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Partnerships

What

According to the K-12 Service-Learning Standards for Quality Practice, Service-Learning partnerships are collaborative, mutually beneficial, and address community needs. Service-Learning goes beyond sharing information and resources to creating mutually supportive partnerships that have a common purpose and enable each partner better fulfill its mission. Service-Learning partnerships:

- include a variety of partners, including youth, educators, families, community members, community-based organizations, and/or businesses.
- involve frequent and regular communication to keep all partners well-informed about activities and progress
- establish a shared vision and set common goals to address community needs.
- collaboratively develop and implement action plans to meet the project goals and to utilize resources more effectively.
- share knowledge and understanding of school and community assets and needs, and view each other as valued resources.

Partnerships are vital to successful Service-Learning. Partners can be external, such as community organizations and business or they can be internal, such as other classes and teachers, school administrators and school facilities staff. Most projects have a mix for both internal and external partners. Partnerships can fall into several categories, for example:

- networking - sharing information that is helpful to both organizations
- cooperation - one organization leads the project with support from the others
- coordination - the partners work together for a specific project or event
- collaboration – a more intertwined type of partnership that includes shared decision-making and formally agreed upon roles and responsibilities

Each type of partnership is valuable and can be included in Service-Learning projects.

So What

Partnerships offer opportunities for schools and community organizations to learn from each other, share resources and knowledge, and to develop respectful and sustained relationships. Organizations are able to provide more services by avoiding duplication of effort and making better use of resources. Students benefit from increased confidence in their abilities, positive interactions with diverse populations exposure career options and opportunities to relate academics to "real-world" situations. Partnerships also demonstrate to the community that students can make valuable contributions and provide the opportunity for positive interactions between the school and the community.

Now What

In order to develop successful partnerships, all members must have a clear understanding of each organizations mission and goals, expectations for the partnership and project outcomes, and the resources each is able to commit to the project. The first step in establishing a partnership is to clarify the goals for the partnership. Next, the potential partners need to be identified and contacted. It is important the school provides potential community partners with:

- a clear definition of service-learning and the essential features of a service-learning program
- the benefits to the community of both Service-Learning and the project
- the academic and standards for which teachers will be held accountable
- the role of the students in planning and implementing the project

The school must also understand the organization's:

- mission and goals
- capacity to provide Service-Learning opportunities
- available resources to support the Service-Learning partnership and the costs of those resources

While it is important that all partners join the project with a clear understanding, it is also important to recognize the fact that the partnership may grow and change over the course of the project. Communication and flexibility are important aspects of Service-Learning partnerships.

Resources:

- www.servicelearning.vcu.edu
- http://nylc.org/sites/nylc.org/files/files/Standards_Oct2009-web.pdf
- http://www.servicelearning.vcu.edu/files/2012/02/partnerships.pdf
- http://www.servicelearning.org/instant_info/fact_sheets/cb_facts/developing_partnerships
- Building Effective Partnerships in Service-Learning,
- National Service-Learning Clearinghouse, 2008. http://lift.nylc.org/

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Who Can Help Us? Will You Help Us?

Grade Levels: 6 – 12

Objective: To identify and recruit potential partners for the Service-Learning project.

Standards:

National Science Education Standards

Unifying Concepts & Processes; Standard A - Science as Inquiry; Standard E - Science & Technology; Standard F - Science in Personal and Social Perspectives

National Educational Technology Standards

Standard 3 - Research and Information Fluency; Standard 4 - Critical Thinking, Problem Solving, and Decision Making

Virginia Standards of Learning

Science: 6.1, 6.5, 6.7
Technology: 8.2, 8.4, 8.5, 8.8, 8.9
Language Arts: 6.1, 6.2, 6.7, 6.8

Background: These sessions will address the need for help from community members, school community, peers, and family members to create a service project that will have an impact that is lasting. Students will be making plans for contact and requests for assistance from our community. Students will research, write letters, and establish relationships within the community using their knowledge of the need for a clean-up and educational outreach.

