

Classroom Plants

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About **Classroom Plants**

DeltaScienceModules, THIRD EDITION

Students explore the variety, complexity, and importance of plants. They work with gardening partners to compare the sizes, shapes, and arrangements of seeds in assorted fruits and vegetables. They then prepare the seeds and plant them, along with kit grasses, peas, and beans. Sprouts soon follow. Experiments with soil, water, and light help students determine optimum growing conditions. As plants develop, students discover the functions of roots and stems. In time, they do the same with leaves and flowers. Finally, they learn how pollination causes the life cycle to begin again.

In the Delta Science Reader *Classroom Plants*, students are introduced to the world of plants. Students observe the similarities and differences between plants and animals and compare different types of plants. They find out about the functions of plant parts and explore what a plant needs to grow. Students learn about plants' life cycles and methods of reproduction. Students meet George Washington Carver, a plant scientist who discovered many new uses for peanut plants. Finally, students read about hydroponics, growing plants in water.

Overview Chart for Hands-on Activities

Hands-on Activity	Student Objectives
1 Plants in Our World <i>page 15</i>	<ul style="list-style-type: none"> • distinguish between animals and plants • examine and name the parts of a plant • acknowledge the importance of plants to life on Earth • discuss some human uses for plants
2 Seed Plants <i>page 23</i>	<ul style="list-style-type: none"> • examine a variety of fruit and vegetable seeds • discuss the function of seeds • classify the seeds according to size or other criteria
3 Seeds in Soil <i>page 29</i>	<ul style="list-style-type: none"> • discuss the advantages of soil as a growing medium • learn how seeds get dispersed in nature • plant seeds from Activity 2 in soil • observe and record the progress of their classroom plants
4 Seeds in Water <i>page 39</i>	<ul style="list-style-type: none"> • “plant” some seeds in water • observe and record the progress of their seedlings • learn that some seeds can be sprouted without soil, but all seeds need soil in order to grow
5 What Do Plants Need? <i>page 47</i>	<ul style="list-style-type: none"> • plant grass seed • monitor plant growth in a variety of growing conditions • determine that plants need sunlight and a moderate amount of water to stay healthy
6 Roots Anchor and Absorb <i>page 55</i>	<ul style="list-style-type: none"> • examine the roots of a variety of plants • learn that roots anchor the plant and absorb water and nutrients from the soil • discover that some plants store extra food in their roots and that these roots can be eaten
7 Stems Support and Supply <i>page 65</i>	<ul style="list-style-type: none"> • examine the stems of a variety of plants • observe that the stem supports the plant • use celery and food coloring to show that the stem transports water and dissolved nutrients between the roots and the leaves
8 Leaves Make Food <i>page 73</i>	<ul style="list-style-type: none"> • collect and examine a variety of leaves • compare the different shapes leaves can have • learn that green leaves contain chlorophyll, which captures sunlight and uses it to make food for the plant • make leaf rubbings
9 Flowers Make Seeds <i>page 81</i>	<ul style="list-style-type: none"> • examine a variety of flowers • distinguish flowers by the number, shape, and arrangement of their petals • discover that the flower is the part of a plant that produces seeds
10 New Plants from Plant Parts <i>page 87</i>	<ul style="list-style-type: none"> • distinguish between a tuber and a bulb • “plant” a potato (tuber) and an onion (bulb) in water and observe the plant parts take root and grow • place a leaf cutting in water and observe the cutting develop roots • conclude that new plants can be generated from the parts of old ones
11 Plant Defenses <i>page 97</i>	<ul style="list-style-type: none"> • feel the tough exterior of an oak leaf • observe the sharp spines of a cactus • taste the spicy juice of a jalapeño pepper • conclude that some plants have unusual characteristics that help them to survive
12 A Trip to a Greenhouse <i>page 105</i>	<ul style="list-style-type: none"> • tour a local greenhouse or garden shop • learn how greenhouses reproduce favorable growing conditions for plants • make a terrarium—a miniature greenhouse—from plastic soda bottles, gravel, soil, and plants
Assessment <i>page 113</i>	<ul style="list-style-type: none"> • See page 113.

