



## At Home Science! Magical Moss

These science experiments can be done using simple household items. Students will have the chance to use moss found outside to create a terrarium.

### What You'll Need:

#### For the Indoor Moss Terrarium

- Glass jar
- Plastic Wrap
- Rubber Band
- Charcoal (optional/best results)
- Small pebbles
- cloth or mesh (window screening, landscape fabric, cheesecloth, gauze or sock material will do)
- Dirt (can be collected with moss or use potting soil)
- Moss
- Water (squirt bottle works best)
- Toys or rocks to decorate the ecosystem (optional)

### How to Start:

Collect moss from outside. There are many varieties of mosses that grow wild in Georgia and can be found on the ground and on rocks and trees, even in urban areas. Look for the plant growing in shady and moist areas. You may choose to gather one type of moss or several types. Once you have collected the plants, store in a plastic bag and spray with water to keep wet. Please do not trespass and get permission before you remove moss from your yard or a neighbors yard.

#### Indoor Moss Terrarium

1. Wash your jar using a dishwasher or with dish soap and warm water. Allow to dry thoroughly.
2. Trace the bottom of the terrarium jar on the cloth or mesh and cut out. Set aside.



3. Place a layer of pebbles at the bottom  $\frac{1}{4}$  of the jar.
4. (Optional) Sprinkle a layer of charcoal over the pebbles. Charcoal helps eliminate odors, absorbs toxins, and prevents the buildup of bad bacteria in your terrarium.
5. Place the cut out cloth or mesh on top of the charcoal and pebble layer. Trim cloth if necessary.
6. Spray one squirt of water onto the netting to prevent soil from falling through to the rock layer.
7. Spread a thin layer of soil on top of the cloth.
8. Add moss to the jar. The jar should now be  $\frac{1}{3}$  filled and  $\frac{2}{3}$  space.
9. Add rocks or toys for decoration.
10. Spray one to two squirts of water into your jar.
11. Cover jar with plastic wrap and secure with a rubber band. Poke holes into the plastic wrap for sufficient air flow.
12. Place terrarium in indirect sunlight and water as needed.



## Diving Deeper:

### Plant Needs

Moss is a living plant and has many needs in order to survive. What are the needs of a plant like moss? Where does the moss in your terrarium get its needs? What steps can you take to make sure that the moss in your terrarium gets all of its needs met?

### Water Cycle in Terrariums

Examine your terrarium for signs of the water system at work. Note where you see water in your jar. Is there condensation accumulating on the sides of the jar and on the lid? Is there some water pooled in the rock layer of your terrarium? Where might water be lost in this system? How often do you think you will need to add water to your jar? What is driving the movement of water in your terrarium? Compare and contrast the water cycle in your terrarium to the global water cycle.

## Vascular vs. Nonvascular Plants

Moss is classified as a nonvascular plant. Grasses, trees, flowers, etc. are all classified as vascular plants. Compare plant structures found in moss with plant structures found in grass. How does each plant collect water? How does each plant reproduce? Are both plants able to perform photosynthesis?

## Erosion investigation

Erosion is the geological process in which earth materials like rocks and soil are worn away and moved by natural forces such as wind or water. The effects of erosion can be harmful, including the loss of fertile land, increased pollution, and increased flooding. Find an area of bare land with no plants, an area covered in moss, and an area with larger plants like grass. Pour water over each of the areas and examine how water moves or is absorbed into the ground at each location. Which area is able to keep the soil in place the best?

## **Additional Resources**

[Collecting and Identifying Moss](#)

[Make an AWESOME terrarium for FREE!](#)

[Moss Life Cycle](#)

[Make Moss Graffiti](#)

[Contemporary Sculptures of Concrete and Moss by Robert Cannon](#)

## Standards Covered in this Lesson:

- S1L1. Obtain, evaluate, and communicate information about the basic needs of plants and animals.
- Develop models to identify the parts of a plant—root, stem, leaf, and flower.
  - Ask questions to compare and contrast the basic needs of plants (air, water, light, and nutrients) and animals (air, water, food, and shelter).
  - Design a solution to ensure that a plant or animal has all of its needs met.
- S3E1.c. Make observations of the local environment to construct an explanation of how water and/or wind have made changes to soil and/or rocks over time. (Clarification statement: Examples could include ripples in dirt on a playground and a hole formed under gutters.)
- S4E3. Obtain, evaluate, and communicate information to demonstrate the water cycle.
- Develop models to illustrate multiple pathways water may take during the water cycle (evaporation, condensation, and precipitation). (Clarification statement: Students should understand that the water cycle does not follow a single pathway.)
- S5L1. Obtain, evaluate, and communicate information to group organisms using scientific classification procedures.
- Develop a model that illustrates how plants are sorted into groups (seed producers, non-seed producers) using data from multiple sources.
- S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.
- Ask questions to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.
  - Plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water. (Clarification statement: The water cycle should include evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff.)
- S7L4. Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.
- Construct an explanation for the patterns of interactions observed in different ecosystems in terms of the relationships among and between organisms and abiotic components of the ecosystem.
  - Develop a model to describe the cycling of matter and the flow of energy among biotic and abiotic components of an ecosystem. (Clarification statement: Emphasis is on tracing movement of matter and flow of energy, not the biochemical mechanisms of photosynthesis and cellular respiration.)
- SEV1. Obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem.
- Analyze and interpret data to construct an argument of the necessity of biogeochemical cycles (hydrologic, nitrogen, phosphorus, oxygen, and carbon) to support a sustainable ecosystem.