

Center for Ecoliteracy



Rethinking School Lunch

A Visual Guide Linking Food, Culture, Health, and the Environment

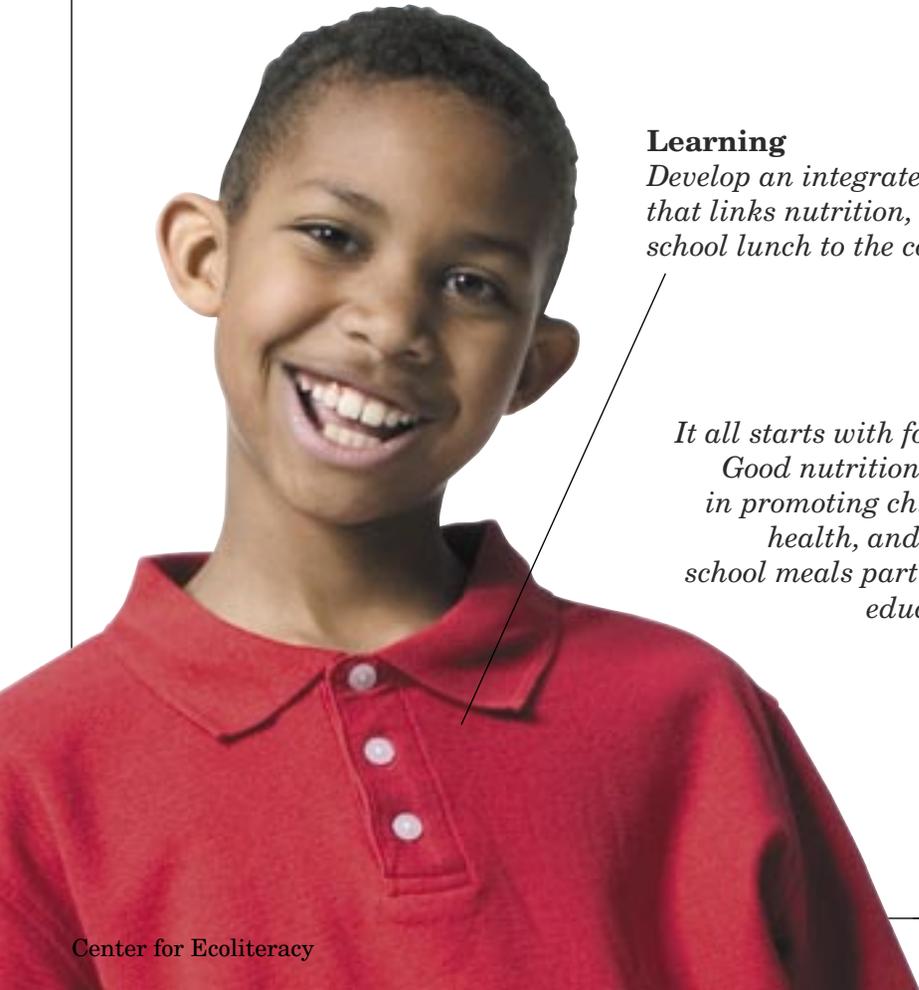
Discover how an integrated curriculum
and enriched school environment
link student learning and well-being
and enhance student understanding
about the natural world.



Introduction

If, as John Dewey stated more than 100 years ago, school lessons should be tied to the values and skills of the “real world,” what should these lessons be? What real-world problem is relevant to today’s students’ lives?

We are facing a national health crisis, and much of the crisis is nutrition-related. What caused this? What influences our food choices? Is there a link between what we eat and socially and environmentally healthy communities?

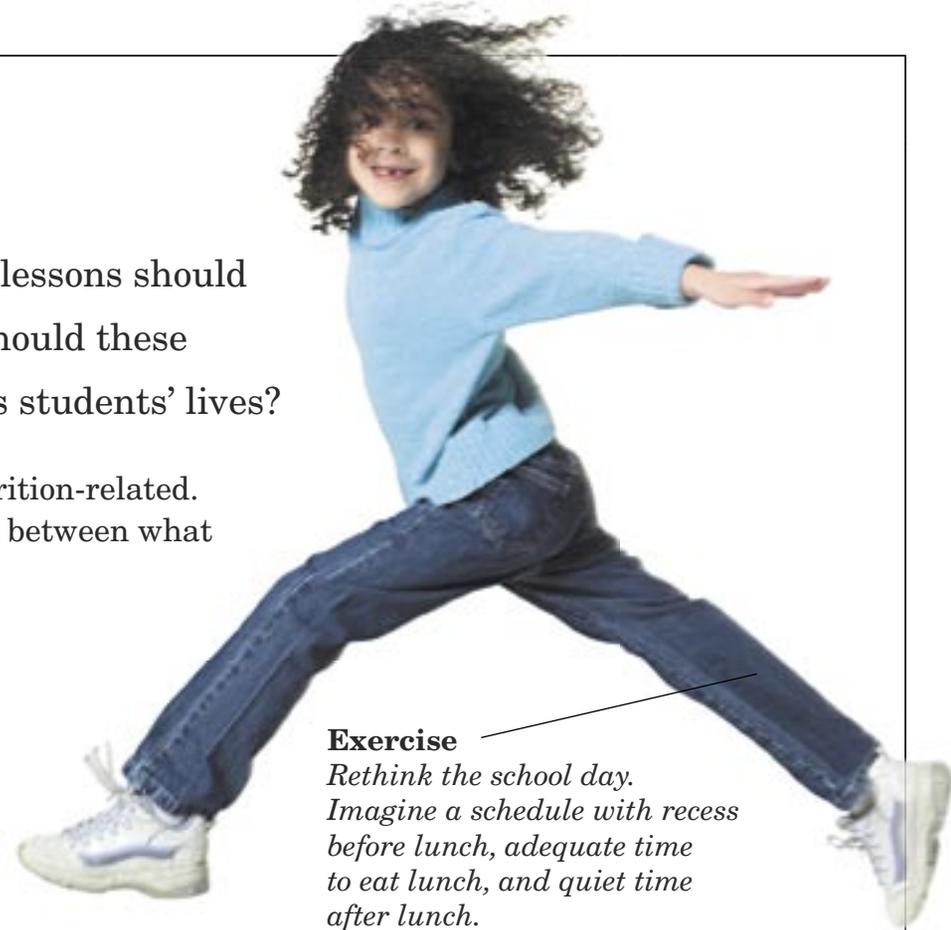


Learning

Develop an integrated curriculum that links nutrition, health, and school lunch to the core curriculum.

Healthy Food

It all starts with food on the plate. Good nutrition has a vital role in promoting childhood growth, health, and learning. Make school meals part of the nutrition education program.



Exercise

Rethink the school day. Imagine a schedule with recess before lunch, adequate time to eat lunch, and quiet time after lunch.



Connecting School Lunch to the Curriculum

Understanding eating relationships lies at the heart of an integrated school lunch curriculum. Exploring these relationships means looking at food “from field to table” and how it is linked to culture and behavior.



Connecting School Lunch to the Curriculum

Hard to imagine? Think about this: eating is a series of relationships. If food is the overarching idea, is it feasible to design a curriculum that integrates science, health, history and social science, and math around social and environmental issues?

Understanding eating relationships lies at the heart of an integrated school lunch curriculum. Exploring these relationships means looking at food—from field to table—and how it is linked to culture and behavior.

