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Introduction

In the United States, obesity rates are rising among children. In many parts of the country, a lack of access to fresh, healthy foods is an increasing problem. Consequently, many people wrestle with *misnutrition*. Nutritionists define misnutrition as an abundance of empty food calories and a lack of nutrient-dense foods. In recent decades, convenience and fast foods have replaced whole, healthy foods in many diets—a trend which leads to obesity, diabetes, heart disease, and other chronic diseases.

An essential part of teaching children how to lead healthy and sustainable lives is helping them to learn what real food is, where it comes from, and why it is an important basis for their diets. Seven Generations Ahead's *Roots and Fruits* curriculum teaches first through fourth grade students about the nutritional benefits of fresh, locally produced food. As they learn, they may begin to develop questions and curiosities about how food grows, what is in soil, and how food arrives on their plates. They may also question the environmental, cultural and economic impact of their food choices. The *Linking Plants and Food* curriculum helps fifth through eighth grade students investigate these concepts more deeply. This program delineates the connections between healthy foods and healthy soil, describes the plant parts we eat, and explores the various layers of the food system.

Education for Sustainability

Linking Plants and Food addresses concepts of soil science, plant science, the food system, and food culture through a lens of sustainability. The curriculum helps students begin to see that their choices and actions have an impact on the world around them. The choices that young people make today, particularly when it comes to food, will affect the lives of children living seven generations from now. Students learn that where they buy food, which foods they buy, and which agricultural practices they support will affect the health of their bodies, the environment, and local economies.

Big Ideas of Sustainability:

Interdependence - All living things are connected. Every organism, system or place depends on others.

Community - All communities involve nested economic, environmental, and social systems.

Cycles - Every organism or system goes through different stages.

Core Concepts

By incorporating several core concepts, *Linking Plants and Food* instills a deep understanding of a sustainable food system. *Linking Plants and Food* teaches the following core concepts:

- Much of the food we eat is grown on farms—complex ecosystems in which many organisms are dependent upon one another to produce healthy plants for food.
- All fruits and vegetables are parts of plants, which are cultivated and harvested before reaching grocery stores, restaurants, and dinner tables.
- Every person has unique preferences for food, but all people need nutritious, varied diets and healthy personal behaviors to thrive.
- Soil is a living organism, and only healthy soil produces healthy plants and foods.
- The waste cycle is an important biological process that can be utilized as a positive asset.
- School gardens provide a variety of benefits for students, teachers, and school communities.
- The food system is a complex system of people, transportation, technology, and procedures.



- Consumer choices of where to buy food and what foods to buy have important effects on society, our health, and the environment.
- Culture and food are interrelated social components influenced by region and globalization.

Place-Based Education

Linking Plants and Food uses the local environment as a focal point for learning. This place-based education creates a meaningful and culturally relevant framework for learning. By connecting core concept areas and units of study to their classrooms, local communities and regional environments, students have a real-world context for learning. Place-based education opportunities are plentiful in the *Linking Plants and Food* curriculum. Students can investigate the soil within the schoolyard, explore the food available in their neighborhoods, identify local sources for fresh and healthy foods, invite community leaders and neighbors to the classroom, and research different cultures that create the dynamic diversity of their neighborhoods. Through this approach, students will understand that their food choices impact their own health and the health of their local communities and environments.

Final Assessment

Linking Plants and Food assessments present opportunities for students to make collaborative decisions that affect the classroom community and incorporate student voices. They give students a chance to practice real-world problem solving and make a difference. Examples of activities that will help teachers assess students' understanding of *Linking Plants and Food's* core concepts are listed below.