Classroom Plants

Process Skills	Vocabulary	Delta Science Reader
classify, compare, observe, define based on observations	animal, leaves, plant, roots, stem	pages 2–3, 6
observe, communicate, classify, infer	fruit, seed, seed plant, vegetable	pages 5, 11–12
communicate; observe; collect, record, display, or interpret data	seedling, soil, sprout	pages 4, 5
predict; observe; measure; collect, record, display, or interpret data		pages 13, 15
hypothesize, experiment, use variables		pages 2, 11–12
predict, observe, infer	absorb, root hairs	pages 6, 7
observe, infer		page 8
observe; compare; collect, record, display, or interpret data	chlorophyll, vein	page 9
observe, compare, define based on observation	flower, petal, pollen	page 10
compare, hypothesize, experiment, infer	bud, bulb, leaf cutting, tuber	page 13
observe, infer	defense	
collect, record, display, or interpret data; experiment	greenhouse, terrarium	pages 14, 15

See the following page for the Delta Science Reader Overview Chart.

Overview Chart for Delta Science Reader

Classroom Plants

Selections	Vocabulary	Related Activity
Think About...		
What Is a Plant? <i>page 2</i>	plant, organism	Activities 1, 5
What Is Soil? <i>page 4</i>	humus, mineral, soil	Activity 3
Plant Life Cycles <i>page 5</i>	flowering plant, life cycle, life span, reproduce, seed, seedling, sprout	Activities 2, 9, 10
What Are the Parts of a Plant? <i>page 6</i>	nutrients, root stem carbon dioxide, chlorophyll, energy, leaf (leaves), oxygen, photosynthesis, respond bud, conifer, flower, petal, pollen fruit, germinate, seed coat	Activity 6 Activity 7 Activity 8 Activity 9 Activities 2, 5
• Roots <i>page 7</i>		
• Stems <i>page 8</i>		
• Leaves <i>page 9</i>		
• Flowers <i>page 10</i>		
• Fruits and Seeds <i>page 11</i>		
Other Ways That New Plants Grow <i>page 13</i>	bulb, cutting, tuber	Activity 10
People in Science		
• George Washington Carver <i>page 14</i>		Activities 1, 12
Did You Know?		
• About Hydroponics <i>page 15</i>	hydroponics	Activities 4, 12

See pages 121–131 for teaching suggestions for the Delta Science Reader.

MATERIALS LIST

Classroom Plants

Quantity	Description	Quantity	Description
8	bags, plastic, reclosable, 15 cm × 15 cm	TEACHER-PROVIDED ITEMS	
32	bases, drainage, for planter cups	1	African violet plant
17	bottles, soda, clear plastic, 2-L†	2	avocados, ripe*
17	bowls, plastic	1	bag, plastic (grocery-type)
2	cheesecloth, 15 cm × 15 cm*	1	bucket*
16	crayons, box	1	cactus, with spines
40	cups, paper, large*	8	carrots, with greens*
6	cups, paper, small*	8	celery stalks, with leaves*
6	flowerpots	1	crackers, animal, box*
1	food coloring, red*	32	crayons, green
1	garden box†	1	cutting board
2	gravel, large, 2 lb*‡	–	flowers, assorted*
5	gravel, small, 2 lb*‡	–	fruits and vegetables*
1	Growing Instructions (4)	–	leaves, assorted*
15	jars, clear plastic	1	marker, felt-tip, black
1	knife, paring	–	newspaper*
8	knives, plastic	5	onions*
32	magnifiers	–	paper towels*
1	paper, construction, assorted colors, p/50*	–	paper, white, large*
32	planter cups	16	paper, white, scrap*
4	plastic sheets, large†	11	paste, jars
1	rubber bands, 1 oz	–	pencils, colored (green, brown, black, gray)
1	seed, grass, 1 lb*	32	pencils, regular
1	seeds, alfalfa, p/1,000*	3	peppers, jalapeño*
1	<i>Seeds in Soil</i>	–	pictures, plants and animals
1	seeds, mung bean, p/100*	–	plants
1	seeds, mustard, p/500*	1	plastic wrap, roll*
11	soil, potting, 4 qt*‡	5	potatoes, with eyes*
2	sponges	8	radishes, with greens*
4	spray bottles†	8	rulers, metric
8	sprinkler bottles	32	safety goggles
1	tape, masking*	11	scissors
1	toothpicks, round, p/250*	1	spoon, measuring (Tbsp)
26	trays, plastic	1	stapler, heavy-duty
1	Teacher's Guide	1	tape, transparent*
8	Delta Science Readers	1	trowel, or strong metal spoon
		1	vase
		–	water, tap*