Life Skills

Infusing the school day with the simple pleasures of preparing and enjoying delicious seasonal meals helps students learn valuable life skills while cultivating positive relationships with their peers.



Health

Eating smart. Designing an integrated curriculum with a focus on food teaches content that is relevant to students' everyday lives, and that will have value outside the classroom.

Environment

Exploring relationships in the context of the school garden, kitchen classroom, physical education, and the lunchroom helps reinforce lessons learned in the formal curriculum.



In the Lunchroom

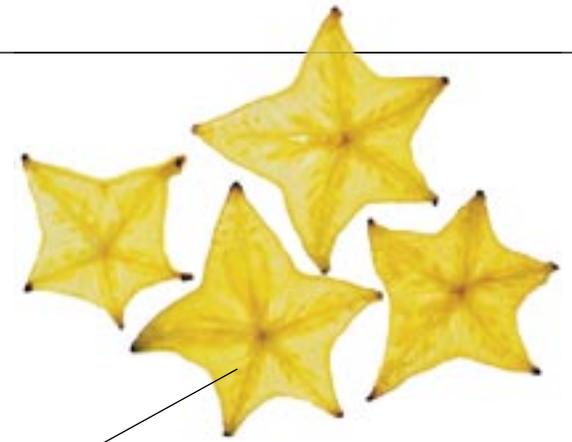
Consider this: learning takes place anytime and anywhere. Now think of a lunch room, a place where students go every day at the same time, for the same purpose. Imagine the possibilities for enhancing student learning.

The lunchroom abounds with informal learning opportunities. This venue lends itself to exploring new tastes, developing social skills, and enjoying simple pleasures. The lunchroom reinforces the formal curriculum's messages about healthy life styles.



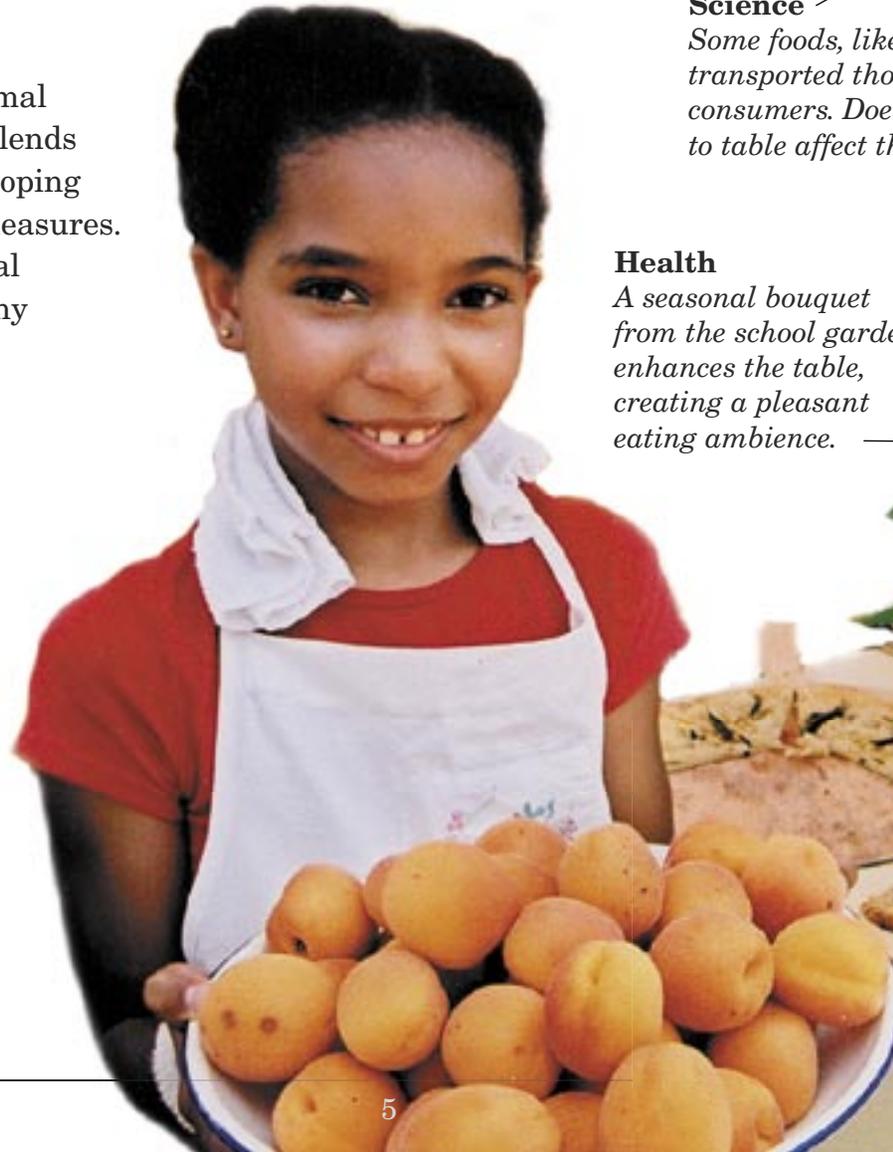
Science

No single food provides all the nutrients we need to stay healthy. Eating a variety of fruits and vegetables helps us have a balanced diet.



Science

Some foods, like these star fruit, are transported thousands of miles to reach consumers. Does the distance from field to table affect the environment?



Health

A seasonal bouquet from the school garden enhances the table, creating a pleasant eating ambience.



In the Classroom

Envision a learning environment that asks:
What is worth knowing? How do students learn?
Are we educating the whole child?

Imagine a classroom where students see a reason for learning...where the curriculum connects to children's lives. Think about students grappling with real-world issues, like the effects of their food choices on the environment.



History/Social Science

Students deepen their understanding of Native California cultures as they learn about California Indian life and how native people interacted with the natural environment, including how they obtained food. This Pomo basket, made from willow, sedge, and redbud, was used for gathering wild plants.



Science/Health

Rich in vitamin C, today's cultivated strawberries originated by crossing wild species from North and South America. Investigating different varieties of strawberries, students explore how modern crops were developed.



Science/Social Science

Creating habitat hats is one way students can demonstrate what they have learned about their local area. Hat details emphasize features and characteristics of landforms and vegetation in their local region.

In the Garden



Imagine a place that thrives on experiential and cooperative learning...a place where academic subjects connect with students' real-world experiences. Imagine a school garden.

Gardens are flexible learning environments that can be tailored to the needs and goals of a school. They are laboratories where students apply what they have learned in the classroom. They are places to listen, observe, touch, smell, and taste. In gardens, a fragmented curriculum becomes unified.

Science

Composting with worms gives students direct experience with the cycling of matter...organic waste changes to a nutrient-rich soil amendment.



History/Social Science

Working in the garden, children experience the role that farmers play in bringing food from the field to the table.



Math

How tall is the bean plant? How much has it grown since it was planted? Collecting data and making graphs helps students visualize change over time.



In the Kitchen Classroom

Experiential learning lies at the heart of the kitchen classroom.

Here students take part in the simple act of working and eating together, focusing on the relationship between food and life.

In the kitchen classroom, students engage in purposeful learning. They develop positive health-related attitudes and behavior. Through real-life, hands-on experiences, they make the connection between the seasons and food.



History

How does the past influence our lives today? An everyday spice like black pepper can lead to discussions of trade routes and early traders who brought pepper from India to the West.

