

Lesson 9

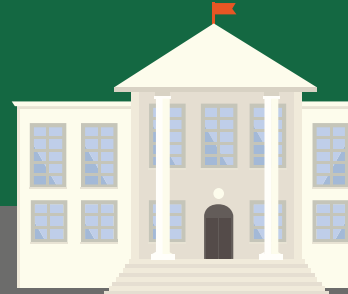
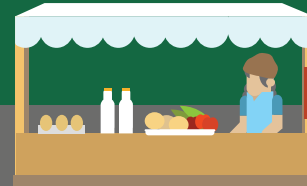
Processing: Farm to Factory

[Lesson Duration: 45 minutes]

Social Studies

Science

Health



Lesson Overview

The development of different **food processing** techniques has sometimes improved and sometimes degraded the quality of food. Food processing offers important benefits to businesses and citizens, including a more varied food supply and foods with a longer **shelf life**. Certain aspects of food processing, however, raise concerns over nutritional quality, worker health, and **food safety**. Students will learn how food is processed and explore the positive and negative impacts of food processing techniques.



Learning Objectives

- Describe different food processing techniques.
- Identify the rationale for different food processing techniques.
- Analyze positive and negative impacts of processing techniques.



Essential Questions

- Why and how are foods processed?
- What are the pros and cons of food processing?



Materials

- Boxes of 4-5 food items (see Warm-up)
- Tape
- Student Handout
- Food Processing Cards
- *Food Processing* primer
- FoodSpan Infographic



Resources

- *Food Processing* primer (www.foodsystemprimer.org/food-processing/)

Warm-up

Main Activities

Wrap-up

Extensions

Warm-up: How Processed is Your Food?

[10 minutes]

Explain that food processing techniques transform raw foods and ingredients into new products. For better and for worse, nearly all food in the U.S. is processed in some way. Divide students into groups and give each a **box of four to five food items**. The choice of foods is not as important as making sure each box contains foods that fall along a continuum from unprocessed to highly processed. Suggested items include fresh produce, milk, pasta, breakfast cereal, and soda. Have each group line up the foods from least processed (on the left) to most processed (on the right). As a class, discuss:

- *Why did your group arrange its food the way it did?*
- *What is the relationship between how processed a food is and how healthy it is?*
- *What is the relationship between food processing and food safety?*

Main Activity: Why and How is Food Processed?

Social Studies, Science, Health
[15 minutes]

Divide students into five groups and distribute copies of the **Food Processing primer**. Assign each group one of the following sections:

- Preservation and Food Safety
- Variety and Convenience
- Nutrition
- Meat Processing and Worker Health
- Food Packaging

Have each group read its section and discuss: *What food processing methods are described? What does this tell us about why food is processed? Have each group choose a representative to present their responses to the class. Summarize presentations on the board and highlight food processing techniques, such as preservation (e.g., freezing, canning), **pasteurization**, **enrichment**, and **fortification**.*



Canning is a preservation technique that can use glass jars (pictured) or metal cans.

Photo credit: mlhradio, 2009. Flickr. Cropped from original.
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Fermentation transforms food through the action of yeasts and bacteria. Nattō (pictured) is a Japanese dish made from fermented soybeans.

Photo credit: JD Kinchan1, 2011. Flickr. Creative Commons CC BY-SA 2.0.

Main Activity: Food Processing Pros and Cons (Science, Health)

[15 minutes]

Divide the board into three sections titled Pro, Con, and Both. Divide the class into small groups. Each group should get all 12 **Food Processing Cards** and every student should get one **Food Processing Handout**. Use the **Food System Primer** for background information. Have groups discuss a statement from each card and decide whether it reflects a pro, con—or both—of food processing and why. Ask students to analyze each statement from the following perspectives:

- Manufacturing company
- Food chain worker
- Retailer (e.g., grocer)
- Citizens

Instruct students to record their responses on the **Food Processing Handout**. Then each group should take its **Food Processing Cards** and **tape** them to the appropriate sections on the board.

Ask students to explain their choices. During this discussion, have students record any new ideas on their handouts. Ask:

- *Based on the reading from the previous activity, are there other pros or cons of certain processing techniques that are missing from this list?*
- *Do the pros of food processing outweigh the cons (See Teacher Note)?*
- *How might we address some of the cons?*

Wrap-up: The Importance of Food Processing [5 minutes]

Have students write a journal entry in response to the prompt: *Why is food processing important? How does it affect people?* Optional: Have students share their responses.



Teacher Note: Caution students to avoid generalizing food processing as completely good or bad. It represents a wide variety of techniques, each with pros and cons.

Extensions:

Revisiting the Infographic (Social Studies)

Distribute copies of the **FoodSpan Infographic** (students may already have their own from previous lessons). Ask students to identify parts that represent food processing. Ask: *Do these accurately and fully represent what we learned about food processing? If not, what could we add to make the infographic more accurate?* Working individually or as a class, have students draw their own versions, create a collage, or add images to the existing infographic. Share photos of students' work on social media and tag #foodspan.

Food Processing Inventions (Science, Health, ELA)

Students will conduct a research project on one technological advance in food processing (e.g., enrichment, canning, freeze-drying, pasteurization). They will explore what problem the invention addressed, analyze the invention's benefits and costs, and take a stance on whether its introduction has led to a net societal benefit.

Processed Food Recipe Rewrite (Health, ELA)

Students will research and write recipes to replace processed store-bought items. For example, they could write their own recipe for a vegetable stir-fry dish rather than a boxed version of the same dish. Students should reflect on whether this process was challenging and whether it was easier to make the less-processed dish (in terms of time, ingredient cost and availability, etc.).



Share Your Knowledge: How is food processed? What should people know about food processing? Ask students to tweet food processing facts and tag **#foodprocessing** and **#foodspan** to join the conversation.