- Write a Good Food Guide for families and friends. This guide could include healthy options for food in local restaurants, farmers markets, grocery stores, and other food vendors, as well as nutritional information and seasonal food choices.
- Research the nutritional information and location of procurement of the foods served in the lunch program. Research other school lunch programs regionally and create a grid of best practices at schools with healthy lunch options, such as daily salad bars, low-fat main dishes, vegetarian options, a high prevalence of less-processed foods, whole grains, whole fruits and vegetables, locally procured foods, and other healthier food options. As an extension, write a letter to the school's Food Service Director requesting more nutritionally dense and locally-procured foods based on your research.
- Create a month-long Healthy School Lunch Menu to present to the school's Food Service Director utilizing information about local food procurement, daily nutritional needs, and neighborhood cultural influences while taking the capacity of the school kitchen into account.
- Answer the question, "What is real food?" by producing a video, creating an art project, writing a poem or rap, or using a variety of other mediums.
- Design and build a school garden using skills acquired from *Linking Plants and Food*. Form a garden group to plan and manage the garden. Create a timeline of planning, planting, and harvesting for the full calendar year.



Lesson Objectives

LESSON 1: DECONSTRUCTING YOUR LUNCH

- Students will explore the relationship between the food they eat, where it comes from, and how it gets to their plates.
- Students will learn that most foods originate in soil.

LESSON 2: CYCLES AND SEASONALITY

- Students will identify one task a farmer does on the farm during a particular month.
- Students will understand and articulate which fruits and vegetables can be harvested throughout each month of the year.
- Students will understand the difference between the growing and harvest seasons.
- Students will identify the yearly, cyclical work on farms.

LESSON 3: PLANT PARTS

- Students will identify the six parts of the plant.
- Students will describe how each plant part contributes to the plant's survival.
- Students will name visual characteristics of each plant part.
- Students will use plant parts to categorize different fruits or vegetables.

LESSON 4: NUTRITION

- Students will understand the concept of Eating the Rainbow and learn about the nutritional benefits of each color group.
- Students will identify food groups and appropriate portion sizes based on MyPlate, the USDA nutrition education program.
- Students will learn how to read and analyze nutrition labels.
- Students will learn the nutrients provided by each plant part.

LESSON 5: HEALTHY SOIL

- Students will describe the amount of fertile soil available on Earth.
- Students will discuss the importance of preserving healthy soil.
- Students will identify the five components of soil.
- Students will describe how organic matter breaks down to form healthy soil.
- Students will understand the connection between healthy soil and healthy bodies.

LESSON 6: THE WASTE CYCLE

- Students will understand the definition of waste.
- Students will learn about composting and be able to link it to the plant cycle.
- Students will learn the meanings of decomposition and compost.
- Students will understand how the waste cycle can be a positive asset.

LESSON 7: SCHOOL AND COMMUNITY GARDENS

- Students will learn that gardens take many forms, indoors and outdoors.
- Students will compare the basic needs of humans to those of plants.
- Students will learn what to consider when designing, planting, and maintaining a garden.
- Students will learn about the benefits of school gardens.



LESSON 8: FARM TO FORK

- Students will understand the process involved in the farm-to-consumer cycle.
- Students will identify where various fruits and vegetables grow.
- Students will identify a farm close to their school.
- Students will discuss the economic impact of food purchased from local versus distant farms.
- Students will understand the impact of distance and transportation on the food supply in terms of quality loss, nutrient loss, and increased energy consumption.
- Students will define conventionally grown, organic, and fair trade certified.

LESSON 9: LOCAL ACCESS

- Students will identify places in their neighborhood that offer healthy foods.
- Students will plan a meal of healthy foods sold at neighborhood food establishments.
- Students will compare their neighborhood food establishments to those available in surrounding areas.
- Students will consider effects that healthy food options have on the overall health of their community.

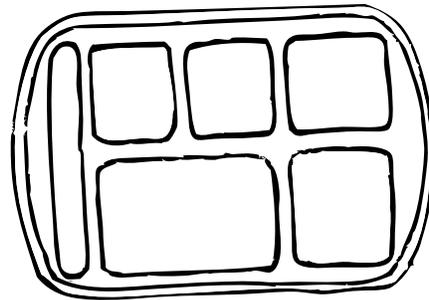
LESSON 10: MY FOOD CULTURE

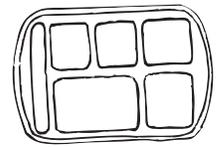
- Students will explore and explain their own food culture.
- Students will tie their own food culture back to the broader community.
- Students will understand the link between food culture and what is grown in different regions of the country and the world.
- Students will learn the impact of globalization on food cultures around the world.



