Pre-K/Kindergarten/First Grade Spring Lesson

Pre-K/K — Sunflower House
1st — Pumpkins and Sunflowers

Objective:

1) Students will bring literature to life by planting a garden similar to one in a story they read in class.
2) Students will learn that plants need sunlight and water to grow, and the basic structures of a plant.
3) Students will learn that different plants have different features and grow in different ways.

California State Content Standards:

1) Kindergarten

A) English/Language Arts

2.0 Reading Comprehension
Comprehension and Analysis of Grade-Level-Appropriate Text

2.2 Use pictures and context to make predictions about story content.
2.3 Connect to life experiences the information and events in texts.
2.4 Retell familiar stories.
2.5 Ask and answer questions about essential elements of a text.

3.0 Literary Response and Analysis
Narrative Analysis of Grade-Level-Appropriate Text

3.1 Distinguish fantasy from realistic text.

B) Math—Measurement and Geometry

1.0 Students understand the concept of time and units to measure it; they understand that objects have properties, such as length, weight, and capacity, and that comparisons may be made by referring to those properties.

1.1 Compare the length, weight and capacity of objects by making direct comparisons with reference objects (e.g. note which object is shorter, longer, taller, lighter, heavier, or holds more).

C) Science—Life Science

2. Different types of plants and animals inhabit the earth. As a basis for understanding this concept:

a. Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).
b. Students know stories sometimes give plants and animals attributes they do not really have.
c. Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).

2) First Grade

A) English/Language Arts

2.0 Reading Comprehension

Comprehension and Analysis of Grade-Level-Appropriate Text

2.2 Respond to who, what, when, where, and how questions.

2.3 Follow one-step written instructions.

2.4 Use context to resolve ambiguities about word and sentence meanings.

2.5 Confirm predictions about what will happen next in a text by identifying key words (i.e., signpost words).

2.6 Relate prior knowledge to textual information.

B) Math—Measurement and Geometry

1.0 Students use direct comparison and nonstandard units to describe the measurements of objects.

1.1 Compare the length, weight, and volume of two or more objects by using direct comparison or a nonstandard unit.

C) Science—Life Science

2.0 Plants and animals meet their needs in different ways. As a basis for understanding this concept:

a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

b. Students know both plants and animals need water, animals need food, and plants need light.

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

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

Lesson Outline:

A. Lesson

a. Read/Review the Story

b. Introduce Sunflower and Pumpkin seeds—compare to seeds that we buy for food

c. Discuss growing habits of Sunflowers and Pumpkins

B. Garden Rules

C. Planting Plans

D. Plant

Seeds/Supplies:

Pumpkin—Jack O' Lantern, Jack-Be-Nimble (miniature), Lumina (white)

Sunflowers—Mammoth (8-10 feet), Autumn Beauty (5-7 feet), Sunspot (dwarf 2-4 feet)

Lesson:

This lesson is based on literature. *If possible, have the teacher read the story to the class before you come to plant.* Then you just review the story with the students. Reading the story and doing the planting will take longer than 30 minutes. If you read Sunflower House, you may want to plant your seeds in a design that would let children go inside a "house" as the plants grow tall.

**Also, please note: These plants grow big (sunflowers tall, pumpkins long vines along ground) so we plant very few seeds. Each child will only plant 1-2 seeds.

1) Sunflowers
   a. Mammoth Sunflower seeds look just like the seeds that you buy at the store to eat—but don't eat these seeds because they are not clean AND don't plant the ones you buy in the market because those seeds have been cooked so they won't grow
   b. Some other types of sunflower seeds look different (show Autumn Beauty, which is a mix)—black, brown, smaller size
   c. Plants from these little seeds grow very TALL—taller than all grownups
   d. Sunflowers are phototropic—they turn their faces toward the sun over the course of the day
   e. Natural birdfeeders—the fully grown sunflowers are full of all the sunflower seeds. If we save those seeds, we can plant them the following year. If we leave the sunflowers and their seeds on the plants to dry, the birds and animals eat the seeds
2) Pumpkins
   a. Pumpkin seeds look the same as the ones you pull out of the pumpkin you carve at Halloween—seeds come from inside the grown pumpkins
   b. Some people cook the seeds from their pumpkin to eat—but don't eat these because they are not clean AND don't try to plant seeds you buy in themarket because they are cooked so they won't grow
   c. Pumpkins grow on long vines that spread across the ground and make big orange flowers, from which the pumpkins grow
   d. Pumpkin plants have big leaves—the size of your dinner plate
   e. Pumpkins take a long time to grow—we plant in spring or early summer to have pumpkins ready in time for Halloween

