



Lesson: Self-sustaining Ecosystem

Name:

Teacher:

Date:

Ecosystem in a Jar Experiment Guide

Standards:

- **MS-LS2-3 (NGSS):** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- **MS-LS1-6 (NGSS):** 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 injury.
- Wash hands after handling soil and plants to reduce exposure to potential allergens or bacteria.
- Use only a small amount of water to prevent mold; overly damp environments can encourage fungal growth.
- Pour activated charcoal carefully to avoid inhaling dust.

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 filter water and prevent mold.



3. Add Soil:

Add a layer of potting soil over the charcoal, filling about one-third of the jar. Press 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. Arrange them to avoid overcrowding and allow space for growth.

5. Add Water:

Lightly mist the plants and soil with a spray bottle. Avoid over-watering; just enough to moisten the soil is sufficient.

6. Seal the Jar:

Close the jar with its lid to create a closed environment for your ecosystem.

7. Place in Indirect Sunlight:

Put the jar in a spot with indirect sunlight. Avoid direct sunlight, which may overheat the plants. A bright room without direct rays is ideal.

8. Observe Daily:

Check the jar each day for condensation, plant growth, and soil moisture changes. Record observations on paper.

Clean-Up Notes

- Wipe up any spilled soil or water carefully.
- Wash hands thoroughly after handling materials.
- Store all materials, including spray bottles and unused soil, properly for future use.
