

Correlation of

**Project Learning Tree  
Environmental Education  
Pre K-8 Activity Guide**

to

**California  
Science Content Standards  
Grades K-8**



## **Introduction**

The purpose of this document is to provide California educators who use Project Learning Tree materials with an easy reference guide as to how PLT's activities correlate to the California Science Content Standards for grades K through 8. As part of the national movement to reform education, the California State Board of Education has adopted criteria to measure the skills, knowledge and ability that all students should be able to master within life, physical and earth sciences, including investigation and experimentation.

Project Learning Tree is an interdisciplinary environmental education program. PLT activities supplement curriculum and can be used to organize instructional units in a variety of subjects. As this correlation will demonstrate, educators can use PLT activities to teach science concepts as well as for assessing student's understanding of concepts. It is the goal of this document to help teachers provide students with lessons that reinforce critical and creative thinking while also covering the required science topics.

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For more information about Project Learning Tree in California, contact Kay Antunez, PLT Coordinator, California Department of Forestry and Fire Protection, P. O. Box 944246, Sacramento, California 94244-2460, or call (916) 653-7958.

A copy of the Science Content Standards for Grades K-12 can be obtained at:  
<http://www.cde.ca.gov/board/science.html>

July 1999.



# KINDERGARTEN

## PHYSICAL SCIENCES

1. Properties of materials can be observed, measured and predicted. As a basis for understanding this concept, students know:
  - a. objects can be described in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical properties (color, size, shape, weight, texture, flexibility, attraction to magnets, floating and sinking, etc.).

### Project Learning Tree Activity Guide

The Shape of Things (1)  
Get in Touch with Trees (2)

- c. water left in an open container evaporates (goes into the air), but water in a closed container does not.

### Project Learning Tree Activity Guide

Tree Treasures (12)

## LIFE SCIENCES

2. Different types of plants and animals inhabit the Earth. As a basis for understanding this concept, students know:
  - a. how to observe and describe similarities and differences in the appearance and behavior of plants and of animals (e.g., seed-bearing plants, birds, fish, insects).

### Project Learning Tree Activity Guide

Picture This! (6)  
Adopt a Tree (21)  
Trees as Habitats (22)  
How Plants Grow (41)  
Have Seeds, Will Travel (43)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
The Closer You Look (61)  
Looking at Leaves (64)  
Bursting Buds (65)  
How Big is Your Tree? (67)  
Signs of Fall (78)

- b. stories sometimes give plants and animals attributes they do not really have.

### Project Learning Tree Activity Guide

How Plants Grow (41)

## Kindergarten

- c. how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs)

### **Project Learning Tree Activity Guide**

Picture This! (6)  
Trees as Habitats (22)  
Every Tree for Itself (27)  
Are Vacant Lots Vacant? (47)  
The Closer You Look (61)  
To Be a Tree (62)  
Tree Factory (63)  
Looking at Leaves (64)  
Bursting Buds (65)  
How Big is Your Tree? (67)  
Signs of Fall (78)  
Tree Lifecycle (79)

## **EARTH SCIENCES**

3. The Earth is composed of land, air and water. As a basis for understanding this concept, students know:
  - a. characteristics of mountains, rivers, oceans, valleys, deserts, and local landforms.

### **Project Learning Tree Activity Guide**

I'd Like to Visit a Place Where... (54)

## **INVESTIGATION AND EXPERIMENTATION**

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in the other three strands, students should develop their own questions and perform investigations. Students will:
  - a. observe common objects using the five senses.

### **Project Learning Tree Activity Guide**

Peppermint Beetle (3)  
Sounds Around (4)  
Adopt a Tree (21)  
Trees as Habitats (22)  
Pollution Search (36)  
Have Seeds, Will Travel (43)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
I'd Like to Visit a Place Where... (54)  
The Closer You Look (61)  
Looking at Leaves (64)  
Bursting Buds (65)  
Signs of Fall (78)

- b. describe the properties of common objects.

**Project Learning Tree Activity Guide**

The Shape of Things (1)  
Get in Touch with Trees (2)  
Picture This! (6)  
Tree Treasures (12)  
Adopt a Tree (21)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
The Closer You Look (61)  
Signs of Fall (78)

- c. describe the relative position of objects using one reference (e.g., above or below).

**Project Learning Tree Activity Guide**

Sounds Around (4)  
Are Vacant Lots Vacant? (47)

- d. compare and sort common objects based on one physical attribute (including color, shape, texture, size, weight).

