



## ***Continuing Education and Local Support for Schools (CELSS) Resource Manual***

# **Science Classroom Activities**

## **Leafy Greens**

(Adapted from Leafy Green Council at <http://www.leafy-greens.org/lessons/scienc1.html>)

**Grade level:** Preschool & up

**Concepts:** Health/Nutrition

**Objectives:** Students will understand nutritional benefits of cruciferous vegetables.

### **Directions:**

1. Cross section of seed will help students learn EMBRYO (tiny part of seed that grows into new plant). Explain that the rest of the seed contains stored sugars that it uses to grow and develop.
2. Discuss the basic needs of a plant (water, air, loose soil, sunlight). When the seed has what it needs, it GERMINATES (starts to grow and develop). Then PHOTOSYNTHESIS occurs (the way leaves of green plants make most of the sugars a plant needs). Grow lettuce, cabbage or broccoli plants from seeds in cups/cartons in classroom. Lettuce seed is 7-10 days to germination; planting depth - 1/4 inch; 82 days to harvest. Cabbage is 10-12 days to germination; 1/2 inch planting depth; 71 days to harvest. Broccoli is 10-14 days to germination; planting depth is 1/2 inch; 90 days to harvest. Withhold water from one and sunlight from another. Draw conclusions from measurements and graphs of growth of all the plants during the leafy greens study. (For extended classroom growing project, refer to The Apartment Farmer by Duane Newcomb, Tarcher, Inc., Los Angeles.) After lesson, students may take plants home to transplant.
3. Use food coloring and a heavy stalk leafy green or celery to show transportation of water through a plant.
4. Help students find articles in newspapers about weather conditions affecting the growth of crops (freeze, drought, etc.). Explain the impact on the cost of these foods to the consumer. (Prices may rise due to limited supplies damaged by nature.)
5. Arrange a tour of a local grocery store on delivery day. Try to tour a refrigerated truck and discuss food spoilage during transport. Have the produce manager explain the "sprinkler" system in the produce cases. Go on a scavenger hunt to find foods with leafy greens in them (slaw, sauerkraut, etc.).

6. Help students cut out pictures from magazines of healthy foods and people exercising. Discuss the importance of a nutritious diet and good exercise to stay healthy. Begin classroom discussion of the phrase, "You are what you eat!".
7. Why do we need to eat foods? We need energy from foods for work and play. The parts of food that help your body grow are nutrients. LEAFY GREENS contain Vitamin A, Vitamin C, Calcium, Iron, Fiber. These nutrients:
  - help build strong teeth and bones
  - help body to fight infection
  - helps growth and health of hair and skin
  - are Fat Free, Cholesterol Free, Low in calories, Low in Sodium
8. According to the Food Guide Pyramid, we need 3-5 servings vegetables per day (Children need 4). 1 serving = 1 cup of leafy raw veg or 1/2 cup of chopped raw or cooked veg. Have students demonstrate through standard measurements the amount of vegetable needed for a serving. The darker the leaf, the more nutritious the green.
9. Where do children get energy? Food! Have students create a food link chain: farmer, processor, grocer, you!
10. Place a few peanuts or chips on one brown paper bag. Place a few dry lettuce leaves or broccoli on another bag. Explain that the oily spot on the bag is from the fat in the peanuts. There is no fat in lettuce or broccoli to leave a soil. Chart results using class database on a scale of 1 - 5 (1 no oil to 5 very oily).

# Science Classroom Activities

## Dried Fruit

(Adapted from [www.dole5aday.com](http://www.dole5aday.com) Dole website)

**Grade Level:** 3-4

**Concepts:** Health/Nutrition

**Equipment needed:**

- Grapes, raisins, various fruit
- Larger paper bags (one bag per group)
- Notebook for observations

**Introduction:**

1. Give students several grapes and raisins. Explain that raisins are dried grapes. Ask students to point out the difference between the two.
2. Ask why the raisins are smaller in size than the grapes. Discuss the fact that living things are made up of cells and that water is in each cell.
3. Tell students that 4 pounds of fresh grapes makes 1 pound of raisins. Three pounds of fresh plums makes 1 pound of prunes. This is due mainly to water loss.
4. Ask why people would want to remove most of the water from the cells of grapes. (Raisins are easy to eat, sweet, used in baking, and stay fresh for a long time).
5. Let students eat grapes and raisins and compare the tastes!

**Directions:**

1. Cut open brown paper bag so it lays flat
2. Spread pieces of fruit (grapes, apricots, apples, pineapples, etc.) on paper bag
3. Place bag in sunlight where it won't be disturbed. Trace around each fruit with pen or pencil.
4. Record in your notebook the date and any observations about fruits (size, shape, color, texture, etc.)
5. Check the fruit every 2 days for changes. Record in your notebook the date and any changes in the fruit's size. Be careful not to disturb the fruit!
6. Observe the fruit for 2 weeks.