Health

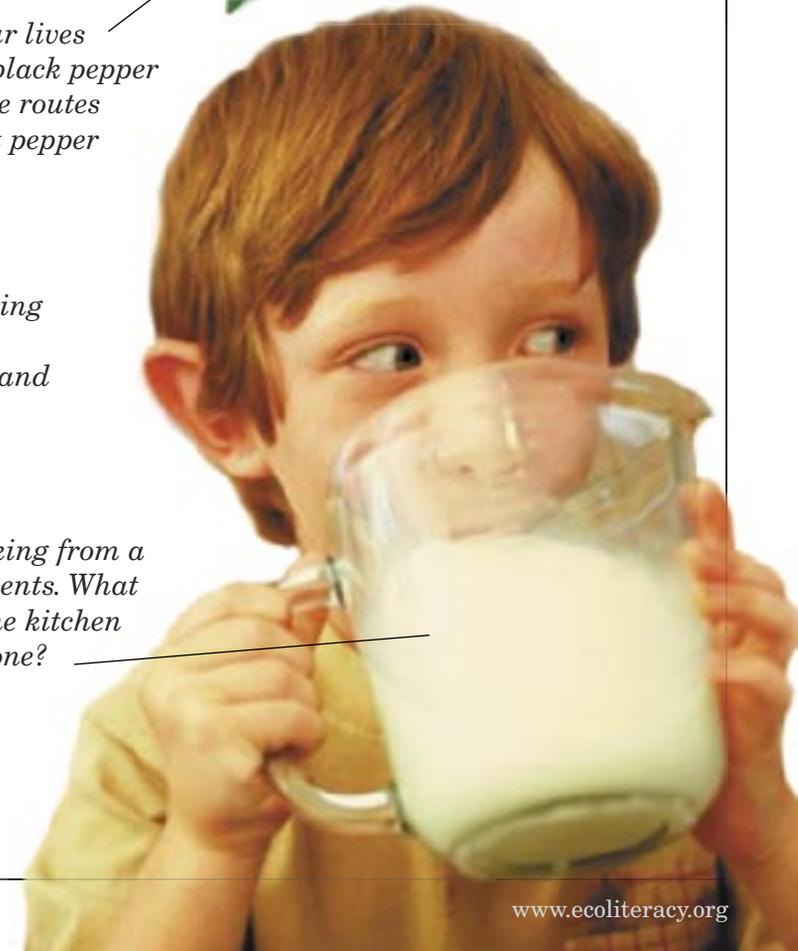
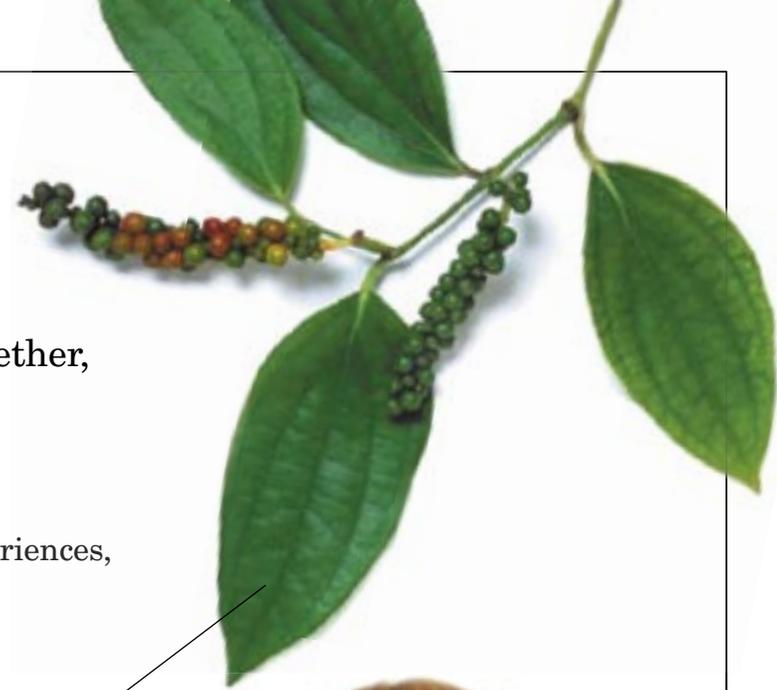
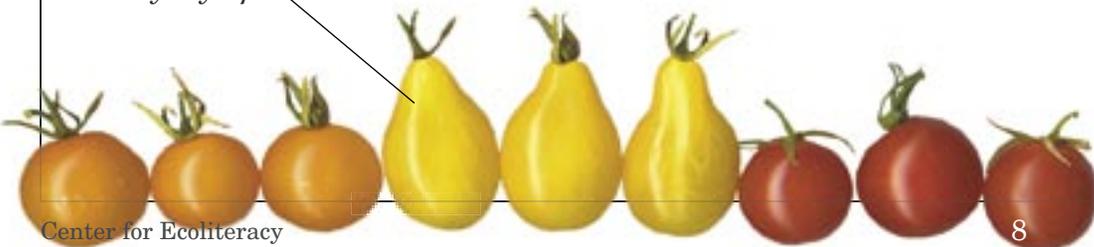
Learning the pleasures of preparing nourishing meals helps students make the link between nutrition and good health.

Social Science

Spontaneous acts, like drinking from a pitcher, offer teachable moments. What rules do we follow to keep the kitchen clean and healthy for everyone?

Math

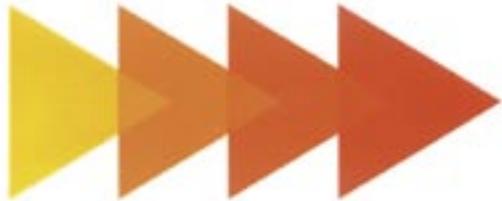
Observing shapes and patterns in the kitchen, students apply the language of math to everyday life.



Designing a School Lunch Curriculum



B E N C H M A R K S
FOR SCIENCE LITERACY



AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

PROJECT 2001

Identifying the knowledge and skills that comprise a school lunch curriculum means using tools such as *Benchmarks for Science Literacy* to map the basic content that all students should know.



The Living Environment

The Flow of Matter and Energy What is the web of life? How do organisms interact with each other and with the physical environment?

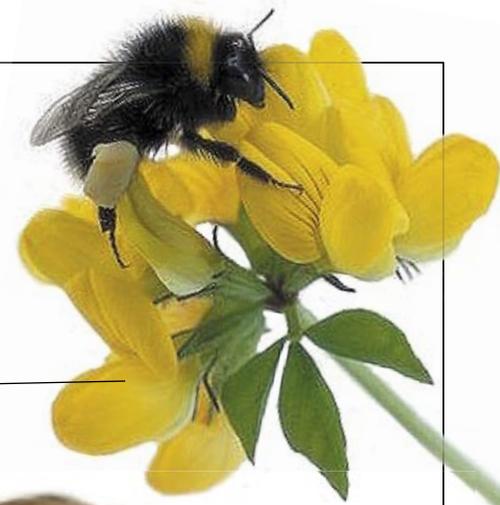
Living organisms need food energy to survive. How do we get and use this energy? By investigating our place in the web of life we begin to understand the effect of human activities on the biosphere.

Energy in Living Things

Directly or indirectly, most living things get their energy from the sun.

