Soil Station

Overview: This lesson plan will teach children that there are different types of soil that farmers have to work with and that plants prefer. They will use their senses to explore the different soils to discover what the attributes of each soil are. Based on their observations, the students will decide which soil plants would prefer.

Background: Soil is the gathering of all living and non-living matter. Without soil, there would be no plants. Without plants, there would be no animals. Ultimately, all of our food comes from the soil. Soil can be anywhere from a few inches to many feet thick.
Soil structure is one of the most important characteristics of soil. Plant growth is influenced by soil structure. Structure affects the movement of water, air, and roots through the soil. Soil can be classified by texture (how it feels) or by color. Particles in the soil come in many sizes and shapes. The particles are mixtures of weathered and un-weathered grains from the original rocks, new minerals that have formed in soils, living micro-organisms, and dead organic materials in all stages of decay. Soil particles can be identified by three sizes. In order of decreasing size, they are sand, silt, and clay. There are several different types that can be identified by texture. Sandy soils are gritty, loose, and crumbly. This type of soil holds little water for plants. There are dark, medium, and light colors of soil. The darker the soil color, the more organic material there is in the soil. This type of soil accepts and holds water easily , and is good for growing plants

Vocabulary:

Oxygen: An ingredient in the air that all living things need in order to survive.

Sand: Soil that is large, loose, and gritty.

Senses: Involves five areas of the human body. Eyes, ears, skin for touching, nose for smelling, taste.

Minerals: A basic earth element; a rock ingredient that has been broken down to its smallest particle. Minerals are necessary for plant, animal, and human nutrition.

Silt: Soil particles that range in size between clay and fine sand.

Water: A needed element for plants.

Compost: A mixture of organic material and soil that is moist and has decomposed biologically with the aid of decomposer organisms such as earthworms.

These questions will be asked as part of the lesson:

1. What do plants need in order to grow?

   _____

2. How many different colors can soil come in?

   _____

3. What kinds of living organisms can you find in the soil. Can you identify some of them?

   _____

4. Where does our food come from?

   _____

5. Can seeds be grown without water?

   _____

6. List the many different sizes that soil particles can come in. Pebbles, sand, silt, clay, etc.

   _____

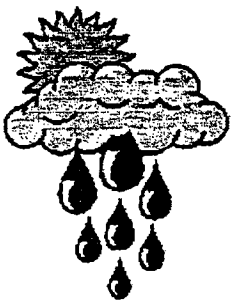
7. How do plants take nutrients from the soil?

   _____

Because student levels in grades K-4 are so diverse, lesson plans are written for adults to translate according to your students' understanding.

Water Cycle Station

Overview: This lesson will teach children that all water on earth is connected in some way, and that plants need water to survive. We can see and sometimes feel water in some form, for example in clouds, lakes, ponds, rivers, and rain. Through interactive role-play, children will understand the water cycle more clearly.



Background: Water can be found in three states: as a liquid (in oceans, lakes, rivers); as a gas, or vapor (in the atmosphere); and as a solid (as snow or ice). The water cycle keeps the earth's supply of water in a continuous movement from one form to another. Water is transported from place to place through evaporation, condensation, and precipitation. Through evaporation, pure water molecules are separated from the salt and any other substances dissolved in ocean water. Plants contribute to the water cycle through transpiration. All living things need water to survive. Nutrients and gasses are transported throughout living organisms in watery solutions to keep them functioning, growing and in repair. Rain, snow, hail, and sleet all come from clouds, which are made of water. This water rises into the air as water vapor when the sun evaporates water on a waterbody's surface. Much water that falls to the ground runs into streams and rivers and the cycle starts all over again.

Vocabulary:

Irrigation: To supply land with water through artificial means.

Accumulation: To collect or gather together over time. Water vapor can collect (and turn into clouds).

Evaporation: The process that turns liquid into water vapor (a gas); which rises into the air.

Condensation: The process that turns water vapor into liquid water (rain). Changing from a gas to a liquid state by cooling.

Precipitation: Falling rain or snow

Instruction: Grades K-1 - The parent volunteer will be asked to read from a giant book. This book will have illustrations and text that will describe the story of the water cycle. The book will be interactive and the students will perform certain tasks during the reading. Inside the book, will be a costume closet. These costumes will be given to students to wear as the story progresses.

