

Project Produce

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Time	Grade Level	Content Area [s]
One week	Grade 5	Life Science

Materials

- Variety of items found in a grocery store produce section
- Internet research resources
- Reference sources from a library
- Cookbooks
- Maps and flags of countries where food is grown
- Community members to interview
- Kitchen supplies [toaster ovens, hotplates, electric woks, bowls, choppers, spoons and dishes]
- Presentation supplies

Objective

Students will learn about plant classification and growth needs by investigating how various foods are grown and imported along with why so many unfamiliar foods show up in the local grocery store.

Activity Outline

- 1 Take students on a field trip to your local grocery store's produce section to gather data. Arrange students in teams and instruct them to explore the produce section, using store signs and packaging for identification. If a class field trip is not an option, this can alternatively be done as a homework assignment. Students will need to write down the names of fresh and dried items, and they can draw pictures to help them remember what some of the unfamiliar foods looked like.
- 2 Once back in the classroom, have students make a master list of all of the items they found in the grocery store. As a class, brainstorm ways in which the produce items can be classified into three or four categories. Some possibilities are the external characteristics of the items—color, shape, size, and odor. Other possibilities include whether it is a vegetable, fruit or something else.

- 3 Divide the students into groups and have them develop their own classification system for the items on the master list and then ask the students to classify the items. After students have classified the items, they should conduct informal group presentations to the class and discuss why they placed them into the categories.
 - 4 Students then conduct research in the library and on the Internet to find out what scientists have to say about the differences. This will result in student discovery of scientific definitions of fruit and vegetable, but also introduce them to other terms such as nut, berry, pome, drupe, and fungi.
 - 5 Using the definitions found during their research, students can reconsider their list from the grocery store. They should begin to see that classification is based on the characteristics for the items being classified and not on personal preferences. Once the students have a better understanding of fruit versus vegetable versus fungi, they should return to their original classification systems and reclassify the items to better reflect their new understanding.
 - 6 Branching out from science and classification, have students use maps and globes to locate the countries of origin for each of the items. Students can further research where the foods are grown, how the foods reach their local grocery stores, and how they are used in cooking. Reference books, parents, classmates, the Internet, and cookbooks are all helpful resources.
 - 7 Invite local backyard gardeners or farmers to come and talk about their gardens and what they needed to grow well. They can discuss the best conditions for growing plants, importance of fertilizers, proper soil pH, crop protection, and more.
8. What is a fruit and how do you know it isn't a vegetable?
 9. When did the stores start to stock foods like _____? Why are the stores beginning to stock these foods?
 10. Did the neighborhood around the store change during the past five years?
 11. Do some people use the new or unusual things more than others? Are different foods found in particular areas of the community?
 12. Do the kinds of foods in a particular grocery store match the different groups of people in the area?
 13. Is there any reason other than a change in ethnic make-up of the community that would result in the introduction of new produce items?
 14. Does anyone in this area grow these things?
 15. How do farmers ensure their crops are safe from pests and disease?

Class Discussion Questions:

1. How does this grow? What does this look like when it is growing?
2. What part of a plant is this? Is this a fruit or a vegetable?
3. What's the difference between a berry, a nut, a fruit, and a vegetable?
4. Do you cook this or eat it raw? Or both?
5. What do these things taste like?
6. Why are there so many different kinds of apples, potatoes, tomatoes, onions, etc.? How are they different?
7. Why is tofu found in the produce section?

Post Assessment

As a culminating activity, invite parents to hear presentations from the students on what they learned about the produce section, the foods contained in it and their own community.

Extension Activities

Transform your classroom into a kitchen with toaster ovens, hot-plates, electric woks, bowls, choppers, spoons, dishes and more. Enlist the help of parents to help students prepare, cook, and eat a variety of the foods they discovered at the grocery store.