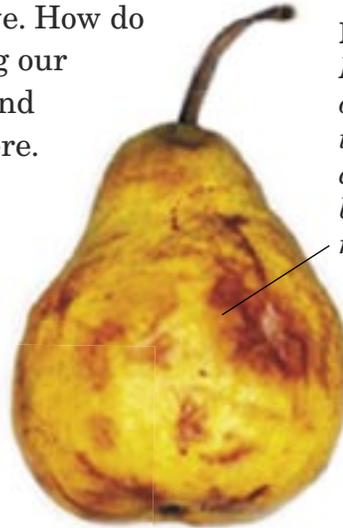
Plants Making Food

Green plants make their own energy-rich food through photosynthesis. They use some of the food energy to grow and reproduce, some is released as heat, and some is stored.



Matter Cycle

Matter passes from one organism to another in a food web. A decomposing pear becomes food for microorganisms.



Food Web

The food energy in this loaf of bread can be traced back to wheat plants, which make their food using the sun's light energy.



Human Society

Culture Affects Behavior Human societies are groups of people who interact with each other. But what actually makes us behave the way we do? Are there universal cultural traits we share? Why are there differences?

No matter where they may live, humans share some patterns of behavior. For example, we all raise children in some defined family setting and we distinguish between good and bad behavior. However, cultures differ in how these traits are expressed. Culture is learned and constantly changes.



Learning from Others

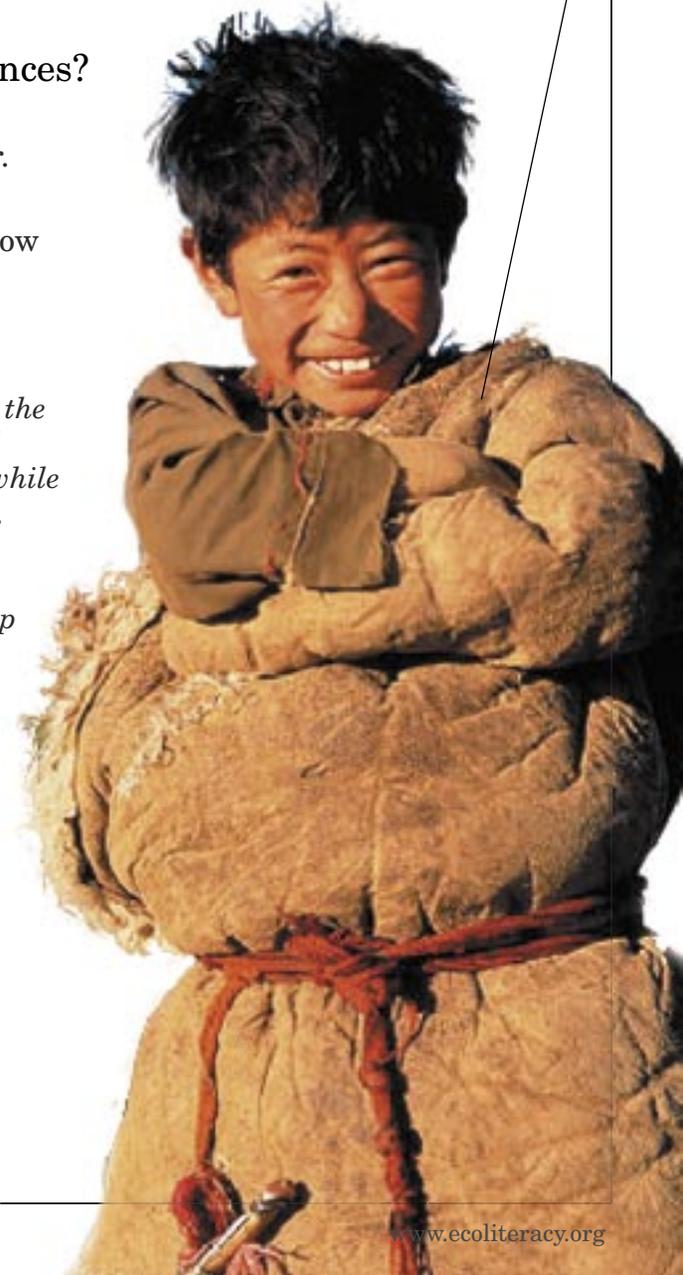
Wooden crate labels from the early 20th century helped streamline distribution, while also marketing a lifestyle, the California dream. Analysis of such cultural items helps students grasp a basic understanding of the impact of large-scale commercial farming and marketing.

Cultural Influences

If this chopstick carrying case from Mongolia could talk, it would tell tales of exotic lands and trade goods, like the red coral set in silver. History comes alive with material artifacts like this, which provide clues to the vast trading networks that spanned Europe and Asia, as well as the eating habits of the traveler.

Groups and Subcultures

Learning about the customs, traditions, and daily life of nomadic herders, like this Tibetan youth, helps students understand how human cultures have been influenced by their physical environment and food sources.



The Designed World



Effects on Society

Early agriculture gave rise to cities and states, ruling classes and laborers.

This 16th-century Persian artwork depicts a palace gardener and portrays the prevailing attitude of taming and glorifying nature within garden walls.

Agricultural Technology The simple act of being selective changed forever our relationship to the land.

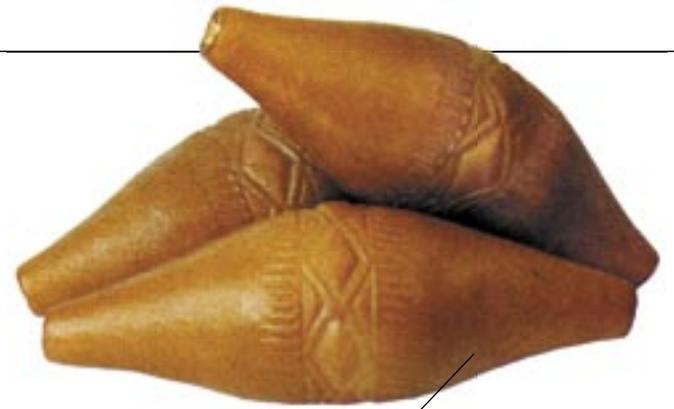
More than 10,000 years ago, humans began the shift from hunting and gathering to intentionally designing and managing the landscape to serve our needs. We began to control characteristics and develop technology to grow crops and raise animals to suit our tastes.

Controlling Characteristics

Wild sheep and goats were some of the first animals to be domesticated about 11,000 years ago. Today, some sheep are bred specifically for their fine wool, coarse wool, meat, or milk.

Producing Food

By modifying the physical environment, people can grow food in places that otherwise would not support crops. In Guangxi Province, China, farmers sculpt hilly slopes into step-like terraces.



Transporting Food

This spindle-shaped cheese from Poland is preserved through culturing, salting, and smoking. Preserving food makes it less perishable and easier to transport. Students research the link between the development of modern transportation and marketing food beyond the region where it was produced.



The Human Organism

Maintaining Good Health As a species, humans are quite curious about themselves. What is a healthy lifestyle? Can the actions of others impact my health?

