



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute

1996 Volume II: Environmental and Occupational Health: What We Know; How We Know; What We Can Do

The Earth and Me: Forever Friends

Curriculum Unit 96.02.02

by Kathleen Ware

The United States is rich in natural resources, fresh water, wildlife, rich soils, and many forests. The United States is also faced with some environmental problems. Water pollution, acid rain, over run landfills, and air pollution are just some of the environmental issues that our nation must address.

Man has made ample changes to the environment which he shares with plants and animals. With the invention of tools and other modern technologies, we have created a world more comfortable for ourselves and our communities. But our wish for a better standard of living is contingent on our natural resources.

The changes made to achieve these higher living standards has not been without harmful effects on the plant and animal population. Some of the changes have even produced negative effects for some people. With the building of cities and the invention of cars and highways, we have created threats which have affected the wildlife population and their habitats.

We have relied on the resiliency of planet Earth to conform to the changes we make and to repair itself no matter what we do to it. We are now beginning to realize that this is not true. We now understand that our natural resources, land, water and air, need our protection and safe-keeping. We see that if nature's balance is to be recovered, then we need to make some changes in our lifestyles in order to help.

The purpose of this unit is to sensitize young children to the value of Earth's natural resources and to encourage them to share in the responsibility for its care. By the conclusion of this unit, it is hoped that a friendship will be formed between the children and their environment which will endure the test of time.

My kindergarten class will begin this study by looking at the ecosystem and how plants and animals have adapted to the conditions of their environment. They will see that the ecosystem is a complex community where trees, plants and animals are dependent upon each other for survival. By studying several types of environmental concerns affecting these ecosystems, the children will be led to understand the fragility of the ecosystem. Disturbances that change these habitats can have negative effects on both man and animals.

An ecosystem is created when plants and animals adapt to the type of soil, land forms, and climate of an area by working together. The wide variety of soils, land forms and climate have made it possible for a great many ecosystems to exist in the United States and across the planet.

The areas on or near the surface of the planet, where plants, animals and humans can survive is the

biosphere. Here many different species of plants and animals can survive in a special environment called habitats. Many of these habitats overlap leading the species to be dependent upon one another for survival thus creating an unique biological community.

As we begin our study, we will look at several features of the ecosystem. This will include a study of 1.) land forms, 2.) soil, 3.) the Hydrologic Cycle, 4.) vegetation and 5.) climate. We will learn how all these features are dependent on each other for the survival of the ecosystem. The negative effects of land pollution by solid wastes and chemicals, water pollution through the dumping of trash and hazardous materials, and the effects of acid rain, a combination of air pollutants and water vapor, will be explored. The children will learn some of the current solutions to these problems and will be asked to create some of their own solutions. By posing a series of “theoretical” questions, the children will be led to understand that the answers to environmental questions are not always so easy to settle.

Finally, it is hoped that the children will see the small part which they can play in solving Earth’s environmental problems and will implement changes in their lives that will lessen the negative impact of pollution on planet Earth.

This unit is expected to cover a period of four months. Through the use of books, periodicals, videos, music, experimentations and field trips the children will gain some basic information on each topic. Much of the learning will be teacher directed while experiments and art projects will provide the children with hands-on experiences. The interdisciplinary approach will allow the children the opportunity through language, writing and the arts to share their ideas and concerns with each other and the school in general. Our culminating activities will be to create a Rain Forest, to build and display our version of “A Tale of Two Cities”, to write our own story of a raindrop traveling through the Hydrologic Cycle entitled “Drip the Drop,” and to create our own Totem Pole of the 3 R’s: recycle, reuse, and reduce.

With our objectives firmly implanted in our minds, we’re on our way to take a look at

Land forms

Land forms are the distinctive topological features of the earth, like hills, valleys, rivers, and ponds. The distinctions in land forms are caused by natural forces like ice, fire and wind. The surface of the earth is constantly being fashioned through the process of erosion. These forces, working alone or together, have modified the topological features of the earth.