Lesson 1:

Deconstructing Your Lunch





Time Allotted

60 Minutes

Target Audience

Grades 5-8

Objectives

- Students will explore the relationship between the food they eat, where it comes from, and how it gets to their plates.
- Students will learn that most foods originate in soil.

Background

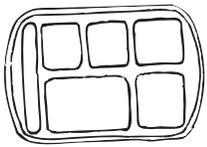
Almost all the food we eat is brought to us by one of Earth's most important resources: soil. Each food we eat can be traced back to soil. For example, the meat in a hamburger comes from a cow, which eats grass or corn grown in the soil. Apples come from trees, which grow in soil. Healthy soil is responsible for almost 100% of the diet humans consume (with a few exceptions, including fish and mushrooms). This lesson focuses on the relationship between people, food, and soil.

Method

This lesson is an introduction to the basic origins of our food. Knowledge of the origins of food instills in students a better understanding of why some foods—such as whole, minimally processed foods—are healthier than others. Before starting the activities, begin the lesson with a basic discussion of what the students ate for lunch and how they felt physically after eating it. Explore the difference between “whole” and “processed” foods. Whole foods include fruits, vegetables, and whole grains. Processed foods are foods that have gone through multiple stages of modification to make one food. For example, a potato goes through many steps before becoming a bag of potato chips. Typically, processed foods are higher in fats, salts, and sugars and carry fewer nutrients. Students can explore the connection of eating more heavily processed foods to fatigue and increased hunger hours after eating.

Discussion/Verbal Exploration

1. *What did you eat for lunch today? Why did you choose what you chose?*
2. *Did your lunch consist of whole foods or processed foods?*
3. *Think about how you feel after lunch. Are you fatigued, still hungry, thirsty, or irritable after eating certain foods?*



ACTIVITY



Time Allotted

15 Minutes

Target Audience

Grades 5-8

Objectives

- Students will learn that most foods originate in soil.

Materials

- Marker board or large chart paper
- Activity 1.1.1 Dirt Made My Lunch Worksheet

Summary

Students learn that almost every food they eat can be traced to soil.

Background

Every day students eat a variety of fruits, vegetables, grains, meat, and dairy and sometimes do not have a sense of where those foods came from. There is a gap in knowledge of where our food originates and how it gets to our plates. Exploration of the origin of the foods we eat creates a better understanding of what those foods provide for us, where those foods are grown, and how they get to our plate.

Method

1. On the left hand side of the board or poster, draw a picture of a food that you ate for lunch. On the right hand side of the board or poster, draw a picture of soil.
2. **Ask:** *How can we connect this food back to the soil?* Use arrows to make a representational diagram. For example, orange juice comes from oranges, which come from trees, which grow in the soil.

A diagram would look like this:

JUICE → ORANGE → TREE → SOIL

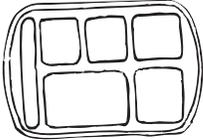
A diagram for cheese would look like this:

CHEESE → MILK → COW → GRASS OR GRAINS → SOIL

3. Repeat this exercise for several foods that students ate for lunch, until students demonstrate a solid understanding of the concept.
4. Tell students to think of a food that does not come from the soil. Point out how difficult this task is, emphasizing the point that soil is responsible for almost 100% of our diet. The few exceptions include fish and mushrooms.
5. Hand out the Dirt Made My Lunch worksheet. Have students draw one item they ate for lunch in the left side box, and draw soil in the right side box. Instruct them to use arrows to connect their food back to its origins in the soil.

Extensions

- Have students record the foods they eat for dinner while at home, keeping a tally of how many originate in soil.
- Encourage students to plant their own seeds to grow food in the soil.



Name _____

Dirt Made My Lunch