Materials:

Service Learning Project folder with notes and data
Internet
Printer
Paper

Procedure:

1.   Class will begin with a probing question to get the students thinking about the importance of community partners and the relationship this has the success of our project.
2.   Small group discussion will follow where students will list the people and/or companies who they feel can help us.
3.   Students will determine how we can enlist the help of their peers and their family members.
4.   While discussions are taking place, students will be writing the list of partners they want to involve.
5.   Once students have compiled their lists, a round robin will follow where they can share their ideas and we can create a master list of potential sources of assistance.
6.   I will then explain the need for a commitment from the neighborhood association that has the rights to the Reservoir to gain full access to complete their project.
7.   Students will then work in their Language Arts class to compose letters to community partners of their choosing to request help.
8.   Letters and all contact will be made no later than December of this year.
9.   Students will also draw up written agreements to be signed by both the community partner and the students to confirm the expectations of all parties involved.
10. Students will bring to class the commitments that have confirmed through their outreach and these will be filed in our class service project binder.
11. Throughout the process of establishing community relationships, students will reflect on the experience on our Edmodo site.

Extensions:

Green Jobs and Careers:

The Bureau of Labor Statistics (http://www.bls.gov/green/) defines green jobs as:

"Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources." And "Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources."

1.   Have students investigate the types of jobs are suited to their personality, skills and interests by using these online resources. The personality test center helps identify career options based on personality indicators and the O*NET tool uses interests and skills to suggest potential careers. Students can choose to use both tools and compare the results or use each tool individually.

   a.   Personality Career Tool Activity: Complete your Meyers Briggs type indicator at the online site.

      i.   Go to www.personalitytest.net/cgi-bin/q.pl

      ii. Answer the 68 quick "either/or" questions. Choose your best answer to each question.

      iii. When you click "RESULTS" your personality type will be listed.

      iv. With your four-letter reference type, choose an occupation from the list that might help suit your type and is a job that you might be interested in exploring.

      v.   The listing can be found by clicking "Green Jobs List" at http://www.ctenergyeducation.com/greenjobs.htm

     vi.   Do a web search of the listed resource sites and other sites to find out more about the job you chose.

- What training/background is required?
- What is the entry-level pay or average pay for this occupation?
- Do there seem to be any jobs available in this occupation? If so where are they?
- After completing your research are you more or less interested in this occupation that when you started? Explain why.

  b. O*NET Interest Profiler Activity: Complete the O*NET Interest Profiler

      i.   Go to http://www.mynextmove.org/explore/ip and complete the interest profiler

     ii.   Answer the quick 60 questions with your best answers for each question.

    iii.   When you have finished your interests will be shown in a graph, click Next to see the jobs suited to your interests.

- Where any of the jobs you chose green jobs? If not you can go to www.onetonline.org/find/green to search the green economy jobs sector.

    iv.   For the jobs listed, choose ones you are interested in.

- What training/background is required?
- What is the entry-level pay or average pay for this occupation?
- Do there seem to be any jobs available in this occupation? If so where are they?
- After completing your research are you more or less interested in this occupation that when you started? Explain why.

2. Have the students investigate green jobs related to their project topics. Suggested resources:

    http://www.bls.gov/green/greencareers.htm

Service-learning Projects:

Have students design a service-learning project implementing a green solution at your school or in your community.

1. Create a brochure or display explaining the project topics. Share this information at community or PTA meeting or Earth Day celebration.

2. Develop a fun lesson for K-2 students at the school. Have upper-grade student present this lesson to the young students in the school.

To learn more about service-learning, visit www.servicelearning.vcu.edu and http://www.servicelearning.org/what-service-learning.

