LIFE LAB SCIENCE PROGRAM
FARM-TO-FORK

LIFE LAB Science Program

CLASSROOM ACTIVITIES TO ENHANCE A FARM FIELD TRIP

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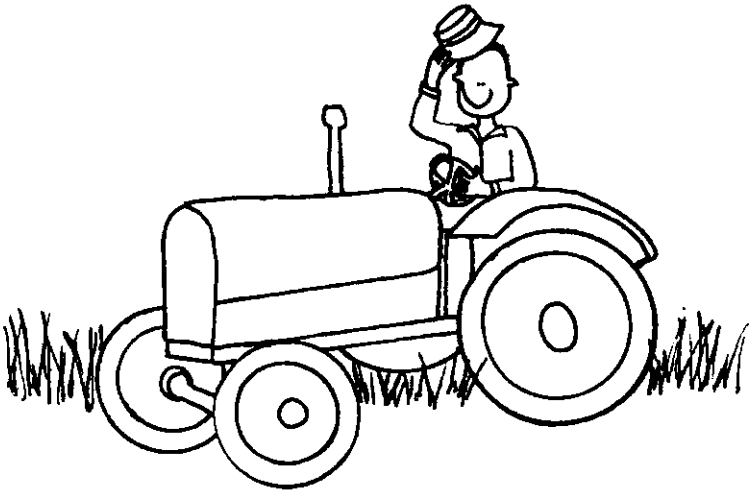
Farm-To-Fork
Life Lab Garden Classroom



Contents

MAKING THE FARM-TO-FORK CONNECTION
A Fall Visit to the Farm

Teacher Introduction

Fall is a season of bounty in the garden and on the farm. Multicolored squash and pumpkins spill out from their beds and beg to be picked. Corn stalks rustle with the last of the year's crop. The apple trees offer sweet and sour, red, green and gold treats for us to enjoy. The beauty of the season entices us to enter the garden and explore.

Children love to discover, harvest, prepare and taste the food grown in the garden and on the farm. The season provides endless opportunities for learning and making connections. How do plants grow? What are their parts? How are they different? How is the food harvested? How does it get to our tables? How can we prepare it so it tastes delicious? Finding the answers to these questions will take the students on an exciting journey into the world of food and food systems.

Before and after their visit to the farm, please use the activities in this packet to get your students thinking about where food comes from and how our eating habits have changed over time. What are the foods we eat made of? Where did they come from? Why do we eat the kinds of food we do? The study of food can incorporate standards and concepts from social studies, science, art, math, music and language. Food and food systems are topics that can be investigated at any grade level. After all, everybody needs to eat!

We hope you enjoy using these activities from *The Growing Classroom* Garden-Based Science Activity Guide. For more information on this and other Life Lab curricula, please visit our website at www.lifelab.org.

Recomended Literature

Nonfiction Books

Farming, Gail Gibbons / Holiday House / April 1990

A Weed Is a Flower : The Life of George Washington Carver, Aliki / Aladdin Paperba

Extra Cheese, Please! : Mozzarella's Journey from Cow to Pizza, Cris Peterson, Alvis Upitis (Photographer) / Boyds Mills Pr / March 1994

Hooray for Beekeeping! (Hooray for Farming), Bobbie Kalman, et al / Crabtree Pub / October 1997

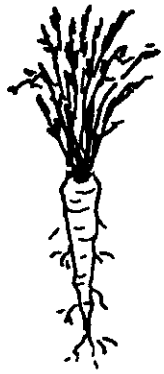
Corn Belt Harvest, Raymond Bial / Houghton Mifflin Co (Juv) / October 1991

Hooray for Orchards!, Bobbie Kalman / Crabtree Pub / October 1997

Chocolate, Claire Llewellyn, Helaine Cohen (Editor) / Children's Press / August 1998

Milk Makers, Gail Gibbons / Atheneum / March 1985

Story of a Farm, John S. Goodall / Margaret McElderry / March 1989



Apple Trees (A Lerner Natural Science Book), Sylvia A. Johnson, Hiroo Koike (Photogr: Publications Company / April 1989

Farming (Then and Now), Katie Roden, et al / Copper Beech Books / September 1996

Corn Is Maize : The Gift of the Indians, Aliki / Ty Crowell Co / October 1987

One Good Apple : Growing Our Food for the Sake of the Earth, Cathrine Paladino(Photogra Paladino (Illustrator) / Houghton Mifflin Co (Juv) / March 1999

World Farming, Martin Bramwell(Editor) / E D C Publications / June 1994

Strawberry, Jennifer Coldrey, George Bernard (Contributor) / Silver Burdett Press / June 1989

Soil, Karen Bryant-Mole, Barrie Watts (Photographer) / Raintree/Steck Vaughn / June 1996

The Disappearing American Farm (Impact Books - Issues), Jake Goldberg, Jacob Goldberg / Franklin Watts, Incorporated / April 1996

The Chicken or the Egg! (Rookie Read-About Science), Allan Fowler / Children's Press / March 1993

The Farm (Field Trips), Stuart A. Kallen / Abdo Pub Co / March 1997

Tobe : A Six-Year Old Farmer, Stella Gentry Sharpe / Beckham House Pub / September 1993

Food : The Struggle to Sustain the Human Community, Jake Goldberg / Franklin Watts, Incorporated / September 1999

The Wheat We Eat (Rookie Read-About Science), Allan Fowler, Allen Fowler / Children's Press / 1999

