Science: Rain Forest!

Ages: 7 - 13

Hello everyone. This is Bill from the Okanagan Regional Library System. Welcome to the fun and inventive world of making STEAM projects in your own home. Each week, I will share a fun and interesting project that you can make using materials commonly found in your own home.

Even though we can't be together right now, we can still learn how to make exciting projects each week!

This week's project: How to Make your own Rain Forest.

Rain Forest

In this activity you will be making your own rain forest, which will live and grow without needing much help from you. You will only ever have to water it once. Amazingly, your rain forest will then keep itself watered by producing "rain", in much the same way that a real rain forest does.

Your rain forest will be built in a "Sealed System". Although no air or water can get in or out, any plants in the bottle will thrive. They are part of an ecosystem , in which all things in one area – including animals, plants, and even soil work together for survival.

Materials Needed:

- Clear tape, like packing tape
- Pistachio Shells
- Small Stones
- Plastic bottle
- Water in a Spray Bottle
- Scissors
- Crushed Charcoal
- Potted Plant

Time: 30 minutes

Steps:

1. Cut the bottle in two, so that the base is about 10 cm high. Keep the top of the bottle for later. Put in a layer of the small stones in the bottom, and then layer the crushed charcoal on top of the stones.

2. Pour the pistachio shells on top of the charcoal. These shells will act as a barrier to stop the soil that goes on next from falling into the charcoal and stones below.

3. Gently take the plant out of its pot and place it on top of the pistachio shells. Try not to shake up the layers when you pick up the bottle. Gently, but firmly press the plant and its soil into the pot. Any excess water from the soil will drip down through the charcoal, but the stones below will prevent your jungle becoming a soggy bog.

4. Spray the leaves of the plant with water, and also pour a little water into the soil to make it damp. Your rain forest ecosystem is now ready to be closed off from the rest of the world.

5. Now place the top part of the bottle onto the base. This is the last time any air or water will get into or out of the bottle. Seal the joint between the two parts of the bottle with the clear packing tape.

6. Put your rain forest somewhere that is light and warm – but not in direct sunlight. If the bottle gets too warm, the water will evaporate from the bottom of the bottle, rather than passing up through the plant.

The Science behind your Rain Forest

In the natural world, during daytime, water constantly passes through plants in a process called transpiration. The water moves up from the roots and out through tiny holes in the leaves (as invisible water vapor). This turns into water droplets that form clouds. In your rain forest, the vapor becomes droplets on the inside of the bottle. The water drops onto the soil, like rain, and the cycle begins all over again.

STEAM

This activity includes everything you need for a comprehensive STEAM project.

Science: Understanding how ecosystems work.
Technology: Understanding how enclosed systems are maintained.
Engineering and Art: Construction of the enclosed rain forest.
Math: Measuring and cutting out the parts needed to construct your rain forest.