

Lesson Title and Summary

Eat A Rainbow

The children will explore five vegetable sub-groups with special emphasis on the “powerhouse” sub-groups of Dark-Green and Red & Orange. To identify sub-groups, the children will use vegetable cards and play a dice game. If time (or as a follow-up activity) the children will circle Dark-Green and Red & Orange sub-group choices available on their lunch menu. Discussion will also focus on the nutritional value of these powerhouse vegetables and whole fruit verses juice and soda.

Learning Goals/Objectives (measurable outcomes)

- identify at least two vegetable sub-groups
- name at least two vegetables from two sub-groups.
- name at least one health benefit from eating vegetables.
- identify which are healthiest choices between whole fruits or vegetables, juice, soda, or water.

Target Grade(s)/Age(s) and Adaptation for other Grades/Ages

4th grade

Lesson Time

30 to 40 minutes: longer time if the menu activity is used.

Preparation, Space Requirements, Personnel needed, Supply List

Supplies: Overhead projector and hand-out (or poster) listing five vegetable sub-groups (Dark-Green, Red & Orange, Beans & Peas, Starchy Vegetables, Other Vegetables); vegetable seed packets, dry erase whiteboard with red and green dry erase markers; vegetable flash cards; vegetable dice; tabulation sheets; school menus or hand-out with sample menu; 4 oz plastic juice cup, 20 oz plastic cup; 10 sugar packets (or 10 teaspoons sugar), and can of soda. If available, a variety of fresh vegetables from the Dark-Green and Red & Orange sub-groups such as leaf lettuces, rainbow chard, kale, carrots with tops, winter squash, sweet potatoes, tomatoes, red or orange peppers plus oranges. **Personnel:** one adult per 7 students, share leadership role with each willing adult leading one section of the lesson. **Classroom teacher:** Pre-group students into 4-7 students depending on desk arrangement (for dice game) and responsible for classroom management.

Lesson Plan

Intro/Engage the Students: (3 minutes)

Introductions of WSU MG, jokes to engage children:

What kind of glue do tomatoes use: **Tomato paste.**

I have a head but nobody, a heart but no blood, Just leaves and no branches, I grow without wood.

What am I? **Lettuce.**

Knock, knock, *Who's There?* Lettuce! *Lettuce Who?* **Lettuce in and we'll tell you.**

Lesson Steps and Activities: (22 to 37 minutes)

1. Have the children list their favorite vegetables, write list on board or overhead projector.
2. Mention that in their science unit they have learned about Protein (vegetable sources are beans and peas), Fat, Carbohydrate/starch, glucose, and some vitamins. Today we are going to talk about the vitamins and nutrients in vegetables and why it's important to eat vegetables.

3. Discuss the five vegetable sub-groups: Dark-Green, Red & Orange, Beans & Peas, Starchy Vegetables, Other Vegetables and nutrition in each group. Mention that we grow many of these in our gardens; when discussing the vegetables can show seed packets (use overhead) so the children can see pictures of each vegetable and reinforce these grow from seeds in gardens and farms. They contain vitamins (some of which the children have studied in their Food Chemistry science unit, see below) and minerals essential for our health.

Also discuss:

Minerals-important to help our body use nutrients. Many minerals found in vegetables.

Dark-Green and Red & Orange Vegetables are nutritional powerhouses: dark greens especially help vision, bones, and teeth, red & orange help heart, vision, immune system, memory.

Fiber or Roughage-helps us feel full longer which can help with a healthy body weight and important for healthy digestion of food especially in lower intestines.

Both **fruits & vegetables** are high in vitamins and minerals; today we are discussing vegetables.

Background information for presenter of the vitamins how they benefit our health which the children have (or will) study in their Food Chemistry science unit:

Vitamin A-helps protect eyes and skin, found in dark-green veggies and red & orange veggies.

Vitamin B1 (Thiamine)-helps convert carbohydrates into fuel for energy. Found in meats, legumes (beans and peas), and nuts. Prevents beriberi.

Vitamin C-helps heal cuts and scratches, keeps teeth and gums healthy. Found in fruits and veggies: oranges, kiwi, tomatoes, strawberries, peppers, potatoes and broccoli. Prevents scurvy.

Vitamin D-Sunshine vitamin, helps body absorb calcium. Being outdoors in sun best source also found in mushrooms and supplemented in milk. Prevents rickets.

