so a bright room without direct rays is best.

8. **Observe Daily:** Check the jar each day for signs of condensation, plant growth, and changes in the soil's moisture. Record your observations on paper.

Note 1: *Clean Up*

After completing the setup, remind students to carefully wipe up any spilled soil or water. Wash hands thoroughly after handling soil and plants. Ensure that all materials, including spray bottles and unused soil, are properly stored for future use.