# Science Classroom Activities

## Salad Party

(Adapted from An Educator's Reference Desk Lesson Plan at <http://www.eduref.org/virtual/Lessons/Health/Nutrition/NUT0011.html>)

**Grade Level:** 3-4

**Concepts:** Health/Nutrition

**Overview:** This is a great activity to help students realize how important plants are in our diets and in our world. It improves classifying skills, increases knowledge of plant parts, provides a cooperative learning experience, and takes the place of an "all sugar treats" party. It also involves home and parents in our studies.

**Purpose:** The purpose of this activity is to provide a positive experience with "veggies" while practicing basic skills of observation, classification, and cooperation. It also provides a model for healthy eating.

**Objectives:**

1. Students will recognize which part of a plant a specific vegetable comes from.
2. Students will be able to sort and classify vegetable according to various characteristics.
3. Students will investigate vegetables which are new to them and classify each according to established guidelines.
4. Students will create a super salad and share in its consumption.

**Equipment needed:** plant parts poster, Ziploc Baggies (all sizes), marking pen, peelers, knives (dull for children), serving containers, serving utensils (preferable tongs), plates, forks, salt, pepper, herb vinegar.

**Other equipment needed:** tempera paint, butcher paper, potting soil, cups, "Earth Tunes" cassette tape by Mary Miche.

**Directions:**

1. Several days prior to the party the students are given the task in their learning groups to choose one group member to bring each type of vegetable. Each student in the group must bring a different plant part. Students may choose a vegetable that is a flower (such as broccoli, cauliflower, or artichoke), a fruit (tomato, cucumber, peppers, zucchini, peas, etc.), a leaf (lettuce, cabbage, spinach, greens), a stem (celery, asparagus, chives, or sprouts), or a root or bulb (carrot, onion, garlic, jicama, radish, etc.). Remind the "fruit" bringers that their contributions should be vegetables that are the fruit of the plant so bananas, peaches, etc. are not appropriate. I also encourage them not to spend over one dollar.
2. The day before the party everyone brings their vegetables. Each student's contribution is put in a baggie with name on it.
3. We start classifying by first having everyone who brought a bulb, or a root, bring it to the table in the front of the room. We discuss characteristics of a root or bulb, determine if all items truly fit this category, and divide them into sub-categories putting the roots in one group and the bulbs in another. On the board behind the

classifying table is a large diagram of a plant with its parts labeled. Setting aside the roots and bulbs, we do the same activity with each plant section proceeding upward to stems, leaves, flowers, and fruits.

4. Next I ask the students to develop a different way to classify the vegetables. They consult as a group and decide what new characteristic will be used as a basis for grouping the "veggies". Groups then share their system of classification with the class and demonstrate by regrouping the vegetables. They might choose to classify by size, color, shape, weight, taste, texture, peeled or unpeeled (whatever they wish), but they must agree within their group on the basic rule of their classification system.
5. Then I give each group an unfamiliar "veggie" and ask them to determine which plant part it is. I have used artichokes, jicama, mushrooms (not quite fair, but interesting to discuss!) celery, bok choy, radicchio, sugar peas, leeks, tomatillos, basil, olives, and dandelion greens.
6. The day of the party we take over the cafeteria right after morning recess. I have four parents come to help with salad preparation. Each parent works with one plant part and the students who brought those e.g. stems (celery, asparagus, chives, and sprouts). I work with the other group. We prepare all the vegetables, i.e. peel and slice, and put them in separate serving dishes with a serving utensil (tongs work best) and set it up like a great salad bar. Only parent helpers use sharp knives to slice and dice! We don't use dressing, but have salt, pepper, and herbal vinegars available. Everyone eats! What a treat!

***Additional Activities:***

1. Use leftovers and ends to do vegetable prints with tempera on butcher paper.
2. Learn the song "Dirt Made My Lunch" by Steve Van Zandt (available on cassette Earthy Tunes by Mary Miche)
3. Use all peelings and organic waste to feed the worm farm!
4. Save seeds from the fruits and plant them!

***Tying It All Together:***

1. Homework - Following the party students have an assignment to check out their own kitchen, and find five foods not used at the party but which are plants. They list the foods and identify which part of the plant it came from.
2. The day after the party we write thank you notes to the parent helpers. Each note must contain some statement of one thing each student in the group learned that was new to them.
3. Evaluation - Using grocery food ads from the newspaper, students cut and paste ten plant foods and then identify plant parts. This works well when done in teams of two.