Erosion is a natural process by which the soil and rocks of earth’s surface are constantly scraped and worn away. Flash floods can erode tons of soil in a short period of time. The soil can be carried many miles away from its original point and deposited elsewhere building up new land.

Huge masses of ice, called glaciers, can act like massive filing boards, eroding existing land forms leaving countrysides flat. They move rocks out of their paths as they move, while rocks below the surface are broken up and carried away. Large mounds of gravel, sand, and clay, called moraines, are created by glaciers.

Earthquakes and volcanoes can move land and cause much destruction. By the shifting of solid plates of rock under the earth’s surface, islands and mountains can disappear or new land forms can be built up. Volcanoes spew lava which hardens to modify the land forms.

Suggested Activities:

1. Take the children on a nature walk to look at the different land forms in your area. Look for hills, mountains, valleys, ponds, etc. Discuss how the animals and plants use the land. Look to see how man has changed the landforms (i.e., added a bridge).
2. Take the children on a trip to Sleeping Giant. Discuss the similarities and differences between the land forms here and those around the school.
3. Have the children create different landforms in the sandbox or a shoebox. Allow them to talk about their creations.
4. Discuss the various wild animals who live in the area. Allow the children to talk about the habitats of these animals.
5. Let the children cut and paste pictures of various landforms out of nature magazines.
6. Have the children create a diorama depicting various land forms. Ask them to create mountains, valleys, or hills. Let them use sand for soil. Save for future activities.

Lesson Plan # 1

Soil

Soil is earth's superficial covering. Soil consists of minerals like clay, sand or bits of rock, decaying parts of plants and animals, water and air. It provides Earth's rocky skeleton with a loose covering which varies widely from place to place. The composition of the soil is contingent upon the kinds of geological materials from which it is made, the kind of vegetation growing on the soil and by human activities which may make artificial alterations to the soil. Plants take root and grow in soil, animals graze and make their homes in soil, and humans plant crops for food in the soil and build on the soil.

Plants rely on the soil to get the water, nutrients and minerals they need. They grow roots to get to the layer of soil containing the right conditions for growth. Soil is found to have three different layers. The top layer or topsoil, is rich in organic matter. The second layer, is mostly organic but may also contain some rocks. The third layer is comprised mainly of rock which lies under the soil.

Soil holds water and keeps it from evaporating. The availability of water from the soil is critical in the productivity of the soil. How long and how much water is held depends on the type of soil. Clay soil, which is a heavy compact soil, holds water for a longer period of time while a sandy soil is usually incapable of holding enough water for plant growth.

Plants are provided with nutrients from decaying plants and animals found in the soil, while the crushed rocks provide the minerals needed for plant growth. Worms and insects found in the soil help in the breaking down of this decaying material, thus enriching and aerating the soil. These materials after having passed through the bodies of these natural decomposers change the texture and quality of the soil.

Scientists take samples of soil and group them according to their general characteristic. They draw pictures of the land which they call soil profiles. The picture emphasizes the properties of the soil that can be seen, felt or

measured.

Soil undisturbed by human tillage or deforestation preserves its balance of humus by decomposition and decay of plant and animal bodies thereby allowing a wide variety of different plant, animal and insect species to exist.

Objectives

1. To understand soil is made of many different things such as minerals like clay, rock and sand, decaying plants and animals, air, and water.
2. To separate and identify what different types of soil are made of.

Materials Soils from several different locations, jars with lids for each kind of soil, labels, marker, water, and large spoon.