Partners:

Language Arts Teacher

School Administration

Family Members

Community Partners (student choice)

Edmodo: http://www.edmodo.com/

Lesson Plan based on an activity developed by

Brianne Gunn

Falling Creek Middle School

Chesterfield County Public Schools

Richmond, Virginia

Green Jobs and Careers Extension based on an activity developed by

Rob Kincade

Mathews High School

Mathews County Public Schools

Mathews, VA

GreenSTEM@VCU Unit Plan

Developed by:

Teresa Turner

Lebanon Middle School
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Lebanon, Virginia

Reduce, Reuse, Recycle and/or Renew

Unit Description

Unit Overview

This unit focuses on natural resources as they relate to sustainable development. Students will learn about the connections between natural resources and the products they use. They will investigate and trace raw materials to landfill trash of everyday products. They will learn about some of the problems that arise from not conserving raw materials and introduced to ideas on how to make that process more sustainable. Students final project will be to develop their own recycling program at school in order to recycle both renewable and nonrenewable resources. Students will then work together collecting scientific data in order to design a recycling program for their school. In doing so, they will learn about what materials are recyclable, how they are recycled and how this benefits the environment by contributing materials to the local recycling center.

Unit Context

The unit will begin by presenting the curriculum objectives for the year, the goals of Service-learning, and what students will be doing in the coming weeks and months. Discussions will be made regarding the basic mathematics and scientific concepts that students will be learning. The lessons will enable students to investigate the concept of protecting their environment and the importance of recycling. Each lesson will focus on aspects of the environment and how it produces the raw materials people use to make products. Wood, metals, sand, and oil are called raw materials. Raw materials are the building blocks of products. Many raw materials, such as oil and metals, are nonrenewable resources. Earth's oil was formed millions of years ago. There's a limited amount of it. When it's gone, its' gone forever. Metals mined from the ground are used to make cars, ships, pots and pans, appliances, and many other things. Glass is made from sand. Plastics are made from chemicals in oil found deep underground. Certain other resources, such as wood, are renewable resources. If trees are cut down for lumber and paper, more can be planted to replace them. Even so, trees take years to grow. Recycling paper and other wood products can help keep forests from being destroyed. Renewable energy sources at the earth's surface: solar, wind and water will be included. Further investigation of green careers.

Service-Learning Standards

Duration & Intensity

The lessons will take place over the course of the school year and address the processes of investigation of community needs, preparation for service, action, demonstration of learning and impacts, and celebration.

Meaningful Service

The lessons are found to be age-appropriate to students' developmental abilities. Students and school staff will demonstrate high interest in a school-wide recycling campaign and the effects the project will have on the school and community at large. Throughout the school year, students, school staff, and family members will learn about how recycling impacts their community and the environment and the role they can play in making the school and their homes more environmental friendly.

Links to Curriculum

The learning goals in this unit are articulated in the Standards of Learning Objectives and is aligned with the school district's passing guides. Students transfer knowledge and skills from the classroom to the school at-large and community and vice versa. Students will enhance their Science, Technology, Engineering and Mathematics (STEM) skills as they organize, collect, design, and present their recycling program to the school and community.

Youth Voice

Students are involved in planning, implementing and evaluating the school-wide recycling campaign and the effectiveness of their experience. They are actively engaged in an open dialogue with the teacher throughout the process, especially during reflective activities. They develop leadership and decision making skills through their work in teams and when communicating the goals of their project to administrators, other students, and school staff.

Partnerships

External partners for the recycling project include: Alcoa, the Virginia Department of Environmental Quality (DEQ), the Southeast Recycling Development Council (SERDC), Russell County Environmental Control and Recycling Center, along with parents and the local media. Internal partners include: students, school administrators, teachers and staff. Students work with both external and internal partners to develop the school- wide recycling program through weekly meetings and classroom visits. External partners donate free recycling bins to the school, which students decorate and place around the school for the collection of waste commodities. Students provide written reports on a monthly basis to report to SERDC. Students form a small media group within their advisory team to provide future interviews with the media.

Diversity

Students work in teams throughout the project during which they develop skills in conflict resolution and group decision-making. It will also provide them with an educational cultural experience that takes seriously the importance of school and community and provide them with the intellectual, civic, and moral tools to work with each other and their community.

