WASATCH COMMUNITY GARDENS

EMPOWERING PEOPLE TO GROW AND EAT HEALTHY, ORGANIC, LOCAL FOOD

PAPER PLATE GREENHOUSES

Materials:

- Paper Plates
- Plastic Sandwich Bags
- Bean Seeds
- Paper Towels
- Yarn or String
- Scissors
- Hole Punch
- Tape
- Stapler
- Decorating Materials

Grade Level and Standards:
3-6th grade

Standard 3.2.3

Construct an explanation that the environment can affect the traits of an organism. Examples could include that the growth of normally tall plants is stunted with insufficient water or that pets given too much food and little exercise may become overweight. (LS3.B)

Standard 4.1.1

Construct an explanation from evidence that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. Emphasize how structures support an organism's survival in its environment and how internal and external structures of plants and animals vary within the same and across multiple Utah environments. Examples of structures could include thorns on a stem to prevent predation or gills on a fish to allow it to breathe underwater. (LS1.A)

Standard 5.3.1

Construct an explanation that plants use air, water, and energy from sunlight to produce plant matter needed for growth. Emphasize photosynthesis at a conceptual level and that plant matter comes mostly from air and water, not from the soil. Photosynthesis at the cellular level will be taught in Grades 6 through 8. (LS1.C)

Standard 6.4.1

Analyze data to provide evidence for the effects of resource availability on organisms and populations in an ecosystem. Ask questions to predict how changes in resource availability affects organisms in those ecosystems. Examples could include water, food, or living space in Utah environments. (LS2.A)

Directions:

1. Cut out the center (flat part) of two paper plates per student, or have students cut their centers out. It's helpful to punch holes in the plate to start the cutting process so they don't have to cut through the edge of the plate.

2. Punch two holes in the edges of each plate that correspond to the size of your plastic bags. Also punch two holes in the top (outside of the seal) of your plastic bag. You'll use these holes to suspend the bag between the plates

3. Have the students decorate the paper plates (or not) as they see fit, and punch two holes in the edge of each plate, then put them aside until step 5.

4. Wet the paper towel so that is it damp but not dripping, and fold 2-3 bean seeds into it, making sure the seeds have room to grow up and out of the paper towel. This can be done by folding the paper towel accordion style and nestling the seeds into the folds, or however else you see fit.

5. Place the damp paper and seeds into the ziploc bag and seal it, making sure there is some air inside the bag.

6. Sandwich the plastic bag between the two paper plates and string the yarn through the holes you punched earlier to suspend the bag. Tie a big loop on the top side so that you can hang the greenhouse in a big window.

7. For extra security, staple the bottom edge of the two plates together with the plastic bag inside.

8. Now, hang up your greenhouses in a sunny spot and watch your sprouts grow!

Extensions:

- For older students, you can set this up as an experiment and use the scientific method to test a variable. Variables you could test might include amount of water in the paper towel, number of seeds, amount of air in the bag, amount of sunlight, type of seed, etc. Metrics to measure could include time to sprout, time to death of sprout, size of sprout at time intervals, etc.

- Have younger students make observations as the seeds sprout and grow. Once they sprout, take the seeds out of the bag and dissect them, plant them or see how long the seeds can survive in the bag without opening it.