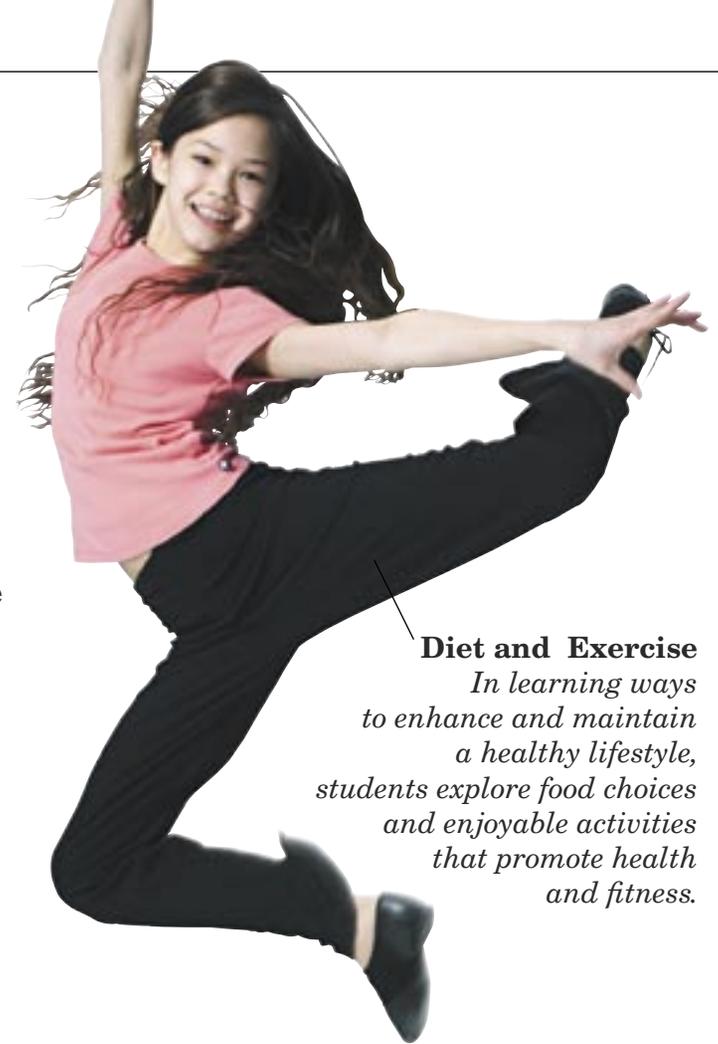
Like other complex organisms, the human body is a system of cells grouped into organ systems that get energy from food. What do we need to know and do to maintain a healthy heart/lung system? What does it mean to be physically fit? How can we maintain muscle tone and keep our bones from breaking? Are there substances we need to avoid to maintain our well-being?

Harmful Substances

Investigating how food choices can affect their health and well-being, students explore their dependence on plants for food. They learn that in order to stay healthy, they need to eat healthy plants. Growing healthy plants requires healthy soil, clean water, and space.

Conditions for Health

Hand washing in the kitchen classroom reinforces lessons learned about personal hygiene and how behaviors can help prevent disease.



Diet and Exercise
In learning ways to enhance and maintain a healthy lifestyle, students explore food choices and enjoyable activities that promote health and fitness.



Explore: The Meaning of Food

Food is essential for our survival. It is also part of our cultural identity, a reflection of who we are. How we produce, market, prepare, and consume food changes over time. Looking at food and patterns of food consumption tells us about changing world views.

Exploring food through the eyes of a chef, a food scientist, a social scientist, or an ecologist reveals a multitude of meanings... food as nourishment, food as symbolism, food as medicine, food as resource, and food as the pleasures of the table.

Chef

Color, flavor, smell, and texture are important to a chef. Stilton cheese brings to mind a specific taste, texture, and appearance. "The King of Cheeses" is made by only a handful of dairies in England.



Dietician

Food means carbohydrates, proteins, fats, vitamins, and minerals to a dietician. A healthy lifestyle means eating a balanced diet with a variety of different types of food.



Social Scientist

This obento, a Japanese child's school lunch, conveys cultural clues to an anthropologist. The specific foods and how they are presented symbolize a link between home and school. The obento plays an important role in socialization.

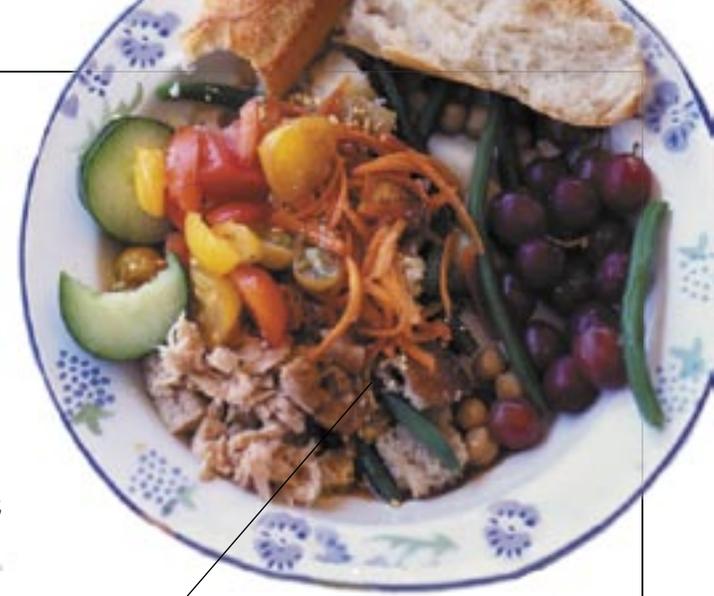


Explore: Food and Health

Eating food we like is a pleasure, but some of our favorite food may not be “good” food. In a culture where food is plentiful, we sometimes eat too much or eat foods that are not good for our health.



Exploring the American diet, we learn about food and lifestyle. We discover factors that influence food consumption patterns and trends. We investigate the factors that influence diet. We explore ways to insure that all people have access to a safe and adequate food supply.

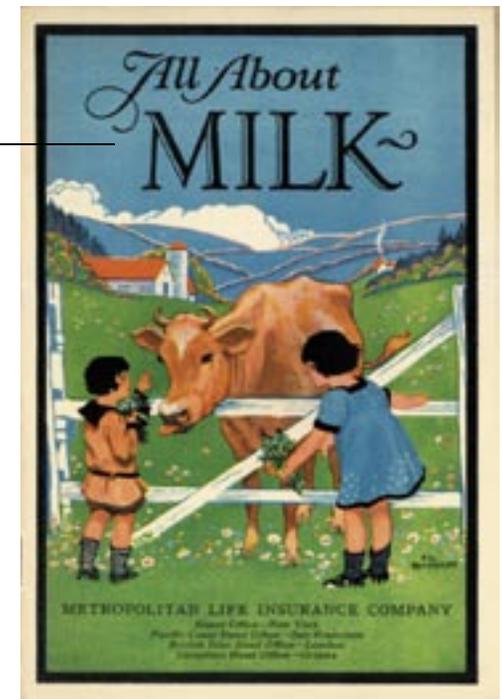


Diet

A healthy diet means thinking about the amount of food we eat, as well as the kind of food. What happens if we chronically eat too much or too little?

Food Advertising

This 1929 Metropolitan Life Insurance Company booklet promotes the health and nutrition benefits of milk. Through an advertising booklet like this, companies could promote their perspective on healthy living.