Reflection

Reflection activities are woven throughout the lessons and activities throughout the entire school year. They include classroom discussions and exercises, discussions with community partners and family members, peer discussions, dialogue between middle and high school students, oral presentations, field trips to recycling center, school scrapbook, data charts and graphs and student surveys.

Assessing Impacts

Evidence of progress is collected from student reflection activities, the Timeline/Task/Activity Chart. During the school year the teacher will check with students, school staff, and partners to see if any aspects of the project need to be improved. Student and teacher assessment of the project at the end of the school year will help to develop ideas and suggestions in sustaining the recycling program for the next year.

Sharing & Celebrating

There are a variety of ways that students will demonstrate what they have learned throughout the school year. Publicity of the project's success will be communicated within the school, throughout the community, and with the media regarding the vision accomplished and school goals met. Students will dedicate funds generated by the school aluminum can recycling to the local Children's Advocacy Center, a non-profit organization.

Civic Goals

The unit will actively engage students in a hands-on, interdisciplinary service-learning approach that will educate students regarding human impact on their school environment and their personal responsibility in solid waste management as it directly relates to the needs of their school. Participation in the unit will further enable students to maintain their interest, voice, and awareness in sustaining a service-learning project within their home and community.

Character & Social Skills

Students' participation in this unit will promote good citizenship through environmental stewardship. Students will develop interpersonal skills in conflict resolution and group decision-making skills while participating in the recycling project.

Career Skills

Students will become equipped with the knowledge of a "Green Career." Lessons will incorporate information and guest speakers to encourage and influence students in the types of "Green Jobs" available in the places in which they choose to settle, whether in Southwest Virginia or not. The lessons in these activities, along with the experiences and partnered relationships they establish along the way, will empower them to become agents of change in Southwest Virginia and beyond, while they are students and as they begin to think about a future path of career.

LESSON 1: "Analyze the Trash"

Conducting the school's waste stream will help to identify the type, quantity, and/or origin of the potential recyclable materials. This information will assist in formulating school recycling goals and procurement of recycling containers and/or other needed materials. Students will complete the assessment with guidance from the teacher. An assessment will be done simply by recording the contents of an individual classroom by sorting and weighting discarded trash. Once the trash is sorted and weighed, it will be multiplied by the number of classrooms for an estimate of the amount of trash and recyclable materials being discarded. Adding the waste from the library, computer lab, and office will lead to a more accurate estimate of the total amount and type of waste in the school.

Standards of Learning Objectives:

Math 5.1, 5.2. 5.3, 5.11, 5.18; Science 5.1, 5.7; Technology 3-5.1-8; English 5.1, 5.2, 5.6, 5.7, 5.8

Methods and Activities:

Part 1: How much waste does the school produce?

Have students weigh an assigned classroom's trash at the end of each day for one week. Have them average the weight of the trash over the five days. Then have the students multiply the answer by 20 to obtain an estimate of trash produced per month for a classroom. Multiply the answer by the number of classrooms to get an estimate of trash disposed by all classrooms per month. Include the library, computer lab and office and add the results to the total amount of trash from classrooms to obtain a monthly total.

Part 2: What is the composition of school waste before recycling?

Have students separate the waste from the classroom trash bins into the following categories: paper, plastic, glass, metal, food, wood, and other. Weigh the separated waste and average the weight of each trash category. Have students record the data on a chart and go to the computer lab to graph the results. The computer lab teacher will assist in teaching students how to use a spreadsheet and create graphs.

Part 3: How much of the school's waste can be recycled?

Have students separate recyclable materials out of each category from part 2 (this should be materials that can be recycled in their community) in a typical classroom at the end of each day for one week. Weight the amount in each category and average for the week. Multiply by 20 for the average weight per month for the classroom. Have students determine which recyclable materials that their school will produce in a month. Form a recycling team to review the results from analyzing the school's trash and set a school recycling goal(s) based on the results.