Fiction Books

How to Make an Apple Pie and See the World, Marjorie Priceman, Random House, 1994

Growing Vegetable Soup, Lois Ehlert, Voyager Books, 1990

Oliver's Fruit Salad,Vivian French, Orchard Books 1998

I Will Never Not Ever Eat a Tomato,Lauren Child, Candlewick Press, 2000

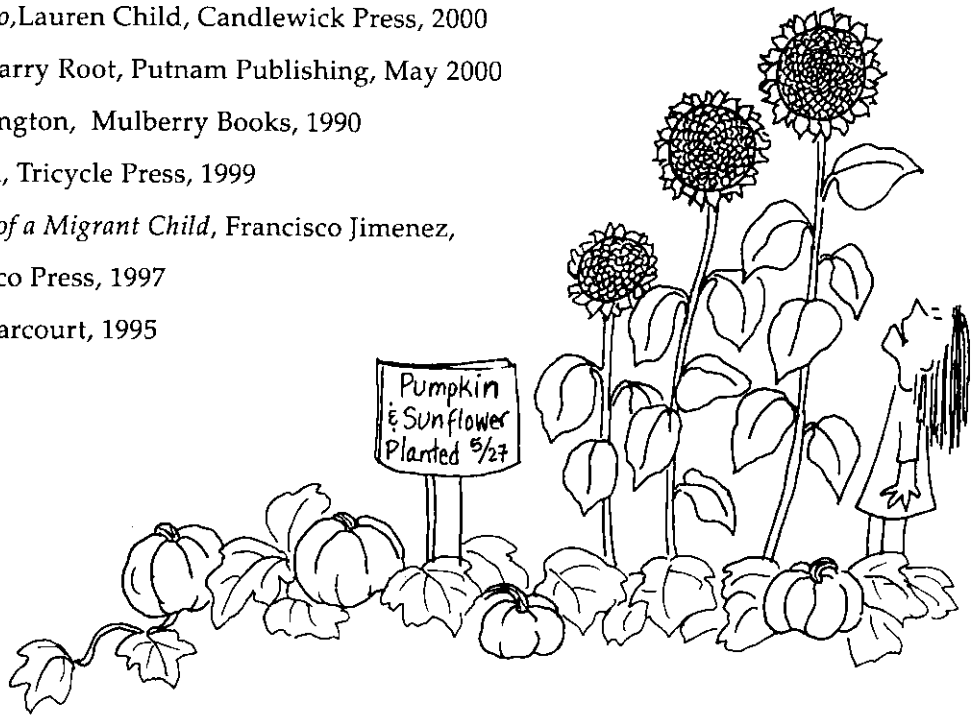
Brave Potatoes,Toby Speed and Barry Root, Putnam Publishing, May 2000

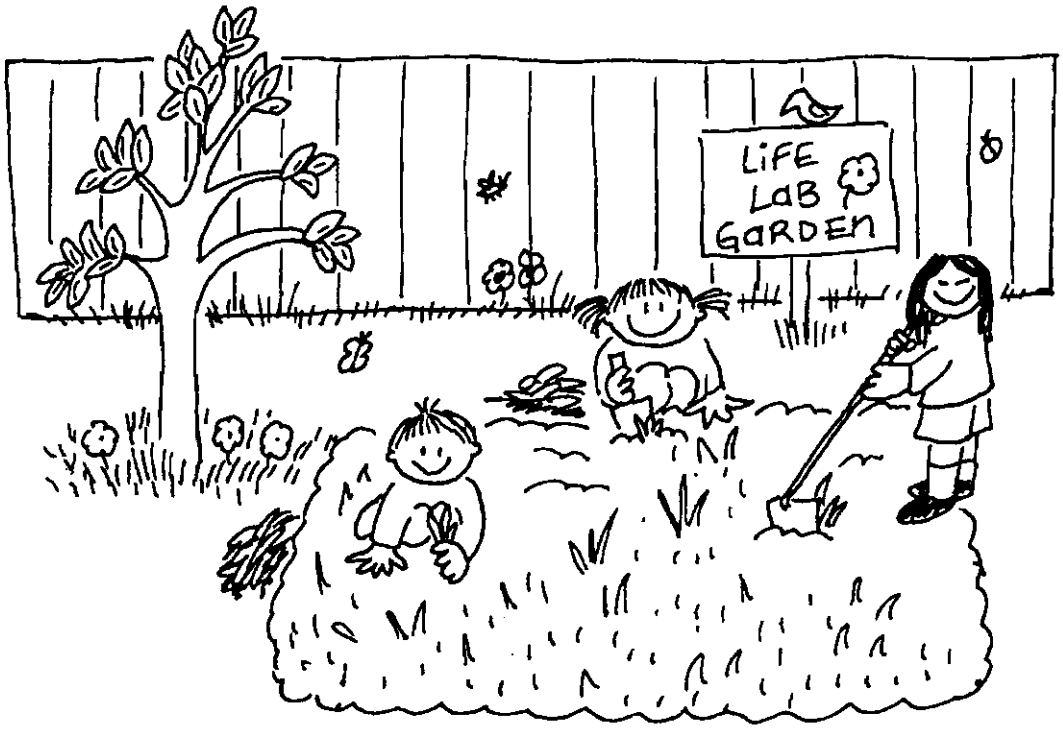
Pumpkin, Pumpkin, Jean Tintherington, Mulberry Books, 1990

