See How IT GROWS:
Earth System in a Bottle

**What You Need**
- 1 rinsed 16 oz to 1 liter used plastic soda or water bottle
- 1 cup potting soil
- Six seeds (fast sprouting are best) or
- Plant for cuttings (hearty plants like mums or lavender, sage, usually work well)
- 1/4 - 1/8 cup water
- Scissors - to cut bottles
- Packing tape
- Ribbon to decorate planted bottle
- Newspaper for easy clean up

**What To Do**
- Cover your working area with newspaper for easy clean up.
- Ask an adult to help you cut the bottle in half.
- Make “wings” on each side of the top half of the bottle by making two 1 inch cuts (about 2 inches apart) on each side of the bottle top.
- Put about 1 cup of potting soil into the bottom half of the bottle.
- Water the soil by adding between 1/4 – 1/8 cups of water (soil should be moist throughout, but water should not “puddle”). If too much water is added, add more soil as needed.
- Add 3 – 6 seeds and/or a cutting from a hearty plant.
  - To plant the seeds, make a 1/4 inch deep hole using a pencil eraser. Add two seeds to each hole. Cover the hole with a “dusting” of soil.

*Continued on back*
Observe...

Observe the seeds/cuttings for several days to several weeks.

Investigate...

- Your bottle now represents the earth system. It consists of soil, water, plants, and air… just like the earth system does.
- Are all of these components of the system needed? Find out!
- Set up other bottles just like the first, EXCEPT delete one of the components from the system.
  - Set up a system without water
  - Set up a system without soil
  - Set up a system without plants
  - Set up a system without air (difficult.. but it can be done)!
- What did you learn about the components in the Earth System?
- Try other investigations, like:
  - Do plants grow better in composted soil or sand?
  - How much water is needed for the best plant growth?
  - What type of plant is best for cuttings?
  - Do plants grow best in normal air or air that has more carbon dioxide?
  - Can a pill bug live inside the earth system?
  - What happens to dead leaves inside the earth system?

For more on Earth System in a Bottle (activities, songs, story, role-play) visit Elementary GLOBE @ http://classic.globe.gov/fsl/html/templ.cgi?EG_ess&lang=en

This activity is brought to you by the BGSU Middle Childhood Science (Dr. Jodi Haney, Professor)