Procedure

1. Make two columns on a large sheet of paper. Label one column before and the other after.
2. Ask the children what they know about soil. Write their responses in the “before” column.
3. Show the students the bags of soils and other materials. Explain that they will be doing an experiment which will show what each of these soils is made of.
4. Place 1/4 cup of soil in each jar and fill it with water. Secure the lid and shake the jar well to mix the soil and water. Label the jars with the soil type. Set them aside for a few days so they can settle into different layers.
5. Have the children discuss what the different layers in each jar are made of. Let comparisons be made between each jar.
6. Divide the children into groups and allow them to draw their soil’s profile in their eco-journals and label the different layers seen.
7. Let the children discuss which type plants would grow best in each soil.
8. Review with the children what they know about soil. Record their responses under “after” in column two.

Lesson Plan—#2

Growing Seedlings

Objectives

1. To discover the effects of good soil on plants by growing seedlings.

Materials 3 pots, different types of soil: sand, garden soil and composted soil, seeds of the same type.

Procedure

1. Show the children the materials you have gathered and allow them time to explore them.
2. Next, review the previous lesson on soil profiles and how plants need good soil in order to grow. Tell them that plants also need warmth, sunshine, air and water for maximum growth.
3. Tell the children that today they will discover the effects of good soil on plants by growing seedlings.
4. Divide the class into 3 groups. Have the children label their pot according to their group and soil type. Plant the seeds of the same type one in each pot. Water them regularly and give them the same amount of light.
5. Let the children compare the growth of the seeds in each pot.
6. Allow them to record their findings in their eco-journals.

Suggested Activities

1. Allow the children to handle soil from several different locations. Encourage them to compare the textures, colors and odors of soil.
2. Place soil in a sieve and sand in another. Using equal measuring units, pour water over the soil and sand. Let children observe which allows the water to drain through first.
3. Discuss how people use the land. Let the children make a collage or poster with pictures showing the activities people do on land.
4. Show pictures of animals. Discuss which animals make their homes on or in the land. Categorize the animals by habitats.
5. Let the children hold a forum with school administrators to discuss how trash and litter deface the appearance of planet Earth and their school ground. Let the children organize a Clean-Up Day. The children can make posters and send out invitations to parents and neighbors to come join the fun as you clean up the litter and debris from your school grounds.

6. Locate where hazardous waste is produced and disposed of in your community.
7. Locate gas stations in your area with an oil recycling program.
8. Let the children send out a monthly newsletters featuring an ecology tip for the month.
9. Encourage the children to plant a tree.
10. Learn about your local recycling programs.

Water

Water is the most common substance on earth. It covers three-fourths of the earth's surface, is the main ingredient in most fruits, vegetables, and meats, and composes 65% of the adult human body. Three quarters of a person's body weight is made of water while blood consists of 90% water.

Water improves human life in a variety of ways. Without it people would die within a few days. With it, we water our crops and add variety to life through swimming, water skiing, and other recreations. We use water to clean ourselves and the environment in which we live.

Water is the only element known which occurs in all three states of matter: 1.) liquid, the most common, 2) a solid (ice) and 3) a gas or vapor. As an ice, water will float because of the air quantity which makes it lighter than water. It is found as glaciers, ice caps, hail, snow and frost. As a liquid, the molecules are able to slip and slide around each other for they are more loosely bound together. Water in this state is found as rain droplets, and dew. As a vapor, the molecules are moving very rapidly and have little attraction to each other. It is during this state that water evaporates. It is evaporation that causes puddles to disappear while an excess of water vapor in the air causes the air to feel "sticky." As a gas or water vapor it is seen as fog, steam and clouds.

Freshwater makes up only about three percent of the water found on planet Earth. This is the water used by plants, animals and humans. Freshwater is found in rivers, lakes, ponds, and streams. Researchers have spent much time developing methods of removing salt from seawater as the demands for freshwater have increased. The major problem is the cost of the desalinization process.

Lesson Plan—#3

The Hydrologic Cycle

The water on planet Earth is not new. Water is constantly in motion changing from a vapor (gas) to a liquid (rain) to a solid (ice, snow). It travels continually from the earth to the atmosphere as seen in the hydrologic cycle.

