ABUNDANT CALIFORNIA

MODELING THE LOCAL FOOD SYSTEM

OVERVIEW

In this lesson, students will begin to recognize their place in the story of food systems. They will examine the steps involved in a California crop—oranges—and then create a model showing the food system that brings them one of their favorite foods. As students think about where their food comes from, they will begin to understand and appreciate all the people and places that are affected by their food choices.

GRADE LEVEL: 3–5

CENTER FOR ECOLITERACY

Published by Learning in the Real World

CALIFORNIA FOOD FOR CALIFORNIA KIDS® downloadable resource

Center for Ecoliteracy
David Brower Center
2150 Allston Way, Suite 270
Berkeley, CA 94704-1377

For more information about this activity, email info@ecoliteracy.org or visit **www.ecoliteracy.org.**

Learning in the Real World®

Learning in the Real World is a publishing imprint and registered trademark of the Center for Ecoliteracy, a not-for-profit, tax-exempt organization. Created in 1997, Learning in the Real World offers resources to support schooling for sustainability, stories of school communities, and the ecological framework that informs the work of the Center.

CALIFORNIA FOOD
FOR CALIFORNIA KIDS®

MODELING THE LOCAL FOOD SYSTEM

LESSON OVERVIEW

Everything we eat has a story to tell. Whether a specific ingredient came straight from the garden or from a faraway farm, the story of our food reveals a web of relationships among many different people and other living beings, each dependent on the others. It includes plants being fed by sunlight, growers tending the plants, and cooks preparing the meal. At its core, it is a story about food systems, which describes how food got from the field to our plate and who helped get it there.

In this lesson, students will begin to recognize their place in that story. They will examine the steps involved in a California crop—oranges—and then create a model showing the food system that brings them one of their favorite foods. As students think about where their food comes from, they will begin to understand and appreciate all the people and places that are affected by their food choices.

This lesson may be used to introduce or support the nine other lessons in this series (shown below), which focus on specific crops and phases of California's food system. It may be taught at any time of the year and in any order.

Lesson Title	Food System Emphasis	Best Time to Teach
Modeling the Local Food System	Overview of California's food system	Any time of year
Table Grapes: Celebrating the Harvest	Harvesting	Fall
The Tomato Salsa Challenge	Processing	Fall
Designing Bean Seed Packets	Producing Seed	Fall
Winter Squash: Sink or Float?	Storing	Winter

Investigating Cabbage Traditions	Eating	Winter
Oranges: A Taste of California's Sunshine	Eating	Winter
Strawberry No-Crush Challenge	Transporting	Spring
Creating Asparagus Ads	Marketing	Spring
Raising Radishes	Growing	Spring

Whether taught individually or together, these lessons will give students a solid understanding of individual crops grown in California as well as the food systems that sustain us all.

GRADE LEVEL

3–5

LENGTH

One to two 50-minute periods

LEARNING OBJECTIVES

Students will:

- Identify the various components of a food system.
- Recognize that many different people and resources help to bring food to our tables.
- Articulate why food systems matter.

STANDARDS CONNECTIONS

NEXT GENERATION SCIENCE STANDARDS

Disciplinary Core Ideas

- LS2.A. Interdependent Relationships in Ecosystems. The food of almost any kind of animal can be traced back to plants.

CA HISTORY-SOCIAL SCIENCE CONTENT STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS. KINDERGARTEN THROUGH GRADE 12

- 3.1. Students describe the physical and human geography and use maps, tables, graphs, photographs, and charts to organize information about people, places, and environments in a spatial context.
- 3.5. Students demonstrate basic economic reasoning skills and an understanding of the economy of the local region.
- 3.5.1. Describe the ways in which local producers have used and are using natural resources, human resources, and capital resources to produce goods and services in the past and the present.
- 3.5.2. Understand that some goods are made locally, some elsewhere in the United States, and some abroad.
- 4.1.5. Use maps, charts, and pictures to describe how communities in California vary in land use, vegetation, wildlife, climate, population density, architecture, services, and transportation.