4. Hand out vegetable flash cards, one per child, have children look at picture side and decide to which sub-group their vegetable belongs then read back of card to verify, call out each vegetable sub-group and have children with those cards stand and have a few children name their vegetable. Let children know which of these vegetables you grow in your garden or grow well in our area.
5. Red apples and oranges are also in the Red & Orange sub-group. Discuss **whole fruit vs. orange/apple juice**, number of whole fruit takes to make a 4 oz. and 12 oz. glass. Show 4 and 12 oz glasses and number of oranges for juice. **Soda vs. water:** Ask how much sugar in one can soda then show amount of sugar packets in one soda (10 sugar packets or 10 teaspoons sugar). Ask how much sugar in water and discuss benefits of water. **Ask which are the healthiest?**
6. Explain and demonstrate dice game: Groups of 4-7 students (groups all the same number of students), each take turn rolling one color of die, then each turn with second color of die, then each turn with third color of die. Each student tracks vegetable points on tabulation sheets. When dice rolling completed, total example then have children tabulate totals (each column, then points for each sub-group, then grand total). Ask groups to raise hands and keep hand up if more than 5 points, 10 points, 15 points, etc. Which student has “eaten”/totalled the most points is the healthiest and are winners. Note that the Dark-Green and Red & Orange veggies get more points because they have more nutrition. Have the other adults hand out dice and tabulation sheets.

(Groups that finish block game earlier than others, can answer the whole fruit versus juice and soda versus water questions and do lunch menu activity that is on the tabulation sheet handout.)

7. If time, or as a classroom follow-up activity, distribute the monthly school menu. Have children locate this week's menu. Circle Dark-Green and Red & Orange choices available. Then discuss menu and healthy choices.
8. Distribute the Eat a Rainbow/vegetable sub-group handout; the children can color the vegetable graphics the appropriate color.

Reflection/Review: (5 min.)

From the favorite vegetables list generated at the beginning of the lesson, have children assist circling with a green dry erase maker the Dark-Green veggies and with a red marker the Red & Orange veggie group. Ask children to name a health benefit from eating vegetables. Remind making healthy choices and eating healthy foods is their choice and their health.

Classroom Follow-up or activity if time:

On school menus, students can circle Dark-Green and Red & Orange choices available.

Vocabulary	
Nutrition	Minerals
Starchy	Sub-group
Protein	Absorb
Fat,	Immune system
Carbohydrate/Glucose	
Vitamins (A, B1, C, D)	

- **Protein**-our bodies use protein to build healthy muscle, skin, bones, and tissue. Found in beans and peas.
- **Fat**-Provides energy and helps our bodies absorb (take in) certain vitamins, but high in calories. Liquid forms, like oils from avocados and olives (olive oil), are heart healthy. Eating too much solid forms of fat like butter, margarine, and hydrogenated oils are not good for our heart.
- **Carbohydrate**/Glucose-Source of energy, found in all fruits and veggies.

Nutrition Powerhouses, lots of vitamin and minerals and low in calories:

Red & Orange Vegetables

Acorn squash
Butternut squash
Carrots
Pumpkin
Red and orange bell peppers
Sweet potatoes
Tomatoes

Dark-Green vegetables (leafy and broccoli)

Beet greens
Bok choy
Broccoli
Collard, turnip, mustard greens
Dark green leaf lettuce
Kale
Romaine lettuce
Spinach
Swiss chard

Other vegetable sub-groups (*eating vegetables from all the sub-groups helps you get the nutrients you need to play hard and be healthy*)

Beans and Peas (these are dried)

Black beans
Black-eyed peas
Garbanzo beans (chickpeas)
Kidney beans
Lentils
Navy beans
Pinto beans
White beans
Soybeans
Split peas

Starchy

Corn
Green peas
Green lima beans
White potatoes
Plantains

Other colorful vegetables

Artichokes
Asparagus
Bean sprouts
Beets
Brussels sprouts
Cabbage
Cauliflower
Celery cucumbers
Eggplant
Green beans
Green peppers
Iceberg lettuce
Mushrooms
Okra
Onions
Parsnips
Turnips
Wax beans
Zucchini

(Even though some of these are green on the outside, they are not green inside and are also lower in certain nutrients than dark-green vegetables. In addition, beet roots are a more purple color than the Red & Oranges vegetables plus they are lower in some nutrients such as Vitamins A and C, so they are in the “other” sub-group.)