**Project Learning Tree Activity Guide**

Picture This! (6)  
Tree Treasures (12)  
Birds and Worms (25)  
How Plants Grow (41)  
Have Seeds, Will Travel (43)  
How Big is Your Tree? (67)  
Signs of Fall (78)

- e. communicate observations orally and in drawings.

**Project Learning Tree Activity Guide**

The Shape of Things (1)  
Sounds Around (4)  
Picture This! (6)  
Adopt a Tree (21)  
Pollution Search (36)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
The Closer You Look (61)  
Bursting Buds (65)  
Signs of Fall (78)

## GRADE 1

### **LIFE SCIENCES**

2. Plants and animals meet their needs in different ways. As a basis for understanding this concept, students know:
- a. different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

**Project Learning Tree Activity Guide**

Picture This! (6)  
The Forest of S.T. Shrew (8)  
Birds and Worms (25)  
Plant a Tree (31)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
Field, Forest, and Stream (48)  
To Be a Tree (62)  
Tree Factory (63)  
Looking at Leaves (64)  
Bursting Buds (65)

- b. plants and animals both need water; animals need food, and plants need light.

**Project Learning Tree Activity Guide**

The Forest of S.T. Shrew (8)  
Trees as Habitats (22)  
Nature's Recyclers (24)  
Every Tree for Itself (27)  
Plant a Tree (31)  
How Plants Grow (41)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
To Be a Tree (62)  
Tree Factory (63)  
Tree Cookies (76)

- c. animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.

**Project Learning Tree Activity Guide**

The Forest of S.T. Shrew (8)  
Pass the Plants, Please (16)  
Trees as Habitats (22)  
Nature's Recyclers (24)  
Birds and Worms (25)  
Three Cheers for Trees (30)  
Plant a Tree (31)  
School Yard Safari (46)  
(continued)

Are Vacant Lots Vacant? (47)  
Field, Forest, and Stream (48)  
Bursting Buds (65)

- e. roots are associated with the intake of water and soil nutrients, green leaves with making food from sunlight.

**Project Learning Tree Activity Guide**

Every Tree for Itself (27)  
Plant a Tree (31)  
Pollution Search (36)  
How Plants Grow (41)  
Are Vacant Lots Vacant? (47)  
To Be a Tree (62)  
Tree Factory (63)  
Tree Cookies (76)  
Tree Lifecycle (79)

**EARTH SCIENCES**

- 3. Weather can be observed, measured and described. As a basis for understanding this concept, students know:
  - b. the weather changes from day to day, but trends in temperature or of rain (or snow) tend to be predictable during a season.

**Project Learning Tree Activity Guide**

Signs of Fall (78)

**INVESTIGATION AND EXPERIMENTATION**

- 4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:
  - a. draw pictures that portray some features of the thing being described.

**Project Learning Tree Activity Guide**

The Forest of S.T. Shrew (8)  
Adopt a Tree (21)  
Three Cheers for Trees (30)  
Pollution Search (36)  
How Plants Grow (41)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
I'd Like to Visit a Place Where... (54)  
The Closer You Look (61)  
Bursting Buds (65)  
Trees in Trouble (77)  
Signs of Fall (78)

- b. record observations and data with pictures, numbers, and/or written statements.

**Project Learning Tree Activity Guide**

The Shape of Things (1)  
Adopt a Tree (21)  
Nature's Recyclers (24)  
Pollution Search (36)  
Talking Trash, Not! (37)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
The Closer You Look (61)  
Bursting Buds (65)  
How Big is Your Tree? (67)  
Trees in Trouble (77)  
Signs of Fall (78)

- c. record observations on a bar graph.

**Project Learning Tree Activity Guide**

Pass the Plants, Please (16)  
Birds and Worms (25)  
Pollution Search (36)  
How Plants Grow (41)  
How Big is Your Tree? (67)

- d. describe the relative position of objects using two references (e.g., above and next to, below and left of).

**Project Learning Tree Activity Guide**

Are Vacant Lots Vacant? (47)

## GRADE 2

### **LIFE SCIENCES**

2. Plants and animals have predictable life cycles. As a basis for understanding this concept, students know:

- a. organisms reproduce offspring of their own kind. The offspring resemble their parents and each other.

**Project Learning Tree Activity Guide**

Environmental Exchange Box (20)

Have Seeds, Will Travel (43)

Tree Lifecycle (79)

- c. many characteristics of an organism are inherited from the parents. Some characteristics are caused by, or influenced by, the environment.