Part 4: Partner with Lebanon High School Students (End of School Year)

Work with students from Lebanon High School to design and build a recycling container to hold aluminum cans, plastic bottles, and paper prior to taking it to the recycling center.

Materials/Resources:

Handouts

Internet: *Virginia Recycling Association (VRA) website address: http://www.vrarecycles.org/SchoolRecyclingToolkit/tabid/60/Default.aspx:*

LESSON 2: "Reduce, Reuse, Recycle and/or Renew"

The Russell County Environmental Control and Recycling Coordinator initiated a recycling bin grant through the Russell County School System for the 2010-2011 school year. He made recycling bins available to Lebanon Middle School to report during the school year. The purpose of the bin grant program is to encourage student's efforts on recycling and to help the teachers and the schools with acquiring bins to begin a recycling program or to stimulate their current programs. Additionally, local businesses and agencies such as Alcoa (world's leading producer of aluminum), Virginia Department of Environmental Quality (DEQ) and Southeast Recycling Development Council (SERDC) donated the free recycling bins in an effort to encourage recycling throughout Southwest Virginia. Together, we are all collaborating on a program in our area to promote recycling so that we can reduce litter and solid waste, save energy and conserve our natural resources in our community. Officer Justus is leading up a local and national aluminum can contest. In honor of the celebration of the 75th anniversary of the aluminum beverage can, the Can Manufacturers Institute (CMI) is launching the Great America Can RoundUp School Recycling Challenge. Schools can compete to recycle the most aluminum beverage cans per capita between America Recycles Day and Earth Day.

Standards of Learning Objectives:

Math 5.1; Science 5.1, 5.7; Technology 3-5.1, 3-5.5; English 5.1, 5.2, 5.7; Engineering

Methods and Activities:

Part 1: What do the terms reduce, reuse, recycle and/or renew mean?

Officer Bobby Justus, guest speaker, visits each fifth grade classroom and introduces the terms and provides students with a PowerPoint presentation slideshow. Officer Justus provides students with examples of items of the different commodities of waste. He also elaborates on the amount of recycling materials collected in Russell County and where students can take them to be recycled, as well as landfills. Students are informed on what types of materials can be reduced, reused, recycled and/or renewed. Justus Students on the "Green Team" committee explain and take Officer Justus on a tour of the school to view their recycling program.

Part 2: Green Careers

Officer Justus informs students of his educational background, which is environmentally based. Officer Justus describes the duties and or responsibilities of his job within the Russell County Environmental Control and Recycling Center. Officer Justus also informs students that he works for the Russell County Sherriff's Office as a litter control officer, which involves issuing tickets and making arrests to people that are littering within the community. He informs students to let him know of areas within their community

that are in need of cleaning up as he is responsible of managing groups to focus on areas in need of preserving.

Part 3: America Recycles Day

Officer Justus visits the school to discuss with students a local and national aluminum can contest that begins on America Recycles Day and ends on Earth Day in April. Students are to keep track of the number of aluminum cans recycled to report online including the total pounds recycled, amount earned and price paid per pound.

Materials/Resources:

PowerPoint Presentation slideshow

LESSON 3: "Earth & Its Resources"

Minerals are nonrenewable resources. They cannot be replaced as trees can be, for example. They take so long to form that they cannot be replaced in our lifetime. Because minerals are nonrenewable, they must be conserved. To conserve means to "use wisely or avoid waste." One way people can conserve minerals is by recycling them--finding ways to treat them or use them again. Researchers can also come up with substitutes to use in place of natural minerals.

Standards of Learning Objectives:

Math 5.1, 5.7, 5.11, 5.18; Science 5.1, 5.7; Technology 5.1, 5.2, 5.4-8; English 5.1, 5.2, 5.6-8

Methods and Activities:

Part 1: What are minerals used for?

