



4. Food: From Natural to Processed

Concepts

- Living things have basic needs.
 - All foods that humans eat begin in a natural state.
 - People eat some foods in their natural state (unprocessed) and some in a processed state. Not all foods are edible by people without processing.
 - Human beings are among the few animals that process their food (others include leaf cutter ants, bees, and wasps).
- kernels and a tortilla, for example; see Setup)
 - Class chart entitled "Foods" with two columns, one labeled "Natural" and the other, "Processed"
 - Drawing paper and crayons for each student
 - A "Natural" and a "Processed" label

Overview

Students will gain an understanding of what "processed" means. Students will distinguish between natural and processed foods and extend their knowledge of our food sources.

Science and Math Skills

- Observing
- Sorting and classifying
- Comparing and contrasting
- Matching
- Applying knowledge
- Communicating
- Charting

Standards

- Humans depend on their natural and constructed environments.
- All organisms depend on plants, directly or indirectly.

Time

Setup: 10 minutes

Class: 45 minutes in one session

Materials

- Paired sets of foods, each containing one natural and one processed food (corn

Background

Food is one of the four basic needs of organisms that cannot make their own food through photosynthesis. Organisms that trap light energy and use it to manufacture their own food are known as "producers." Some animals eat plants for food. Other animals eat animals that eat plants. All living things that rely on producers for food are known as "consumers." Food sources are important in all environments.

People use a variety of food resources, both natural and processed, to meet their energy and nutritional needs. With a few exceptions (for example, bees and wasps), people are the only animals that process their foods.

Processed foods are foods that are no longer in their natural state, because they either have been cooked and/or combined with other ingredients. For example, an apple is a food in its natural state. However, applesauce is made by processing the apple (steaming, mashing and adding flavoring) to make a new mixture. Roasted peanuts are no longer in their natural state because they have been cooked. Raw foods, such as carrots, celery and lettuce, are considered natural for the purposes of this unit, because nothing more than washing or

cutting of the natural food is involved in preparation.

NOTE: "Natural" can mean a variety of things on food labels. Use of the term "organic" is regulated and limited to foods that have been produced without pesticides, chemical fertilizers or antibiotics.

Setup

You will need to provide a variety of common foods, both natural and processed, Make sure there is a natural food for each child and at least one processed food that matches each natural food. Prepare one set of foods for demonstration during a class discussion of natural and processed foods. See examples below.

Safety

1. Follow all district and school laboratory safety procedures.
2. Be aware of any contact or food allergies children may have when handling materials. Be especially aware of children with peanut allergies.
3. If students will be eating food after the activity, make certain that all food is wrapped during the activity. Do not allow children to eat unwrapped food after it has been handled by other children.
4. It is good laboratory practice to have students wash hands before and after laboratory investigations.

EXAMPLES of FOOD SETS

<u>Natural</u>	<u>Processed</u>
potato	potato chips
grape	raisin, grape juice
raw peanut	peanut butter, peanut candy
sugar cane	sugar
ear of corn	tortilla, corn nuts

strawberry	strawberry jam
brown rice	rice cereal
dried beans	canned beans
orange	orange juice
wheat shaft	crackers, cereal bar, macaroni
tomato	pizza or salsa
carrot	cooked carrot
cucumber	pickle
milk**	cheese**
avocado	guacamole
rice	Rice Krispies treat
lemon	lemon juice, lemon candy
cinnamon stick	ground cinnamon
apple	apple sauce

** You may want to mention that most milk products sold in stores are pasteurized (heated) to kill germs.

Procedure

1. Gather students together in a semicircle in front of you and show them several unprocessed foods. For example, you could present an apple, a cucumber and/or a peanut. Ask, *From where did these foods come? Can you eat them just the way they are? Can some other animal eat them in the form you see here?* As students answer, make sure they understand these unprocessed foods are natural resources that may be eaten just as they are. Now show the processed counterparts of the same foods (e.g., a jar of applesauce, a pickle, and/or a jar of peanut butter). Ask, *Where did this applesauce come from originally? (Is there an applesauce tree?)* Make sure students understand that applesauce is a processed food. Ask, *Can you eat the applesauce just the way it is? How has it changed from the apple?* Point out that since the apples in applesauce are cooked and mashed, applesauce is a processed food. Ask, *Do*

animals eat applesauce? Point out that people process foods, but animals generally do not.