**Project Learning Tree Activity Guide**

Birds and Worms (25)

- d. there is variation among individuals of one kind within a population.

**Project Learning Tree Activity Guide**

School Yard Safari (46)

The Closer You Look (61)

Looking at Leaves (64)

How Big is Your Tree? (67)

Name That Tree (68)

- e. the germination, growth, and development of plants can be affected by light, gravity, touch, or environmental stress.

**Project Learning Tree Activity Guide**

Every Tree for Itself (27)

Plant a Tree (31)

How Plants Grow (41)

Sunlight and Shades of Green (42)

Have Seeds, Will Travel (43)

Bursting Buds (65)

Tree Lifecycle (79)

- f. in plants flowers and fruits are associated with reproduction.

**Project Learning Tree Activity Guide**

Have Seeds, Will Travel (43)

Bursting Buds (65)

## **EARTH SCIENCES**

3. Earth is made of materials that have distinct properties and provide resources for human activities. As the basis for understanding this concept, students know:
  - e. rock, water, plants and soil provide many resources including food, fuel, and building materials that humans use.

### **Project Learning Tree Activity Guide**

Tree Treasures (12)  
Pass the Plants, Please (16)  
Environmental Exchange Box (20)

## **INVESTIGATION AND EXPERIMENTATION**

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:
  - a. make predictions based on patterns of observation rather than random guessing.

### **Project Learning Tree Activity Guide**

Peppermint Beetle (3)  
Adopt a Tree (21)  
Talking Trash, Not! (37)  
How Plants Grow (41)  
Are Vacant Lots Vacant? (47)  
Field, Forest, and Stream (48)  
How Big is Your Tree? (67)  
Tree Cookies (76)

- b. measure length, weight, temperature, and liquid volume with appropriate tools and express measurements in standard and non-standard units.

### **Project Learning Tree Activity Guide**

Talking Trash, Not! (37)  
How Plants Grow (41)  
How Big is Your Tree? (67)

- c. compare and sort common objects based on two or more physical attributes (including color, shape, texture, size, weight).

### **Project Learning Tree Activity Guide**

Picture This! (6)  
Tree Treasures (12)  
Birds and Worms (25)  
How Plants Grow (41)  
(continued)

- Sunlight and Shades of Green (42)
  - Have Seeds, Will Travel (43)
  - Name That Tree (68)
- d. write or draw descriptions of a sequence of steps, events, and observations.

**Project Learning Tree Activity Guide**

- Nature's Recyclers (24)
  - School Yard Safari (46)
  - Are Vacant Lots Vacant? (47)
  - Trees in Trouble (77)
- e. construct bar graphs to record data using appropriately labeled axes.

**Project Learning Tree Activity Guide**

- Pass the Plants, Please (16)
  - Birds and Worms (25)
  - How Plants Grow (41)
  - How Big is Your Tree? (67)
- f. write or draw descriptions of a sequence of steps, events and observations, and include the use of magnifiers or microscopes to extend senses.

**Project Learning Tree Activity Guide**

- Nature's Recyclers (24)
  - Are Vacant Lots Vacant? (47)
  - Tree Cookies (76)
- g. follow verbal instructions for a scientific investigation.

**Project Learning Tree Activity Guide**

- Nature's Recyclers (24)
- Sunlight and Shades of Green (42)

## GRADE 3

### **PHYSICAL SCIENCES**

1. Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept, students know:
  - a. energy comes from the sun to the Earth in the form of light.

**Project Learning Tree Activity Guide**

Air Plants (28)

2. Light has a source and travels in a direction. As a basis for understanding this concept, students know:
  - a. sunlight can be blocked to create shadows.

**Project Learning Tree Activity Guide**

Air Plants (28)

### **LIFE SCIENCES**

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept, students know:
  - a. plants and animals have structures that serve different functions in growth, survival, and reproduction.

**Project Learning Tree Activity Guide**

Sounds Around (4)

Adopt a Tree (21)

Birds and Worms (25)

Every Tree for Itself (27)

How Plants Grow (41)

Sunlight and Shades of Green (42)

Have Seeds, Will Travel (43)

Are Vacant Lots Vacant? (47)

The Closer You Look (61)

To Be a Tree (62)

Tree Factory (63)

Looking at Leaves (64)

Bursting Buds (65)

How Big is Your Tree? (67)

Tree Cookies (76)

Tree Lifecycle (79)

- b. examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.

