

# BIG IDEAS

**Linking Food, Culture, Health, and the Environment**

**A New Alignment with Academic Standards**

**Center for Ecoliteracy in Partnership with National Geographic**

**Grades K–2**

Copyright © 2014 Center for Ecoliteracy

Published by Learning in the Real World

## Learning in the Real World®

Center for Ecoliteracy

David Brower Center

2150 Allston Way, Suite 270

Berkeley, CA 94704-1377

All rights reserved. To share this material digitally, please provide a link to [www.ecoliteracy.org](http://www.ecoliteracy.org). Reproduction or redistribution of this material in any other form is prohibited unless used by educators and school administrators for noncommercial purposes. Educators and administrators copying, distributing, displaying, or modifying this material for noncommercial purposes must also include the copyright notice "© 2014 Center for Ecoliteracy" on all materials. For other permitted uses, please contact the Center for Ecoliteracy at [publications@ecoliteracy.org](mailto:publications@ecoliteracy.org).

For more information about this publication, email [info@ecoliteracy.org](mailto:info@ecoliteracy.org) or visit [www.ecoliteracy.org](http://www.ecoliteracy.org).

Learning in the Real World is a publishing imprint of the Center for Ecoliteracy, a not-for-profit, tax-exempt organization. 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.

# BIG IDEAS

## Linking Food, Culture, Health, and the Environment A New Alignment with Academic Standards

Most people engage in the act of eating every day. What we eat and how we grow, process, prepare, and consume food profoundly affect the lives and welfare of humans and other beings, yet our food systems remain a mystery to many people. It is vital that we all understand the linkages between the *food* we eat, the ways that *culture* shapes our food choices and behaviors, the relationship between food and our *health*, and the interconnections between our food systems and the *environment*.

Fostering this understanding should have an important place in our schools. To facilitate incorporating these themes, this publication identifies key “big ideas” that link food, culture, health, and the environment and demonstrates how they align with the following new academic standards:

- Common Core State Standards
- Next Generation Science Standards: Crosscutting Concepts
- College, Career, and Civic Life Standards for Social Studies (also known as C3)
- National Health Education Standards
- California Nutrition Competencies (from *Nutrition Education Resource Guide for California Public Schools, Kindergarten Through Grade Twelve*)

An earlier iteration, *Big Ideas: Linking Food, Culture, Health, and the Environment* (2008), provided an extensive conceptual road map based on benchmarks established by the American Association for the Advancement of Science. The present publication offers samples of learning opportunities that engage students simultaneously with relevant big ideas and current academic standards.

This edition of *Big Ideas* was prepared to coincide with the launch of *National Geographic's* 2014 landmark series of magazine articles, “The Future of Food.” This series traces the development of our dominant food systems and associated societal issues. It profiles promising strategies for creating systems for nourishing ourselves that better serve people, communities, and the natural environment.

We hope that *Big Ideas* will be a valuable resource as you help students make their own connections between food, culture, health, and the environment.