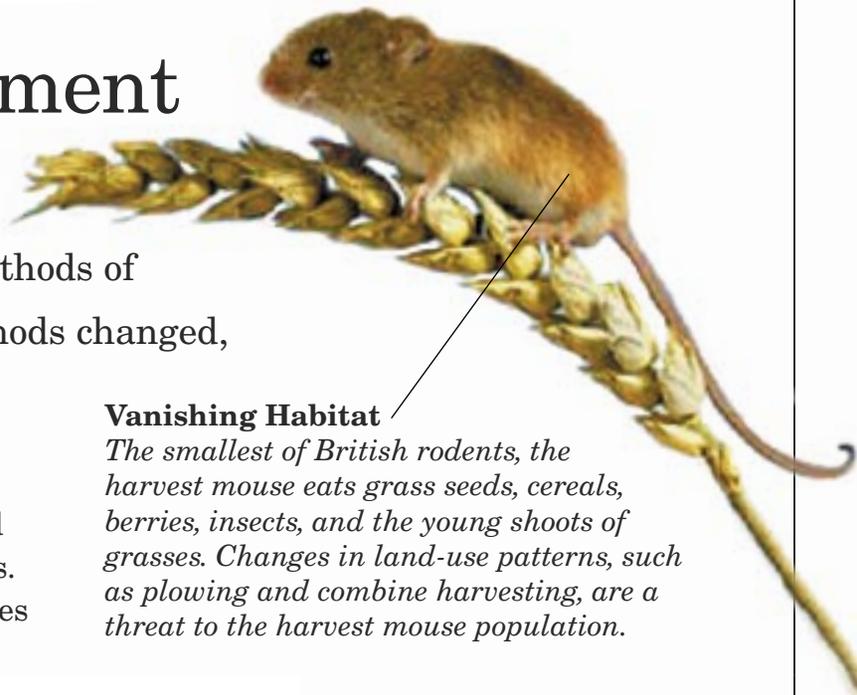


Health and Fitness

People of similar age and activity levels may have different nutritional needs. And, different foods contain different amounts of nutrients that our bodies need. Eating the right combination of foods helps us stay healthy.

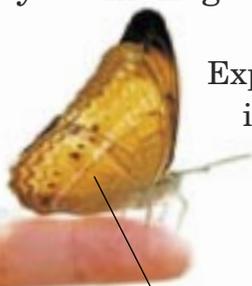
Explore: Food and the Environment

Most of the plants and animals we eat are grown or raised on a farm. While much of the food we eat has a long history, the methods of growing and preserving the food have changed. As farming methods changed, so did the way we managed the land.



Vanishing Habitat

The smallest of British rodents, the harvest mouse eats grass seeds, cereals, berries, insects, and the young shoots of grasses. Changes in land-use patterns, such as plowing and combine harvesting, are a threat to the harvest mouse population.



Exploring food and the environment, we investigate how the exchanges of plants and animals had an impact on natural systems. We study ways that agricultural techniques can mirror natural systems and cycles.

Pollination

Butterflies, bats, bees, and other animals pollinate most of the staple crop plants we eat. Imagine what our food supply would be like if there were no pollinators.



Eating Seasonally

The food choices we make each day can have an impact on our food system. Eating seasonally and locally makes you more aware of the weather and the seasons. Buying locally also helps reduce hidden costs associated with marketing and transporting food.

Agriculture

Most children are not aware that most of their food comes from farms. They don't know what grows where, what plants need to grow well, how crops are harvested, nor how food gets from the field to their table.



Explore: Food and Culture

Food communicates a vision of who we are. We identify ourselves through our food and food habits. How we prepare and eat food,

what we eat, and when we eat it are all influenced by culture, social customs, and economic factors.

Exploring food and culture, we investigate traditions and beliefs that have developed around food preparation. We learn that food can be symbolic. It can reflect social status. We discover that food is much more than nourishment.

Symbolism

Legend has it that the pineapple symbolized hospitality to the Carib people. If the Spanish saw one at the entrance to a village, they knew they were welcome. This symbolism spread to Europe and Colonial America, where the pineapple became a design element in architecture, needlework, ceramics, and furniture.

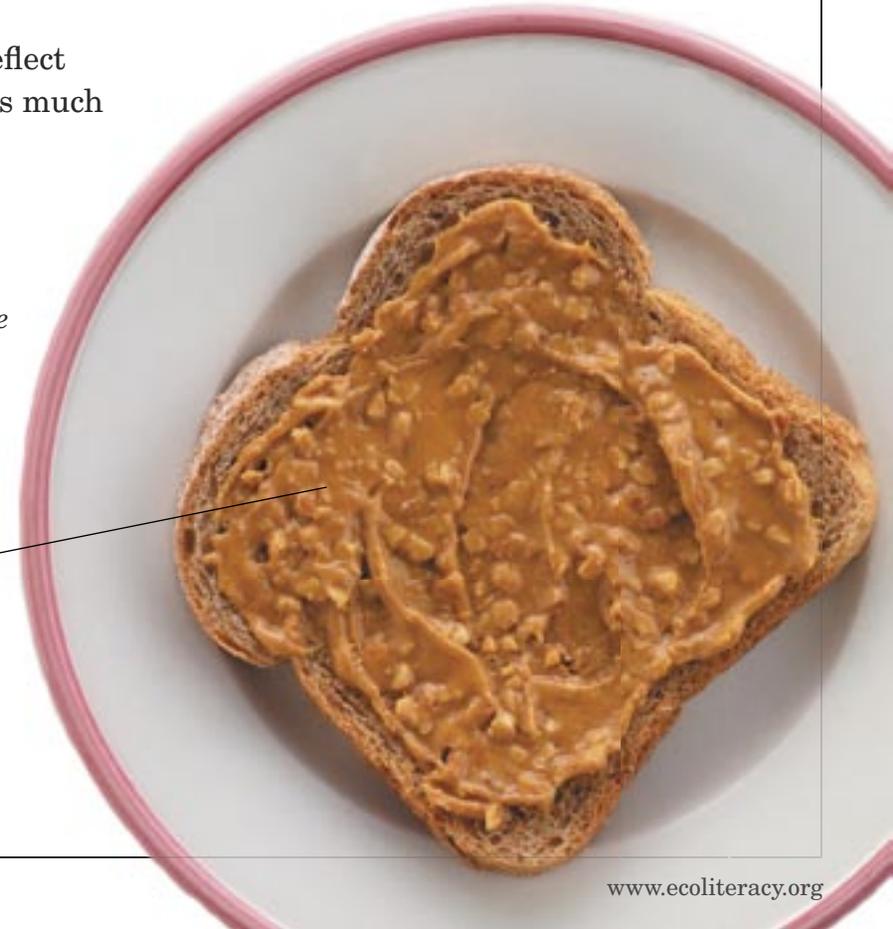
Food History

Widely grown by native peoples of the New World, European explorers took the peanut to Europe, Asia, Africa, and the Pacific Islands. Although introduced to the United States in colonial times, peanuts were not a popular food until the Civil War, when they became an important source of protein for the soldiers.



Art

In 13th-century Japan, the illustrated handscroll depicted daily events. This painting is part of a set portraying famous oxen of Japan's agricultural provinces.



Mapping Student Learning Goals



Aligning state standards to Project 2061 strand maps provides a framework for educators to begin to articulate what they want students to know, understand, and be able to do.



Mapping Student Learning Goals

How do we prepare students to make their way in the real world? What ideas will have lasting value beyond the classroom? What do we want students to know, understand, and be able to do?