Safety

Before taking your class to the grocery store, be certain to gain permission from parents and to arrange the field trip with the store manager and the produce manager. Discuss with both managers the purpose of the trip and the kinds of information they might be asked to supply [i.e., names of unfamiliar items, where they came from, how they get to the store]. Ask that they not provide samples to taste in case of allergies. If students with disabilities are a part of the class, be certain the setting is accessible to all students.

Contact parents so that students with food allergies can be accommodated.

Closely supervise any sharp objects or hot appliances and only permit adults to use them. Students should not be using any sharp objects or hot appliances.



PROJECT PRODUCE

The grocery store produce section used to be a familiar but rather dull place. There were bananas next to the oranges next to the limes. Broccoli was next to corn and lettuce. Apples and pears, radishes and onions, eggplants and zucchinis all lay in their appropriate bins. Those days are over.

Now, broccoli may be next to bok choy, potatoes beside jicama, and the carambola, tomatillos, bitter melons, and tamarinds not far from cactus leaves, sapodillas, and pine nuts. The once dull and familiar produce section is no longer so dull and familiar.

Instead of reinforcing the familiar, the produce section of most grocery stores has taken on a global flair with more and more international items arriving daily.

The changes in the produce section make it a prime location for a lesson integrating science with social studies. That was my inspiration when I took a fifth-grade class to the grocery store. It ended up a recipe for success! Although our visit was part of a summer enrichment program, this “produce project” would be a great interdisciplinary adventure for your classroom.

Think Safety!

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For a successful integration of science and social studies, look no further than your local grocery store.

By Donna M. Wolfinger

information they might be asked to supply (i.e., names of unfamiliar items, where they come from, how they get to the store). Ask that they not provide samples to taste in case of allergies. If students with disabilities are a part of the class, be certain the setting is accessible to all students.

A Visit to the Produce Aisle

The children arrived at the local grocery store ready to begin collecting data. Working in teams and using store signs or packages to make identifications, the students wrote down the names of the fresh and dried items found in the produce section. Some students drew pictures so they could remember what some of the unfamiliar items looked like. The produce manager helped identify items not clearly labeled and even gave some additional names for the more unusual offerings. Most of the student questions focused on identifying the unfamiliar items and asking how they were used.

Back in the classroom, the students made a master list of all of the items they found in the grocery store. The students added to it other produce items their families use that were not found in the store we visited. Lychees, kumquats, ancho peppers, plantains, and kim chee joined the list.

Classifying and Generating Questions

Once the master list was finished, the students were divided into groups to develop their own classification

systems for the items on the master list. Prior to breaking into groups, the class as a whole brainstormed some ways they could classify the items into three or four categories. Some of the possibilities dealt with the external characteristics of the items—color, shape, size, and odor. Other possibilities dealt with the part of the plant or whether it was a vegetable or something else. From that list, each group selected a method and then worked together to classify the items. Most groups focused on whether the item was a vegetable or not or on the part of the plant they thought it might be. At this point, however, any system that worked was acceptable.

Many questions arose as students interacted with one another and as they presented their classification systems to one another. The presentations took the form of posters and oral presentations. Students drew pictures of the items they classified into the categories chosen and then discussed why they placed them into the categories. These presentations were informal and were designed to raise questions.

After the presentations, several questions arose:

- How does this grow? What does this look like when it is growing?
- What part of a plant is this? Is this a fruit or a vegetable?
- What's the difference between a berry, a nut, a fruit, and a vegetable?
- Do you cook this or eat it raw? Or both?
- What do these things taste like?
- Why are there so many different kinds of apples, potatoes, tomatoes, onions, etc.? How are they different?
- Why is tofu found in the produce section?

Fruit, Vegetable, or Other?

As students were classifying the items, a recurring question was “What is a fruit and how do you know it isn't a vegetable?” Using what they knew from their experiences as consumers of fruits and vegetables, the students developed their own definitions for fruit and vegetable. In most cases, they considered a fruit “something sweet” you could eat as a snack or make into a

dessert. A vegetable was “something you ate for dinner” and was not particularly sweet. One group insisted vegetables were green or yellow and “yucky.”