Complete a guided reading activity on the use of minerals using the Science textbook. Discuss with students what minerals are used for, i.e. to make many products, steel, electric light bulbs, iron ore to make nails, buildings, ships, and the mineral bauxite is used to make aluminum for food-wrap foil, soft-drink cans, and pie tins, just to name a few uses. The iron and aluminum that come from these two ores are metals. Metals have many useful properties. They conduct electricity and can be stretched into wires. The metal copper, for example, comes from a mineral ore and is used to make electrical wires.

Part 2: Lab Activity

Complete a lab activity for students to identify the different types of minerals and their properties. Students will need to write up the lab report.

Part 3: How can people ruin soil? and How can people protect the soil?

Complete a guided reading activity on how people can ruin soil and how people can protect the soil using the Science textbook. Discuss with students how people depend on soil and how soil is ruined and wasted.

Discuss with students how people often get rid of garbage and hazardous wastes by burying them in soil, which can cause diseases, such as cancer. Have students create a graphic organizer listing the ways that people need to take care of soil, i.e. adding fertilizers and humus, using crop rotation, strip farming, contour plowing and terracing, or other suggestions from students.

Part 4: Investigating the changing of Earth--Weathering & Erosion

Define weathering and erosion with the students and take them around the schoolyard to gather data about erosion. They will plan various methods of stopping the erosion from altering the area further, and they will be "adopting a spot" on the school grounds for the school year. It is important for students to identify the factors that prevent erosion. Students will also consider ways to prevent the area from being polluted or wasted.

Materials/Resources:

McMillan/McGraw-Hill 5th Grade 2002 Edition Textbook

VDOE Science Enhanced Scope and Sequence Guide- Grade 5

Handouts

LESSON 4: "The Importance of Plants"

Plants help us in many different ways. They produce oxygen for us to breathe. They provide food for us to eat. We build homes with wood from trees. Lifesaving medicines are made from some plants. Now research shows plants have another amazing use--they help us clean up pollution!

Standards of Learning Objectives:

Math 5.1; Science 5.1, 5.5, 5.7; Technology 3-5.1, 3-5.4-7; English 5.1, 5.2, 5.6-8

Methods and Activities:

How can plants clean pollution?

Complete a guided reading activity of the "Amazing Story" in the Science textbook entitled, "Cleaning Pollution with Plants." Complete a concept web on what type of plants clean up pollution, i.e. clover, alfalfa, and mustard.

Green Careers

Have students research on the Internet in the computer lab on the following scientists: Katherine Banks and Paul Schwab of Purdue University. These scientists discovered that grasses with large root surfaces work well at cleaning up polluted soil.

Materials/Resources:

McMillan/McGraw-Hill 5th Grade 2002 Edition Textbook

Internet

LESSON 5: "The Cycles of Life"

Many people urge that we conserve raw materials by recycling them--just as nature recycles water, carbon, and nitrogen. Many communities have recycling programs. Glass products, metal, plastics and papers can all be recycled. Service stations can save oil that is drained from car engines. Nitrogen is a chemical found in plant fertilizers. Fertilizers are substances used to add minerals to the soil. Some fertilizers are natural. These are decaying plants and animals, and animal wastes. Other fertilizers are made in factories. The environment provides all the things we need. The environment will keep doing these things as long as we let it recycle the substances that make life possible and comfortable.

Standards of Learning Objectives:

Math 5.1, 5.2, 5.18; Science 5.1, 5.6, 5.7; Technology 5.1, 5.2, 5.4-8; English 5.1, 5.2, 5.6-8

Methods and Activities:

Part 1: What is the Water Cycle?

Complete a guided reading activity on the water cycle using the Science textbook. Discuss with students what happens to rainwater after it falls and how it is recycled. Have students color the handout on the water cycle.

Part 2: What is the Carbon Cycle?

Complete a guided reading activity on the carbon cycle using the Science textbook. Discuss with students the importance of carbon and how it is found in the air as carbon dioxide and is used by plants in photosynthesis. It is found in many of the things we use every day, from fuel to chairs to nonstick pans. And like water, carbon is recycled by nature. Have students color the handout on the carbon cycle.