During this cycle, water evaporates from the ground, vegetation (transpiration), and other bodies of water (lakes, rivers, streams, etc.) It travels through the atmosphere as a vapor where it cools and condenses. The droplets join together to form clouds. Rain falls back to the earth from these clouds, feeding the earth's surface and making it possible to support plant life. Lakes, streams, and rivers are fed by these rain waters. Underground cavities, called aquifers, catch some of the rain water as it seeps into the soil. Soil moisture, which is part of the water which has been absorbed into the soil, is taken up through the root of vegetation and is transpired from the leaves. The water from these sources is heated by the sun and returns to the atmosphere as a vapor. Thus water is constantly traveling from the ground to the atmosphere and back to the ground.

The hydrologic cycle has no beginning or end but is a constantly moving system. No water is ever lost or gained in this cycle for it simply returns to the earth in one form or another. This cycle plays a major role in determining climate and types of vegetation so what effects this cycle at any point can have long lasting effects.

Objectives

1. Children will learn about the water cycle through simple experiments and hands-on activities.

Materials Felt pieces cut out in the shape of a raindrops, mountain, river and clouds.

Procedure

1. Ask the children how many things they do which include the need for water.
2. Ask the children what forms water comes in other than a liquid.
3. Discuss with the children how we get rain.
4. Ask them where does the water that falls from the clouds come from.
5. Where does this water go after it falls?
6. Use your felt pieces to tell the story of the water cycle.
7. Let the children follow a raindrop through the cycle using a teacher made or store bought activity sheet.
8. In their eco-journals, allow the children to draw and write about the Hydrologic cycle, following a raindrop through the cycle. They may want to give their raindrop a name.

Extended Activity

Allow the children to retell the story of the Hydrologic Cycle using the felt pieces and a flannel board. Write the story parts on large sheets of paper using a magic marker. Divide the children into small groups and let them illustrate the story. Combine the pages to create a class big book.

More Activities

1. Discuss conservation of water in the home and at school.
2. Place a 1/2 gallon jar in the water holding tank of the toilet to save 10% of the water with each flush.
3. Have the children make a check of the faucets in the home and at school and report leaks to the proper people.
4. Encourage the children to shut the water off while brushing their teeth.
5. Discuss helium filled balloons. Tell the children that they deflate and sometimes end up in the ocean. Explain how they quickly lose their color and can look like jelly fish. Whales and sea turtles eat them and starve to death because the balloons block their intestines.

Forests and Other Vegetation

Once the United States was covered with forests which covered most of the country. Forests at one time grew so thick that a person would not walk through them. With the arrival of the European settlers and the development of land for cultivated crops, farms, towns and cities, these forests were cut down and the land cleared. Cultivated crops now replace those areas where natural plants once grew. Alaska and Hawaii are the only two states which still have a substantial amount of their natural vegetation.

Types of Forests

The kind of forest found in an area is determined by the climate, soil and topography of the region. Natural forest will maintain itself in a relatively fixed, self regulated condition for extended periods of time. The size and height of the plants in a forest control the type of vegetation which will grow on forest floor. Forest fires and harvesting of trees by lumber companies may cause a forest to change from one type of tree to another.

Tree Groups

Based on the type of leaf and climate forest in the United States have been divided into the following group.

Deciduous trees are found usually in the eastern United States. They are broadleaf trees with a wide, flat leaf. Their wood is hard and their seeds are enclosed in some type of covering. These trees include the oak, maple, and popular.

Coniferous trees are found in the more northerly forests of the United States. Coniferous trees have needles or

scale shaped leaves and are called evergreens. Much of the softwood yielded in the United States comes from the Douglas fir forest of the Pacific Northwest. The seeds of the coniferous trees are found between the scales of the cones produced by these trees. Coniferous trees include the pine, fir and spruce.

Palm trees flourish in warmer climates, including some desert areas of the United States. Since they do not have branches, the leaves grow right out of their trunks.