Once they had their own definitions, the students hit the library and the Internet to find out what scientists have to say about the differences. Their research led them not only to scientific definitions of *fruit* and *vegetable*, but also to terms like *nut*, *berry*, *pome*, and *drupe*. (See Figure 1, page 28, for definitions of botanical terms.) *Herbs* were added to the classification systems. “But,” one student declared, “mushrooms don't fit anywhere.” So, the class added a new category to their classification system: *fungi*.

Using the definitions of fruit, vegetable, and fungi found in the various reference sources, the students reconsidered their lists from the grocery store. They began to see that classification is based on the characteristics of the items being classified and not on personal preferences. Their common knowledge classification of fruits and vegetables gave way to a more scientific use of the terms. They extended their concept of a fruit as something eaten as a snack or in a pie to the reproductive body of a plant containing seeds. A cucumber, an eggplant, and a tomato, they discovered, were all fruits.

Once the children had a better understanding of fruit versus vegetable versus fungi, they returned to their original classification systems and reclassified the items on their lists to better reflect their new understanding. As the group began to understand classification, they realized not only that mushrooms did not fit under fruits or vegetables but also a few other items in the produce section like tofu and egg roll wrappers. Another question arose: “Where do these things come from?”

The World of Produce

Branching out from science and classification, the group's study moved into the realm of

SCiLINKS
THE WORLD'S A CLICK AWAY

Keywords: Plants with seeds
at www.scilinks.org
Enter code: SC010502



This page, left to right: tamarillo, cherimoya, pepito, lychee, and guava. On opposite page, top: tomatillo. bottom: tamarind.
Note: Fruits in these pictures are not shown to scale.



carambola

social studies but continued to tow science along with it. Students used maps and globes to locate the countries of origin for each of the items. Once again, the Internet became a valuable source of information for finding the locations where the produce items originated (see Internet Resources). Flags bearing the names of more exotic items were posted in the proper locations on wall maps.

However, it was not enough to know where a fruit, vegetable, herb, or fungus comes from. These students wanted to know how they are grown, how they get to the United States, and how they are used in cooking. Information from reference books, parents, classmates, the Internet, and cookbooks joined maps and globes as research tools as children investigated the origins of the unfamiliar items and made them familiar.

All of the questions and all of the research still did not answer an important question: “What are winter melons that grow in China doing in *my* grocery store?” As with the previous investigation of the produce section, this question led to more questions:

- When did the stores start to stock foods like _____? Why are the stores beginning to stock these foods?
- Did the neighborhood around the store change during the past five years?
- Do some people use the new or unusual things more than others? Are different foods found in particular areas of the community?
- Do the kinds of foods found in a particular grocery store match the different groups of people in the area?
- Is there any reason other than a change in ethnic makeup of the community that would result in the introduction of new produce items?
- Does anyone in this area grow these things?

Many of these questions could be answered through interviews. The school principal was a great source for information about changes in the community as reflected in changes in the school populations. Grandparents and neighbors who had resided in the area for a long time shared their perceptions

about changes in the neighborhood, providing students with an oral history of their community. The store’s produce manager and general manager were able to answer questions about when various types of produce began to be provided and why their store began to order different items.

Some of the questions in the interviews included:

- Is the neighborhood the same as it was when you first moved here?
- How has it changed?
- How did you decide to start ordering more foods from Mexico or South America?
- Are you thinking of ordering more kinds of foods? What kinds? Why?

To facilitate these interviews, students worked in small groups to determine who they would interview and to develop a series of questions for the interviewee. Once the questions were made and approved, the students took the initiative to schedule the interview time, if the interviewee was a parent, grandparent or neighbor. To interview store personnel or the school principal, the teacher scheduled the time and accompanied the student to the store.

Gardeners’ Delight

The question, “Does anyone in this area grow these things?” returned the class to science. Backyard gardeners in the neighborhood were growing bok choy, tomatillos, and habanero peppers. Connecting with these gardeners was a simple task—they were parents and grandparents of the students or next-door

Figure 1.