**Project Learning Tree Activity Guide**

Habitat Pen Pals (7)  
Environmental Exchange Box (20)  
Field, Forest, and Stream (48)  
Tropical Treehouse (49)

- c. living things cause changes in the environment where they live; some of these changes are detrimental to the organism or other organisms, whereas others are beneficial.

**Project Learning Tree Activity Guide**

Adopt a Tree (21)  
Trees as Habitats (22)  
Every Tree for Itself (27)  
Air Plants (28)  
Three Cheers for Trees (30)  
Plant a Tree (31)  
Pollution Search (36)  
How Plants Grow (41)  
School Yard Safari (46)  
Nothing Succeeds Like Succession (80)

- d. when the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.

**Project Learning Tree Activity Guide**

Every Tree for Itself (27)  
A Forest of Many Uses (32)  
Pollution Search (36)  
How Plants Grow (41)  
Sunlight and Shades of Green (42)  
Are Vacant Lots Vacant? (47)  
Tropical Treehouse (49)  
Tree Cookies (76)  
Nothing Succeeds Like Succession (80)

**EARTH SCIENCES**

4. Objects in the sky move in regular and predictable patterns. As a basis for understanding this concept, students know:
- a. the patterns of stars stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons.

**Project Learning Tree Activity Guide**

Signs of Fall (78)

## **INVESTIGATION AND EXPERIMENTATION**

5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:

- a. repeat observations to improve accuracy, and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or uncertainty in the observation.

**Project Learning Tree Activity Guide**

How Plants Grow (41)

- c. use numerical data in describing and comparing objects, events and measurements.

**Project Learning Tree Activity Guide**

Pass the Plants, Please (16)

Birds and Worms (25)

Talking Trash, Not! (37)

How Plants Grow (41)

How Big is Your Tree? (67)

- d. predict the outcome of a simple investigation, and compare the result to the prediction.

**Project Learning Tree Activity Guide**

Birds and Worms (25)

Talking Trash, Not! (37)

How Plants Grow (41)

Are Vacant Lots Vacant? (47)

Field, Forest, and Stream (48)

How Big is Your Tree? (67)

- e. collect data in an investigation and analyze them to develop a logical conclusion.

**Project Learning Tree Activity Guide**

Pass the Plants, Please (16)

Trees as Habitats (22)

Nature's Recyclers (24)

Birds and Worms (25)

Talking Trash, Not! (37)

How Plants Grow (41)

Have Seeds, Will Travel (43)

Are Vacant Lots Vacant? (47)

Field, Forest, and Stream (48)

## GRADE 4

### **LIFE SCIENCES**

2. All organisms need energy and matter to live and grow. As a basis for understanding this concept, students know:

- a. plants are the primary source of matter and energy entering most food chains.

**Project Learning Tree Activity Guide**

Pass the Plants, Please (16)

Air Plants (28)

Sunlight and Shades of Green (42)

Web of Life (45)

- b. producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs, and may compete with each other for resources in an ecosystem.

**Project Learning Tree Activity Guide**

The Forest of S.T. Shrew (8)

Can It Be Real? (11)

Adopt a Tree (21)

Trees as Habitats (22)

Nature's Recyclers (24)

Birds and Worms (25)

Air Plants (28)

School Yard Safari (46)

Are Vacant Lots Vacant? (47)

Forest for the Trees (69)

- c. decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.

**Project Learning Tree Activity Guide**

The Forest of S.T. Shrew (8)

The Fallen Log (23)

Nature's Recyclers (24)

Tree Lifecycle (79)

3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept, students know:

- a. ecosystems can be characterized in terms of their living and nonliving components.

**Project Learning Tree Activity Guide**

Habitat Pen Pals (7)  
The Forest of S.T. Shrew (8)  
Planet of Plenty (9)  
Charting Diversity (10)  
Can It Be Real? (11)  
Environmental Exchange Box (20)  
Every Tree for Itself (27)  
Plant a Tree (31)  
A Forest of Many Uses (32)  
Web of Life (45)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
Field, Forest, and Stream (48)  
Tropical Treehouse (49)  
I'd Like to Visit a Place Where... (54)

- b. for any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.

**Project Learning Tree Activity Guide**

Habitat Pen Pals (7)  
The Forest of S.T. Shrew (8)  
Planet of Plenty (9)  
Charting Diversity (10)  
Can It Be Real? (11)  
Environmental Exchange Box (20)  
Birds and Worms (25)  
Plant a Tree (31)  
School Yard Safari (46)  
Are Vacant Lots Vacant? (47)  
Field, Forest, and Stream (48)  
Tropical Treehouse (49)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)  
Life on the Edge (88)

- c. many plants depend on animals for pollination and seed dispersal, while animals depend on plants for food and shelter.