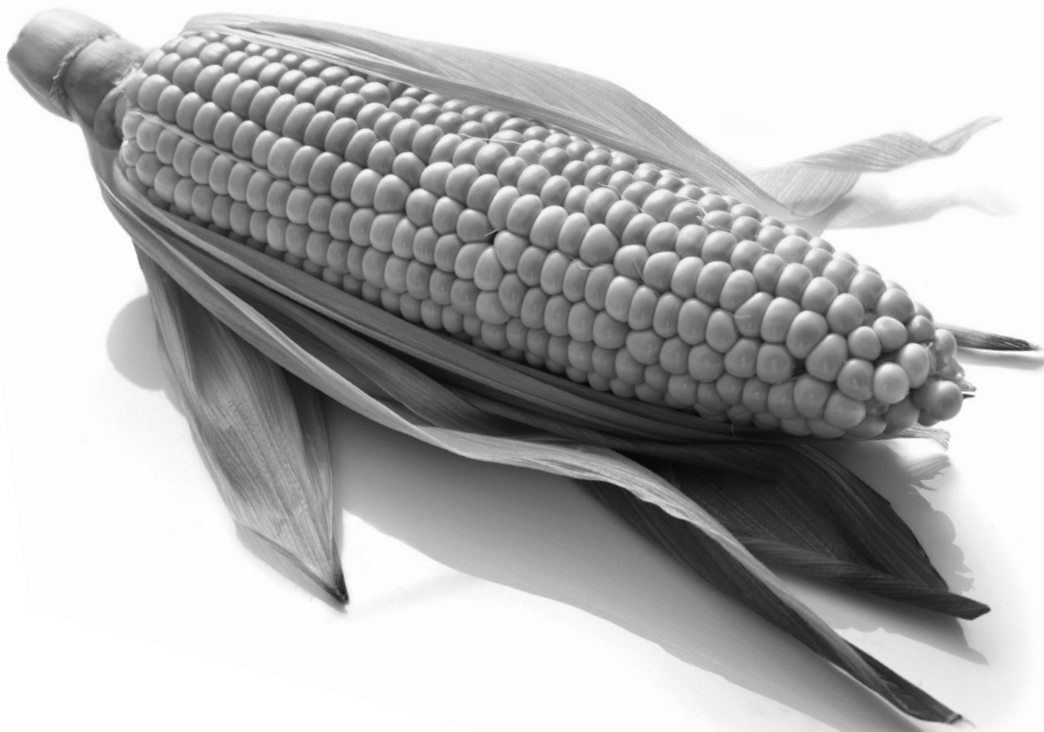


# K-2

# FOOD

## Producing Food: Overview

Food is essential for our survival. Yet most people never see food before it gets to the grocery store, and primary-aged children may have only vague ideas about where their food comes from. Learning about food sources and origins is an important step in exploring the impacts of our food choices on society and the environment.



# Big Idea

The food we eat comes from plants or animals, most of which are raised on farms or in gardens.

## Standards Connections

### Next Generation Science Standards

CROSSCUTTING CONCEPT	SAMPLE STUDENT ENGAGEMENT, GRADES K-2
<b>Cause and Effect</b>	Take a walk in the schoolyard or garden to look for plants that are being eaten by animals. You could also read a story such as Beatrix Potter's <i>The Tale of Peter Rabbit</i> . Discuss the possible effect that animals eating plants has on plants and people and explore ways to protect plants so that people can eat them.
<b>Systems and System Models</b>	Read a book about the journey of food from farm to plate, such as <i>From Cow to Ice Cream</i> by Bertram T. Knight. Illustrate the similar journey of one food item served in the lunchroom.
<b>Energy and Matter</b>	Practice using a variety of garden tools—for example, trowels, shovels, hoes, and rakes. Talk about how tools and machines help people grow food by requiring less work (energy). (This also relates to Standard K-2 ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.)

# Common Core State Standards—English Language Arts

## STRAND

## SAMPLE STUDENT ENGAGEMENT, GRADES K–2

---

### Reading Literature

Read *From Wheat to Bread* by Kristin Thoennes Keller. Draw a simple illustration to show the steps involved in growing, harvesting, processing, and transforming wheat into bread. (RI.K.1. With prompting and support, ask and answer questions about key details in a text. RI.1.1. Ask and answer questions about key details in a text. RI.2.3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.)

### Writing

Watch plants grow from seed to edible mature plants (for example, by growing radish, leaf lettuce, or bean seeds in the school garden or in paper cups in the classroom). Write and illustrate stories about caring for garden plants. (W.K.3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened. W.1.3. Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure. W.2.3. Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.)

# College, Career, and Civic Life (C3) Framework for Social Studies State Standards

## DIMENSION

## SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

### **Applying Disciplinary Concepts and Tools—Economics**

Make applesauce from apples, strawberry jam from strawberries, or prepare other foods from plants or plant parts. (D2.Eco.3.K-2. Describe the skills and knowledge required to produce certain goods and services.)

## California Nutrition Competencies

## COMPETENCY

## SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

### **1. Essential Nutrition Concepts**

Make a class chart of “Basic Needs.” Under the headings “People,” “Other Animals,” and “Plants,” identify the basic needs that must be met for each category of living beings to survive. (1h. Consider the interactions among nutrition science, ecosystems, agriculture, and social systems that affect health, including local, national, and global perspectives. [For Kindergarten: Describe what plants and animals need for growth.]



