



Make a terrarium mini-garden

A terrarium is like an aquarium, but for plants instead of fish. It is made in just about any glass container. It is planted to look like a miniature garden or forest enclosed in its own little world.

You can easily make a beautiful terrarium yourself.

First, you want all the plants to thrive in the same kind of environment. For example, you could plant all succulents (including cactus), because they need very little water. Or you could plant all ferns, because they like it moist. You could put moss with the ferns, because moss likes it moist too. If you put a fern with a cactus, one or the other might not do well (the fern if it gets too dry, the cactus if it gets too wet).

You can use an open container or a closed container. An open container is best for succulents and cacti. They like lots of air. A closed container (with a lid) might be best for ferns, ivies, and begonias. They like it humid. But if you see a lot of water condensing on the lid, remove it for a while, then replace it.

For any terrarium, you need:

- Clear glass container. For example, aquarium of any size, goldfish bowl, cookie jar, pickle jar, vase with a broad bottom, brandy snifter, or even a shallow dish with a glass bowl turned upside-down over it.
- Rocks (around marble sized, depending on the size of container)
- Activated charcoal to filter the water and help prevent growth of fungi
- Potting Soil (sterilized)
- Small plants of different colors, shapes, & textures. Try to get miniature plants that aren't going to grow too big for the container.

Optional:

- Moss
- Decorative rocks or pebbles, or both
- Fun décor, like tiny pine cones, shells, ceramic animals, or a garden gnome.

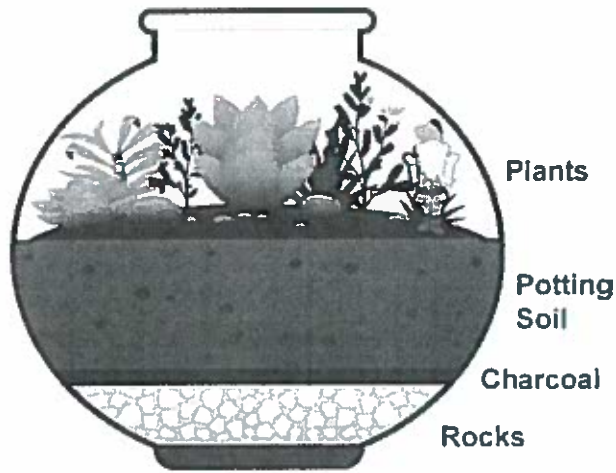
For more information and to find this activity online go to NASA's Climate Kids website: <http://climatekids.nasa.gov/birds>.
Find more fun activities at <http://climatekids.nasa.gov/make>.



Make sure your glass container is clean and shiny. The layers of rock and soil are part of the beauty of your terrarium.

Instructions:

1. Start with a layer of rocks, about one inch or so, at the bottom of your container. These will help the soil drainage, so the roots of your plants won't get water-logged.
2. Add a 1/2-inch-thick layer of charcoal.
3. Fill the container up to half-full with potting soil.
4. Plant your plants. When you remove them from their little pots, carefully tease the roots apart and remove some of the old soil so they will fit nicely in the terrarium. Arrange them to look nice. Leave some space for them to breathe and grow. Pat down the soil so they don't get uprooted easily.
5. Add decorative pebbles, rocks, pine cones, or whatever to make your terrarium look like a little garden world.
6. Water the plants, but not too much.
7. Place in indirect light.



Holding warmth, just like Earth's atmosphere

A terrarium has its own mini-climate. The container has just a small opening or sometimes even a lid to completely enclose the container. That makes a terrarium like a greenhouse. Sunlight enters through the glass and warms the air, soil and plants the same way that sunlight coming through the atmosphere warms Earth's surface. The glass holds in some of the warmth, just as Earth's atmosphere does.

For more information and to find this activity online go to NASA's Climate Kids website: <http://climatekids.nasa.gov/birds>.
Find more fun activities at <http://climatekids.nasa.gov/make>.

Building a Terrarium

Overview: A terrarium is a miniature garden grown inside a covered glass or plastic container. It is a low maintenance way to incorporate plants into your classroom or home and an excellent tool for teaching children about the water cycle as it demonstrates evaporation, condensation and precipitation. In the presence of light and heat, water evaporates from the plants through transpiration and from the soil. Since it is an enclosed environment, when the water vapor hits the side of the container, it condenses. Once enough water accumulates or the temperature decreases, the condensation will then precipitate down the sides of the container back into the soil.