Pumpkin Circle,George Levenson, Tricycle Press, 1999

The Circuit—Stories from the Life of a Migrant Child, Francisco Jimenez, University of New Mexico Press, 1997

Tops & Bottoms, Janet Stevens, Harcourt, 1995



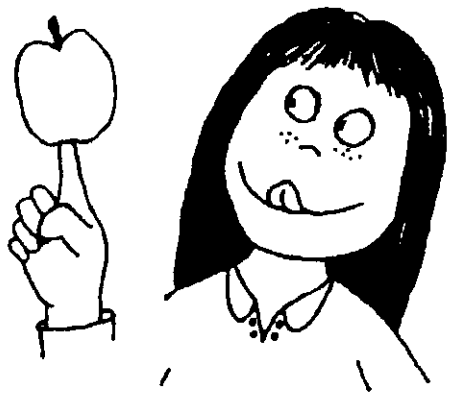


ACTIVITIES

I Eat My Peas with Honey

DESCRIPTION

Students conduct a survey of food preferences.



OBJECTIVE

To introduce the individual decision-making process in choosing foods to eat; to use writing and communication skills to demonstrate how and why students make certain food choices.

MATERIALS

- Science journals
- Pencil

CLASS DISCUSSION

Have you ever heard this rhyme?

I eat my peas with honey,
I've done it all my life;
It makes the peas taste funny,
but it keeps them on my knife!

People have different tastes in food. In this survey, we'll take a look at some of the foods we like and don't like.

ACTION

Have each student conduct the following survey.

1. Name your favorite food. _____

2. Find two people in your classroom who like the same food you do.

3. Find some classmates who do not like your favorite food. Ask them to try to explain why they don't like it. List two reasons:

a) _____

b) _____

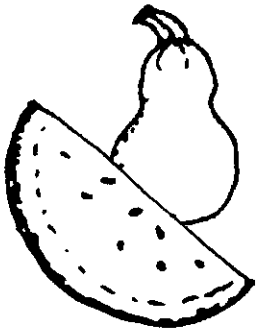
4. Make a list of foods you don't like.

a) _____

b) _____

c) _____

d) _____



5. Look at the foods on your list. Can you think of reasons why you don't like each food? Write the reasons beside each one.

6. Now make a list of your favorite foods.

a) _____

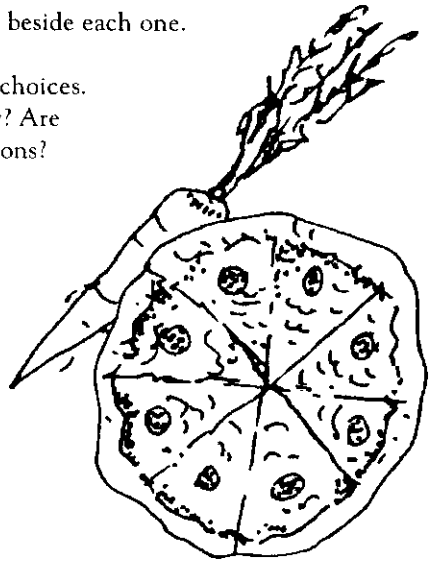
b) _____

c) _____

d) _____

7. Write the reason you like each of these favorite foods beside each one.

8. Discuss with students how and why they made these choices. Do they consider some foods to be good or bad? Why? Are there certain foods that are family favorites or traditions? Are they favorites because of how they taste? Family culture? Advertising?



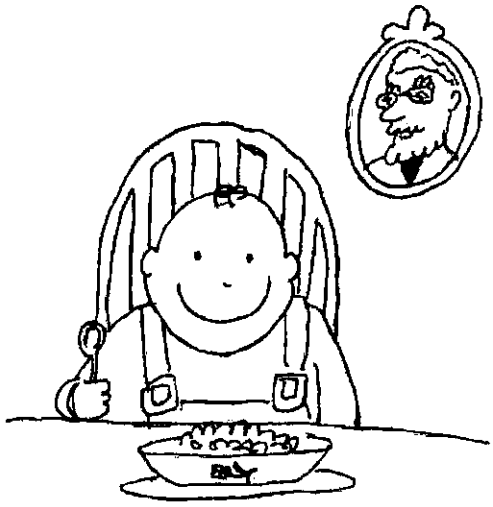
WRAP UP

Who chooses what you eat? What affects whether you like or don't like a food? Why can you like a food that isn't good for you? Do you like to try new foods? Why or why not?

DIGGING DEEPER

Make a food sample tray of foods the students might not have tried: raw vegetables (beets, jicama) with dip; hummus (garbanzo bean dip).

When I Was Little



DESCRIPTION

This activity uses writing and oral communication to research food changes over the past two generations. Students prepare a questionnaire about food and food habits. Using this questionnaire they will interview a grandparent or someone of that generation.

OBJECTIVE

To demonstrate how eating habits have changed over the past two generations; to develop an idea of the roots of food choices.