COMMON CORE STATE STANDARDS–ENGLISH LANGUAGE ARTS

- RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. RI.4.3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

VOCABULARY

- **Compost** – (noun) a mixture of decayed plant and animal material used to fertilize soil; (verb) to make vegetable matter into compost
- **Consumer** – someone who buys and uses products or services
- **Food miles** – the distance food travels from where it is grown to where it is eaten

- **Food system** – all the elements and activities involved in feeding people
- **Supply chain** – the steps involved in producing and delivering a food or product

MATERIALS

- Copies of "The Journey of a California Crop" student handout
- Scissors
- Tape (optional)
- Poster paper
- Colored pencils or pens

PREPARATION

- Make copies of "The Journey of a California Crop" student handout.

DIRECTIONS

1 Ask students, "Where does food come from?" (Students may answer supermarkets, restaurants, and so on. Probe further until students recognize that most of our food comes from farms, ranches, and gardens.) Ask them, "How does food get to us? What people help bring our food to the table? What else is involved?" Help them see that all our food has a story to tell about the people and places we depend on to eat. Explain that students will look at the story of one California crop—oranges.

2 Divide the class into pairs or small groups, giving each the "The Journey of a California Crop" handout. Instruct students to cut out the the cards. Point out that each card shows part of the *supply chain* that delivers us oranges. Challenge students to read the cards, and then put them in the order they think the steps occur in the supply chain. Have them tape down the cards, in order, to sheets of paper.

3 Ask a few pairs or groups to share their supply chains with the class, having them use reasoning to explain their choices.

4 Point out that the supply chains for all the different foods we eat, when taken as a whole, is called a food system. Food systems expand the story and include all the people and processes involved in bringing us food.

5 Begin a class list of the various elements of a food system. Students may list the processes identified on the cards, as well as additional ones. Also encourage them to include the people involved at each step, such as farm workers, truck drivers, cafeteria workers, and so on.

6 Provide poster paper and colored pencils, and direct students to work in pairs or small groups to create a poster or other model of the food system in their community. Students should start with a favorite food they like to eat (other than oranges), and then depict the steps and people involved in bringing that food to the table. They may use lines or arrows to show relationships between the different elements.

7 Invite students to share their posters with the class. Lead a discussion about whether and why food systems are important:

- What story does your food system model tell about our food? What is your place in that story?
- Are all food systems the same? In what ways might they differ?
- Why does it matter where our food comes from and what happens to it on the way?
- How is food connected to people's health? To our community? To the environment?

EXTENDED LEARNING

- Show students the PBS special *Nourish: Food + Community*, which explores our nation's food system. Use the lesson "The Story of Food" in the accompanying *Nourish Curriculum Guide* to help students compare a local

food system with an industrial one. (See Resources for links to the curriculum and to order the video.)

- Help students look at food labels to identify the sources of different fresh produce or packaged foods in their lunches. Map the items by placing sticky notes and taping lengths of yarn onto a world map showing where the foods come from and how far they traveled. Introduce the term *food miles*, and have students determine which foods represent the fewest and most food miles.
- Visit a farmers market or talk to the produce manager at a local grocery store to find out more about how food gets from local farms to customers. (See Resources for a list of farmers markets in your area.)

RESOURCES

- *Nourish: Food + Community.* http://www.nourishlife.org/
- *Nourish Curriculum Guide.* https://www.ecoliteracy.org/sites/default/files/Nourish-Curriculum-Guide.pdf.
- National Farmers Market Directory. https://www.ams.usda.gov/local-food-directories/farmersmarkets.

ASSESSMENT

Use the students' posters to assess their understanding of food systems. You may use criteria such as:

Content – How comprehensive are the food system components for the chosen food?

Layout – How well organized is the poster and how easy to follow are the connections depicted?

Labeling – How clearly labeled are the food system components?

BACKGROUND

The story of our food is closely tied to our local, regional, or global food system. A food system encompasses all aspects of food production and food distribution that brings food to consumers. It includes growing, harvesting, producing seed,

packing, processing, storing, transporting, marketing, and consuming food, and disposing of food waste.

HOW FOOD SYSTEMS DEVELOPED

The first food systems arose about 10,000 years ago, when farming and the domestication of animals began to bring about permanent settlements. People started producing more food than they could use, which eventually led to a system of trade. Commodities like salt, spices, and grains were first traded locally and then regionally. Over time, systems developed for distributing various food products globally.

Food systems became even more complex with the Industrial Revolution. Over the 19th and 20th centuries, many people moved to urban areas to seek jobs, and the world's population became increasingly concentrated in cities. This population shift meant there were fewer people growing their own food and, at the same time, fewer farmers. Food producers were motivated to increase their output, often using industrialized methods for mass production.