Materials:

- an enclosed container
- pea gravel or small rocks
- potting soil
- small indoor or tropical plants
- charcoal (optional)

Approximate Time to Complete: 30 minutes to 1 hour

Location: Indoor

Ages: all ages

Season: all seasons

Instructions:

1. Find an appropriate container. Glass jars, fish bowls and tanks, clear plastic bottles and food containers can all make fine terrariums. Just make sure there is enough room to reach your hand into your container for planting and maintenance.

Clear plastic soda bottles are commonly used in school settings because they are readily available and inexpensive. To create, cut off the top of a large, clear plastic soda bottle, leaving a container that is approximately 8 inches tall. After planting in the soda bottle, you can either tape the top back onto the soda bottle or just cover it tightly with plastic.

2. Clean the container using soapy water and rinse well. Dry completely.

3. Cover the bottom of the container with ½ inch (for small containers) to 1-1/2 inch (for large containers) of pea gravel for drainage. This mimics the bedrock found under our soils and allows access water to drain from the soil. You can also add a few granules of filtering charcoal (not the type used for barbecuing) to the top of the gravel to help remove odors. The charcoal is optional and is not needed if your terrarium maintains proper moisture levels.

4. Next fill the container to approximately one-third to one-half full with moist potting mix. The amount of soil you put in will depend on the size of the container (you need to have enough room for plant roots). You should use a sterilized potting soil mix to avoid problems with molds and fungi (small bags of potting soil are available at most garden centers).

The moisture level of the soil when you put it into your terrarium is very important. Pour the soil into a bowl or tub and mix with water until the soil is moist enough to cling together in a ball when pressed into the hand. If water drips from the soil when pressed into a ball, then it is too wet and you should add more dry potting soil to your mixture. Once you find the perfect balance, place the soil in your container. Try to avoid getting soil particles stuck on the sides of the container above the soil level.

Many potting mixes contain slow release fertilizers. If the soil you purchased does not contain any fertilizer you may want to add a small number of slow release fertilizer pellets or some organic fertilizer like worm castings to your mix before planting. You want your plants to stay small and grow slowly, so you do not need much.

5. Next add your plants. You need to look for plants that are small, slow-growing, and perform well in humid environments. How you arrange the plants will depend on the size and location of the terrarium. If you will be viewing the terrarium from one side, then place the tallest plants in the back and shortest plants in the front. If your terrarium will be viewed from all sides or you plan to rotate it, plant the tallest plants in the middle and the shorter plants along the outside.

There is a wide range of plants to choose from. Most garden centers have an area reserved for indoor plants and you can usually find a variety of plants in 2 to 4 inch pots.

Some recommended plants to use include:

- african violet
- artillery fern
- false aralia
- jade plant
- miniature peperomia
- nerve plant
- oxalis
- pink polka dot plant
- prayer plant
- small ferns
- small peace lilies
- small philodendrons
- spider plant
- strawberry begonia
- Swedish ivy

These are just a few suggestions. Experiment with different plants. If they appear to grow too vigorously or respond poorly to the humidity, remove them and try something new. You can also try growing plants from seeds and cuttings.

6. In addition to plant material, you can also be creative and add other objects to create mini-landscape scenes. For instance you may want to add decorative rocks, small animal figurines, small bridges or mirrors to look like mini ponds.

7. After planting, attach the container lid or cover with plastic. Place the terrarium in a windowsill with indirect lighting or under grow lights. Do not place it in strong direct sunlight or water will evaporate too quickly and plants may scorch.

Observe your terrarium closely for the first few days to make sure you have the proper moisture level. You'll know that the terrarium contains the right amount of water if the sides and top get misty with water droplets when in bright light. If there is no moisture along the sides, then you need to add some more water. If the sides are always very wet and it is hard to see the plants, then there's too much water and you should remove the top for a few hours and allow some of the excess water to evaporate. Once you achieve the perfect balance, it will not need frequent attention.

8. Check on your terrarium periodically. Prune or remove plants with excessive growth. You want to avoid plant leaves touching the sides of the container as much as possible to prevent constant water sitting on the foliage. Also check on the moisture levels as some water may be lost over time.