Planting Directions:

1) Make rows a foot apart for sunflowers. Plant seeds two inches apart. For Sunflower House, make one row forming three sides of a rectangle or in a circle. Sunflower House should use only Mammoth Sunflower seeds.
2) Plant pumpkins in two-foot wide circle, two feet from neighboring circle. Plant 6-8 seeds per circle. If desired, you may make a small mound and plant pumpkin seeds on top.
3) Each student plants two seeds 1 inch deep. Have students insert their finger up to first knuckle to dig hole.
4) DO NOT COVER UP SEEDS UNTIL ALL ARE PLANTED IN THEIR HOLES—OTHERWISE YOU WON'T KNOW WHERE THE SEEDS ARE FOR THE NEXT STUDENT.

Pre-K/Kindergarten/First Grade Spring Lesson

Pre-K/K — Sunflower House
1st — Pumpkins and Sunflowers

Today your class will be planting their spring garden with sunflowers, along with pumpkins if you choose. These plantings are linked to several children's stories. Please read one or more of the following books before your planting:

Sunflower House *by Eve Bunting*
This is the Sunflower *by Lola M.Schaefer and Donald Crews*
The Pumpkin Circle *by George Levenson*

These plants grow very big (sunflowers are very tall, and pumpkins grow on long vines) and take a long time to mature. The plants will not be fully mature until after school is out for the summer. Before school gets out, the students will be able to see how fast the plants grow and how the pumpkins and sunflowers develop. Because the plants grow so fast, it is fun to visit the garden regularly and use a yardstick to measure how much they have grown in just a week. Make a data chart to chart the growth! For more fun, measure the students at the time of planting and then measure them over the course of the growing season to compare their growth rate with that of the sunflowers and pumpkins. Encourage the students to visit the plants over the summer. Remind them to leave the sunflowers and pumpkins growing in the garden so that they are there for the students to study and enjoy when the students arrive back in the fall.

California State Content Standards:

1) Kindergarten

A) English/Language Arts

2.0 Reading Comprehension
Comprehension and Analysis of Grade-Level-Appropriate Text

2.2 Use pictures and context to make predictions about story content.
2.3 Connect to life experiences the information and events in texts.
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3.0 Literary Response and Analysis
Narrative Analysis of Grade-Level-Appropriate Text

3.1 Distinguish fantasy from realistic text.

B) Math - Measurement and Geometry

1.0 Students understand the concept of time and units to measure it; they

understand that objects have properties, such as length, weight, and capacity, and that comparisons may be made by referring to those properties.

1.1 Compare the length, weight and capacity of objects by making direct comparisons with reference objects (e.g. note which object is shorter, longer, taller, lighter, heavier, or holds more).

C) Science—Life Science

2.0 Different types of plants and animals inhabit the earth. As a basis for understanding this concept:

a. Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).
b. Students know stories sometimes give plants and animals attributes they do not really have.
c. Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).

2) First Grade

A) English/Language Arts

2.0 Reading Comprehension

Comprehension and Analysis of Grade-Level-Appropriate Text

2.2 Respond to who, what, when, where, and how questions.
2.3 Follow one-step written instructions.
2.4 Use context to resolve ambiguities about word and sentence meanings.
2.5 Confirm predictions about what will happen next in a text by identifying key words (i.e., signpost words).
2.6 Relate prior knowledge to textual information.

B) Math—Measurement and Geometry

1.0 Students use direct comparison and nonstandard units to describe the measurements of objects.

1.1 Compare the length, weight, and volume of two or more objects by using direct comparison or a nonstandard unit.

C) Science—Life Science

2.0 Plants and animals meet their needs in different ways. As a basis for understanding this concept:

a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.
b. Students know both plants and animals need water, animals need food, and plants need light.
c. Students know animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.
e. Students know roots are associated with the intake of water and soil nutrients and green leaves are associated with making food from sunlight.

Please visit the garden regularly to watch your plants grow! We recommend bringing your class to the garden weekly to observe and measure (make a data chart!) the growth of your plants. Hold an Open House in June to talk to your students about their garden.

Second Grade Spring Lesson

Pollinator Flower Garden

Objective:

1) Students will learn the role of flowers and pollinating birds and insects in the garden and that different pollinators have different needs.
2) Students learn the lifecycle of the butterfly and that butterflies have different needs during the different stages of their life.

