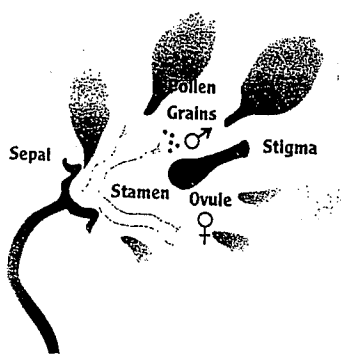
Teaching Activity: Earth From Space

Introduction: A system is a group of elements that interact and function together as a whole. For example, a flower is made up of several separate, yet interdependent parts: the sepal, the stamen, the ovule, the stigma, and the pollen grains. By putting the parts together, a system is created, in this case the flower. The flower then becomes part of a more complex system, the plant. To help students understand the complexity of a system, it is first necessary to provide several examples found in their immediate environment: school, neighborhoods, families, businesses, automobiles, etc. Each of these can be classified as a system. Second, in order to emphasize the impact of change on a system, students need to evaluate whether or not any of these systems has ever malfunctioned. Was a bus late? Do large snow storms close school? Did the cafeteria lose power? Did the car stop in the middle of the highway?



Putting the parts together makes a system.

By building simple models of the Earth system, students will have a first hand opportunity to observe how components fit together, interact and change.

Objectives:

- Students will construct a simple model of the Earth system;
- Students will observe, keep records and analyze the activities of their
- models and variables (temperature, moisture, etc.) that affect them;
- Students will report the results of their research to the class;
- Students will prepare a written summary of their research;

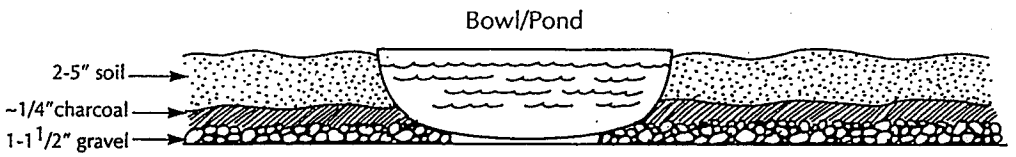
Materials: Terrarium (closed or open top) or rectangular glass tank, coal, sand, clay, rocks, small plants, watering can, thermometer, small glass bowl, small plastic toys;

(OPTIONAL AND NOT RECCOMENDED: Salamanders, newts, turtles, insects, frogs, or fish)

Teaching Strategies: Setting up the Terrarium

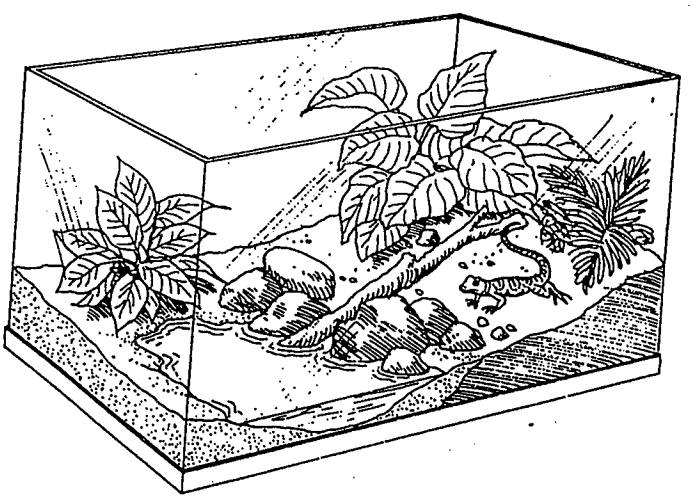
- Build versions suitable for Grades 2-3, middle or high school; Terrariums or aquariums world best in a class that has time to watch living things row. A version built by the entire group will probably be better suited to K -grade 1; team or individually built terrariums are better for older students;

- Set up the soil and bowl / pond arrangement as shown below;



Soils

- **Set up the living parts of the terrarium similar to the example shown below:**



- Select plants with different water or sunlight requirements;

- Select rapid growth grasses or flowers as well as slow growing cactuses, succulents, ferns;

- Provide each student with a copy of the Terrarium Observation Chart.

- Observations of conditions within the terrarium should be recorded daily (temperature, frequency of watering, hours of sunlight exposure, etc.

- Have students note the condition and growth of all living things placed in the terrarium as of Day 1.

- Have students write up a brief summary of the data recorded on their charts.

OPTIONS:

- Alter one of the components in the terrarium, either exposure to sunlight or frequency of water, to see how changes affect the different plant species.
- To teach this activity as a more controlled experiment, set up two identical containers for each plant variety. Allow them a few days to stabilize , then use one as a control and one as the experimental mini-terrarium.

Terrarium Observation Sheet