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Plant Parts You Eat

The Science of Food: Activity 4

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Plant Parts You Eat

This activity's objectives are aligned with the National Science Education Standards, specifically those related to Science as Inquiry and Physical Science. In this activity, students will observe different plant-originated foods, and they will discover that humans consume a remarkable variety of plants and plant parts, such as roots, seeds, leaves, flowers and grains. Students will make and record observations, use evidence, draw conclusions, and use resources to find information.

Key science concepts addressed in this activity include the following.

- Consumers depend on producers for food.
- People rely on many different plants and plant parts for food.

Student Worksheets
Student pages in the teacher's guide are provided in English and in Spanish.

Reference

Moreno N., and B. Tharp. (2011). *The Science of Food: Teacher's Guide.* Fourth edition. Baylor College of Medicine. ISBN: 978-1-888997-76-7. Development of this student activity was supported, in part, by grant numbers R25 ES06932 and R2510698 from the National Institute of Environmental Health Sciences of the National Institutes of Health to Baylor College of Medicine.

Image Reference

Photo © White Harvest Seed Company\Savanna Nocks.
http://whiteharvestseed.com/detroit-dark-red.html

Key Words

food, eat, eating, nutrients, beets, roots, stems, leaves, leaf, flower, plants, light, water, air, soil, photosynthesis, sunlight,

Materials

Have students work in groups of 2-4 to conduct the activity. Each group will need the following.

Per Group of Students

- Crayon or marker
- Plastic, serrated knife
- Piece of whole fruit, vegetable or grain (see Set-up)
- Sheet of white construction or drawing paper, 9 in. x 12 in.

Setup

• Bring enough different fruits, vegetables and grains to provide a different sample to each group of 2–4 students. Try to include at least one representative from each of the categories listed below. Fresh, whole examples are best.

• Roots: examples include carrot, beet, radish, or sweet potato

• Leaves: lettuce, spinach, or scallions (Students can observe that the fleshy bulb of the scallion or green onion is made up of overlapping leaf bottoms.)

• Stems: asparagus (potato is a confusing example, except to discuss with students afterwards) or celery stalks (leaf stem)

• Flowers: broccoli, cauliflower, or artichoke

• Fruits: apple, orange, peach, tomato, or zucchini (example should have observable seeds)

• Seeds: dried beans, peas, or lentils

• Whole grains: popcorn or wheat berries (white rice has most of the grain removed).

• Soak examples of grains and dried seeds overnight before bringing to class, so that they will be soft enough for students to split open.

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Image Reference

Photo by Christopher Burnett © Baylor College of Medicine.

Key Words

materials list, materials needed,

Science Safety Considerations

Students always must think about safety when conducting science investigations. This slide may be used to review safety with your class prior to beginning the activity.

Safety first!

•Always school district and school science laboratory safety guidelines.

•Have a clear understanding of the investigation in advance.

•Practice any investigation with which you are not familiar before conducting it with the class.

•Make sure appropriate safety equipment, such as safety goggles, is available.

•Continually monitor the area where the investigation is being conducted.

Safety Note. Caution students to be careful when using the plastic knife.

References

1.Dean R., M. Dean, and L. Motz. (2003). *Safety in the Elementary Science Classroom*. National Science Teachers Association.

2.Moreno N., and B. Tharp. (2011). *The Science of Food Teacher's Guide.* Fourth edition. Baylor College of Medicine. ISBN: 978-1-888997-76-7. Development of this student activity was supported, in part, by grant numbers R25 ES06932 and R2510698 from the National Institute of Environmental Health Sciences of the National Institutes of Health to Baylor College of Medicine.

Key Words

science, classroom, safety, lab, laboratory, rules, safety signs,

What Plants Do You Eat?

- Did you know that humans eat many different parts of plants?
- Did you eat food that came from a plant today?
- Does oatmeal come from plants?
- What about apple juice?

Barley is a member of the grass family. Humans eat it as a cereal grain.

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What Plants Do You Eat?

Begin the activity by asking, *Did you know that humans eat many different parts of plants?* Lead a class discussion about the different parts of plants, such as seeds, leaves, stems, roots, and flowers. Follow by having students think of all the plant-based foods they have eaten (or will eat) that day.

Ask, *Does oatmeal come from plants? What about apple juice? What other foods come from plants?* Examples might include bread from wheat; cereals from oats, wheat and corn; and juice from oranges and apples. Ask, *Did you know that we eat many different parts of plants?*

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Image Reference

Photo courtesy of the U.S. Department of Agriculture. Public domain. http://commons.wikimedia.org/wiki/File:Hordeum-barley.jpg

Key Words
food, eat, eating, plants, nutrition,

Let's Get Started

In this activity, students will observe different plant-based foods. They will discover that humans consume a remarkable variety of plants and plant parts, such as roots, seeds, leaves, flowers, and grains.