TWO MAIN TYPES OF FOOD SYSTEMS

Today, the most widespread food system is the global industrial food system. This system feeds much of the world's seven billion people relatively cheaply and efficiently. It is a complex system that involves multinational conglomerates, mechanized agriculture, long-distance transportation, and factory-processed food, all geared to maximizing efficiency and reducing cost. This system has also produced the so-called Western Diet—a diet high in processed meats, saturated fats, refined grains, and sugar—which is linked to hypertension, heart disease, diabetes, and obesity.

In addition to the global food system, there are also local food systems that are more direct, with fewer steps and fewer people between the farmer and the consumer. Examples of local food systems include farmers markets, farm-to-school programs, and garden sharing. These smaller systems can help sustain local economies, support local farmers, and offer fresher foods, but may also be more expensive for consumers.

CALIFORNIA'S FOOD SYSTEM

California is by far the largest producer of agricultural products in the United States. It produces about half of the country's fruits and vegetables and leads the nation in the production of nearly 80 crops and commodities. Agriculture is very important to California's economy, grossing over $45 billion per year. California agriculture employs approximately 820,000 workers annually, and the state's food system as a whole accounts for nearly three million jobs.

Sunshine and water are key components of California's food system. The state's famously sunny skies and mild temperatures are ideal for many farm crops. However, California's dry climate means that most farmers rely on the Sierra snowmelt to irrigate their fields. With recent climate changes causing drought conditions, many farmers have had to scale back on water-intensive crops.

Transportation is another critical component of California's food system. While several of California's most productive agricultural regions are located in the center and far southeast of the state, most farm produce is consumed in urban centers along the coast or out of state. Produce must be moved quickly over long distances, requiring a multimodal system of trucks, rail cars, ocean ports, and air transport.

NAME: _____

THE JOURNEY OF A CALIFORNIA CROP

PACKING

Oranges are washed, sorted, and packed into 40-pound cartons.

EATING

Oranges and orange juice are eaten by consumers.

DISPOSING/ COMPOSTING

Throughout the system, discarded oranges and orange parts may be used as animal feed; used in moderation, they can be composted to help grow more oranges.

PROCESSING

Some oranges are juiced to make fresh or frozen orange juice. Orange peels are used to make orange flavoring and other products.

NAME: _____

THE JOURNEY OF A CALIFORNIA CROP

GROWING

Oranges grow on trees in orange groves.

MARKETING

Oranges and orange products are sold in a variety of stores.

TRANSPORTING

Oranges or orange products are loaded onto trucks, rail cars, or container ships and shipped throughout the United States and to other countries.

HARVESTING

Oranges are picked by hand.

CENTER FOR ECOLITERACY

ABOUT THE CENTER FOR ECOLITERACY

The Center for Ecoliteracy is an internationally recognized leader in systems change innovations in education for sustainable living. Since 1995, the Center has engaged with thousands of educators from across the United States and six continents. The Center offers publications, seminars, academic program audits, coaching for teaching and learning, in-depth curriculum development, keynote presentations, and technical assistance. Books authored or coauthored by the Center for Ecoliteracy include *Ecoliterate: How Educators Are Cultivating Emotional, Social, and Ecological Intelligence* (Jossey-Bass, 2012); *Smart by Nature: Schooling for Sustainability* (Watershed Media, 2009); and *Ecological Literacy: Educating Our Children for a Sustainable World* (Sierra Club Books, 2005).

CREDITS

Project Director Zenobia Barolow

Author Leslie Comnes

Designer Karen Brown

Proofreader Mark Rhynsburger

Project Manager Alexa Norstad

PHOTOS

Cover iStock_103170291_orange_with_blossoms_Denira777; iStock-587219698_glass_orange_juice_subjug

Student Handouts iStock-531639471_growing_ChrisBoswell; iStock-175218175_harvesting_berkant_sezer; iStock-693673766_packing_siculodoc; iStock-811846532_processing_DuxX; iStock-647047610_transporting_Wavebreakmedia; iStock-476140299_marketing_jhorrocks; iStock-952035710_eating_StockPlanet; iStock-1007769124_compost_Mickis-Fotowelt; iStock-866236744_scissors_Ganna_Galata