Flower Functions

Students learn the basic structure of a plant and how each part works together as a system to obtain essential resources needed for the plant's survival.

Grade Level: 1st

Phenomena:
How does a flower's structure help it survive?

Objectives:
- Students will identify four resources plants need to survive: soil, air, sunlight and water.
- Students will draw and label the four basic parts of a plant: roots, stem, leaves and flower.
- Students will evaluate how each plant part provides the plant with the resources it needs to survive.

Materials:
- One blank paper per student
- Envelopes of What A Plant Needs sorting cards, enough for each student or pair of students
- Plant poster - optional
- Pictures of plant - optional

Appendixes:
- Label the parts of a plant poster: Page 5
- Build a flower layout: Page 6

Time Considerations:
Preparations: 5 minutes
Lesson Time: 50-65 minutes
Introduction: 5 minutes
Activity 1: 10 minutes
Activity 2: 10 minutes
Activity 3: 10-15 minutes
Activity 4: 10-15 minutes
Conclusion: 5-10 minutes

Related Lesson Plans:
Earthworms, Pollination Investigation, Photosynthesis, The

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Next Generation Science Standards

1-LS1-1.
Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs

Science and Engineering Practices (SEP):
Constructing Explanations and Designing Solutions.

Disciplinary Core Ideas:
Structure and Function
Information Processing

Crosscutting Concepts:
Structure and Function

Excellence in Environmental Education Guidelines

Strand 2.2—The Living Environment
A) Learners understand basic similarities and difference among a wide variety of living organisms. They understand the concept of habitat.

Background

Without plants on Earth life would not exist! Plants are the primary source of food for people and animals. They produce oxygen, renew the air and provide habitat for living things.

There are four basic parts of a plant: leaves, stem, roots and flower. Leaves are the food factory of the plant. Through photosynthesis, leaves produce food in the form of sugar to be used and stored by the plant for later.

The stem of a plant has two main functions. It moves water and minerals from the roots upward to the rest of the plant. Food material is moved downward. Stems also provide support for the plant; allowing the leaves to stay upright and the roots to remain in the ground.

Roots, which are usually underground, have several functions. They anchor the plant and help hold the plant upright. Roots absorb water and minerals from the soil; these resources are moved up the stem and used by the rest of the plant. Roots are also able to store food.

The flower is the reproductive organ in flowering plants. The male part of the flower is the stamen, which is composed of the anther and filament. The female part of the flower is the pistil, which is composed of

the stigma, style and ovary. Pollination occurs when pollen is transferred by insects or wind from the anther to the stigma. Fertilization occurs when the pollen joins with the egg. After this, a seed forms inside a fruit (*Queensland Science Teachers)*

Preparation

Gather all needed materials. Prepare envelopes with What a Plant Needs sorting cards, enough for each student or pair of students. Be sure to include sunlight, water, soil and air; other possible items include: house, clock, car, money, etc

Doing the Activity

Introduction: Plant Brainstorm
Lead a class brainstorm on plants; list known plant names on the board.

Ask students if they feel all these plants need similar resources to survive?

Activity 1: Sorting Activity
Plants need certain things in order to grow and stay alive just like people do. For example, people need food in order to survive.

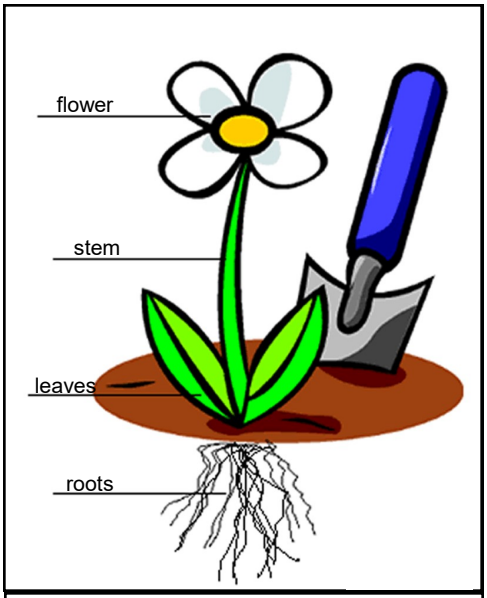
Let students work individually or in groups of two. Give each student or pair of students an envelope with What a Plant Needs sorting cards.

Students are to sort their cards into two piles: one pile of things a plant must have to grow and the other pile things a plant does not need in order to grow. For added interest, tell students you have just bought a plant and want to plant it in your garden. But, you're not sure what a plant needs to survive. Their goal is to discover this through their sorting.

When groups finish, go through each picture and have students give a thumbs-up for things a plant needs, and a thumbs-down for things plants do not need to survive. The following cards should be left on the board at the end of the activity: sunlight, water, soil and air

Activity 2: Draw a Flower
Confirm with the class, that all plants need all these resources to survive. The class will now focus on one type of plant today, a flower. Students will learn the basic parts of a flower, and how these parts work to obtain the resources needed to survive. Pass a sheet of blank paper to each student. Students are to draw a flower of their choice and to try to include all the different parts of a plant. Use this activity to pre-assess students' knowledge of plant parts.