MATERIALS

- Science journals

CLASS DISCUSSION

The food we eat has changed quite a bit just in the last two generations. Many of the prepared foods in supermarkets of today were probably unknown to your great-grandparents or grandparents. Why not ask them and see? What questions would you ask them about the foods they ate when they were your age? *(Brainstorm a list of questions)*

ACTION

1. Have students prepare a questionnaire about food and eating habits. Possible questions include: What foods did you eat when you were little that you seldom or never eat now? Where did you get your food? Were foods prepared differently than they are today? How long did it take to make dinner? What foods were always made at home instead of purchased at a store? How were the foods packaged? What international foods do you eat today that weren't available when you were a child? How often did the family eat together? Do you eat any foods today that seemed strange or unappetizing when first introduced to you? At what time of day did you eat your largest meal? Did you eat out? If so, where? How often? What was your favorite food as a child? Do you think foods are better or worse today?

2. Have each student interview a grandparent or elder in their community, or invite a senior to class for the students to interview.

3. Have students analyze the responses by comparing the changes and similarities in eating habits.

WRAP UP

Summarize your interview. Compare how eating habits have changed over the years. Name an old eating habit that you would like to practice. Trace the development of an old eating habit into a modern eating habit.

DIGGING DEEPER

1. Invite a panel of grandparents to school to be interviewed by the whole class.
2. Have some seniors work with a group of students to prepare an old-fashioned meal.
3. Invite a parent to prepare a traditional meal from another country with the class, and discuss how immigration has affected what we eat today.
4. Have students research food preferences in different historical periods. Can modern habits be traced back to them?

Stem, Root, Leaf, or Fruit?

DESCRIPTION

Students classify foods they eat according to plant parts and make a vegetable and dip snack.

OBJECTIVE

To identify and classify the parts of food we eat.

TEACHER BACKGROUND

In the culinary world, we define fruits as sweet and vegetables as not sweet. In the world of science, however, vegetables and fruits are separated differently. A fruit is the part of the plant that develops from the fertilized ovary (or, in essence, from the pollinated flower) and has the seeds inside it. Under this definition, fruits include: pumpkins, peppers, cucumbers, avocados, tomatoes, eggplant, apples, string beans, and anything else that has seeds inside. "Vegetable" is not a botanical term but a catch-all category used to describe non-fruit plant parts we eat, such as celery, spinach, and carrots.

MATERIALS

- Science journals
- Sample of fresh spices from list of answers at end of activity
- Produce for snack (one item from each plant part category — for example: carrots, celery, spinach, broccoli, cucumbers, and sunflower seeds)
- Dip for snack (cottage cheese, hummus, etc.)
- Cutting board and knives

PREPARATION

Make up a picture chart of foods and spices that will be available in the classroom for this activity (see the Food Categories chart on the next page).

CLASS DISCUSSION

Name some plants that you eat. *(List responses on the board.)* Do you eat the whole plant or part of it? Let's list the different parts of plants. *(root, stem, leaf, flower, fruit, and seed)* Do you think we eat all of these different parts? *(Record predictions.)* Can you name the different parts of the plants we listed that you eat? *(List the part name(s) next to each plant.)*

ACTION

1. Group students in pairs and have them refer to the picture chart of foods and spices.
2. Have students make six category headings in their science journals: root, stem, leaf, flower, fruit, and seed.
3. Tell them to write each food in one of the categories, according to what part of the plant we eat. For example, a walnut is a seed, an eggplant is a fruit, and so on.)

4. To introduce students to the wonderful world of spices, have them use their senses to explore the samples you have collected.

5. Challenge students to try classifying the spices. This tends to be a little more difficult for students, so if they cannot put the spices in categories, guide them through.

6. Now have students enjoy their new knowledge. Have them cut up produce and make a dip using the cottage cheese or hummus. They may want to experiment with adding a small amount of spices to the dip. Be sure that they name the part of the plant they are eating.

WRAP UP

What is your favorite vegetable? Which part of that plant is it? What is your favorite root, stem, leaf, flower, fruit, and seed?