Many plants and animals are dependent on trees for food and shelter. A small elm tree can be home thousands of different species of plants and animals. Birds survive on the insect population they find in the trees while animals build their homes in these same trees.

The natural growth pattern of a forest is more acceptable for animal life than a man made forest. Forest planted by man tend to have trees of the same age and are planted too close together. Trees thus planted are called tree plantations. The size and closeness of the trees block out light and deters the growth of ground plants. The thick clusters of needles and leaves that fall discourages the growth of new trees. Dead trees, which in a natural setting, would rot and become home to insects and fungi are cleared away. Thus the biological diversity which would exist in a natural forest does not exist.

People also need trees for survival. Trees give us the wood we need to build houses, to make furniture and instruments, and many other things. We heat our homes with the wood from trees. In some countries, the only fuel people use is wood. Trees provide us with fruits, spices, and nuts. Paper is made from trees. Trees help to lessen the amount of dust in the air by capturing it in their leaves. They take in carbon dioxide and release oxygen which is necessary for all life. The roots of trees act as a glue, holding the soil in place.

Lesson Plan #4

Busy Trees

Trees help to keep the air we breathe clean and healthy to breathe. Tiny holes in the leaves of trees, called stomata, allow the tree to breathe through them and to “sweat” out water. Trees absorb carbon dioxide from the air and give off oxygen which people, animals, and other plants need to breathe.

Objective

- 1) To teach the children how plants help to keep the air clean and healthy to breathe.

Materials A tree seedling, large clear plastic bag and rubber band or string.

Procedure

1. Discuss how trees help to clean the air.
2. Have the children water the tree seedling and place it in the plastic bag. Secure the bag in

place with the string or rubber band. Moisture from the tree will condense in the bag.

Other Suggested Activities

1. Let the children collect leaves and label them. Preserve them between waxed paper. Group them according to the tree type: deciduous or coniferous.
2. Let the children make a fungus garden. Place a piece of moistened bread in a plastic bag. Place it in a warm, shady place. The fungus grows quickly with a display of beautiful colors and forms. The children should examine it every day. Soon the bread will disappear and the fungus will die.
3. Let the children grow grass people. Fill a small white flower pot with soil. Add the grass seeds on top and water. Place in a sunny place. As the grass grows, the children can cut or style the "hair". They can create a face on the pot with various art materials.
4. Let the children grow a pine. Find an brown pine cone which is beginning to open. Shake off the seeds and plant in a pot filled with soil. Water it and then keep it moist. A pine tree should sprout in about three to four weeks.

Environmental Enemies

Pollution

Living things are harmed and/or killed by pollution. Pollution exist when something is made unclean or putrid by harmful chemicals or waste. Plants, trees, and animals die from pollution. Buildings are damaged and humans are made ill. These are just a few of the side effects of pollution.

Solid Waste

Solid waste is made of solid or semi-solid materials. They are usually the remainder of human or animal activity. It is unwanted, worthless, and may also be hazardous.

Solid waste can be categorized as the following: 1.) Garbage which is the decomposable waste from food. 2.) Rubbish which is made primarily from noncombustible waste such as metals and glass; combustible waste such as paper, wood and fabric; and other non decomposable wastes. 3.) Sewage treatment solids which is composted of materials caught on sewer screens, settled solids and sludge. 4.) Industrial wastes which include paints, sand, and chemicals; 5.) Agricultural wastes such as crops residue and animal manure, 6.) Mining waste contributes coal and lug heaps to the solid waste collection. Dead animals, ashes, debris from construction sites, fallen trees and limbs are other forms of solid waste.

The most commonly used method to dispose of solid waste is on land. Solid waste makes up more than 90% of the nation's public waste.