California State Content Standards:

1) Science—Life Science

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

b. Students know the sequential stages of life cycles are different for different animals, such as butterflies, frogs, and mice.
c. Students know many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment.
d. Students know there is variation among individuals of one kind within a population.
e. Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.
f. Students know flowers and fruits are associated with reproduction in plants.

Lesson Outline:

A. Lesson
   a. What is a Pollinator?
   b. How do you attract a Pollinator?
   c. Lifecycle of a Butterfly
B. Garden Rules
C. Planting Plans
D. Plant

Seeds/Supplies:
Suggested varieties--any combination of quick growing plants in various colors and variety will work. Plant in blocks of color for best impact and rainbow look.

Pink: Cosmos, zinnia, bee balm, aster
Red: Red sunflower, zinnia, sages (Salvia)
Orange: calendula, marigold, milkweed (monarch caterpillar food), Mexican sunflower (Tithonia)
Yellow: Dill, black-eyed susan, gallardia, marigold, coreopsis
Blue/Purple: Bachelor's Buttons, verbena, cupid's dart, pincushion (Sciabiosa), coneflower (Echinacea), sages (Salvia)
White: Yarrow, cosmos, Shasta daisy

**We recommend planting seedlings started indoors 6-8 weeks prior or purchasing nursery transplants. Depending on the weather and conditions, some flower seeds germinate/grow slowly, and you may not get sufficient flowers by June if you sow seed directly in spring.

Lesson:
Pollinators are insects and animals, such as bees, butterflies, flies, hummingbirds, and moths, that serve an important role in the garden.

1) Pollinators do their important work without even knowing it!
   a. Pollinators seeking nectar from flowers for their own food pick up pollen on their bodies.
   b. When they fly to the next flower, they spread the pollen to those flowers, which is called "pollinating" the flowers.
   c. Pollinating the flowers helps the plants because plant flowers must receive pollen from other plants in order for the plants to reproduce by making new seeds.

1) Pollinators are attracted to flowers by two things:
   a. Color of flowers—pollinators flying by see bright colors in the garden. Many pollinators are picky eaters and will go to only one color of flower, such as monarch butterflies which like orange or yellow. Night blooming flowers are usually white so that the night pollinators (such as moths) can see them in the dark.
   b. Scent of flowers—the sweet smell of flowers attracts passing pollinators. Night-blooming flowers like jasmine use very strong scent to attract night pollinators.

2) Different pollinators like different shaped flowers. Butterflies need a landing pad—big wide-faced flowers such as cosmos or dill or yarrow to land on so they can drink the nector. Hummingbirds like deep flowers that make use of their long skinny beaks.

3) Butterflies are unique types of pollinators because they have a special lifecycle.
   a. Lifecycle: They lay their eggs in the garden, the eggs hatch into caterpillars, the caterpillars eventually form a chrysalis, and finally the chrysalis opens to release the new butterfly. (THIS IS THE MOST SIMPLE DESCRIPTION OF THE LIFECYCLE—WE DO NOT HAVE TIME DURING OUR LESSONS TO TEACH A COMPLETE LESSON ON BUTTERFLY LIFECYCLES).

b. To attract butterfly pollinators to the garden, the garden must feed both caterpillars and butterflies —leaves for caterpillars/flowers for butterflies. Dill, marigold, zinnia and yarrow are good plants because they feed both. Monarch caterpillars only eat one type of food—milkweed—so monarchs will only lay eggs on milkweed plants.

Planting Directions:

Planting seeds:

1) Make rows 6 inches apart and ¼ inch deep.

2) Plant seeds by placing in row 1 inch apart—most seeds are very small like lettuce or carrots. Bigger seeds (Mexican sunflower, cosmos) can be planted 2 inches apart. Do not have students dig a hole for their seeds.

3) Have students pinch and pat to cover rows after they place seeds.

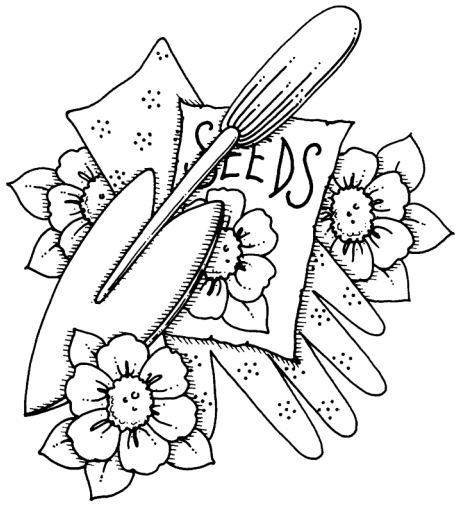
Planting seedlings: BEST TO DEMONSTRATE THIS IN GARDEN BEFORE LETTING STUDENTS PLANT

1) Follow spacing recommended for each variety.