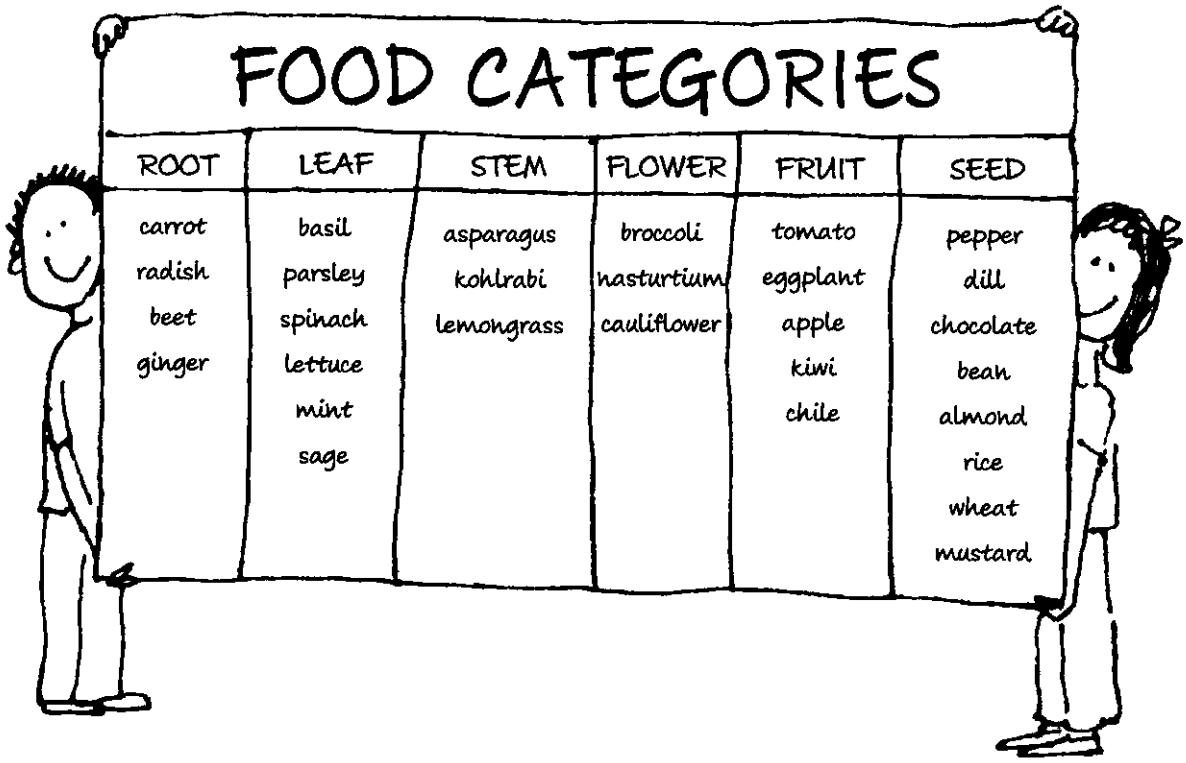
DIGGING DEEPER

1. Have students describe their last meal in terms of plant parts. For example, a peanut butter and jelly sandwich would be ground-up seeds *(peanut butter)* and crushed fruit *(jelly)* on ground-up and baked seeds *(bread)*.

2. Sing Roots, Stems, Leaves *(found at the beginning of this section)*

3. Have students design a meal composed only of one category. How would they enjoy such a meal?

4. Have students plant a garden bed according to the plant parts they eat, with a section for each category.



Straight From the Source

DESCRIPTION

Students will identify the plants and animals from which a variety of foods are derived.

OBJECTIVE

To understand that all food comes from plants and animals.

MATERIALS

- Pictures of foods
- Pictures of plants and animals that are the source of those foods
- Science journals

CLASS DISCUSSION

Today many foods are processed into forms so that their source is not recognizable. What do we mean by processed? Can you name any foods that are processed? Even though we eat processed foods, we are dependent upon the original plants and animals for all of our food.

ACTION

1. Divide the class into small groups.
2. Hold up pictures of foods for the class to see. Give each group a few minutes to discuss the source among themselves.
3. Have each group draw the food source in their journals.
4. Share responses when done.
5. List all sources on the board. Have students categorize them into animals and plants. Is there any source that is not an animal or plant?

SUGGESTED FOODS

FOOD	SOURCE
ketchup	tomato, sugar cane, spices
hamburger	cow
French fries	potato plant
peanut butter	peanuts
grape jelly	sugar cane, grapes
spaghetti	wheat
corn flakes	corn plant
crackers	wheat
cheese	cow
popcorn	corn plant
bologna	cow, pig, or turkey
gelatin	horse hooves
chili	beans, cow, tomato
pickles	cucumbers, dill plant
ice cream	cow, sugar cane

WRAP UP

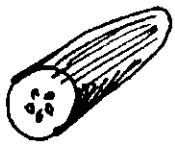
Identify three foods you eat that are in the form of their natural sources. Identify three foods that do not resemble their sources. Why are plants and animals so important to us?

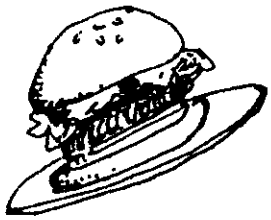
DIGGING DEEPER

1. Have students classify plants into fruits, vegetables, nuts, legumes, and grains. Sort seed samples of each into labeled cans. Prove they are plants by sprouting them.

2. Discuss meat-eaters and vegetarians. Find out why some people do not eat meat. Which of the foods listed above would a vegetarian not eat?

3. Have each child choose a favorite processed food and make a poster to show all the different sources in it.





The $1,000,000 Orange

DESCRIPTION

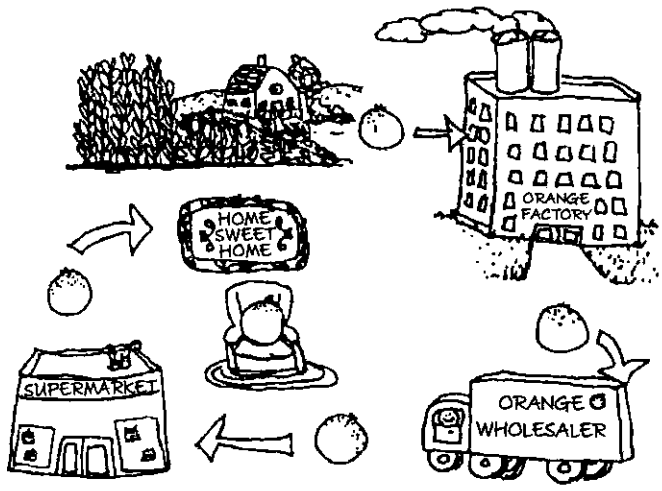
Students make orange "juicicles" to learn the steps and costs involved in processing food from its original form to its final form.

OBJECTIVE

To demonstrate the increased cost of food as it is processed.

MATERIALS

- One orange with price tag
- 1/2 fresh orange per student
- Hand juicer
- Bowl
- Pitcher
- One small paper cup per student
- Masking tape
- One popsicle stick per student
- Freezer space
- Knife
- Cutting board
- Measuring cup
- Water



PREPARATION

Draw the following chart on the board. Have a recorder fill in the chart as the activity progresses.