Currently, garbage is being produced at an alarming rate. In the United States we create about ten pounds of plastic each year for every person on Earth. One thousand four hundred pounds of trash per person per year is produced by Americans alone. Americans discard three million cars per year, use fifty percent of paper for packaging alone, and our industries produce nearly two hundred fifty million tons of toxic, corrosive and ignitable refuse. At the current rate of production, it is evident that we will run out of places to store our trash in the very near future.

Lesson Plan #5

Landfills

Around 1920, land filling of wetlands began with the alternating layers of garbage and dirt. Land fills were to hold garbage and waste until it decomposed. Waste that would not decompose was buried out of sight in land fills. Incineration and land filling were the chosen waste disposal systems for a time. The increase concern over air pollution and the public dislike of the smoke and fumes emitted from incinerator plants soon caused the use of these facilities to decline. Land filling was proclaimed as the solution, safe and sanitary, to the problem of waste disposal.

Three hundred new landfills were built per year across the country during the 1970's. With an increasing awareness of recycling, the creation of new landfills has diminished to somewhere between fifty to two hundred per year according to the National Solid Waste Management Association. But even if the current rate of garbage production remains the same, we will eventually run short of landfill space.

Not only are landfills reaching their capacity but poisonous substances are leaking into our water supply. Older land fills were constructed without linings. This has allowed chemicals from manufacturing plants and factories to seep into the underground water. Leachate, a liquid produced by rotting garbage has also seeped into the aquifers or ground water. These pollutants end up in wells and the water supply.

Between the years 1942-1953, thousands of tons of chemicals were dumped in Love Canal in the United States. In 1977, strange illnesses began to plague the residents who lived in houses which had been built on the land. An investigation showed that the chemicals had leaked into the ground water that was used by these families as drinking water. The result was that nearly one thousand families had to move away from their home.

We are also discovering that burying our trash does not get rid of it. May of the items we bury in our landfills are not biodegradable and the lack of air hinders the decomposition of waste. This means that some of these items, such as Styrofoam, will still be in a landfill some two hundred years from the day it was buried.

Objectives

1. To allow first hand experience with the problem of an over abundance of trash.

Materials You will need to set aside an area approximately 3'x 3' as a landfill, (the size can be

determined by the children but limits should be set) and non food trash.

Procedure

1. Several days before you are ready to teach this lesson read the children the book “Trash” by Charlotte Wilcox. Allow them to predict what they think the book will be about.
2. Tell the children that they will be garbage collectors. Explain that they are only to collect non food garbage.
3. Give each child a large brown bag. Tell them that their source of garbage may be from home or a classroom in the school. They are to request that all non food garbage for the day is to be placed in the brown bag and returned to school.
4. Show the children the class land fill. Explain that all trash must be placed in the landfill. The land fill size cannot be increased because of lack of classroom space. Emphasize that all trash must go in the land fill.
5. Have children bring in their trash and place it in the land fill. Let them discuss possible solutions to the trash problem once they realize that all the trash will not fit.
6. Suggest that they consider which items have been needlessly placed in the landfill. Record the children’s suggestions.

Totem Pole (Tote Them to the Recycle Bin) (A lesson on the 3 R’s of a Healthier Environment)

Objectives

1. To show that we can lessen our trash by recycling (making something new out of something old. Reusing (to use something over again) and reducing, (making something smaller).

Materials

1. Non food trash from landfill. Boxes or empty milk crates stacked and covered with construction paper or newspaper for the totem pole.

Procedure

1. Explain to the children that today you are going to sort the trash which landed in the landfills into groups. Tell them that you want them to decide which things could be recycled, reused, and reduced. Tell them that they will display their results on their totem pole to share with the school.
2. Recyclables may include cans, newspaper, plastic and glass containers.
3. Reusables may include a lunch box instead of a paper bag, an article of clothing, toys, or household items which may have been passed on, reusable dishes instead of plastic or Styrofoam, etc.
4. Reducibles may include a thermos instead of individual juice containers, a reusable container for fruits or snacks instead of plastic bags.
7. Make a Tote Them (Totem Pole) by stacking three or four plastic milk carriers one on the other. Cover it with construction paper and place a happy global face on top. Let the children mount their 3 R items on the totem pole using some type of adhesive and place in an area for display.