2) Have students dig hole as deep as seedling pot and 1 inch wider.

3) Demonstrate to students how to remove seedling from container—turn upside down with fingers on either side of seedling and tap bottom of container until seedling comes out. REMIND THEM NEVER TO PULL OUT BY STEM!!

4) Place seedling in hole and gently pat in dirt all around.



Teacher Information

Second Grade Spring Lesson

Pollinator Flower Garden

Today your class will be planting their spring garden to attract pollinators such as butterflies, bees, and hummingbirds. The goal is to plant a garden of colorful flowers that will lure in the pollinators. Please take a moment with your class in the next few days to note how many pollinators are in the garden area at the beginning of the growing season. If the garden does not have any flowers in bloom, you should not see very many. As the season progresses and the flowers come into bloom, visit the garden regularly to compare the number of pollinators you see as the flowers come into bloom.

Please remind your students not to pick the flowers. If the flowers are gone from the garden, the pollinators will not come! You may want to have them make "Do Not Pick the Flowers—Pollinators at Work!" signs to remind others as well.

Due to time constraints, we provide only a very simple review of the butterfly lifecycle during this lesson. We hope that you will use this lesson as either a beginning for or a review of a more detailed study of this fascinating process.

California State Content Standards:

1) Science—Life Science

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

b. Students know the sequential stages of life cycles are different for different animals, such as butterflies, frogs, and mice.

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

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

e. Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.

f. Students know flowers and fruits are associated with reproduction in plants.

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

Please visit the garden regularly to watch your garden grow! Hold an Open House in June to talk to your students about their garden.

Third Grade Spring Lesson

Three Sisters Garden

Objective:

Students will learn (1) folklore and practical use of traditional Native American Three Sisters plantings of corn, bean and squash, (2) different plant species have different growing habits and needs, and (3) Native Americans used complementary plantings of multiple plant species and symbiotic relationships between plant species to help their food grow more successfully than if they had grown the plants separately.

California State Content Standards:

1) Science Standards

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

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

c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.

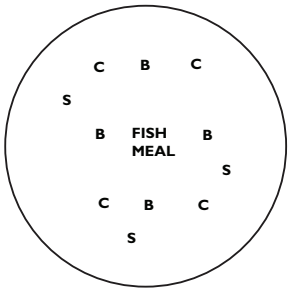
2) Social Science

3.2: Students describe the American Indian nations in their local region long ago and in the recent past.

1. Describe national identities, religious beliefs, customs, and various folklore traditions.
2. Discuss the ways in which physical geography, including climate, influenced how the local Indian nations adapted to their natural environment (e.g., how they obtained food, clothing, tools).

Lesson Outline:

A. Lesson
   a. History of Three Sisters
   b. Draw Three Sisters Planting diagram
   c. Discuss complementary growing habits of Three Sisters
B. Garden Rules
C. Planting Plans
D. Plant



Three Sisters Planting diagram

Seeds/Supplies:

Corn—preferably colored Indian corn
Pole Beans—Romano or Kentucky Wonder
Squash—zucchini or summer squash
Fish meal fertilizer

Lesson:

Corn, beans and squash were the primary agricultural foods planted by many Native American peoples. Traditional Native American planting of these three food crops together helps all crops grow better than they would if planted apart. For great stories and enrichment activities, use **In the Three Sisters Garden** *by Joanne Dennee*.

Here is how the sisters help each other grow:

1) Corn helps her sister Bean by providing support for beans to climb. Beans are a climbing vine; corn is a tall skinny plant.

2) Bean helps her sisters Corn and Squash by providing natural fertilizer, which means plant food, in the soil. Nitrogen is necessary for all plant growth—most fertilizers sold in the store are mainly nitrogen. Beans are special plants that can put nitrogen in the soil. They are "leguminous" plants—this means they absorb nitrogen from the air and release it back into the ground through their roots. Corn and squash grow better because they can absorb the nitrogen that beans release into the soil.