JOB	PROCESS	MATERIALS	LABOR	ENERGY	COST

CLASS DISCUSSION

What's the difference between an orange and an orange juicicle? What steps do you think are taken to make juicicles from oranges? *(list on board)* What do these steps involve? *(energy, money, labor)* If we turned our class into an orange juicicle factory, how much do you think we would need to charge for a juicicle in order to cover the cost of production? *(Record predictions.)*

ACTION

1. Divide the class so that each group of students has a job from number 4 (below).

2. Take the class through the process of making orange juicicles. With each step, discuss the materials, labor, and energy that would be involved.

3. Have the processors at each step determine how much they would charge for their part of the process. The recorder should record this information and then add up the final cost of the orange juicicles.

4. Jobs and steps:

Farmers	Grow and harvest oranges, truck them to processor.
Slicers	Cut oranges in half until there is one half per person.
Juicers	Squeeze orange halves into a bowl.
Blenders	Stir in 1/3 cup of water to the juice of each orange half.
Packagers	Pour mixture into a small paper cup.
Labelers	Put tape on each cup with product name and ingredients label.
Truckers	Carry orange juicicles to freezer.

5. Have students insert sticks into juicicles after 20 minutes (or as soon as they begin to thicken).

6. Discuss what price the class would sell their product for in order to pay their costs and make a reasonable profit. Why would it be cheaper to buy the ingredients and materials and make it at home?

7. Enjoy the orange juicicles as an afternoon snack.

WRAP UP

Why is it more expensive to buy processed foods than unprocessed foods? Name three advantages of buying processed foods. Name three disadvantages. Describe how having so many processed foods affects our society in terms of jobs, costs, energy use, health. Is the cost of food related to nutritional value?

DIGGING DEEPER

1. Have students research food preparation in other cultures such as that of Native Americans in precolonial times. Compare it with food preparation today.

2. Have students investigate prices of foods in their original form and the same products in processed forms. How many processed products can they find for one original food?

3. Have students research the actual breakdown in cost of a food product that travels from farmer to store. Which is the most expensive step? The least? *(This will vary for each product because there are different processing and transportation requirements. Your County Agricultural Extension should be able to provide you with information.)*

This Little Lettuce Went to Market

DESCRIPTION

Students investigate and compare the trip to market for local produce and produce grown far away. You can enhance this lesson by inviting a farmer and a supermarket produce manager to class.

OBJECTIVE

To investigate the steps from farmer to supermarket in marketing produce.

MATERIALS

- Seasonal list of locally grown fruits and vegetables, available from County Agricultural Extension or Agriculture Commissioner
- One grocery store newspaper ad per group of four

CLASS DISCUSSION

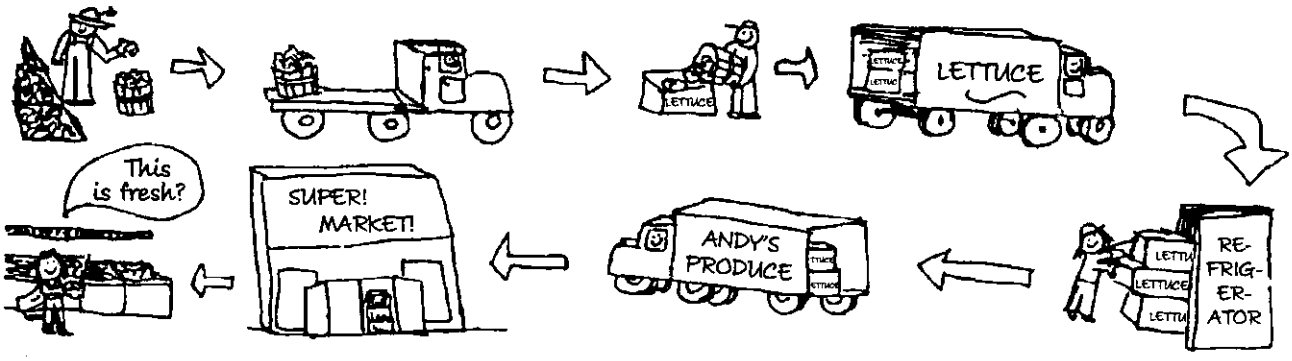
Review with students a list of locally grown fruits and vegetables and their seasons.

ACTION

1. Divide the class into groups of four. Give each group a grocery store ad from the local newspaper.

2. Have students list the fresh produce advertised and where they think it was grown.

3. Have students choose one item grown locally and one transported from far away and list the different steps each had to go through to get from harvest to the supermarket. What are the costs and energy uses with each step?



4. Invite a farmer to class to explain how local farmers sell their produce. Have the farmer trace the steps from the farm to the market, and the costs along the way. How much of the produce is sold locally?

5. Invite a supermarket chain's produce manager to class. Interview the manager to find out how stores purchase produce. Can they buy direct from local farmers? How does out-of-season produce get to the store from where it is grown?

