

Activity: Food Systems Feed the World

Activity Level: Advanced

Source: Adapted from Utah Agriculture in the Classroom

Purpose

Understand the basic parts of the food chain.

Example Topics It Supplements

Food insecurity and global hunger; how food and food products are produced and distributed

Activity Snapshot

1. Organize and Prepare Supplies
2. Read Background Information
3. Interest Approach
4. Conduct Activity
Explain the steps of the food system chain. Divide the class into groups and have them answer “What If” questions about a food chain link. Have students work with others with their same link to create a summary. Then the students form a “chain link” to show each of the parts of the food system chain.
5. Ask follow up questions and make the connection to agriculture.
 - What surprised you about the parts of the food system chain?
 - What happens if one part of the food chain has an incident or isn’t operating properly?
 - Why is it important to understand the food system chain?
 - What can we share with others about what we learned today?

State Standards It Supports

SS 5.2.1—Students will analyze various markets where buyers and sellers exchange goods or services.
SS 8.3.6.b—Describe and analyze the role of geographic factors in determining the spatial arrangement of humans and their activity.
LA 6.3.3.d—Listen, ask probing questions, summarize, and explain information being communicated and consider its contribution to a topic, text, or issue under study.

Materials

- Handout “Food System Chain” copied in a different color for each group—1 per group
- Scissors—at least 1 pair for each group
- Stapler—at least 1 for groups to share

What’s the Connection to Agriculture?

Nebraska farmers grow crops and livestock to feed the people in our state, nation, and world. There are many steps involved to get the products from the farm to a person’s fork. It is important to know the steps in the food system chain and understand the impact if one part of the chain is not operating correctly. That can make the difference between people getting the food they need or being hungry.

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PROCEDURES:

1. Organize and Prepare Supplies
See “Materials” on cover page.

2. Background Information

Hunger affects the well-being of people, nations, and the world. When people are healthy, strong, and well nourished, they have energy, creativity, security, and courage to solve problems, create great works of art and music, contribute to scientific advances, and live their daily lives with dignity and joy, ultimately advancing civilization. People who are not well nourished do not have the energy to work or to learn and often need constant medical care. The cost is lost potential and increased health care costs. Getting our food from farm-to-fork involves several steps and many hands. This system needs to be understood before students can grapple with the question, “Why does hunger exist?”

In a highly efficient modern agricultural system (like the United States) the following steps take place during food production:

1. Preparation (getting ready to grow)
2. Growing
3. Harvesting and transportation
4. Storage
5. Processing
6. Distribution
7. Preparation and consumption

Transportation and ample supply of energy (fuel and electricity) are required for each step. Each step also involves a great number of people including bankers, agriculture suppliers, extension agents, farmers and farm workers, truck drivers, food handlers, millers, and bakers. Weather conditions, energy supplies and price, storage facilities and transportation problems can affect this “food chain.” In countries that are highly efficient and productive (the United States has a surplus of food), a breakdown in the system can usually be fixed or rerouted quickly. However, developing countries that do not have the geography (climate or weather conditions), infrastructure (noted in the steps above), monetary system (most are poor), or political system that allows them the ability to feed more than just their families. These are some of the major reasons why hunger exists in the developing world, but the reasons for hunger in the U.S. centers more on poverty. Some people don’t have enough money to purchase food. Poverty (beyond the scope of this lesson), affects millions of Americans. Local food banks are one way your students can help.

3. Interest Approach

Ask students to think about the last time they were really hungry. Have a few students share their examples. Ask students what they did about being hungry. *Expected responses: got some food and ate.* Pose the question: Where did that food come from? *Expected responses: my house, a restaurant, the grocery store.* Ask the students where the food comes from that ends up in our homes, restaurants, etc. Explain that there are many steps involved in getting food into their stomachs!

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4. Conduct Activity

- a) Share with the students there are seven parts to what we call the food system chain—how we get products from the farm to people’s tables.
- b) On a large surface, project or write the seven parts of the food system chain: Preparation (getting ready to grow); growing; harvesting and transportation; storage; processing; distribution; preparation and consumption.
- c) As a class, go through each of the seven steps. The students should be tasked with big-picture thinking when asked questions about each one. They should be prepared to share examples and answers to what needs to happen or be done at each step.

- Preparation (getting ready to grow food):

What does the farmer need to begin growing a crop?
Land, seeds, fertilizer, equipment, etc.

- Growing the food:

What does a farmer need for the crop to grow?
Sunshine, rain, labor to care for crop

- Moving food from the field (harvesting and transportation):

What is needed to harvest and transport the crop from the field?
Harvesting equipment, labor (people), fuel, tractors, trucks, trains, ships, airplanes, safe roads.

Where is the crop moved after it is harvested from the field?

Most is moved to processing facilities or storage facilities. In some cases, some may be kept/stored by the farmer, or be taken to local markets to be sold.

How far does it have to travel in each of these situations?

It varies—when going to storage, usually there is a local or regional storage facility. Processing facilities may be further away. The point to know is that it must travel a ways.

- Storing the food:

Where is the crop stored?