**Project Learning Tree Activity Guide**

Charting Diversity (10)  
Can It Be Real? (11)  
Adopt a Tree (21)  
Trees as Habitats (22)  
Nature's Recyclers (24)  
Air Plants (28)  
Have Seeds, Will Travel (43)  
Web of Life (45)  
Field, Forest, and Stream (48)  
Tropical Treehouse (49)

- d. most microorganisms do not cause disease and many are beneficial.

**Project Learning Tree Activity Guide**

The Fallen Log (23)

Nature's Recyclers (24)

**EARTH SCIENCES**

5. Waves, wind, water, and ice shape and reshape the Earth's land surface. As a basis for understanding this concept, students know:
- c. moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places (weathering, transport, and deposition).

**Project Learning Tree Activity Guide**

Water Wonders (44)

**INVESTIGATION AND EXPERIMENTATION**

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:
- a. differentiate observation from inference (interpretation), and know that scientists' explanations come partly from what they observe and partly from how they interpret their observations.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)

Nature's Recyclers (24)

Pollution Search (36)

How Plants Grow (41)

Are Vacant Lots Vacant? (47)

Field, Forest, and Stream (48)

Germinating Giants (66)

How Big is Your Tree? (67)

Tepee Talk (75)

Tree Cookies (76)

Nothing Succeeds Like Succession (80)

- b. measure and estimate weight, length, or volume of objects.

**Project Learning Tree Activity Guide**

Talking Trash, Not! (37)

How Plants Grow (41)

How Big is Your Tree? (67)

- c. formulate predictions and justify predictions based on cause and effect relationships.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)  
Every Drop Counts (38)  
How Plants Grow (41)  
Sunlight and Shades of Green (42)  
Water Wonders (44)  
Are Vacant Lots Vacant? (47)  
Trees in Trouble (77)

- e. conduct multiple trials to test a prediction and draw conclusions about the relationships between results and predictions.

**Project Learning Tree Activity Guide**

How Plants Grow (41)  
Have Seeds, Will Travel (43)  
Water Wonders (44)  
Trees in Trouble (77)

- e. construct and interpret graphs from measurements.

**Project Learning Tree Activity Guide**

Talking Trash, Not! (37)  
Every Drop Counts (38)  
How Plants Grow (41)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

- f. follow a set of written instructions for a scientific investigation

**Project Learning Tree Activity Guide**

Germinating Giants (66)  
Signs of Fall (78)

## GRADE 5

### **LIFE SCIENCES**

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept, students know:

- a. many multicellular organisms have specialized structures to support the transport of materials.

**Project Learning Tree Activity Guide**

Every Tree for Itself (27)

Air Plants (28)

Sunlight and Shades of Green (42)

Are Vacant Lots Vacant? (47)

- e. how sugar, water, and minerals are transported in a vascular plant.

**Project Learning Tree Activity Guide**

Are Vacant Lots Vacant? (47)

Tree Factory (63)

Tree Cookies (76)

- f. plants use carbon dioxide (CO<sub>2</sub>) and energy from sunlight to build molecules of sugar and release oxygen.

**Project Learning Tree Activity Guide**

Every Tree for Itself (27)

Air Plants (28)

Three Cheers for Trees (30)

Plant a Tree (31)

A Forest of Many Uses (32)

Sunlight and Shades of Green (42)

Web of Life (45)

- g. plant and animal cells break down sugar to obtain energy, forming carbon dioxide (CO<sub>2</sub>) and water (respiration).

**Project Learning Tree Activity Guide**

Air Plants (28)

Three Cheers for Trees (30)

Plant a Tree (31)

A Forest of Many Uses (32)

Sunlight and Shades of Green (42)

Web of Life (45)

## **EARTH SCIENCES**

3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept, students know:
- b. when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled, or as a solid if cooled below the freezing point of water.

### **Project Learning Tree Activity Guide**

Water Wonders (44)

- c. water moves in the air from one place to another in the form of clouds or fog, which are tiny droplets of water or ice, and falls to the Earth as rain, hail, sleet, or snow.

### **Project Learning Tree Activity Guide**

Water Wonders (44)

- d. the amount of fresh water, located in rivers, lakes, underground sources, and glaciers, is limited, and its availability can be extended through recycling and decreased use.