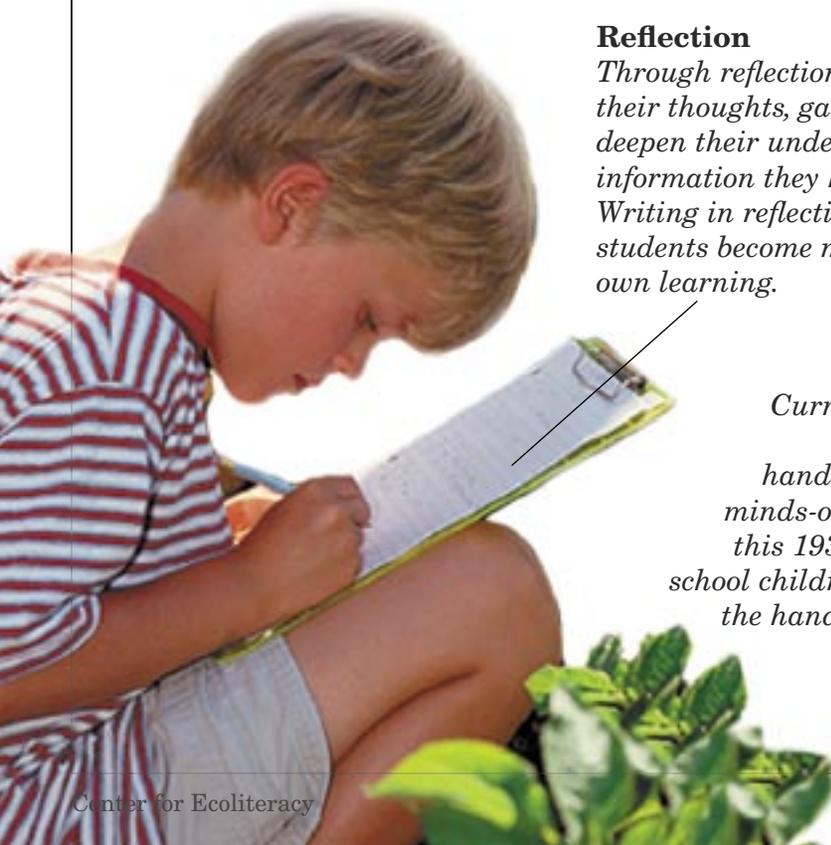
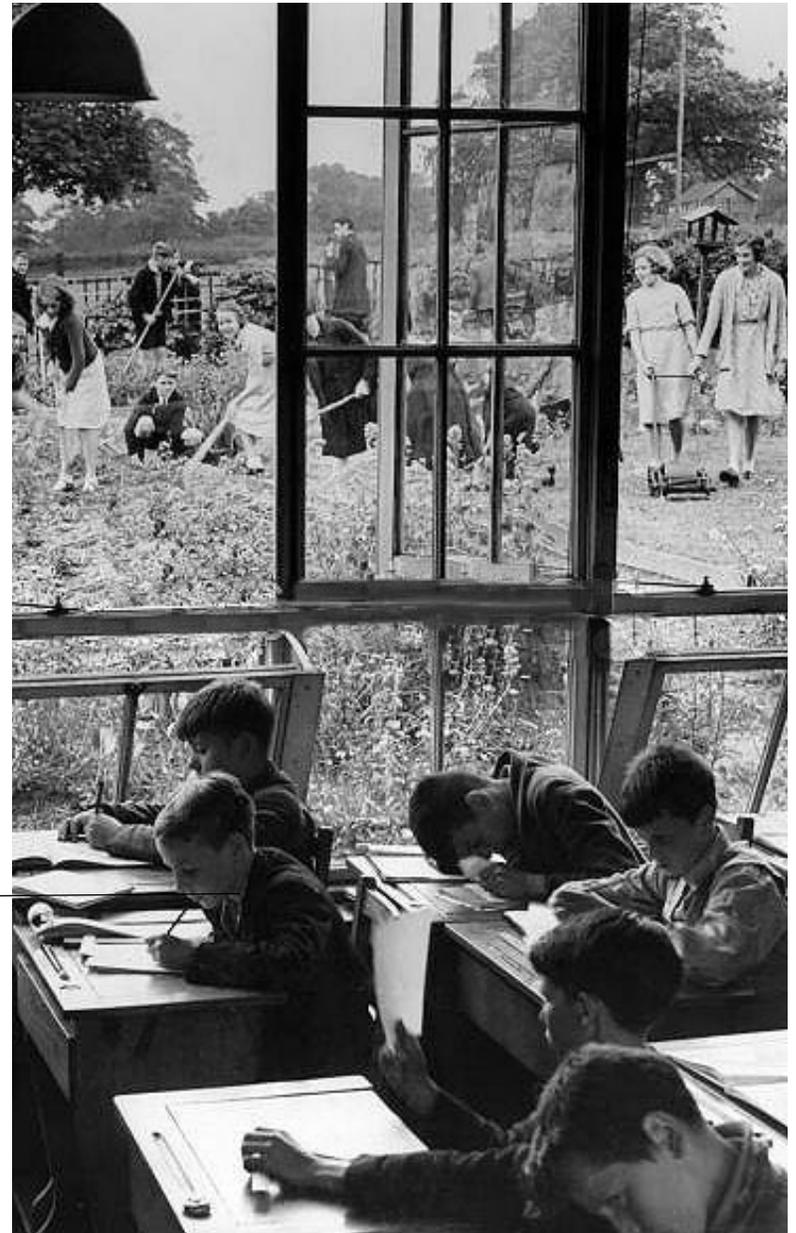
How can the charts on the following pages help you? State standards mapped to select Project 2061 strand maps provide a framework for educators to build, adapt, or integrate lessons that will help students gain an understanding of the links between food, culture, and the environment...one step toward education for sustainability.

Reflection

Through reflection, students clarify their thoughts, gain insights, and deepen their understanding of new information they have received. Writing in reflection journals helps students become more aware of their own learning.

Learning

Current school reform efforts call for students to have hands-on activities as well as minds-on experiences. As seen in this 1939 photograph of British school children, the idea of engaging the hands and minds is not new.



The Living Environment: The Flow of Matter and Energy

	Grades K-2 By the end of grade 2, students will:	Grades 3-5 By the end of grade 5, students will:	Grades 6-8 By the end of grade 8, students will:
Plants Making Food	Know that plants and animals both need to take in water, and animals need to take in food. In addition, plants need light.	Know plants have different structures that serve different functions in growth, survival, and reproduction.	Know that one of the most general distinctions among organisms is between plants, which use sunlight to make their own food, and animals, which consume energy-rich foods.
Food Web	Know that animals eat plants or other animals for food.	Know that almost all kinds of animals' food can be traced back to plants.	Know that all organisms, including humans, are part of and depend on two main interconnected global food webs.
Matter Cycle	Know many materials can be recycled and used again, sometimes in different forms.	Understand that over the whole earth, organisms are growing, dying, decaying and new organisms are being produced by the old ones.	Know how matter is recycled within ecosystems.
Energy in Living Things	Know that plants and animals use certain resources for energy and growth.	Know that the transfer of energy (e.g., through the consumption of food) is essential to all living organisms.	Know how energy is transferred through food webs in an ecosystem.

This conceptual framework was drawn from *Benchmarks for Science Literacy* (AAAS) and *Content Knowledge* (MCREL/ASCD). It is correlated to state content standards. This framework provides a foundation for planning instruction that will help students gain an understanding of **Education for Sustainability** in the context of food and food systems.