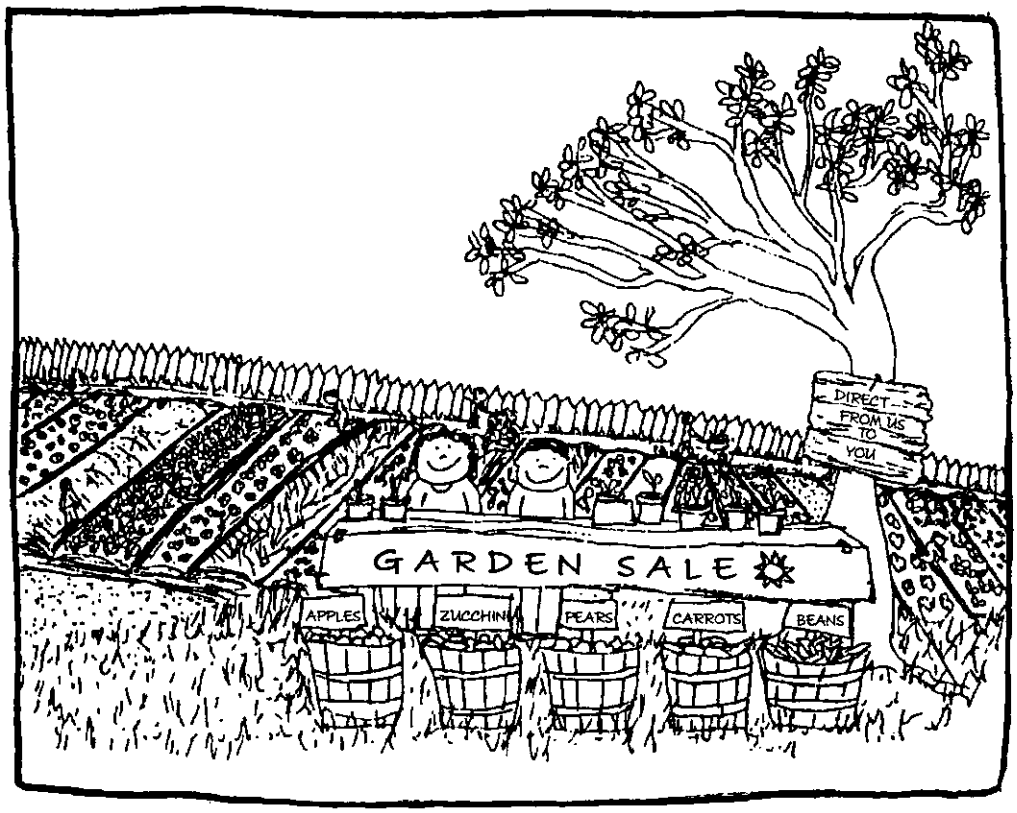
WRAP UP

Why don't stores carry only local produce? How many people handle the food between the farmer and the store?

DIGGING DEEPER

1. Have students harvest some produce from the garden and determine its price at a farmers' market or produce stand.

2. Make a stew with fresh seasonal fruits or vegetables that are available locally.



Try It, You'll Like It!

DESCRIPTION

Students design an advertising campaign by selecting a little-known fruit or vegetable and trying to influence another class to eat more of it.

OBJECTIVE

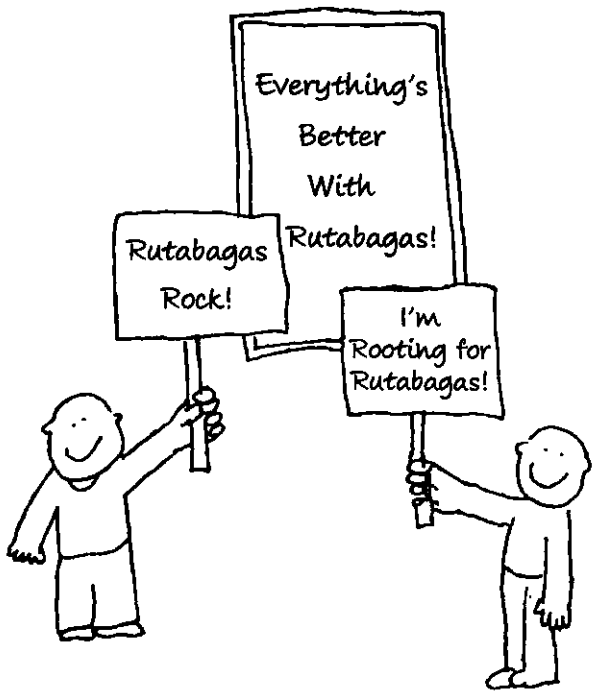
To experiment with the influence of advertising.

MATERIALS

- Samples of food to be advertised
- Art supplies

PREPARATION

Arrange for a test class by asking another teacher to allow the ad campaign to be presented to his or her class. The campaign should last for an extended time period. We suggest one month.



CLASS DISCUSSION

Name some ways that advertising has influenced you. Has advertising ever persuaded you to try something you thought you wouldn't like? Let's design an ad campaign for a little-known fruit or vegetable.

ACTION

1. Have your class design the ad campaign:
   - Select a fruit or vegetable that isn't well known or popular but is available, such as kohlrabi, kumquat, plantain, or turnips.
   - Select techniques students want to use to convince more people in the test class to eat the fruit or vegetable. Suggestions include free samples, posters in their classroom, brochures, slogans, skits.
   - Establish a time line of when and how the techniques will be used.
2. Have your class poll the other students on their previous experiences with the fruit or vegetable — e.g., have they ever, never, or frequently tried the food?
3. Supply the fruit or vegetable and advertise the food, using suggestions from number 1 (above).