### **Project Learning Tree Activity Guide**

Renewable or Not? (14)

Every Drop Counts (38)

Our Changing World (86)

Life on the Edge (88)

## **INVESTIGATION AND EXPERIMENTATION**

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:
- a. classify objects (e.g., rocks, plant, leaves) based on appropriate criteria.

### **Project Learning Tree Activity Guide**

Get in Touch with Trees (2)

Habitat Pen Pals (7)

Charting Diversity (10)

We All Need Trees (13)

A Few of My Favorite Things (15)

Pass the Plants, Please (16)

Trees as Habitats (22)

The Fallen Log (23)

Birds and Worms (25)

Talking Trash, Not! (37)

Have Seeds, Will Travel (43)

Are Vacant Lots Vacant? (47)

Soil Stories (70)

- b. develop a testable question.

**Project Learning Tree Activity Guide**

The Fallen Log (23)  
 Nature's Recyclers (24)  
 How Plants Grow (41)  
 Sunlight and Shades of Green (42)  
 Have Seeds, Will Travel (43)

- c. plan and conduct a simple investigation based on a student-developed question, and write instructions others can follow to carry out the procedure.

**Project Learning Tree Activity Guide**

Tree Treasures (12)  
 The Fallen Log (23)  
 Nature's Recyclers (24)  
 How Plants Grow (41)  
 Sunlight and Shades of Green (42)  
 Nothing Succeeds Like Succession (80)

- d. identify the dependent and controlled variables in an investigation.

**Project Learning Tree Activity Guide**

Nature's Recyclers (24)  
 Birds and Worms (25)  
 How Plants Grow (41)  
 Sunlight and Shades of Green (42)  
 How Big is Your Tree? (67)  
 Trees in Trouble (77)  
 Nothing Succeeds Like Succession (80)

- e. identify a single independent variable in a scientific investigation and explain what will be learned by collecting data on this variable.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)  
 Adopt a Tree (21)  
 Nature's Recyclers (24)  
 How Plants Grow (41)  
 Sunlight and Shades of Green (42)  
 Water Wonders (44)  
 Soil Stories (70)  
 Trees in Trouble (77)

- f. select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)  
 Nature's Recyclers (24)  
 Every Drop Counts (38)  
 How Plants Grow (41)  
 (continued)

Water Wonders (44)  
How Big is Your Tree? (67)  
Soil Stories (70)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

- g. record data using appropriate graphic representation (including charts, graphs, and labeled diagrams), and make inferences based on those data.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)  
Trees as Habitats (22)  
Birds and Worms (25)  
Every Tree for Itself (27)  
Talking Trash, Not! (37)  
Every Drop Counts (38)  
How Plants Grow (41)  
Are Vacant Lots Vacant? (47)  
How Big is Your Tree? (67)  
Soil Stories (70)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

- h. draw conclusions based on scientific evidence and indicate whether further information is needed to support a specific conclusion.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)  
Trees as Habitats (22)  
The Fallen Log (23)  
Every Drop Counts (38)  
How Plants Grow (41)  
Water Wonders (44)  
Are Vacant Lots Vacant? (47)  
Soil Stories (70)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

## GRADE 6 FOCUS ON EARTH SCIENCE

### **SHAPING THE EARTH'S SURFACE**

2. Topography is reshaped by weathering of rock and soil and by the transportation and deposition of sediment. As the basis for understanding this concept, students know:
  - b. rivers and streams are dynamic systems that erode and transport sediment, change course, and flood their banks in natural and recurring patterns.

**Project Learning Tree Activity Guide**

Water Wonders (44)

### **ECOLOGY (LIFE SCIENCE)**

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept, students know:
  - a. energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis, and then from organism to organism in food webs.

**Project Learning Tree Activity Guide**

Air Plants (28)

Plant a Tree (31)

Sunlight and Shades of Green (42)

Web of Life (45)

Tropical Treehouse (49)

- b. over time, matter is transferred from one organism to others in the food web, and between organisms and the physical environment.

**Project Learning Tree Activity Guide**

The Fallen Log (23)

Nature's Recyclers (24)

Web of Life (45)

- c. populations of organisms can be categorized by the functions they serve in an ecosystem.

**Project Learning Tree Activity Guide**

Charting Diversity (10)

Can It Be Real? (11)

The Fallen Log (23)

Dynamic Duos (26)

Plant a Tree (31)

Web of Life (45)

(continued)

Are Vacant Lots Vacant? (47)  
Nothing Succeeds Like Succession (80)

- d. different kinds of organisms may play similar ecological roles in similar biomes.