Human Society: Culture Affects Behavior

	Grades K-2 By the end of grade 2, students will:	Grades 3-5 By the end of grade 5, students will:	Grades 6-8 By the end of grade 8, students will:
Group and Subcultures	Know that people belong to some groups because they are born into them and to some groups because they join them.	Understand that different groups have different expectations for how their members should act.	Understand that a large society may be made up of many groups, and these groups may contain many distinctly different subcultures.
Cultural Influences	Understand that people often choose to do the same kinds of things that their friends do, but that people also often choose to do certain things their own way.	Understand that each culture has distinctive patterns of behavior that are usually practiced by most of the people who grow up in it.	Understand that usually within any society there is broad general agreement on what behavior is “acceptable” but that the standards used to judge behavior vary for different settings, different subgroups and may change with time and in response to different political and economic conditions.
Learning from Others	Know that people can learn from each other in many ways.	Understand that people can learn about others in many different ways.	Understand that technology, especially in transportation and communication, is increasingly important in spreading ideas, values, and behavioral patterns within a society and among different societies.

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The Designed World: Agricultural Technology

	Grades K-2 By the end of grade 2, students will:	Grades 3-5 By the end of grade 5, students will:	Grades 6-8 By the end of grade 8, students will:
Producing Food	Know that most food comes from farms either directly as crops or as the animals that eat crops.	Know how human activities have increased the ability of the physical environment to support human life in the local community, state, United States, and other countries.	Understand the environmental consequences of both the unintended and intended outcomes of major technological changes in human history.
Transporting Food	Know the modes of transportation used to move people, products and ideas from place to place, their importance and their advantages and disadvantages.	Know the various ways in which people satisfy their basic needs and wants through the production of goods and services in different regions of the world.	Understand the role of technology in resource acquisition and use, and its impact on the environment.
Effects on Society	Know people invent new ways of doing things, solving problems, and getting work done.	Know that technologies often have costs as well as benefits and can have an enormous effect on people and other living things.	Understand the role of agriculture in early settled communities; differences between wild and domestic plants and animals; how patterns of settlement were influenced by agricultural practices.
Controlling Characteristics	Know that plants and animals need enough warmth, light, and water to grow well.	Know that some plant varieties and animal breeds have more desirable characteristics than others, but some may be more difficult or costly to grow or raise.	Understand that people control some characteristics of plants and animals they raise by selective breeding and by preserving varieties of seeds to use if growing conditions change.

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The Human Organism: Maintaining Good Health

	Grades K-2 By the end of grade 2, students will:	Grades 3-5 By the end of grade 5, students will:	Grades 6-8 By the end of grade 8, students will:
Diet and Exercise	Know that eating a variety of healthy foods and getting enough exercise and rest help people to stay healthy.	Know the nutrient values of different foods and healthy eating practices.	Understand how nutrient and energy needs vary in relation to gender, activity level, and stage of life cycle.
Harmful Substances	Know how to distinguish between helpful and harmful substances.	Know that tobacco, alcohol, other drugs, and certain poisons in the environment can harm human beings and other living things.	Know that the environment may contain dangerous levels of substances that are harmful to human beings. Therefore, the good health of individuals requires monitoring the soil, air, and water and taking steps to make them safe.
Maintaining Good Health	Know basic personal hygiene habits required to maintain health.	Know ways in which a person can prevent or reduce the risk of disease and disability.	Understand how lifestyle, pathogens, family history, and other risk factors are related to the cause or prevention of disease and other health problems.

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Credits

Produced by the Center for Ecoliteracy with special thanks to Margo Crabtree for interpretive text, and Karen Brown for design and production. For more information, visit www.ecoliteracy.org.

Photography

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Page 4 Girl eating strawberry: CEL/Tyler; Alium and bee: CEL/Tyler; Pizzas: The Edible Schoolyard

Page 5 Girl holding peaches: The Edible Schoolyard; Plates of vegetables: The Edible Schoolyard; Starfruit: Ryan McVay/Getty Images

Page 6 Habitat hat: CEL/Tyler; Pomo basket: California Academy of Sciences, Ruth and Charles Elkus Collection; Hands holding strawberries: Annie Griffiths Belt/NATIONAL GEOGRAPHIC IMAGE COLLECTION/Getty Images

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Page 9 *Benchmarks for Science Literacy* cover: The American Association for the Advancement of Science; Bee: Brand X Images; Peas: PhotoAlto/Getty Images; Girl with bread: Titus/Getty Images; Starfruit: Ryan McVay/Getty Images

Page 10 Garden journal: CEL/Tyler; Boy with apple: Anne Ackermann/Getty Images; *Atlas of Science Literacy* cover: The American Association for the Advancement of Science

Page 11 Forest and river: Raymond Gehman/NATIONAL GEOGRAPHIC IMAGE COLLECTION/Getty Images; Girl holding bread: Titus/Getty Images; Bee on flower: Kim Taylor & Jane Burton/Getty Images; Pear: Image Source/Getty Images

Page 12 Chopsticks and case: California Academy of Sciences, Rietz Collection, cat. # CAS 0389-1940a-c; Crate label, Sunkist Corporation; Mongolian child herdsman: Keren Su/Getty Images

Page 13 Polish spindle cheese: Slow Food International; Lamb: Bob Elsdale/Getty Images; Terraced Chinese farm: Keren Su/Getty Images; Persian miniature: CEL/K. Brown

Page 14 Girl leaping: Rubberball Productions; Handwashing: The Edible Schoolyard; Man carrying produce: Iain Crockett/Getty Images

Page 15 Boy writing in journal: CEL/Tyler; Garden journal: CEL/Tyler; Insects: Brand X Images; Harvest mouse: Digital Zoo/Getty Images

Page 16 Stilton cheese: Slow Food International; Obento: Pie in the Sky Productions (Oregon Public Broadcasting); Girl jumping rope: Rubberball Productions/Getty Images

Page 17 Girls jumping: Rubberball Productions; Plate of food: The Edible Schoolyard; *All About Milk* cover: Duke University;

Page 18 Farm landscape: CEL/Tyler; Peas: PhotoAlto/Getty Images; Harvest mouse: Digital Zoo/Getty Images; Butterfly on hand: Image Source/Getty Images

Page 19 Japanese illustration of bull: Harry N. Abrams, Inc.; Peanut butter: Dorling Kindersley/Getty Images; Pineapple: Fototeca Storica Nazionale/Getty Images

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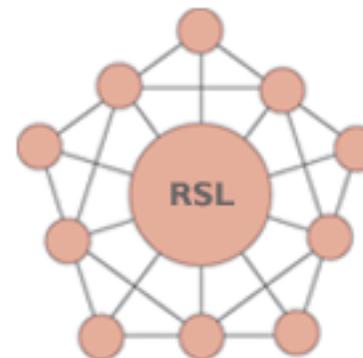
Rethinking School Lunch

What is Rethinking School Lunch (RSL)?

RSL is a planning framework to implement food service and curriculum innovation.

It connects public education and public health.

FOOD POLICY
CURRICULUM INTEGRATION
FOOD AND HEALTH
FINANCES
FACILITIES DESIGN



THE DINING EXPERIENCE
PROFESSIONAL DEVELOPMENT
PROCUREMENT
WASTE MANAGEMENT
MARKETING AND COMMUNICATIONS