Part 3: What is the Nitrogen Cycle and How Are Trees Recycled?

Complete a guided reading activity on the nitrogen cycle using the Science textbook. Discuss with students how you can help nature recycle plant material by composting. Both natural and artificial fertilizers contain nitrogen. Bring a bag of fertilizer to class to examine the label for nitrogen. Encourage students to read the labels at stores that sell fertilizers to find out if nitrogen is one of the ingredients. As they will discover, like water, nitrogen and carbon have their own cycles in nature. Earth is a closed system, With the exception of energy, almost nothing gets out or gets in. It is recycled!

Have students color the handout on the nitrogen cycle.

Part 4: Reduce, Reuse and Recycle and Too Much Trash

Each year, the United States produces enough trash to fill enough garbage trucks to reach halfway to the moon? In 2003, each American produced about 4.5 pounds of garbage per day. Where does all that waste go? How can we reduce the amount of garbage we make? Have students think about these questions and complete a chart provided by the website, *Time for Kids*, entitled, "Reduce, Reuse, and Recycle. They will identify the following objects: paper bag, plastic bag, aluminum can, Styrofoam cup, and glass bottle. Students will record the number of times they use this object in one month, the number of times that they reuse this object in one month, list one way they can use this object more efficiently and another use for this object. They will also discover the time it takes for this object to decay in a landfill. Have students complete the pie graph provided by the website, *Time For Kids*, entitled, "Too Much Trash!." Students will use the graph to answer questions regarding the percentages of items that Americans are tossing into the garbage. They will identify the following commodities: paper 35%, yard trimmings 12%, food scraps 12%, plastics 11%, metals 8%, rubber, leather, textiles 7%, wood 6%, glass 5%, and other 4%. Take students to the computer lab to have them create a spreadsheet on the data and convert it into a pie and column graph.

Materials/Resources:

McMillan/McGraw-Hill 5th Grade 2002 Edition Textbook

Internet: *Time For Kids website address: http://www.timeforkids.com/TFK/teachers/teachingresources/wr/search/0,28116,worksheets,00.html?searchstring=all&searchtype=skillandtheme&searchcase=worksheets&startindex=1&endindex=20*

Handouts

LESSON 6: "Earth's Fresh Water"

The United States Congress has passed laws such as the Safe Drinking Water Act and the Clean Water Act. These laws set standards for water purity. Laws are important. However, it takes people to help save water and keep it clean. The oceans have a tremendous ability to absorb human waste. Unfortunately, at some point the pollution becomes too much for the water to handle.   Oceans provide many valuable resources. Most of the world's nations are now aware of the need to protect their coasts and water from pollution. They have begun to keep sewage, chemicals, and other waste out of the water. Oceans are polluted by people dumping wastes and spilling chemicals. Fresh water can be polluted, too, in many ways.

Standards of Learning Objectives:

Math 5.1, 5.7, 5.11, 5.18; Science 5.1, 5.6; Technology 5.1, 5.2, 5.4-8; English 5.1, 5.2, 5.6-8

Methods and Activities:

Part 1: How can fresh water be polluted?

Complete a guided reading activity on how fresh water can be polluted using the Science textbook. Discuss with students ways that fresh water can be polluted, i.e. precipitation, acid rain, runoff water, groundwater picking up chemicals and pesticides, industry and household waste. Guide the students to understand that because of local pollution, many families use water-treatment devices in their faucets. Some families have to use bottled water for cooking and drinking. Have students complete a graphic organizer on four sources of water pollution and write a paragraph about them.

Part 2: Lab Activity

Have students conduct an experiment on fresh water and salt water. Students will be able to analyze how the physical characteristics (depth, salinity, and temperature) of the ocean affect where marine organisms can live. Students will make a real connection of Earth's water and how the oceans are rich in natural resources, such as oil, natural gas, and coal. The ocean's living creatures are also a valuable resource. Students will write a lab report.