**Project Learning Tree Activity Guide**

Charting Diversity (10)  
Tropical Treehouse (49)

- e. the number and types of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil composition.

**Project Learning Tree Activity Guide**

Habitat Pen Pals (7)  
The Forest of S.T. Shrew (8)  
Planet of Plenty (9)  
Every Tree for Itself (27)  
Air Plants (28)  
Rain Reasons (29)  
Plant a Tree (31)  
How Plants Grow (41)  
Web of Life (45)  
Are Vacant Lots Vacant? (47)  
Tropical Treehouse (49)  
Nothing Succeeds Like Succession (80)  
Life on the Edge (88)  
Where Are the Cedars of Lebanon? (94)

**RESOURCES**

6. Sources of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation. As a basis for understanding this concept, students know:

- a. the utility of energy sources is determined by factors that are involved in converting these sources to useful forms and the consequences of the conversion process.

**Project Learning Tree Activity Guide**

Tree Treasures (12)  
We All Need Trees (13)  
Renewable or Not? (14)  
A Few of My Favorite Things (15)  
Energy Sleuths (39)  
Make Your Own Paper (51)  
A Look at Aluminum (52)  
On the Move (53)  
Forest for the Trees (69)  
Waste Watchers (73)  
Resource-Go-Round (82)  
A Peek at Packaging (84)  
Our Changing World (86)  
Where Are the Cedars of Lebanon? (94)

- b. different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and classify them as renewable or nonrenewable.

**Project Learning Tree Activity Guide**

Renewable or Not? (14)  
 A Few of My Favorite Things (15)  
 A Forest of Many Uses (32)  
 Forest Consequences (33)  
 Energy Sleuths (39)  
 Make Your Own Paper (51)  
 On the Move (53)  
 Forest for the Trees (69)  
 Waste Watchers (73)  
 Resource-Go-Round (82)  
 Our Changing World (86)  
 Where Are the Cedars of Lebanon? (94)

- c. natural origin of the materials used to make common objects.

**Project Learning Tree Activity Guide**

We All Need Trees (13)  
 Renewable or Not? (14)  
 A Few of My Favorite Things (15)  
 Environmental Exchange Box (20)  
 A Forest of Many Uses (32)  
 Forest Consequences (33)  
 Make Your Own Paper (51)  
 A Look at Aluminum (52)  
 On the Move (53)  
 Forest for the Trees (69)  
 Tepee Talk (75)  
 Resource-Go-Round (82)  
 A Peek at Packaging (84)  
 Where Are the Cedars of Lebanon? (94)

## **INVESTIGATION AND EXPERIMENTATION**

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:

- a. develop a hypothesis.

**Project Learning Tree Activity Guide**

Planet of Plenty (9)  
 Birds and Worms (25)  
 Rain Reasons (29)  
 How Plants Grow (41)  
 Have Seeds, Will Travel (43)  
 (continued)

Soil Stories (70)  
Air We Breathe (72)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

- b. select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.

**Project Learning Tree Activity Guide**

Sounds Around (4)  
Planet of Plenty (9)  
Adopt a Tree (21)  
Rain Reasons (29)  
Every Drop Counts (38)  
How Plants Grow (41)  
Soil Stories (70)  
Air We Breathe (72)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

- c. construct appropriate graphs from data and develop qualitative statements about the relationships between variables.

**Project Learning Tree Activity Guide**

Sounds Around (4)  
Planet of Plenty (9)  
Birds and Worms (25)  
Loving It Too Much (35)  
Talking Trash, Not! (37)  
Every Drop Counts (38)  
How Plants Grow (41)  
Are Vacant Lots Vacant? (47)  
Soil Stories (70)  
Air We Breathe (72)  
Trees in Trouble (77)  
Nothing Succeeds Like Succession (80)

- d. communicate the steps and results from an investigation in written reports and verbal presentations.

**Project Learning Tree Activity Guide**

Rain Reasons (29)  
Are Vacant Lots Vacant? (47)  
Soil Stories (70)

- e. recognize whether evidence is consistent with a proposed explanation.

**Project Learning Tree Activity Guide**

Sounds Around (4)  
Planet of Plenty (9)  
Birds and Worms (25)  
(continued)

- Rain Reasons (29)
  - Energy Sleuths (39)
  - How Plants Grow (41)
  - Have Seeds, Will Travel (43)
  - Water Wonders (44)
  - Soil Stories (70)
  - Trees in Trouble (77)
  - Nothing Succeeds Like Succession (80)
- f. read a topographic map and a geologic map for evidence provided on the maps, and construct and interpret a simple scale map.