More Suggested Activities

1. Let the children take a food trash and a non food trash such as plastic cup or spoon and place them in a container of dirt. Allow the children to observe what happens to the food trash and what happens to the other trash. Discuss the results. The children may wish to record the results in their eco-journals.
2. Show the children how worms work as decomposers. Fill a large clear plastic container about half way with dirt. Moisten the soil and place red worms in the soil. Place several different uncooked food items on top of the soil. Cover the container to lock in the moisture and allow the children to observe what happens. Let them record the results in their eco-journals.
3. Using the dirt from your worm experiment allow the children to grow flowers in a window box. Discuss how the decomposed matter has enriched the soil making it better for plant growth.

Lesson Plan #6

Water Pollution

For years people have also used Earth's waterways as the dumping ground for various materials. Because of the resiliency of oceans, rivers, seas, etc., the feeling was that the effects would be minimized as these pollutants were dispersed over these vast areas.

Pollution of our waterways are caused by a variety of substances such as radioactive substances from uranium and thorium mining. Rubbish, organic chemicals, infectious materials, fertilizers, and plant nutrients, sediments of soil and minerals particles eroded by storms and floodwaters, sewage and other oxygen depleting waste have all found their way into our waterways.

Eutrophication, which is the abnormal growth of aquatic plants, occurs when synthetic nutrients leak into lakes. These artificial nutrients generate abnormal growth of aquatic vegetation. These plants in return deplete the oxygen supply in the lake as they decay. Bad tasting water, odor and ugly green scums of algae are some of the products of eutrophication.

The urgency for control of these impurities led to the approval of the 1972 Federal Water Pollution Control Act. Strict controls and cleanup deadlines were established for industrial and municipal pollutions. These deadlines were not relaxed until the passing of the 1977 amendments. Supplemental provisions to this law helped to strengthen the suppression of toxic water pollution.

Objectives

1. To show the children to how plants will also absorb pollutants in the water.

Materials Jars, cut white cut flowers or sticks of celery, and food coloring.

Procedure

1. Review how plants use water.
2. Share the materials you have gathered with the children and allow time for discussion of what they might be used for.
3. Explain that the children will be doing an experiment to show how plants can absorb pollutants from the water.
4. Place some food coloring in the jars and then add water. Trim the stems of the plants and stand them in the colored water for several hours.
5. Let the children observe the discoloration of the plants by the absorption of the "pollutant" in the water.

Help Keep Your World Beautiful

The environment is all around us. Everything that affects and surrounds us is a part of our environment. The environment is made up of the things we can see, hear, feel, touch, and smell. It is time for the people of the United States and perhaps even the world to roll up their sleeves and ask, “How Can I Help.” just as the oceans of our world are made of individual droplets of water, so each individual contribution to lessening the production of trash and litter can add up to make an ocean of difference.

The majority of the population disposes of its trash in the proper manner. We throw our trash into the receptacle, we flush our toilets, and haul large debris to the city dump. Our industries load their toxic waste into the proper receptacles and ship them off to some graveyard for toxic and nuclear waste. And then we go about the business of creating more. More household trash, more toxic and nuclear waste, more chemicals, more cars, more of all kinds of things which will eventually end up as trash.

Waste disposal has produced some serious problems for all of us. Land fills are overflowing. Garbage buried years ago is still lurking just below the surface. We don't know how to make those canisters full of nuclear waste disappear so the mountain just keeps growing. In the recent years we've watched as an bombardment of disposable materials became available on the market. Disposable diapers, plates, cups, flashlights, cameras, etc. have all piled up be added to the heap of trash which already litters the landscapes and oceans. We have so much trash that we don't know what to do with it all. So we've tried to ship our garbage to other parts of the country or world to be buried in someone else's backyard.