3) Squash helps her sisters Corn and Bean by using her large round leaves to shade the ground. This keeps the soil around the roots cool and protected so less water evaporates from the soil. This was especially important in the Southwest, which is a dry, desert environment.

4) Finally, Native Americans would use fish heads and bones leftover from their meals to fertilize the soil. They would put them in the bottom of the mound and plant the three sisters on top. As fish parts decomposed, the vitamins and minerals they left behind would fertilize the crops.

Planting Directions:

Ten Students for Each Three Sisters Mound Planting

1) Make a circle two feet in diameter, approximately three feet from the next closest circle. If this is being planted in a container, the container serves as the circle and the mound (described in #3 below).

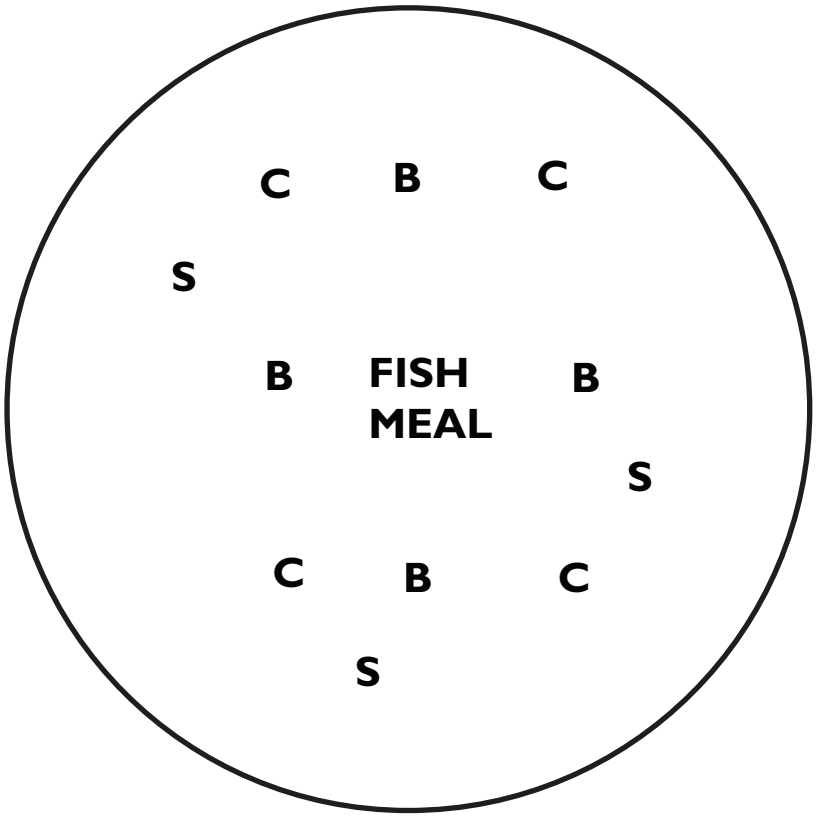
2) Sprinkle fish meal in circle—1 student.

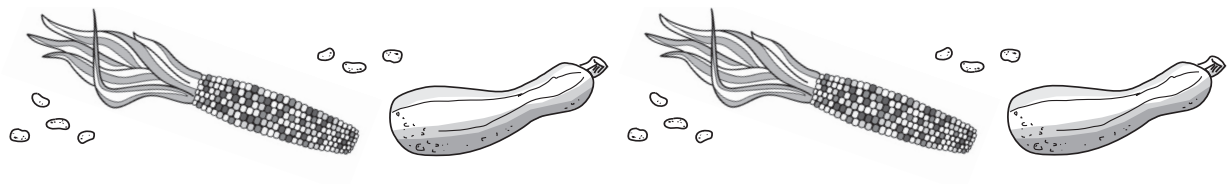
3) Build a 2 inch tall mound, looking like a "mesa" or flat-topped mountain typically found in Southwest, in circle—2 students. If planting in containers, have 2 students turn potting soil to aerate it and mix in the fish meal, and then spread it flat.

4) All seeds get planted 1 inch deep. Students should insert their finger up to first knuckle to dig hole. Space seeds approximately two inches apart. Students should not cover their seeds until all have been planted so everyone can see where the others' seeds are.

a. Plant four corn (C) seeds in a square—2 students
b. Plant four bean (B) seeds, one on each leg of square—2 students
c. Plant three squash (S) seeds all around outside of square—3 students
d. Squash planters cover all seeds by pinching holes closed.

5) Cover with seed starter cloth and water.