Part 3: Green Careers

Have a guest speaker come to the class that works at the Waste Water Treatment Plant in Lebanon, VA and discuss their job and how the facility operates.

Materials/Resources:

McMillan/McGraw-Hill 5th Grade 2002 Edition Textbook

Activities Integrating Math & Science (AIMS) 2003 Edition

VDOE Science Enhanced Scope and Sequence Guide- Grade 5

Handouts

LESSON 7: "Interactions of Living Things"

If a food chain, food web, or energy pyramid changes, the result might affect humans. On farms a decrease in predators like insect-eating birds might lead to a population explosion of insects. If the insects are plant pests, crops may suffer and food may become scarce. Humans may influence such changes. It is important to monitor how human actions affect the populations of an ecosystem.

Standards of Learning Objectives:

Math 5.1; Science 5.1, 5.6, 5.7; English 5.1, 5.2, 5.6-

Methods and Activities:

How do food webs affect you?

Complete a guided reading activity on Food Chains and Food Webs in the Science textbook entitled, "What Is a Food Chain and a Food Web?" and "How Does Energy Move in a Community?" Have students draw and label an energy pyramid of a land food chain and an ocean food chain. Discuss with students how food webs affect you. People who eat contaminated fish may become very sick. You a part of a food web, too. Humans are at the top of most food webs. Changes in any population may also affect you. Further, that phytoplankton produce 80% of the Earth's oxygen and serve as the base of the ocean ecosystem. Play the Food Chain game with students using the cards provided by the VDOE Science Enhanced Scope & Sequence.

Materials/Resources:

McMillan/McGraw-Hill 5th Grade 2002 Edition Textbook

VDOE Science Enhanced Scope and Sequence Guide- Grade 5

Handouts

LESSON 8: "Energy Resources"

Some energy sources will last forever, while others will run out eventually. Most of the energy we use can be traced back to fossil fuels--coal, oil, or natural gas. The energy in fossil fuels, in turn, can be traced back to the Sun. Our supplies of fossil fuels are limited, and fossil fuels are not a renewable energy source. With the growth of industry, the demand for and use of energy also grows. The United States is the world's largest consumer of energy. The energy we use makes our lives easier. However, energy use pollutes the environment. It also speeds up the rate at which Earth's energy resources are used up. If we continue to use fossil fuels at our present rate, we will run out of them.

Standards of Learning Objectives:

Math 5.1, 5.7, 5.11, 5.18; Science 5.1, 5.7; Technology 5.1, 5.2, 5.4-8; English 5.1, 5.2, 5.6-8

Methods and Activities:

Part 1: What other sources of energy are there?

Complete a guided reading activity on the five alternative energy sources such as hydroelectric plants, windmills, geothermal energy, solar panels and tidal power plants that are listed in the Science textbook. Have students select one of the alternative energy sources and research the topic on the Internet and write a report.

Part 2: How can we conserve energy?

Complete a guided reading activity on how students can conserve energy using the Science textbook. Discuss with students the need to conserve nonrenewable resources and make the connection to biomass. Have students complete a data chart to calculate percentages of barrels of crude oil that contains 42 gallons. When refined, it produces 21 gallons of gasoline, 9 gallons of fuel oils, 5 gallons of jet fuel, 4 gallons of lubricants, and 3 gallons of asphalt. Take the students to the computer lab and have them convert the data to percentages and make a pie graph with their results.

Part 3: Green Careers

Have students research jobs in alternative energy on the Internet and write a brief report.

Materials/Resources:

McMillan/McGraw-Hill 5th Grade 2002 Edition Textbook

Handouts

Partners

Lebanon Middle and High School Teachers, Staff and Volunteers

Russell County Public Schools Administration

Alcoa

Virginia Department of Environmental Quality (DEQ)

Southeast Recycling Development Council (SERDC)

Russell County Environmental Control and Recycling Center

Local media