* = consumable item

† = in separate box

‡ = in Sand and Soil box

ACTIVITY SUMMARY

In this Delta Science Module, students are introduced to plants and plant growth.

ACTIVITY 1 Students begin their study of plants by distinguishing between animals and plants. They observe plants in their natural surroundings and learn the main parts of a plant. They discuss the importance of plants to life on Earth, then name some everyday items that are made from plants and plant parts.

ACTIVITY 2 Students learn of the importance of seeds to the reproduction of seed plants. They compare the size, shape, and arrangement of seeds in a variety of fruits and vegetables. They learn that many plants produce seeds and that the fruit of a plant contains the seeds from which new plants grow.

ACTIVITY 3 Students discuss the properties of soil as a growing medium and learn how seeds get dispersed in nature. Then they plant the seeds of the fruits and vegetables they examined in Activity 2 and record the growth of the seeds into seedlings.

ACTIVITY 4 Students sprout seeds in water. They observe and record the progress of their seedlings and conclude that while some seeds can be sprouted without soil, all seeds need soil in order to grow. Students also learn about the importance of the seed in providing temporary nourishment to the seedlings.

ACTIVITY 5 Students investigate the needs of plants. Students grow pots of grass in a variety of light and water conditions, and learn that plants need sunlight and a moderate amount of water to grow.

ACTIVITY 6 Students explore the specific parts of a plant, beginning with the roots. Students observe the roots that have formed on their seedlings and conclude that roots anchor the plant and absorb water and dissolved nutrients.

They also learn that some roots store food and that these roots are good to eat.

ACTIVITY 7 Students learn about the functions of plant stems. By examining their seedlings as well as conducting a classic experiment with celery stalks and red food coloring, students discover that plant stems support the plant and transport fluids between the roots and leaves.

ACTIVITY 8 Students have an opportunity to examine a variety of leaf shapes. Students also learn that a pigment called chlorophyll gives plants their green color and enables the plant to make food from sunlight, water, air, and nutrients.

ACTIVITY 9 Students learn about a very special plant part: flowers. Students ponder the different shapes flowers can have, then examine and name the inner and outer structures of a flower. Students come to understand that through pollination, flowers produce the seeds from which new plants grow.

ACTIVITY 10 Students learn that not all new plants come from seeds. By rooting a bulb (onion), tuber (potato), and a leaf cutting in water, students discover that new plants can be grown from the parts of old ones.

ACTIVITY 11 Students discover that some plants have developed unusual characteristics that protect them from plant-eating animals. By touching the leathery exterior of an oak leaf, observing the needle-like spines of a cactus, and tasting a bit of hot pepper, students experience the deterrents firsthand.

ACTIVITY 12 Students tour a local greenhouse and learn how these special buildings are designed to cultivate plants. Back in the classroom, they make terrariums from plastic soda bottles, soil, and plants. Students continue the study of plants by maintaining these “miniature greenhouses.”