# CULTURE

## Understanding Behavior: Overview

Food is much more than just nourishment. It is also a reflection of our individual tastes, as well as of our culture, traditions, and life situations. By identifying their own food choices and eating habits and those of people around them, students can begin to recognize factors involved in making healthful food choices.



# Big Idea

People have different tastes in food.

## Standards Connections

### Next Generation Science Standards

CROSSCUTTING CONCEPT	SAMPLE STUDENT ENGAGEMENT, GRADES K-2
<b>Patterns</b>	Read a story about foods from other cultures, such as <i>Everybody Cooks Rice</i> by Norah Dooley, in which a young boy eats rice prepared by neighbors from different ethnic backgrounds. Sketch the variety of foods portrayed in the story.

### Common Core State Standards—Mathematics

DOMAIN	SAMPLE STUDENT ENGAGEMENT, GRADES K-2
<b>Measurement and Data</b>	Select six favorite fruits and create a graph showing the number of students in the class who prefer each fruit. Make similar graphs for vegetables, grains, meats, and beans. Invite your school's food service director to talk about how this information can be used to plan school lunches. (1.MD.4. Organize, represent, and interpret data with up to three categories. 2.MD.10. Draw a picture graph and a bar graph to represent a data set with up to four categories.)

# Common Core State Standards—English Language Arts

## STRAND

## SAMPLE STUDENT ENGAGEMENT, GRADES K–2

---

### Reading Literature

Read and discuss a story that deals with various food customs, such as *How My Parents Learned to Eat* by Ina R. Friedman or *Yoko* by Rosemary Wells. How are people’s food customs alike, and how do they differ? (RL.K.7. With prompting and support, describe the relationship between illustrations and the story in which they appear [e.g., what moment in a story an illustration depicts]. RL.1.7. Use illustrations and details in a story to describe its characters, setting, or events. RL.2.7. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.)

### Writing

Imagine the perfect meal for breakfast, lunch, or dinner. Think what you would most like for a birthday or another special day. On a paper plate, draw a picture of the meal and, on another piece of paper, write explanatory text describing it. (W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. W.1.2. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.)

**STRAND****SAMPLE STUDENT ENGAGEMENT, GRADES K-2**

---

**Writing**

Create a class cookbook of favorite family recipes and include a short story about where each recipe came from, why it's a family favorite, or special occasions associated with the recipe. Discuss ways people learn from others about what and how to cook. (W.K.1. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened. W.1.3. Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure. W.2.3. Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.)

## College, Career, and Civic Life (C3) Framework for Social Studies State Standards

**DIMENSION****SAMPLE STUDENT ENGAGEMENT, GRADES K-2**

---

**Applying Disciplinary Concepts  
and Tools—Geography**

Read *Gai See: What You See in Chinatown* by Roseanne Thong. Discuss the exotic, local, and seasonal items found at a Chinese street market. (D2.Geo.5.K-2. Describe how human activities affect the cultural and environmental characteristics of places or regions.)

**Applying Disciplinary Concepts  
and Tools—Geography**

Try foods from other countries brought in by parents or other community members, perhaps focusing on one food category such as grain products, with samples of roti, pita, rice, couscous, tortillas, and so on. (D2.Geo.11.K-2. Explain how the consumption of products connects people to distant places.)

## National Health Education Standards

[Not applicable]

## California Nutrition Competencies

### COMPETENCY

### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

#### 2. Analyzing Nutrition Influences

Post items on a class bulletin board regarding rituals and rules (such as words of thanks, washing hands before eating, or special foods for holidays) that families have for meals and food. (2. All students will demonstrate the ability to analyze internal and external factors influencing food choices and health outcomes. For Kindergarten: Give one example of a favorite food custom or food choice on a special holiday. For Kindergarten: Identify one practice that makes meal-times enjoyable.)



# HEALTH

## Maintaining Health: Overview

As a species, humans are quite curious about themselves. For young students, this innate curiosity includes questions about their own bodies and what they need in order to move and function. By building on this curiosity, students can explore the concept that certain foods are good for a healthy body as they start to consider the relationships among food, movement, and health.



# Big Idea

What we eat and the way we use our bodies can affect our health.