**Project Learning Tree Activity Guide**

Rain Reasons (29)

- h. identify changes in natural phenomena over time without manipulating the phenomena (e.g., a tree limb, a grove of trees, a stream, a hillslope).

**Project Learning Tree Activity Guide**

Adopt a Tree (21)

Field, Forest, and Stream (48)

Nothing Succeeds Like Succession (80)

## **GRADE 7 FOCUS ON LIFE SCIENCE**

### **CELL BIOLOGY**

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope. As a basis for understanding this concept, students know:
  - b. the characteristics that distinguish plant cells from animal cells, including chloroplasts and cell walls.

**Project Learning Tree Activity Guide**

Rain Reasons (29)

### **EVOLUTION**

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept, students know:
  - e. extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

**Project Learning Tree Activity Guide**

Our Changing World (86)

Life on the Edge (88)

### **EARTH AND LIFE HISTORY (EARTH SCIENCE)**

4. Evidence from rocks allows us to understand the evolution of life on Earth. As the basis for understanding this concept, students know:
  - e. fossils provide evidence of how life and environmental conditions have changed.

**Project Learning Tree Activity Guide**

Where Are the Cedars of Lebanon? (94)

### **STRUCTURE AND FUNCTION IN LIVING SYSTEMS**

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function. As a basis for understanding this concept, students know:
  - a. plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.

**Project Learning Tree Activity Guide**

Have Seeds, Will Travel (43)

- f. the structures and processes by which flowering plants generate pollen and ovules, seeds, and fruit.

**Project Learning Tree Activity Guide**

Have Seeds, Will Travel (43)

**INVESTIGATION AND EXPERIMENTATION**

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:

- a. select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.

**Project Learning Tree Activity Guide**

Adopt a Tree (21)

Trees as Habitats (22)

Rain Reasons (29)

Every Drop Counts (38)

How Plants Grow (41)

Watch on Wetlands (71)

Air We Breathe (72)

Trees in Trouble (77)

Nothing Succeeds Like Succession (80)

- b. utilize a variety of print and electronic resources (including the World Wide Web) to collect information as evidence as part of a research project.

**Project Learning Tree Activity Guide**

Sounds Around (4)

Charting Diversity (10)

Energy Sleuths (39)

Watch on Wetlands (71)

- c. communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.

**Project Learning Tree Activity Guide**

Sounds Around (4)

Rain Reasons (29)

How Plants Grow (41)

Have Seeds, Will Travel (43)

Air We Breathe (72)

Trees in Trouble (77)

Nothing Succeeds Like Succession (80)

- d. construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates and cell structure).

**Project Learning Tree Activity Guide**

Watch on Wetlands (71)

Nothing Succeeds Like Succession (80)

Our Changing World (86)

- e. communicate the steps and results from an investigation in written reports and verbal presentations.

**Project Learning Tree Activity Guide**

Sounds Around (4)

Rain Reasons (29)

## GRADE 8 FOCUS ON PHYSICAL SCIENCE

### **STRUCTURE OF MATTER**

3. Elements have distinct properties and atomic structure. All matter is comprised of one or more of over 100 elements. As a basis for understanding this concept, students know:
  - d. the states (solid, liquid, gas) of matter depend on molecular motion.

**Project Learning Tree Activity Guide**

Air We Breathe (72)

### **INVESTIGATION AND EXPERIMENTATION**

9. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:
  - a. plan and conduct a scientific investigation to test a hypothesis.

**Project Learning Tree Activity Guide**

Rain Reasons (29)

How Plants Grow (41)

Nothing Succeeds Like Succession (80)

- b. evaluate the accuracy and reproducibility of data.

**Project Learning Tree Activity Guide**

Rain Reasons (29)

How Plants Grow (41)

Air We Breathe (72)

Trees in Trouble (77)

Nothing Succeeds Like Succession (80)

- c. distinguish between variable and controlled parameters in a test.

**Project Learning Tree Activity Guide**

Rain Reasons (29)

How Plants Grow (41)

Air We Breathe (72)

Trees in Trouble (77)

Nothing Succeeds Like Succession (80)

- e. construct appropriate graphs from data and develop quantitative statements about the relationships between variables.

**Project Learning Tree Activity Guide**

How Plants Grow (41)

Air We Breathe (72)

Trees in Trouble (77)