Help students to remember basic plant parts, using a plant in the classroom or school yard as an example. Ask, *Why are green plants special?* (they make food through photosynthesis) *Where do plants trap sunlight to make food?* (leaves and other green parts) *Where do plants take in the water and nutrients they need?* (roots) *How can we get more plants?* (planting seeds or other reproductive plant parts, such as stem sections) *Where do seeds come from?* (flowers, which develop fruits and seeds)

Give each group of students a sheet of drawing paper, a plastic knife and one of the plant foods you have brought to class. Direct students to fold the sheet in fourths, creating four spaces in which to record information (see illustration on the slide). Allow students to observe and discuss their respective food items briefly before continuing.

Have groups provide the following information in the four squares on their sheets. In the first (top left) square, students should describe and/or draw the outside of the food. Before students fill in the second square (top right), direct them to cut the food in half or into several pieces, so that they can observe the interior. Have them write a description of, and/or draw the inside of the food in the second square.

Have students use their observations to describe in the third square (bottom left) what plant part or parts is/are represented by the food. Students also should report the observations they used to reach their conclusions. For example, carrots have fine roots attached to the large central root, and some students may have observed that carrots grow underground, etc. In the final square (bottom right), have students report

different ways to prepare and eat the food. You may want to spend an extra class period on this step, so students have time to visit the library or access the Internet to gather additional information.

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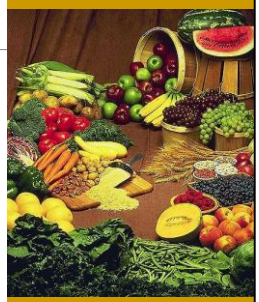
Key Words

lesson, experiment, food, eat, eating, nutrients, plants, plant growth, food preparation, roots, stems, leaves, flowers, fruit, vegetables,

Let's Talk About It

- Did the inside of your food item look different that the outside?
- Was your food item a seed, root, stem, leaf, grain, or flower?
- How can your food item be prepared to eat?
- In what part of the world does your food item grow?



Humans consume a variety of plants and plant parts, such as roots, seeds, leaves, flowers, and grains.

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Let's Talk About It

This activity introduces students to the concept that foods we eat come from different parts of the plant, such as the roots, leaves, seeds, and flowers. By observing different plant-originated foods, students discover that the wide variety of foods we eat originated in many different and geographically separate parts of the world.

Stimulate a discussion about what students observed and reported by asking, *Did the inside of your food item look different than the outside? Was your food item a seed, stem, root, leaf, grain, or flower? What are some ways your food item can be prepared to eat?* Have each group share the information about its plant food with the rest of the class.

You may want to contribute some fun facts about plant parts and food. For instance, we know that potatoes are stems, not roots, because a potato in water will produce leaves at the top and roots at the bottom. Also, artichokes are similar to huge sunflower buds, and pineapples consist of the fleshy stems and flowers of a tropical plant.

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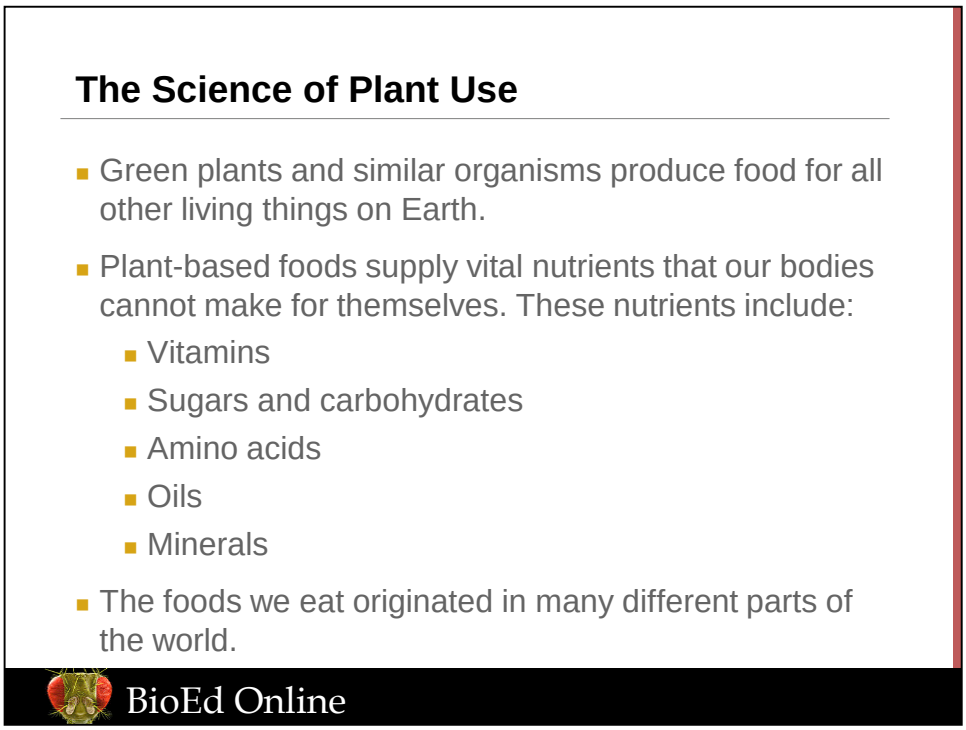
Image Reference