Teacher Information

Third Grade Spring Lesson

Three Sisters Garden

Today your class will be planting a Three Sisters Garden, which is a traditional Native American planting method for growing corn, beans and squash. The students will learn that the Native Americans used a complementary planting design growing these crops together that encouraged the plants to grow more successfully than they would have grown if planted separately.

1) Corn provides support for the bean vine to grow up.
2) Beans absorb nitrogen from the air and release it into the soil as fertilizer for corn and squash.
3) Squash leaves shades the soil and plant roots to keep them cool and retain needed moisture in the soil.
4) Native Americans added leftover fish parts to soils as additional natural fertilizer.

This lesson teaches both third grade Science (Life Science) and Social Science (Native American) Content Standards.

California State Content Standards:

1) Science Standards

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.
b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.
c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.

2) Social Science

3.2: Students describe the American Indian nations in their local region long ago and in the recent past.

1. Describe national identities, religious beliefs, customs, and various folklore traditions.
2. Discuss the ways in which physical geography, including climate, influenced how the local Indian nations adapted to their natural environment (e.g., how they obtained food, clothing, tools).

Please visit the garden regularly to watch your garden grow! Hold an Open House in June to talk to your students about their garden.

Fourth Grade Spring Lesson

California Rancho Kitchen Garden

Objective:

Students will learn about the various plants the missionaries and Native Americans used for food, medicine and home life during the time of the California Missions and Ranchos.

California State Content Standards:

1) Science—Life Science.

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

a. Students know ecosystems can be characterized by their living and nonliving components.

b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.

c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

2) Social Science.

4.2 Students describe the social, political, cultural, and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods.

5. Describe the daily lives of the people, native and nonnative, who occupied the presidios, missions, ranchos, and pueblos.

6. Discuss the role of the Franciscans in changing the economy of California from a hunter-gatherer economy to an agricultural economy.

Lesson Outline:

A. Lesson

a. Agricultural needs of missions and ranchos—food, medicine, housewares

b. Use of a kitchen garden

c. Plants of Native Americans v. plants brought by Missionaries

B. Garden Rules

C. Planting Plans

D. Plant

Seeds/Supplies:

Seeds:
Beans-Romano, Kentucky Wonder
Carrots-Nante or other small
Corn—hybrid, short season variety
Gourds-Big Dipper, Birdhouse
Cilantro
Onion--bulbs
California poppy

Transplants:
Tomatos—Sweet 100s or other fast-growing varieties
Peppers
Herbs—mustard, sage, lamb's ear, yarrow, lemon balm, epazote, chia, parsley, thyme, marjoram

Lesson:

Students grow crops that were commonly grown in Alta California on the missions and ranchos: beans, corn, ingredients for salsa (tomatoes, peppers, cilantro, onions), and medicinal herbs. Students also grow gourds, which were grown by local Native Americans and later on the missions and ranchos for use as serving and eating utensils, decoration and musical instruments (maracas).

1) At the time of the missions and ranchos, there were no grocery stores or refrigerators so they had to grow all their own food.

2) No pharmacies and very few doctors were available so the ranchos also grew their own herbs to use for medicine—heal stomachaches, headaches, wounds, etc.

a. Priests brought seeds of important herbs with them from Europe—thyme, mustard, marjoram, lemon balm. They would sew seeds into their vestments for transport.

b. Native Americans taught the missionaries about some of the native California herbs—poppies, sage, epazote (believed to prevent stomach gas from eating beans ☺), chia.

3) Crops that take a lot of space to grow and that they ate a lot of, such as corn and beans, would be grown in big fields on the rancho.

4) Herbs and vegetables used for seasoning or medicine would be grown on plots of land very near the kitchen, so the cooks could easily grab what they needed while they were cooking. This would be especially important for medicinal herbs that might be needed in an emergency.

5) In order to have food during both the summer and winter months, many of the vegetables they grew were eaten both fresh and also dried to be eaten later. Corn could be eaten fresh off the cob AND could be dried and ground into corn meal to make tortillas. Similarly, beans could be eaten as green beans fresh off the vine AND could be dried and later cooked in liquid and eaten in soup or as mashed or refried beans. Peppers and herbs can be eaten fresh or dried as well.

6) One of the traditional foods eaten on the ranchos was Posole. It was a meat stew usually made with pork mixed with carrots, onions and corn.