## Standards Connections

### Next Generation Science Standards

#### CROSCUTTING CONCEPT

#### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

##### Stability and Change

Plant radish, cherry tomato, cucumber, or sugar snap pea seeds in the garden or in pots. Water and watch the vegetables grow and harvest them when they are ripe. What changes do the seeds reveal? Then experience the tastiness of fresh, healthful garden-grown vegetables.

### Common Core State Standards—English Language Arts

#### STRAND

#### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

##### Reading Informational Text

Read a book on the topic of healthful eating, such as *Gregory, the Terrible Eater* by Mitchell Sharmat or *Eating the Alphabet* by Lois Ehlert. Make a list of healthful foods. (RI.K.1. With prompting and support, identify the main topic and retell key details of a text. RI.1.1. Ask and answer questions about key details in a text. R.2.1. Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.)

**STRAND****SAMPLE STUDENT ENGAGEMENT, GRADES K-2**

---

**Writing**

Draw pictures of a healthy person and then brainstorm words to describe someone who is healthy. (W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. W.1.2. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.)

## College, Career, and Civic Life (C3) Framework for Social Studies State Standards

**DIMENSION****SAMPLE STUDENT ENGAGEMENT, GRADES K-2**

---

**Applying Disciplinary Concepts and Tools—Economics**

Compile a recipe box of healthful snacks that children can prepare themselves, such as carrot sticks and peanut butter. Copy recipes to prepare at home. (D2.Eco.3.K-2. Describe the skills and knowledge required to produce certain goods and services.)



## National Health Education Standards

### STRAND

### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

#### **Standard 1. Essential Health Concepts**

Keep a simple diary of food and physical exercise for a given day. Make a class list of fruits, vegetables, and other healthful foods, as well as the different kinds of exercise included in the diaries. (1.2.1. Identify that healthy behaviors impact personal health.)

#### **Standard 7. Practicing Health-Enhancing Behaviors**

Write a story or draw pictures of things that people should avoid putting in their bodies. (7.2.2. Demonstrate behaviors that avoid or reduce health risks.)

## California Nutrition Competencies

### COMPETENCY

### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

#### **1. Essential Nutrition Concepts**

Make a class chart of food groups, with the headings “Fruits,” “Vegetables,” “Milk,” “Grains,” and “Meat/Beans.” Cut out pictures of food from magazines and tape them underneath the appropriate headings. Find food items from the school lunch menu that fit into each category. (1b. Know nutrition and health guidelines. For Grades 1-2: 1.1.N. Classify various foods into appropriate food groups.)

#### **7. Practicing Nutrition-Enhancing Behaviors**

Explore balanced meals that include foods from various food groups. Use pictures of food from magazines to create examples of different meals. Which ones are balanced and healthy? What could we do to make an unhealthy meal healthier? (7. All students will demonstrate the ability to practice nutrition-related behaviors that reduce risk and promote health. For Grades 1-2: Plan a nutritious meal.)

# ENVIRONMENT

## Sustaining Life: Overview

Why do people eat? Like all living things, we need food to stay alive. All animals—including people—take in plants or other animals for food. Plants, on the other hand, are able to create their own food using sunlight. By exploring this basic need for food, students can begin to see how their food connects them to other living things and to their environment.



# Big Idea

Living things need some kind of food to live.

## Standards Connections

### Next Generation Science Standards

#### CROSSCUTTING CONCEPT

#### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

##### Cause and Effect

Explore how sunlight affects plants: place marigold or zinnia seeds in small pots or egg cartons; put some pots next to a sunny window and others in the dark. Compare the plants' growth and appearance. Afterward, transplant them in the garden to provide nectar for butterflies and seeds for finches and sparrows. (This also directly relates to standard 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.)

##### Systems and System Models

Make paper chains representing simple food chains to show that plants need sunlight to grow, some animals eat plants, and other animals eat animals (for example, Sun → Grass → Cow → Person)

##### Energy and Matter

Explore the notion that all living things need energy by looking for evidence—such as chewed leaves or fruits, nipped stems, or slimy snail trails—that animals live and eat in the garden or schoolyard.