Photo courtesy of the Agricultural Research Service, U.S. Department of Agriculture. Public domain. http://commons.wikimedia.org/wiki/File:Foods.jpg

Key Words

lesson, experiment, food, seed, root, stem, leaf, grain, flower, fruit, vegetable,



The Science of Plants

During this activity, students observed the following key properties of food.

- **Consumers depend on producers for food.** Green plants and similar organisms produce food for all other living things on Earth. Food provides energy and nutrients for organisms, such as animals, that cannot trap energy from the sun through photosynthesis. Some animals, called primary consumers, eat only plants. Others, known as omnivores, eat plants and animals. Most humans are omnivores. However, some people chose to eat only foods that come from plants. Plant-based foods supply vital nutrients that our bodies cannot make for themselves. These nutrients include vitamins (necessary for the proper functioning of the body), sugars and other carbohydrates (which provide energy), amino acids (the building blocks of proteins), oils (another concentrated energy source), and minerals, such as potassium, magnesium and calcium.

- **People rely on many different plants and plant parts for food.** Humans consume a remarkable variety of plants and plant parts. The wide variety of foods we eat today originated in different parts of the world. Many foods are derived from plant roots, stems, leaves, flowers, or grains.

Reference

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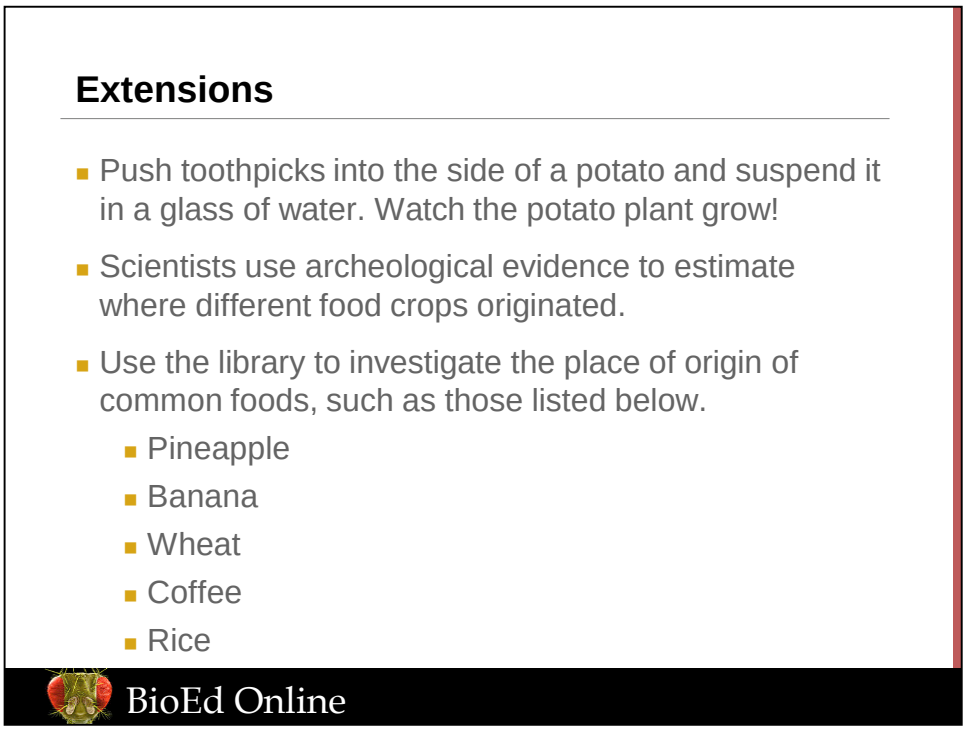
Key Words

plants, science, green plants, food, nutrients, vitamins, sugars, carbohydrates, amino acids, minerals, oils,



Extensions

•Push toothpicks into the side of a potato and suspend it in a glass of water. Students will be able to observe the formation of stems, leaves and roots.

•Many common food crops originated in distant, and different, parts of the world. By using archeological evidence and locating where wild relatives of certain food crops still grow, scientists have been able to estimate where these crops originated. Have students use the library to investigate the places of origin of some common foods.

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Key Words

lesson, experiment, extensions, food, plants, potato, food crops,