OUR GLOBAL KITCHEN

Investigate How Food is Produced, Distributed, Exchanged, and Consumed

Activities for Grades 6–8

OVERVIEW

Students will investigate the way food is produced, distributed, exchanged, and consumed.

- **Before Your Visit:** Students will explore a computer interactive and consider how far their groceries have traveled.
- **During Your Visit:**
  - o As they move through *Our Global Kitchen*, students will explore food production, distribution, exchange, and consumption.
  - o In the Windowfarms display, students will discuss the advantages and disadvantages of local, small scale food production and its role in feeding a growing world population.
- **Back in the Classroom:** Students will explore a case study of the supply chain for apples by filling out a diagram based on prior knowledge and then engage in an associated reading that will help them further understand food production, distribution, exchange, and consumption.

NYS Social Studies Core Curriculum:

Standard 4: Economics
The study of economics requires an understanding of major economic concepts and systems, the principles of economic decision making, and the interdependence of economies and economic systems throughout the world.

BACKGROUND FOR EDUCATORS

The foods that we choose connect us to farms and farmers, and our choices support systems of gathering, growing, processing, and storing — all of which affect the planet. Food may come from our backyard, a regional farm, or from thousands of miles away, so our choices also affect transportation networks and energy consumption.

BEFORE YOUR VISIT

Activity: Global Grocery

amnh.org/ology/features/globalgrocery/

Have students select one item from the Global Grocery interactive and think about how it got to their table. Ask them to consider the following questions:

- What's the key ingredient in the food you chose?
- How and where do you think it grows?
- How was it processed to make the food you selected?
- What other ingredients had to be added, if any?
- How did that food travel to your table?
- What was exchanged for the food?

Plan how your students will explore the *Our Global Kitchen* exhibition using the student worksheets.

Distribute the worksheets to the students. You may want to review the worksheets and the map of the exhibition with them to make sure they understand what they are to do.

DURING YOUR VISIT

Our Global Kitchen: Food, Nature, Culture

3rd floor (30–45 minutes)

Students will use the worksheet to explore the exhibition, with a focus on food production, distribution, exchange, and consumption.

Windowfarm

1st floor, Weston Pavillion (15–30 minutes)

Vertical farms, like the one on display here, are one method that farmers and scientists are using to produce food where space is limited. Ask students to think about:

- What food growing, production and distribution challenges does Windowfarms solve?
  (Answers may include: doesn't require a lot of space/soil, system can be produced and distributed locally so environmental impact is limited, gives access to fresh food)

- What challenges doesn't it solve?
  (Answers may include: can't feed lots of people, size and weight of plants is limited)

BACK IN THE CLASSROOM

Activity: Food Supply Chain: Washington Apple Case Study

Objective: Students will complete a food chain supply diagram to learn how apples are produced and distributed.

1. Print out the following and distribute a copy for each group:
   Food Supply Chain: Washington Apple Handout
   http://www.jhsph.edu/research/centers-and-institutes/teaching-the-food-system/curriculum/_pdf/Ingredients_of_the_Food_System-Handouts.pdf

2. Have students break into groups of four. Each member of the team should select an aspect to focus on (Production, Distribution, Exchange, or Consumption). Working as a team, have students fill in the information they think is missing to create an overall picture of the apple supply chain.

   Note: The students focusing on consumption should think of the various ways in which apples are processed for consumption.

3. Afterwards have each group post its chart on the board.

4. Then have students read the article about apples (included at the end of the PDF) and have a class discussion about the food chains that they created. What new information, if any, did students get from the reading?

   Note: You can bring in the three types of apples to help illustrate the reading.

Student Worksheet

Production

1. In the **Grow section**, find and explore the **"Reshaping Our Foods"** wall. Choose two products featured and explain how and why they have been modified.

2. In the same section, visit **"Ways of Growing"** and explore the **six mini dioramas** that show different farming methods. Choose one, explain what it shows and where it's being used, and think of one pro and one con of this type of growing.

Distribution and Exchange

3. In the **Trade section**, visit the **Aztec Market diorama**. What foods can you recognize?

How do you think that these foods reached the market?

What could be exchanged for goods?

4. In the same section, find and explore the **Food Waste display**. Name one way in which food is wasted during distribution or exchange.

5. Explore the **Cook section**. Name three ways that food can be preserved so that it can be eaten later or transported.