2. Repeat the steps above, comparing a cucumber and a pickle, and the peanut and peanut butter. Explain that each student now will be given a food to identify as either "natural" or "processed." Also explain that someone in the room has a "match" for each student's food sample that is the opposite category ("natural" or "processed") and students should find that food "match".
3. Distribute one food item (either natural or processed) to each student. Since students will be seeking to match their items with the foods' natural or processed counterparts, make certain that everyone will have at least one match.
4. Allow time for student pairs to examine, discuss and identify their foods. Then line students up with their foods. One at a time, ask students to step forward, show their foods, decide if the foods are natural or processed, and explain why they think this is. Ask questions to lead to the correct classification like, *Do you think this could be growing on a tree just like it looks?* Ultimately, students should form two lines, one for natural and another for processed. Next, encourage the students in the "natural" line to find their food match or matches in the "processed" line. Have students discuss what they know about their foods and identify any other possible foods that could be created from the natural food.
5. There may be more than one processed food for some of the natural items.
6. Distribute drawing paper and crayons or markers to each student. Each student

should draw a picture of the food, either as it was presented or in another way that it might be prepared, color it, and cut it out.

7. Gather all students into a class group again. Explain that each student will bring his/her food picture to the front of the class, name it and identify it as natural or processed. Then each student will attach the food picture to the chart under the appropriate column, natural or processed. The student(s) with the matching counterpart foods will follow, attaching their foods to the opposite column on the chart.
8. Ask students to share what they know about their foods: where they come from, and if processed, how they think was done to make the processed one.

NOTE: Be aware of special food allergies to ensure student safety.

Extensions

- At the conclusion of the activity, have a tasting party. For example, you could have a taco party with the tomatoes, tortillas, guacamole, etc. Demonstrate how to wash hands with soap and water. Have students wash their hands before proceeding with the activity. (HINT: Tell students to sing the "Happy Birthday" song completely to gauge how long to wash their hands—about 10 seconds.)
- Have students draw or write the steps they think are taken to transform a natural food into a processed food that they enjoy eating. Have students follow up by investigating the processing steps and writing a short report describing them. You may have to assign the foods,

e.g., a can of tuna fish, a box of cereal, a can of grape juice for the investigations.

- Make lunchbox observations or lunchtime observations. Ask, *What's in your lunch today?* Ask students to differentiate lunch food items as natural or processed.
- Share grapes and raisins and discuss their natural or processed state. Ask, *How did the raisins get this way?*
- Draw pictures of natural foods and processed foods made from the natural ones. Cut out drawings, laminate them and put them into baskets labeled "natural" and "processed" for a sorting center.
- Show films or sets of pictures showing the change a natural food undergoes to become processed (National Geographic, *Window on Literacy*, e.g.).
- Make peanut butter or applesauce.
- Have students make cookbooks with their favorite recipes inside.
- Include reading material such as *The Magic Tortilla*, *Tortilla Factory*, and *The Little Red Hen*.
- Take a field trip to, or make it a homework assignment to go to a grocery store and make a list of different natural and processed foods students find there.
- Encourage students to find natural and processed foods in their kitchens at home, to draw and name these foods, and to bring their drawings to class to share.
- Grind wheat berries into flour and make pancakes.
- As a class activity, make a classroom bulletin board: *All the Foods You Can Prepare With _____* (e.g., tomato - pizza, spaghetti, soup, catsup; or apple - pie, sauce, cookie, cake, butter, jelly).

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