When students finish, either ask volunteers to help draw a large flower on the board, or the instructor can draw a flower based off student suggestions. The final drawing should include



Parts of a plant

roots, a stem, leaves and a flower.

Another option to quickly assess students understanding by using the a pre-drawn poster, which can be modeled after the poster on page five. Ask volunteers to place labels on the poster to identify all the plant parts. The class will give a thumbs up or down to whether or not they agree with the placement.

Activity 3: Putting it all Together
Review the basic needs of a flower with students - air, water, sunlight, soil. Explain to the class they now know the parts of a plants and what plants need to survive. But, how does a plant obtain these resources?

As each job is discussed, reach kinesthetic learners by introducing the body motions listed below. Begin at the bottom of the flower with the soil and roots.

Soil - Ask why plants need soil? Ask what part of the plant uses the soil? (the roots) Roots anchor the plant in the ground and *slurps up* water and minerals. Using your hands, wiggle your fingers at your feet and make a slurping sound as you stand up.

Stem - Ask what does the stem do for the plant to survive? What does it move? The stem is like a straw. It moves water from the roots to the rest of the plant. Stand straight up, with arms to your side. Move your arms upwards while making a whooshing sound.

Leaves - Ask what job do leaves have? Ask what do leaves make? Leaves use sunlight and air to make food through a process called photosynthesis. Stand up straight with your arms held half way up in the air. With palms up, move your hands back and forth, like an Egyptian dance, and say "making food, making food."

Flower - Ask why is the flower important to plants? Ask does the flower have important functions? The flower, which includes the petals and reproductive parts, attracts pollinators to begin the process of pollination. Eventually eggs within the ovary are pollinated and seed dispersal begins. Raise both arms above your head, with your hands spread wide. Waving hands and chanting "hey bees! Hey bees!"

Review the different flower parts and how each part functions, by using the newly taught motions. To more thoroughly assess students on their immediate understanding, reverse the questions, so students must identify the part of the plant that does a specific function i.e. What do the roots do vs. what part of the plant soaks or slurps up water?

Activity 4: Build a Flower

To concrete student understanding on the function of each flower part, use the entire class in this next activity to build a life size flower. See page six for a visual description of how to set up this activity.

Begin by locating an open space in the classroom. Students should stay in their desks until they are selected as a plant part. Begin at the roots and work your way up.

Roots - *slurp up water and minerals.* Choose four to five students with long hair. Students lay on the ground face up so their feet almost join together to make circle. Those with long hair can spread it out to create *root hairs.* While on the ground, students *slurp up* using their hand motion.

Stem - *whoosh water up and down.* Choose four to five students to stand shoulder to shoulder in the middle of the root's circle, facing outwards. Using their arms students *whoosh* up from toes to head, to indicate water movement.

Leaves - *jive to make food*. Choose four to five students and place each person between the roots and next to the stem. Using their hand motion, students chant "making food, making food."

Petals - *jump to spread seeds.* Select the remaining students and place each person around the roots. Students wave hands and chant "hey bees, hey bees." Remind students to be careful of their root classmates.

Conclusion

Return students to their desks and discuss how each flower part is necessary to its survival. Since students are now experts in plant functions, explain how they will illustrate their new found knowledge. Have students turn over their paper with the previous flower drawing, so they have a blank sheet of paper on their desks. Students will now draw a new flower, with all the flower parts on it.

Challenge students to label all the flower parts in their picture and to show how these parts use all the resources necessary for survival.

Assessment

Assess the students with a question and answer session. Examples: What part of the plant sucks up water? (roots) What part of the plant uses sunlight to make food? (leaves)

Extensions

Use plant parts flash cards to help with this assessment. Pass out a pack of cards to each student. Explain that you are going to describe a plant part and then say "go." After you say "go," they should hold up the card that shows what plant part you just described.

The above flash card activity can be modified by having students do the motion that represents the plant part if flash cards.
Draw a tree on the board and ask the students if they are able to label the parts. Have different students come up to the board and label the parts of the tree. This can help assess the students' deeper understanding of plant parts and their functions.

Vocabulary

Flower: the colored part of a plant that produces seeds or fruit

Leaves: A flat and usually green part of a plant that grows out from a stem, twig, branch, etc. Leaves make food by the process of photosynthesis, giving off oxygen as a by-product.

Petal: one of the colored outer parts of a flower

Plant: a living organism with a green pigment called chlorophyll that allows the organism to make food from the energy of the sun

Roots: The part of a plant or tree that grows under the ground. Water and dissolved foods are absorbed from the soil through root hairs and travel up the roots to the plant's stem through xylem and phloem vessels.