Consumption

6. In the **Eat section**, choose one of the three **dioramas** (Livia Drusilla, Jane Austin, or Kublai Khan). What do these meals tell us about the people who ate them? How far did the ingredients travel?

Student Worksheet

ANSWER KEY

Production

1. In the **Grow section**, find and explore the **"Reshaping Our Foods"** wall. Choose two products featured and explain how and why they have been modified.

(Answers may include:
- *Yield: Casava can grow in many conditions and can feed more people than grains like rice or wheat. Chickens have been bred to produce more eggs. "Miracle Rice" was developed to produce higher yields.*
- *Size and Shape: Tomatoes have been bred to be bigger and are picked green to make them easier to transport. Strawberries and watermelons have been bred to be bigger. Due to overfishing, smaller, younger cod have replaced larger ones.*
- *Location: Potatoes have been bred so that they can be grown in many locations.*
- *Taste: Chiles have been bred for spiciness. Apples have been bred for sweetness.)*

2. In the same section, visit **"Ways of Growing"** and explore the **six mini dioramas** that show different farming methods. Choose one, explain what it shows and where it's being used, and think of one pro and one con of this type of growing.

(Answers will vary but may include: subsistence rice farming in Vietnam, oyster farming (aquaculture) in France, push-pull maize or diversified farming in Kenya, urban agriculture in Brazil, large-scale industrial farming in the U.S., corn farming in Iowa.)

Distribution and Exchange

3. In the **Trade section**, visit the **Aztec Market diorama**. What foods can you recognize?

(Answers will vary.)

How do you think that these foods reached the market?

(Answers will vary.)

What could be exchanged for goods?

(Answers will include: cacao beans, which served as currency; other goods produced by the farmers.)

4. In the same section, find and explore the **Food Waste display**. Name one way in which food is wasted during distribution or exchange.

(Answers will include: damaged food is discarded, storage is inadequate, not enough machinery to process and package, problems with transportation to market)

ANSWER KEY

5. Explore the **Cook section**. Name three ways that food can be preserved so that it can be eaten later or transported.

(Answers will include: Sugar, salt, smoking, canning, pickling, drying)

Consumption

6. In the **Eat section**, choose one of the three **dioramas** (Livia Drusilla, Jane Austin, or Kublai Khan). What do these meals tell us about the people who ate them? How far did the ingredients travel?

(Answers will vary.)

Reading: Apples

The New York State apple harvest begins in August, providing local apples to grocery stores, farmers' markets and "food hubs" that distribute produce from several small farms to larger markets. Alongside regional specialties like the McIntosh and Empire varieties, New York State orchards also grow the popular Red Delicious, Gala, and Fuji apples.

New York State grows a lot of apples, but processes half of those apples into juice, sauce or cider. To fill the demand for fresh apples, stores mix local New York apples with imports. Sometimes the convenience of dealing with large organizations leads grocers to buy out-of-state apples. Depending on the time of year and the variety, fresh apples in New York stores can come from as far away as Chile or New Zealand.

Washington State's climate and efficient orchard industry have made it America's largest apple producer. Apples can be stored for up to 240 days without spoiling if they are stored under special conditions, including very low levels of oxygen. In the winter the New York harvest is finished and the foreign harvest season may be months away. To ensure that apples are available all year round, Washington State has built giant controlled-atmosphere warehouses.

Washington also has a great transportation network. Highways cut through the state's three major growing regions, providing easy access for refrigerated trucks. Washington apples are shipped around the U.S. by truck and rail, with each refrigerated truck or railcar carrying hundreds, sometimes thousands, of boxes of fruit. Apples bound for the Northeast market travel by train. Competitive costs, assistance with marketing, and large distributors make it possible for Washington apples to compete with New York apples all year round. The scale of Washington's apple industry enables it to dominate the market, and it provides most of the apples sold in New York groceries during the winter.

In the spring and summer New York also imports apples from countries in the Southern hemisphere. Chile is by far the largest foreign supplier of apples to the U.S., and exports more Gala apples than any other variety. The fruit travels in special refrigerated shipping containers that prevent it from ripening. In recent years, China has become a major player in the world apple market, and over 60 percent of the apples grown there are Fujis. Although New York State orchards produce Fuji apples, at least some Washington State Fuji apples end up in New York stores. However, those Fujis may soon come from even farther away.

Foreign imports peak in July, but fall off dramatically in August as New York begins its own apple harvest.