Grain elevators, refrigerated units, other controlled environments.

Is this only time food may be stored?

No, food will also be stored after processing before it is distributed for purchase.

- Processing the food:

What might happen to corn produced for humans to eat at a processing facility?

Depending upon the facility, it may be processed and milled into a corn product that is then sent to another facility for further processing. The Frito Lay plant in Gothenburg, NE is a corn sourcing plant so it is eventually shipped out again in 4,000 bushel rail cars. Eventually that corn is processed into

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Fritos corn chips, Doritos, or Tostitos and distributed throughout the Western United States.

What about other crops, like tomatoes?

Tomatoes would be washed, heated, skinned, then smashed. The smash is mixed with spices to make ketchup, tomato sauce, paste, etc.

- Distribution

How does a product get distributed?

After it's made into its final product, it is moved throughout the United States (or even the world) by semi-trucks, trains, ships, and airplanes. It can be distributed to wholesalers, grocery stores, restaurants, etc.

In third-world (less advanced countries) what might some challenges be for distribution?

There could be a lack of airports, or good roads to transport food to people who need it. Also, there may be not be appropriate refrigeration which may cause food to spoil. The other factor is if there is war or civil unrest in a country, it may prevent food and food products from getting to people that need it.

- Preparing and consuming the food (at home or in a restaurant)

How do we actually get food to eat?

We have to pay for it at a grocery store or restaurant. Some students may have gardens, which supplement food for their family, but most people must get some, if not all, of their food items at a store.

Why is it important for people understand how to prepare food safely and choose healthy foods?

If food is improperly prepared and then consumed, there is a risk for people to become ill. It is always important to follow food safety guidelines and read packages for expiration dates and preparation recommendations.

- d) Divide the class into groups of five. Give each group a copy (on different colored paper) of the Food System Chain handout. Have students cut apart the "links" and give one to each group member.
- e) Ask students to think about all the steps our food must go through to get from farm-to-fork. Give them five minutes to think of as many answers as possible to the "What If" question on their "link." Record responses in complete sentences on the BACK of their link. They should use at least three-four sentences.
- f) When completed, have all the students with the same "link" get together in a group. Have them discuss what they each wrote in response to the "What If" question.
- g) As a group, students should write one paragraph, incorporating everyone's ideas and any new ones the group may have added after the discussion.
- h) Have each group read/present their paragraph to the class.

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- i) Lead the discussion about each group's "link" presentation as to why the students came up with the examples and scenarios they shared.
 - j) Have students re-group with the other students with the same color "links." Each student should form their "link" into a circle ("What If" question side out). The first person staples theirs together and then each additional link is stapled to form a chain. The links should be in the correct order of the steps in the food system chain.
 - k) Display chains with final paragraphs on wall space or bulletin board.
5. Ask Follow Up Questions and Make the Connection to Agriculture
- What surprised you about the parts of the food system chain?
Answers will vary.
 - What happens if one part of the food chain has an incident or isn't operating properly?
The ability to get food to the consumer might be compromised. That could lead to food shortages and could impact individuals getting the food and nutrition needed. This could also affect food prices—if there is a low supply of food and a high demand, prices for consumers may increase.
 - Why is it important to understand the food system chain?
It gives us a picture of how food gets from the fields to our plates. We also should be aware of the global issue of hunger and how the food chain can impact people all over the world.
 - What can we share with others about what we learned today?
Nebraska farmers grow crops and livestock to feed the people in our state, nation, and world. There are many steps involved to get the products from the farm to a person's fork. It is important to know the steps in the food system chain and understand the impact if one part of the chain is not operating correctly. That can make the difference between people getting the food they need or being hungry.

Additional Activity and Resources:

Review a world map. Ask the students to identify and write down the continents most severely affected by hunger. Ask the students to respond to the following questions concerning these areas:

- What climactic or geographic similarities can be noted about these countries? How may the weather or insect populations affect the food supply? Could it be a factor for these countries?
- Do these countries have stable governments? Can these citizens vote? Would or could that make a difference for this problem?
- What can be done to help people overcome hunger or food insecurity in America? In the world?

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www.uri.edu/endlunger/

The official website of Hunger Free America.

The site contains state specific statistics on hunger and school food programs.

www.feedingminds.org

An international classroom for exploring the problems of hunger, malnutrition, and food insecurity. You will find sample materials and lessons, and an interactive forum for exchanging ideas and experiences around the world.

www.worldhunger.org

World Hunger Notes is an online publication of the World Hunger Education Service. Students can submit their questions and have them answered by the educational staff.

Getting Ready to Grow the Food

What might happen if the fertilizer needed for the best crop growth were not available to the farmer?



Growing the Food

What might happen if a hailstorm came the week the crop was to be harvested?

Harvesting & Transportation

What could happen to the crop during transportation?



Processing

What might happen to a crop at a food processing factory?

Storing the Food

What might happen if the crop were not stored properly?



Distributing the Food

What might happen if you did not have money to purchase food?

Preparation and Consumption of the Food

What might happen if people consistently chose unhealthy foods?