Planting Directions:

1) Beans: If planting beans must be planted with support such as a trellis. Make two rows one foot apart and ¼ inch deep. Support fence will run between the two rows. Plant seeds 1 inch deep and 2 inches apart along each row. Have students insert finger just up to first knuckle for depth. Do not have students cover seeds until all of row is planted so they keep spacing relative to their fellow students' seeds.

2) Corn: Corn should be planted in rows 1 foot apart. Plant seeds 1 inch deep and 3 inches apart. As with beans, have students insert finger just up to first knuckle for depth and again do not cover until all are planted.

3) Onions: Onion should be planted in rows 6 inches apart. Plant onion bulbs 3 inches deep and 1 inch apart (they will be harvested as green onions). Use fingers, marked, unsharpened pencils or dowels to poke holes in ground 3 inches deep. Instruct students about the top and bottom of onion bulb(Top is pointy, dried roots on bottom), and make sure they are putting bulbs in hole right side up. As with beans and corn, do not cover until all are planted.

4) Cilantro and other herbs from seeds: Cilantro should be planted in rows ¼ inch deep and 6 inches apart. Students should place seeds in row (do not dig hole) 1 inch apart. Students should pinch row closed and pat to cover rows after place seeds.

5) Gourds: Gourds are planted in two foot wide circles (or mounds if not in raised beds), 2-3 feet apart, or they may be planted along a trellis like the beans. Seeds should be planted 6-8 to a mound, 1 inch deep. Have students insert finger up to first knuckle for depth and do not cover seeds until all have been planted in the circle.

6) Tomatoes, herbs and peppers: Have students transplant plants approximately 18-24 inches apart. Key for successful transplanting: (a) have students dig hole same depth as seedling pot and 1 inch wider, (b) show kids how to gently remove plant from pot by placing hand gently around plant and overturning plant into their hand (rather than pulling out by stem), and (c) have students gently pat dirt down around plant to stabilize plant in new hole. If you are using individual tomato supports, these need to be placed around plant at time of planting.

Teacher Information

Fourth Grade Spring Lesson

California Rancho Kitchen Garden

Today your class will be planting a California Rancho Kitchen Garden. The students will plant vegetables and medicinal and culinary herbs that were commonly planted at the missions and ranchos. The students will learn:

1) Missions and Ranchos were isolated and had to grow all of their own food and medicines.

2) Priests brought some seeds with them for food; they also learned about and later grew Native American culinary and medicinal herbs.

3) They would grow herbs and some vegetables within the mission walls in the kitchen garden so that they were easily accessible for seasoning and health emergencies. Large crops such as corn and beans were grown outside of mission walls.

4) One of the traditional foods eaten at the Missions and Ranchos was Posole—stew of pork, carrots, onions, and corn.

This lesson teaches both fourth grade Science (Life Science) and Social Science (Native American) Content Standards.

California State Content Standards:

1) Science—Life Science.

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

a. Students know ecosystems can be characterized by their living and nonliving components.
b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

2) Social Science.

4.2 Students describe the social, political, cultural, and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods.

5. Describe the daily lives of the people, native and nonnative, who occupied the presidios, missions, ranchos, and pueblos.
6. Discuss the role of the Franciscans in changing the economy of California from a hunter-gatherer economy to an agricultural economy.

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Fifth Grade Spring Lesson

Colonial Kitchen Garden

Objective:

Students will learn about the various plants the Early American settlers and Native Americans used for food, medicine and home life during the time of colonization and the Revolutionary War.

California State Content Standards:

1) Social Science.

5.3 Students describe the cooperation and conflict that existed among the American Indians and between the Indian nations and the new settlers.

2. Describe the cooperation that existed between the colonists and Indians during the1600s and 1700s (e.g., in agriculture, the fur trade, military alliances, treaties, cultural interchanges).

5.4 Students understand the political, religious, social, and economic institutions that evolved in the colonial era.

1. Understand the influence of location and physical setting on the founding of the original 13 colonies, and identify on a map the locations of the colonies and of the American Indian nations already inhabiting these areas.

5.6 Students understand the course and consequences of the American Revolution.

4. Understand the personal impact and economic hardship of the war on families, problems of financing the war, wartime inflation, and laws against hoarding goods and materials and profiteering.