This was the case of Mabro, a smelly sea vessel which left the harbors of New York on March 22, 1987. It was loaded with 3,168 tons of solid waste in the form of smelly garbage and chemicals produced by the residents and commercial businesses of Islip, Long Island and other New York townships. The destination was Jones County, North Carolina.

Upon arriving at Jones County, it was discovered that the people their had changed their minds. They too had more garbage than they needed and they weren't about to receive any more. The ship began a search for a township or country which would accept Long Island's smelly trash. The barge loaded with garbage was turned away by four states and two countries. On May 16, after 162 days at sea, Mabro, now having been nicknamed GAR-BARGE, returned to New York Harbor still carrying its smelly cargo.

Suggested Activity

Let the children sit on the town council to decide whether the garbage on Mabro should be accepted. Let them debate the pros and cons of their decision.

There are no easy solutions to the problem of waste disposal. It may be a problem for which we will have to contend with for the remainder of human existence. We can however begin to reverse some of the damage done by learning to care for our environment and by become wise consumers. By recycling, reusing and reducing we can reduce the amount of pollution we produce each day and that can make a difference.

Childrens Annotated Bibliography

Kalman, Bobbie, "Reducing, Reusing, & Recycling", 1991, Crabtree Publishing Co. Wonderful ideas for reducing trash.

Wilcox, Charlotte, "Trash!", 1968. Carolrhoda Books, Inc. Minneapolis. Trash is followed from the home to the land fill.

Wilkes, Angela, "My First Green Book . . . A Lifesize Guide To Caring For Our Environment", 1991. Alfred Knopf, Inc. Wonderful pictures and experiments showing the effects of pollution.

Carr, Terry, "Spill! The Story of the Exxon Valdez", 1991, Franklin Watts. Show the effects of oil pollution on marine and plant life and discusses some of the clean-up techniques.

Cole, Joanna, "The Magic School Bus . . . At the Waterworks," 1986, Scholastic, Inc. The children take a journey through the water cycle.

Cole, Joanna, "The Magic School Bus . . . Meets the Rot Squad", 1995, Scholastic, Inc. Mrs. Frizzle, the school science teacher, takes her class on a rotten expedition in this book on decomposition.

Markham, Adam, "the Environment", Rourke Enterprises, Vero Beach, Fl., 1988. Examines how various ecosystems are being destroyed by human activities and efforts to stop the destruction.

Temple, Lannis, "Dear World: How Children Around the World Feel About Our Environment", Random House, New York, 1993. A collection of letters and drawings from young people around the world that express their feelings about the environmental problems and nature.

Mattson, Mark, "Environmental Atlas of the U.S.", 1993, Scholastic, Inc. Excellent resource book.

Usborne, "Protecting Rivers & Seas", 1990, Scholastic, Inc.

Usborne, "Protecting Trees & Forests", 1991, Scholastic, Inc.

Teacher's Annotated Bibliography

Tesar, Jenny E., "The Waste Crisis", Facts on File, New York, 1991. Examines all kinds of waste; commercial, industrial, toxic and radioactive, and discusses the problems and possible solutions connected with the existence and management of such pollutants.

Barss, Karen, "Clean Water", Chelsea House Publishers, New York, 1992. Discusses the problem of maintaining a clean water supply and relates this issue to such topics as pollution, depletion of sources and other environmental concerns.

Dolan, Edward, "Our Poisoned Sky", Cobblehill Books, New York, 1991. Explains how pollutants are ruining our atmosphere and what is being done about them.

Schlessinger Video, "Degradation of the Land", Bala Cynwyd, Pa. 1993.

<https://teachersinstitute.yale.edu>

©2019 by the Yale-New Haven Teachers Institute, Yale University

For terms of use visit <https://teachersinstitute.yale.edu/terms>