## Common Core State Standards—English Language Arts

### STRAND

### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

#### Reading Informational Text

Read a picture book describing food webs, such as *The Magic School Bus Gets Eaten: A Book About Food Chains* by Patricia Relf and Carolyn Bracken or *Who Eats What? Food Chains and Food Webs* by Patricia Lauber. Discuss the key points in the book. (RI.K.1. With prompting and support, ask and answer questions about key details in a text. RI.1.1. Ask and answer questions about key details in a text.)

## College, Career, and Civic Life (C3) Framework for Social Studies State Standards

### DIMENSION

### SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

#### Applying Disciplinary Concepts and Tools—Geography

Make simple bird feeders by spreading pinecones with peanut butter or suet and rolling them in birdseed. Place the feeders outside the class window and see what kinds of birds they attract. What else can people do to help birds and other wildlife? (D2.Geo.5.K-2. Describe how human activities affect the cultural and environmental characteristics of places or regions.)

# California Nutrition Competencies

## COMPETENCY

## SAMPLE STUDENT ENGAGEMENT, GRADES K-2

---

### 1. Essential Nutrition Concepts

Looking at pictures of a variety of foods, identify their original sources. For example, jelly comes from fruits, cheese from cows, and bread from wheat. Which sources are animals and which are plants? Is there any source that is neither animal nor plant? (1a. Know the six nutrient groups and their functions. For Kindergarten: Identify the variety of foods of plant origin. Identify the variety of foods of animal origin, such as eggs, fish, poultry, beef, and milk.)



## About the Center for Ecoliteracy

The Center for Ecoliteracy is a nonprofit organization that advances ecological education in K–12 schools. Founded in 1995, the Center engages with school communities, foundations, civic leaders, and other change agents at multiple levels of scale from the local to the national. It creates and publishes books and guides, facilitates professional development and conferences, and provides strategic consulting to schools and businesses.

The Center has published dozens of free downloadable resources for educators and nearly 150 essays and interviews with leading thinkers, educators, and policy makers. Its books 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). Well known as a leader in K–12 school food reform and school gardens, the Center developed the *Rethinking School Lunch* guide and planning framework; collaborated with the Berkeley Unified School District and Chez Panisse Foundation in the School Lunch Initiative; and is partnering with Oakland Unified School District in the Rethinking School Lunch Oakland initiative.

The Center's food-related resources include *Big Ideas: Linking Food, Culture, Health, and the Environment*; the cookbook and professional development guide *Cooking with California Food in K–12 Schools; Making the Case for Healthy, Freshly Prepared School Meals*; and classroom discussion guides for Academy Award-nominee *Food, Inc.* and the *nourish: food + community* series. To learn more, see [www.ecoliteracy.org](http://www.ecoliteracy.org).



## About the National Geographic Society

Founded in 1888, the National Geographic Society is one of the world's largest nonprofit scientific and educational organizations. With a mission to inspire people to care about the planet, the member-supported Society offers a community for members to get closer to explorers, connect with other members, and help make a difference. The Society reaches more than 500 million people worldwide each month through its media platforms, products, and events. National Geographic has funded more than 11,000 scientific research, conservation, and exploration projects and supports an education program promoting geographic literacy. For more information, visit [www.nationalgeographic.com](http://www.nationalgeographic.com).



## About the National Geographic Center for Geo-Education

National Geographic is dedicated to helping young people learn about their interconnected world. Through its Center for Geo-Education, it creates learning materials and educational experiences for learners and the adults who teach them. The Center's mission is to make sure that young people receive the education about their dynamic, interconnected world that they will need to function effectively and act responsibly throughout their lives. More information about the Center is available at [NatGeoEd.org](http://NatGeoEd.org).

## **CREDITS**

**Zenobia Barlow** Publisher

**Carolie Sly, Leslie Comnes** Authors

**Michael K. Stone** Editor

**Wendy Ledger, Mark Rhynsburger** Proofers

**Karen Brown** Designer

**Monica Bueb** Production

**Alexa Norstad** Project Coordinator

## **PHOTO CREDITS**

Unless otherwise noted, photographs of children are licensed from Rubberball; photographs of fruits and vegetables are licensed from Digital Vision; photographs of insects are licensed from Brand X. Remaining photographs are licensed from istockphoto as follows:

Corn: istockphoto 13967505, JoeBiafore; Fortune Cookie: istockphoto 4521424, Eyewave; Snail: istockphoto 10922522, AlasdairJames