Lesson Outline:

A. Lesson
   a. Agricultural needs of Colonists—food, medicine, housewares
   b. Use of a kitchen garden
   c. Plants of Native Americans vs. plants brought by Colonists
B. Garden Rules
C. Planting Plans
D. Plant

Seeds/Supplies:

Seeds:
Beans—Lima beans (important crop brought by colonists), Romano or Kentucky Wonder pole beans
Squash—Black Beauty Zucchini or yellow summer squash variety
Onions—bulbs
Corn—any hybrid, short season variety
Carrots—Nantes
Medicinal herbs—basil, dill, cilantro, bee balm, lemon balm

Transplants:
Medicinal herbs--rosemary, thyme,
marjoram, rue, chamomile

Lesson:

Lesson:
Even after many years of living in the colonies in America, families had to grow most or all of their own food to eat. Although they could purchase grains and certain shelf stable foods (like flour or dried beans) by the time of the Revolutionary War, most homes had a small kitchen garden in which they grew fresh vegetables as well as herbs for culinary seasoning and for medicinal use.

1) There was no refrigeration for keeping food fresh or markets for purchasing fresh vegetables. So, families seeking fresh foods needed to grow them themselves. This became particularly important during the time of the war when much of commerce was disrupted and the currency had little value so people could not buy many things that may have been previously available.

2) Families had their own small kitchen garden next to their home that they used to provide fresh vegetables and herbs for flavoring foods and medicinal uses.

3) The vegetables being planted today (beans, corn, carrots and onions) were the basic vegetables used to make Succotash, a common meat stew eaten during these colonial times.

4) There were few doctors and pharmacies, especially in rural areas, so most remedies were created from common herbs grown in the garden—treating upset stomach, headache, cuts and sores, etc. The colonists brought seeds for herbs with them from Europe, and they also learned from the Native Americans how to grow and use some native herbs for seasonings and medicines.

Planting Directions:

1) Seeds
    a. Carrots--make rows 6 inches apart and ¼ inch deep. Place seeds 1 inch apart in row. Do not let students dig holes for seeds. Have student pinch and pat to cover rows after they place seeds.

b. Onions—plant in rows 6 inches apart. Bulbs must be planted 3 inches deep. Use unsharpened pencils or small dowels marked at 3 inch depth to make holes. Instruct students about the top and bottom of the onion bulb (top is pointy, bottom is dried roots) and be sure they are planting them right side up.

c. Corn and Beans--plant seeds two inches apart in rows 1 foot apart. Beans must have support from trellis or support fence between rows of beans. Seeds should be planted 1 inch deep. Have students insert their finger down to first knuckle to make hole. Do not have them cover seeds until all have been planted in row.

d. Squash--plant in two foot diameter circle, with circles two to three feed apart. Seeds should be planted six to a circle, one inch deep. Have students insert their finger down to first knuckle to make hole. Do not have them cover seeds until all have been planted in circle. Squash may also be grown up trellis or fence like beans.

2) Herbs

a. Seeds (cilantro, basil, dill)--make rows 6 inches apart and ¼ inch deep. Place seeds 1 inch apart in row. Do not have students dig holes for seeds. Have students pinch and pat to cover rows after they place seeds.

b. Nursery transplants—assign 2-3 students to each transplant. Plant transplants one foot apart. Students take turns digging hole, as deep as a seedling and one inch wider, removing transplant from pot (turn upside down and tap, catching plant as it falls out, not by pulling out of pot by neck of plant), planting in hole and patting down dirt around it.

Teacher Information

Fifth Grade Spring Lesson

Colonial Kitchen Garden

Today your class will plant vegetables and herbs that would commonly be grown by families for food, medicine and home life during the later Colonial and Revolutionary War periods. They will learn:

1) Because there was no refrigeration or markets, families needed to grow much of their own fresh food. This was also important during the Revolutionary War when commerce and trading was interrupted and currency had uncertain value so that it was difficult to buy items that might previously have been available.

2) Because there were not many doctors or pharmacies, families also grew many medicinal herbs to treat common illnesses such as stomache ache, headache and cuts.

3) Students will grow the basic ingredients for Succotash—corn, lima beans, carrots and onions—which was meat stew very common in Colonial America.

California State Content Standards:

1) Social Science.

5.3 Students describe the cooperation and conflict that existed among the American Indians and between the Indian nations and the new settlers.

2. Describe the cooperation that existed between the colonists and Indians during the1600s and 1700s (e.g., in agriculture, the fur trade, military alliances, treaties, cultural interchanges).

5.4 Students understand the political, religious, social, and economic institutions that evolved in the colonial era.

1. Understand the influence of location and physical setting on the founding of the original 13 colonies, and identify on a map the locations of the colonies and of the American Indian nations already inhabiting these areas.

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