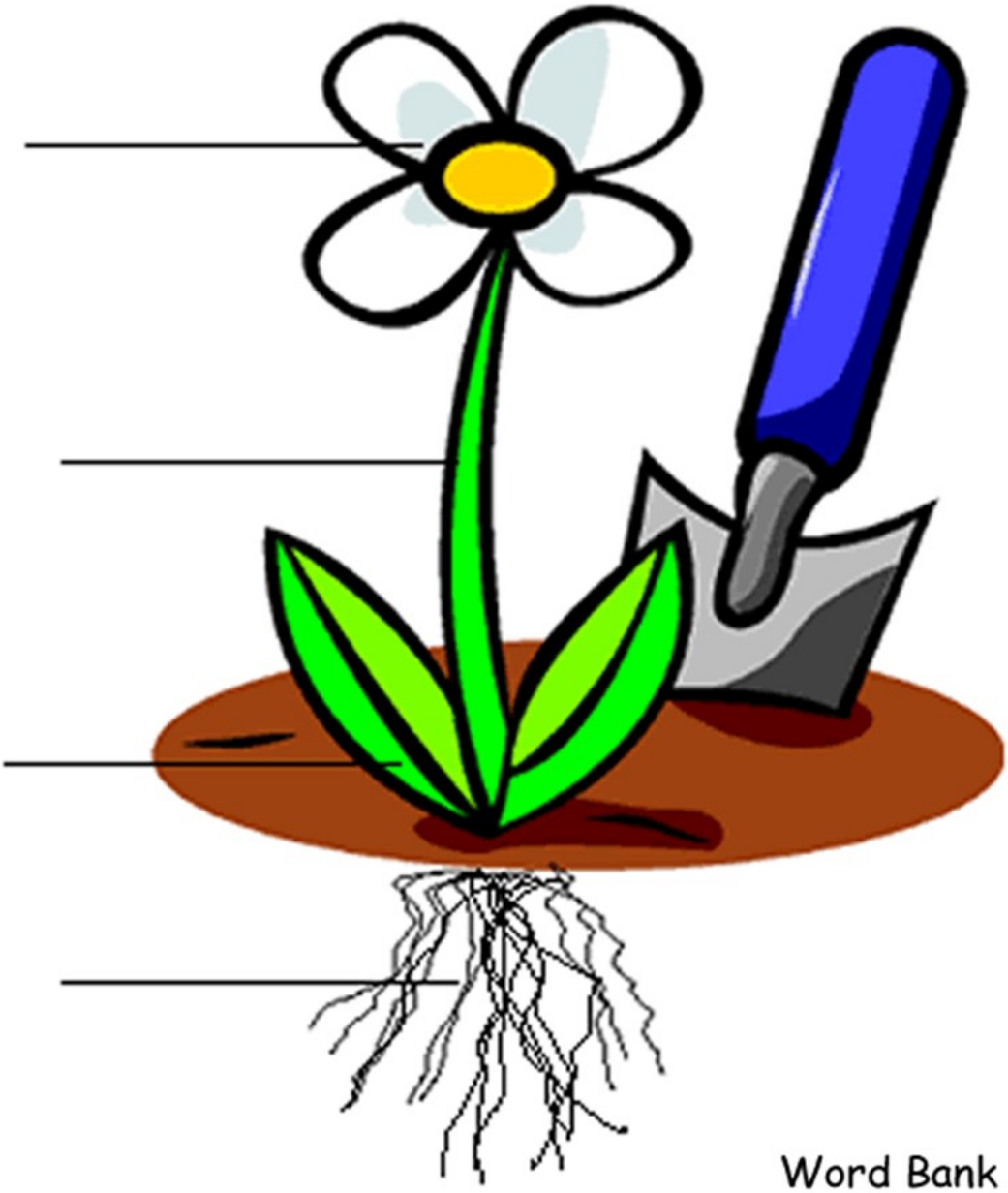
Stem: the long main part of a plant from which the leaves and flowers grow; moves water throughout the plant

Sources

- Queensland Science Teachers. (1999, Feb. 10). Functions of Plant Parts. In Queensland Junior Science Biology. Retrieved Jan. 3, 2011, from http://www.qldscienceteachers.com/junior-science/biology/functions-of-plant-parts

Name:_____

Label the Parts of a Plant



Word Bank
stem
roots
flower
leaves

Activity 4: Build a Flower Student Layout

Below is an example of how to arrange students in this activity. Each shape represents one student. Any number of students can be used to build a flower. It is important to repeat each action as each new plant part is added. This will keep students engaged and interested throughout the activity.

- Roots lay on their backs, with feet inwards to form a circle
- Stems stand shoulder to shoulder, facing outwards, inside the root circle
- Leaves stand sideways between the roots
- Flowers stand around the outside of the flower, facing inwards