4. Then conduct another poll as in number 2.

5. Try different techniques with different classes or students.

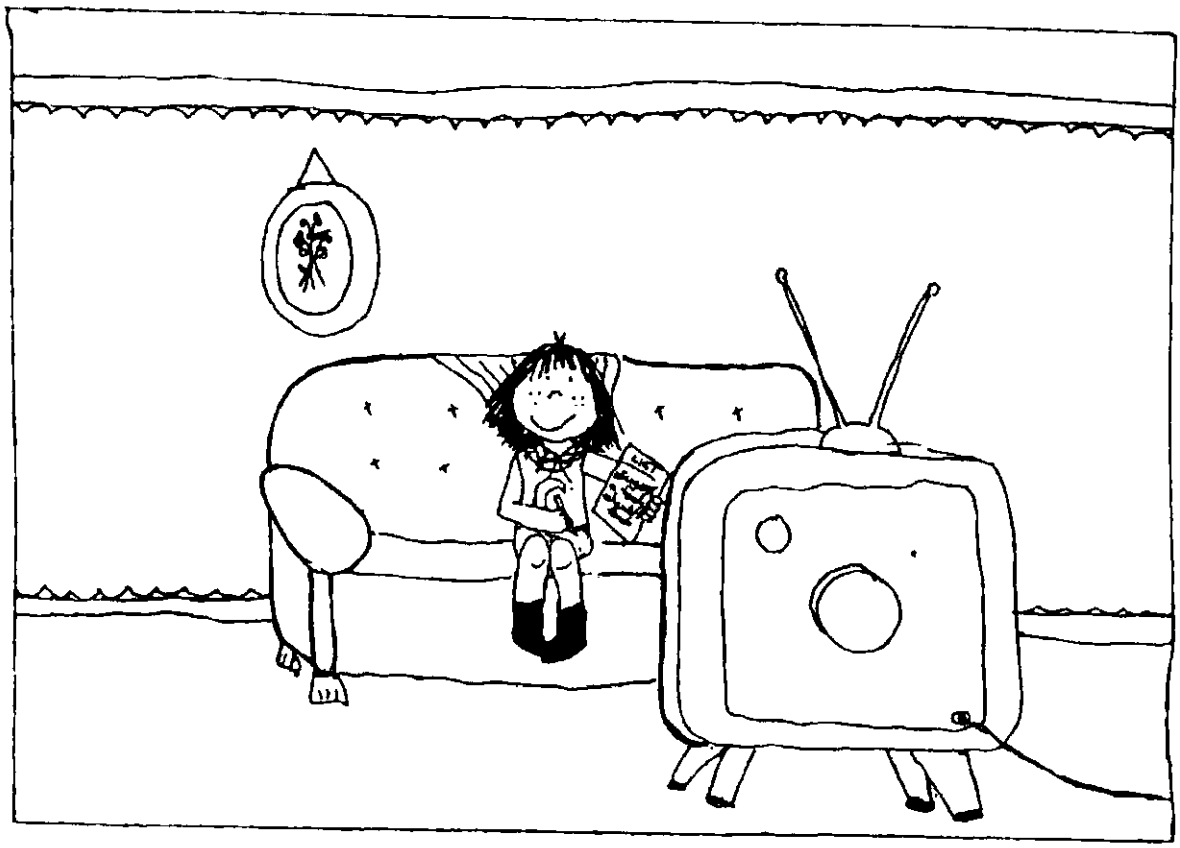
6. Discuss the influence of advertising on consumers.

WRAP UP

What techniques worked best with the class? Do companies use those same techniques a lot? If you were selling the food you advertised, how much would you have increased or decreased your sales? Do you think it is fair to influence a consumer through advertisements?

DIGGING DEEPER

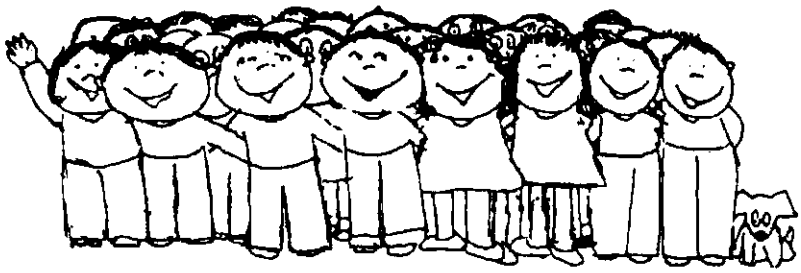
Have students make a checklist of techniques they can look for when watching ads.



Hear Us, Hear Us

DESCRIPTION

Students graph their food preferences and present their graphs to the school food service representative.



OBJECTIVE

To use graphing as a means of presenting food preferences.

MATERIALS

- Large sheets of newsprint
- Markers

ACTION

1. Have students make five graphs labeled Fruits, Vegetables, Beverages, Grains, and Meat/Meat Alternatives.
2. Have students take nominations for seven favorite healthful foods in each category and list nominations on the bottom of each graph. Guide the students to make healthy choices.
3. Have them record on each graph the number of students who prefer each food listed.
4. Send results to the school food services representative, accompanied by a class letter explaining the project.

WRAP UP

Which food was the class favorite in each category? Name a whole grain, fruit, or vegetable that you like that is not on the graph. Which was the overall favorite food in the class? If you were the school food services director, how would you use this information?

DIGGING DEEPER

Invite the school or district food services director to class to talk about how the information could be used.

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