Plant terms covered in the produce project.

Berry: A thin-skinned fruit that usually contains more than one seed.

Drupe: A fleshy fruit containing a single seed enclosed in a hard layer commonly called a “pit.” A peach is a typical drupe.

Fruit: The ovary of a flower that has developed and matured, usually containing seeds. An orange is an example of a fruit, as is a bell pepper and an eggplant.

Nut: A one-seeded dry fruit with a hard, thick wall. A pecan is an example of a nut.

Pome: A fleshy fruit with a multiple seed-bearing core. Apples and pears are pomes.

Vegetable: A plant with an edible part, such as a root, stem, leaf, bulb, flower, or tuber. Lettuce, celery, cauliflower, and broccoli are examples of vegetables.

Connecting to the Standards

This article relates to the following *National Science Education Standards* (NRC 1996):

Content Standards

Grades 5–8

Standard C: Life Science

- Reproduction and heredity
- Diversity and adaptation of organisms

neighbors. The students invited the gardeners to come and talk about how these plants grew and what they needed to grow well.

Our backyard gardeners discussed with students the best conditions for growing plants, including the need for more water in growing melons than in growing eggplants, the need for full sun for all vegetables, and the fact that some types of vegetables will cross-pollinate. One grower of bell peppers related having planted his sweet peppers near the ultra hot habaneros and having sweet peppers with a spicy flavor. Students also learned the importance of fertilizers, the role of worms, proper pH for the soil, and the pros and cons of chemical pesticides and organic approaches to pest control.

With the help of the backyard gardeners, the class began to plan a school garden that next year can grow seeds collected from the produce items we investigated or from seeds purchased through catalogs and local garden centers. The produce exploration had really blossomed!

In the Kitchen

When students looked at cookbooks to find out how the produce items were used in cooking, they were inspired to try out some of the recipes. Naturally,



parents were contacted so that students with food allergies could be accommodated. One morning, the classroom was transformed into a kitchen with toaster ovens, hotplates, electric woks, bowls, choppers, spoons, and dishes appeared in the classroom. With the help of parents, who

closely supervised the use of cutting utensils and hot appliances, students had

a chance to prepare, cook, and eat a variety of Korean, Mexican, Indian, and Chinese foods. Curries were found to be a little too spicy. Authentic

kiwano



Mexican cuisine was compared to the local variety for a chance to explore the term “Tex-Mex.”

As a culminating activity, parents were invited to hear presentations by the students on what they had learned about the produce section, the foods contained in it, and the changes occurring in their own community. One group presented using PowerPoint and a second using Hyperstudio, while others created traditional posters, charts, and pictures for their oral presentations. The Hyperstudio group focused on changes in the neighborhood that resulted in changes in the produce purchased in the store, while the PowerPoint and poster presentations focused on specific items, including the place the item was grown for export, how it was grown, physical characteristics, and how it was used in cooking.

Curious About Cuisine

The produce section of the grocery store provided a near perfect opportunity for these fifth-grade students to direct their own unit of work and for the teacher to integrate science and social studies. Not only did students learn about plant classification and growth needs, but they also investigated how various foods are grown and imported. In addition, they investigated the demographics of their own community to find out why so many unfamiliar foods were showing up in their local grocery store.

The fact that the unit was student-directed added to the interest and the motivation of the students to learn. The natural connections between science and social studies that sprang from this unit seamlessly demonstrated the ease with which these two areas of study can be integrated. ■

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Resources

National Research Council (NRC). 1996. *National science education standards*. Washington, DC: National Academy Press.

Internet

California Rare Fruit Growers Fruit Facts

www.crfg.org/pubs/frtfacts.html

EnchantedLearning.com Botany and Paleobotany Dictionary

www.enchantedlearning.com/subjects/plants/glossary/index.shtml

Food Network

www.foodnetwork.com/food/cooking

Food Reference Website

www.foodreference.com/html/foodarticles.html

Melissa's Product Info

www.melissas.com/catalog/index.cfm?info=yes