The book will open with a scene of a farmer looking out into the field. He/she will stare into the sun and say "Irrigation, irrigation, that's all I ever do around here! I sure wish it would rain so that I can give my irrigation system a rest!" Attached will be a card that says "Irrigation" and on the back will be a definition. Each new vocabulary word in the water cycle will go something like the first activity. Children will interactively learn the meaning of each term and play out its part.

Grades 2-4- Students will dress in costume and perform a readers theatre. Grade 2 and LEP students will perform a simplified version. Please consider that there will need to be four good readers in this station.

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Integrated Pest Management Station

Overview: Children will learn that all insects are not bad insects when used instead of sprays and insecticides to control pest damage. A greater awareness of the struggle the farmer has to go through to achieve a balanced ecosystem can be understood through this lesson plan.

Background: The modern concept of Integrated Pest Management incorporates information from such areas as:

1) Characteristics of the pest population, predictions of the occurrence, population levels, and potential economic damage of pests.
2) The relationship between predator and prey insects, their varied habitats, the biology of the host plant, and their interrelationships in a given environment.
3) Changes that weather patterns inflict on pest life.
4) Results of familiar practices such as crop rotation, irrigation, cover and companion crops, and harvest methods on pest activities.
5) Effects of various control policies on each other and on the environment.

Integrated Pest Management uses a variety of cultural, biological, mechanical, and chemical means to hold the pests below economically damaging levels, while at the same time avoiding disruption of the agro-ecosystem.

Vocabulary:

Integrated Pest Management: Alternative approaches to managing insects other than sprays or poisons.

Larva: The wingless, immature insect form that hatches from an egg.

Earthworm: A long, thin skeletonless animal that lives in the soil.

Caterpillar: The larva of a butterfly.

Lady Bug: An insect that eats aphids.

Aphids: An insect that eats plants.

Poisons: A chemical substance that kills insects.

Predator: An animal or insect that hunts and eats other animals.

Praying Mantis: A predator insect.

Instruction: A carrot farmer tells the story of finding critters on his/her carrots one morning. After running to the barn to get a can of poison, the farmer realizes that he/she has killed a lot of other critters as well. Suddenly, every live creature was gone. After much library research, the farmer found out that there was a lot to learn about the many critters that live in the garden. An entomologist was called out to the site to investigate the problem. The farmer says "We want to grow the best carrot so that lots of people would want to eat it. I know that I wouldn't want to buy a carrot that had holes in it, but I also didn't want to kill all of the good creatures in my garden that are necessary for my crop to be healthy and strong. A farmer's life isn't as easy as I thought it would be! I have lots of decisions to make and work to do!" Eventually, it is demostrated how beneficial insects are employed to help the farmer out through puppetry and interactive role play with numerous insect props.

Because student levels in grades K-4 are so diverse, lesson plans are written for adults to translate according to your students' understanding.

Distribution Station

Overview: This lesson will teach children how the fruits and vegetables they eat grow from seeds and arrive at their table. Children will gain a greater awareness of the distribution aspect of the food industry. Harvesting,transportation, storage, and marketing are played out through the teaching of the *Distribution Song.*

Background: The growth and development of agriculture owes much of its success to streamlined distribution methods. Since the beginning of commercial agriculture, crops have been selected for better quality and easier production. The methods involved in harvesting vary according to the commodity. These methods include: digging, picking, cutting, lifting, conveyance, loading, etc. Harvest preservation is the effort to retain crop quality while slowing the degradation process. Preventing water loss is important in maintaining product qualities. Maintaining a cool temperature through proper storage prolongs the life of harvested unprocessed plant products. Storage can also moderate price by management of the supply available to the market. Marketing plays a key role in the distribution of a food product to each individuial consumer.

Vocabulary:

Distribution: To deliver or spread a commodity through an area or range.

Harvester: A person who gathers a crop.

Inspector: A person who examines a commodity carefully.

Packer: A person who fills boxes or crates full of food items.

Truck Driver: A person who transports goods for a profit.

Warehouse: A place where goods or merchandise is stored.

Wholesaler: A person who sells goods in large quantities.

Grocer: A storekeeper who sells foodstuffs.

Consumer: A person who eats up or devours.

Instruction: Farmer/teacher retells the process of distribution as he/she dresses student volunteers with props. When dressing is complete, the whole class joins in to sing the Distribution Song to the tune of "Row, Row, Row Your Boat". As the song is being sung the student characters are passing an avocado to each other in keeping with the song.

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